

Universitat de les Illes Balears



CATÀLEG DE
**PROJECTES
D'INVESTIGACIÓ**

DE LA UNIVERSITAT
DE LES ILLES BALEARS

2002

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**PROJECTES DE RECERCA
EN EL MARC DE LA UNIÓ EUROPEA,
I ALTRES ACCIONS**

UNIVERSITAT DE LES ILLES BALEARS

Referència: NNE5/2001/293.

Programa: Energy, environment and sustainable development.

Títol: *Grid-connected Pv systems integrated in educational and cultural facilities.*

Acrònim: UNIVERSOL.

Investigador responsable: MOYÀ NIELL, Gabriel.

Categoria: TU (àrea de coneixement: Ecologia).

Inici: 2002. **Fi:** 2004.

Socis:

Universitat Rovira i Virgili (Espanya)
Universitat Autònoma de Barcelona (Espanya)
Institut Català d'Energia (Espanya)
Iberdrola Ingeniería y Consultoría, S.A. (Espanya)
Ajuntament de Santa Coloma de Gramenet (Espanya)
Ajuntament de Badalona (Espanya)
Ajuntament d'Artà (Espanya)
Universitat de Girona (Espanya)
Whitby Bird and Partners, LTD (Regne Unit)
Oxford Brookes University (Regne Unit)
The Chancellor, Master and Scholars of the University of Cambridge (Regne Unit)
University of Leicester (Regne Unit)
University of East Anglia (Regne Unit)
Institute Universitary of Technology (França)
Université de Bourgogne (França)
Electricite de France (França)
Conseil Régional Rhone-Alpes (França)
Hespul (França)
Ecole Nationale Supérieure d'Arts et Métiers Centre de Lille (França)
Pole Scolaire de la Bannière (França)
Ecole National de Travaux Publics de l'Etat (França)
Université Claude Bernard Lyon 1 (França)
Groupement d'Etablissements de Formation a l'Energie (França)
Municipality of Ria-Sirach (França)
Region Languedoc-Roussillon (França)
Ecole National Supérieure d'Arts et Métiers (França)
Coordinador: Universitat de Barcelona (Espanya)

Summary

The main objective of the project is to actively participate in the Take-Off campaign aiming at doubling the share of RES in the European mix by 2010, by installing a significant number of medium-large grid-connected PV systems in educational and cultural facilities in four State-members (Spain, France, UK and the Netherlands). Wishing to establish the foundations on which the Green Campuses and Green Municipalities of the future can be built, the participants (universities, technical training organisations, regional governments and municipalites, cultural centres, utilities and enterprises) also aim at raising social awareness on energy issues and actual possibilities of PV technology. Thanks to the best architectural integration and technical design, and to a carefully elaborated monitoring and dissemination programme, the project will clearly contribute to improving the acceptance of renewable energy sources among all concerned professionals, and the general public.

DEPARTAMENT DE BIOLOGIA

Títol: *Development and evaluation of improved fruit fly attractants in the Balearic Islands.*

Centre: Departament de Biologia. Edifici Guillem Colom Casasnovas.

Investigadora responsable: [ALEMANY FERRÀ, Aina](#).

Categoria: TU (àrea de coneixement: Zoologia).

Inici: 2000. **Fi:** 2004.

Socis:

Instituto Nacional de Investigaciones Agrarias (Espanya)
Centro Nacional de Pesquisa de Agroindustria Tropical (Brasil)
Universitat de Costa Rica Rodrigo Facio (Costa Rica)
Universitat de Tolima (Colòmbia)
Research & Development Golan Heights (Israel)
Programa Moscamed (Mèxic)
Agricultural Research Service (EUA)
University of Southampton (Regne Unit)
University of Thessaloniki (Grècia)
Subtropical Agricultural Research (EUA)
Direccia de Serviços de Investigaçao Agrícola (Portugal)
Instituto Nacional de Tecnología Agropecuaria (Argentina)
CIRAD-FLOHR. Reunió (França)
Ministry of Agriculture, Foos Technology & Natural Resources (Maurici)
Honduran Foundation for Agricultural Research (Hondures)
Univesitat de Dáo Paulo (Brasil)
Coordinador: International Atomic Energy Agency

Summary

Ceratitits capitata is in Spain a key pest due to its destructive effect on so many commercial fruits as citrus, peach and apricots. Other non commercial host as *Ficus carica* and *Opuntia ficus-indica* are also key host because of their importance as medfly reservoirs. At the moment, control measures are based on repetitive insecticides bait sprays which have serious effects on natural enemies and on fruit quality. In this sense, it is important to reduce insecticide treatments using environment-friendly and cost effective techniques as an alternative to conventional insecticides. Environmental protection measures are also increasing the need for alternatives to conventional pest control, and we have to consider that Menorca island and some areas of Ibiza island have been declared Reserves of Biosphere by UNESCO. Standard and effective monitoring systems are needed for IPM strategies, reflecting precise changes in temporal and spatial distributions of the medfly. Detection and monitoring population is critical in the Balearic Islands, because the possibility to control the pest at two moments over the year when the population is very low. At this moment, selective and effective captures will reduce the pest below the economic damage level, thus reducing or even eliminating the use of insecticides. On the other hand, the olive fly *Bactrocera oleae*, is also an important pest in Spain. This monophagous pest requires as in the case of medfly, an area-wide approach. For this reason, it is also important to develop effective attractants for monitoring and for use on a mass trapping strategy basis. Finally, geographical situation of the Balearic Islands is an adequate place to study isolated populations.

**DEPARTAMENT DE BIOLOGIA FONAMENTAL I
CIÈNCIES DE LA SALUT**

Referència: QLK1-2001-00183.

Programa: Life science: biotechnology, agricultural and food research.

Títol: *Dietary lipids as risk factors in development. Mechanistic issues.*

Acrònim: DLARFID.

Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

Investigador responsable: PALOU OLIVER, Andreu.

Categoria: CU (àrea de coneixement: Bioquímica i Biologia Molecular).

Inici: 2002. **Fi:** 2004.

Socis:

The State Institute for Quality Control of Agricultural Products of Wageningen (Holanda)
Klinikum der Universitaet Regensburg (Alemanya)
University of Southern Denmark (Dinamarca)
The Wenner-Gren Institute Stockholm University (Suècia)
Istituto di Morfologia Umana Normale (Itàlia)
Coordinador: Jagiellonian University Medical College (Polònia)

Summary

The nutritional factors are not only the source of energy but also are essential for the organism growth and development. They serve as the factors regulating the expression of genes and synthesis of proteins and they also indirectly regulate hormones, physiology of development and functional tissue remodelling of the mature organism. Unfortunately, the same factors and mechanisms are involved in deep pathology of diet-mediated social threatening illnesses Beta-carotene, the source of the lipid soluble vitamin A and retinoic acid in humans was recommended for the prevention of atherosclerosis and cancer development. Unexpectedly, the recent three multicenter, randomized human trials revealed the weak protective effect against the increased incidence of myocardial infarction, and morbidity/mortality due to the lung cancer. Since the beta-carotene is commonly used as the food colorant, the influence of its metabolites together with fatty acids derivatives will be investigated in the healthy and cancer human and animal cells. The possible involvement of the new classes of proteins and genes will be followed by the most modern methods to determine the early markers of pathology.

The Consortium of 9 research Centers from 7 EU Countries is formed to realize aims of this project with the use of most advanced technology methods such as molecular biology: cDNA-microarray, proteomic: high-resolution 2D gelectrophoresis with mass spectrometry, flow cytometry). Improved knowledge of beta-carotene and food fatty acid derivatives on regulation of gene expression will serve as the scientific basis for new diagnosis of hazard, search for the new type of anticancer, antiatherosclerotic, anti-obesity or antidiabetic pharmacotherapy, enhancing European food industry competitiveness and the innovative potential of European R&D. Developing the basis for the future food product labelling system will contribute to the improvement of the quality of life of a consumer.

DEPARTAMENT DE CIÈNCIES DE L'EDUCACIÓ

Referència: 99/136576.

Títol: *FARRUTX, towards a township model of environmental interpretation in saturated touristic areas.*

Centre: Departament de Ciències de l'Educació. Edifici Guillem Cifre de Colonya.

Investigador responsable: SUREDA NEGRE, Jaume.

Categoria: CU (àrea de coneixement: Didàctica i Organització Escolar).

Inici: 2000 **Fi:** 2002.

Summary

This project is based on four fundamental premises:

(a) The consideration of interpretation as an instrument or strategy of management for making the conservation of the natural heritage compatible with the offer of services for visitors. With the application of interpretation programmes not only can we promote behaviour which is in harmony with the place visited, by raising the awareness of the importance of conserving it, by stimulating and persuading, but we can also promote economic and social development. Interpretation makes up one of the most effective indirect methods for controlling the impact of visitors, for redirecting the influx of tourist and for managing the natural and historic heritage.

(b) The consideration of a township as the most suitable space for the development of programmes which are directed at making economic development through tourism compatible with environmental conservation.

(c) The widely accepted consideration that educational strategies directed at solving environmental problems must intervene from the local dimension of an environmental problem, from the conservation of a territory, of a heritage asset, etc. so as, from here, to begin to introduce a broader, worldwide dimension of the environmental issue.

(d) The observation of the scarce development of interpretation in countries in the south of Europe. This situation is in contrast with the capacity that this strategy possesses as a means for the management of visitors.

This project seeks to design, perform and test an environmental programme that makes possible the definition of a model for carrying out environmental interpretation programmes in tourist resort of Mediterranean Europe. Within this framework, the main goal of the project is to offer a product -the model- based on the theory and the practice -the programme- that can become a motivating and exemplifying element in the use of interpretive and educational strategies for the protection and improvement of the environment in tourist areas.

Referència: 26778.

Programa: Information society: safer internet action plan.

Títol: *Safer internet for knowing and living.*

Acrònim: SIFKAL.

Centre: Departament de Ciències de l'Educació. Edifici Guillem Cifre de Colonya.

Investigador responsable: [SUREDA NEGRE, Jaume.](#)

Categoria: CU (àrea de coneixement: Didàctica i Organització Escolar).

Inici: 2001. **Fi:** 2003.

Socis:

Universität des Saarlandes (Alemanya)

University of East Anglia (Regne Unit)

Extreme Media Solutions (Grècia)

Gesellschaft für Medienpädagogik und Kommunikationskultur (Alemanya)

Universitat Internacional d'Andalusia (Espanya)

Coordinador: Universitat de Cádiz (Espanya)

Summary

Using Internet in a safer way does not depend exclusively on the implementation of technical controls in the client or server services neither on restrictive norms in relation to contents. Safer use of the Internet means, specifically, an Internet that gives its users (who may include parents, teachers, adolescents, local authorities and librarians) a potentially powerful tool to know better our world and to live better in it. However, to achieve this, we have to build up a social and educational understanding of the Internet, establishing a culture that protects individual rights while providing freedom of intercommunication. While we have established procedures for managing knowledge in print, the speed and openness of the new media present new challenges. The central objective of the SIFKAL project is to elaborate and disseminate information and recommendations about the educational and socially relevant possibilities of the Internet using a permanent and virtual place in multilingual and in different formats in relation to four targets groups: parents, teachers, librarians and local authorities. The project will focus on actual contributions, in initiatives, and on examples of best practice using the Internet as a media for knowing and living.

DEPARTAMENT DE CIÈNCIES DE LA TERRA

Projecte: Mediterranean Programme (Robert Schumann Centre for Advanced Studies).
Títol: *Articulations du tourisme international et du tourisme national dans les pays des rives sud et est de la Méditerranée.*
Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casasnovas.
Investigador responsable: [SEGUÍ LLINÀS, Miquel](#).
Categoria: TEU (àrea de coneixement: Anàlisi Geogràfica Regional).
Inici: 2000. **Fi:** 2002.

Socis:

Institut Universitarie Européen de Florence (Itàlia)
Coordinador: Faculté des Lettres et des Sciences Humaines de Rabat. Université
Mohamed V-Agdal (Marroc)

Summary

The research program of the Mediterranean Programme is structured in the following way. It is characterised by one key research perspective and structured into research topics. The research perspective is that flows of persons, goods, and ideas between the Northern (Europe) and Southern Mediterranean, as well as among the Southern Mediterranean countries are fundamental in understanding the crucial dynamics in the area. The Mediterranean Programme has indicated a few research topics. In the realm of socio-political studies (alphabetical order): Business and politics, euro-mediterranean partnership, images and discourses, Islam and politics & economics, migration, political regime analysis. In the realms of political economy studies (alphabetical order): competition policy and implementation, development of financial markets-banks, the stock exchange and order financial intermediaries, private sector and corporate structures, privatization policy and practice.

**DEPARTAMENT DE CIÈNCIES HISTÒRIQUES I
TEORIA DE LES ARTS**

Referència: ECD-3316-26966.

Programa: User-friendly information society.

Títol: *Minority newspapers to new media.*

Acrònim: MNM.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigador responsable: [SERRA BUSQUETS, Sebastià](#).

Categoria: TU (àrea de coneixement: Història Contemporània).

Inici: 2001. **Fi:** 2002.

Socis:

Hora Nova, SA (Espanya)

Diari Segre, SL (Espanya)

Promozione Attivita Editoriale, SRL (Itàlia)

Vasabladet AB (Finlàndia)

Hufvudstadsbladet AB (Finlàndia)

Coordinador: Universitat de les Illes Balears (Espanya)

Summary

The project will produce a series of product and service ideas that will facilitate the development of digital content in minority languages throughout the EU, by enabling minority language media to increase their market penetration, reaching dispersed readership markets and enabling them to produce multi-language products which will increase their competitiveness across cultural and linguistic barriers and within their traditional markets. The product and service ideas will be exportable to the over forty minority language media in the EU and to other media companies. The project's objectives are:

- Research the applications of automatic syntactical translation software, for treatment of news and advertising in minority language print media.
- Assess the viability of developing WAP and 3Gweb services in the regional or minority press market to increase their market penetration and competitiveness.
- Evaluate the impact of database generated newspaper derived products in increasing the viability of minority language print media.
- Explore the technical viability of developing remote printing applications for minority media in areas of dispersed readership.
- Develop a web-based showcase to demonstrate the feasibility of the applications addressed within the project.
- Ascertain the viability of implementation and identify potential partners for follow-up actions.

The project aims bring together a series of minority language newspapers across Europe, who are generally isolated by language and market, and will analyse the possibilities of joint applications of the results of this preparatory action. It will bring these media firms into contact with commercial firms, such as software developers, ISPs and communication firms which they do not traditionally work with, and will generate longer lasting and commercially interesting relationships that would be expandable to other media outlets across Europe. The follow-up actions include wide dissemination of the results. At later stages the present consortium members hope to expand the group and implement the results of this preparatory action.

**DEPARTAMENT DE CIÈNCIES MATEMÀTIQUES
I INFORMÀTICA**

Referència: FMRX-CT98-0234.

Programa: Training and mobility of researchers.

Títol: *Viscosity solutions and their applications.*

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: [COLL VICENS, Bartomeu](#).

Categoria: TU (àrea de coneixement: Matemàtica Aplicada).

Inici: 1998. **Fi:** 2003.

Socis:

Université de Tours (França)
Rheinische Friedrich-Wilhelms-Universität (Alemanya)
Foundation for Research and Technology-Hellas (Grècia)
Universita degli Studi di Milano (Itàlia)
Universita degli Studi di Padova (Itàlia)
Universita degli Studi di Roma-La Sapienza (Itàlia)
Universitat de Las Palmas de Gran Canaria (Espanya)
Kungl Tekniska Högskolan (Suècia)
Coordinador: Université de Paris IX-Dauphine (França)

Summary

This is a proposal for research on problems related to the theory of viscosity solutions and its applications. The theory of viscosity solutions is one of the most central and fastest growing areas in the field of nonlinear partial differential equations. Its scope extends from rather deep and challenging mathematical problems to the modelling and analysis of a large number of applied problems in science, engineering, atmospheric/ocean studies and economics, which include, among others, phase transitions, moving fronts, statistical mechanics, combustion, turbulent reaction-diffusions, optimal and stochastic control, mathematical finance, image processing, etc...The understanding of such applications obviously requires, in addition to theoretical results, extensive computations and efficient numerical methods, which can be derived and analysed using the theory of viscosity solutions.

The long list of applied areas and problems which can be studied using methods related to viscosity solutions, the rather difficult and challenging mathematical problems that encompasses as well as the astonishing progress already achieved, in such a relatively short (for mathematics) period, using viscosity solutions has generated an ever growing interest in Europe, US, Japan and China. An indication of the growing importance of this theory for mathematics is that, since 1981 when M. G. Crandall and P.-L. Lions introduced the concept of the viscosity solution, more than one thousand papers related to the subject have been published in mathematical journals of high quality, a rather amazing fact for mathematics. A proof of the importance and relevance of viscosity solutions for applied mathematics is the fact that they have already been used successfully to analyse a large number of questions related to the applications mentioned above. Europe is in a unique position to be at the forefront of this theory. Some of the leading groups in the world in the theory of viscosity solutions and its applications are located in Europe and all of them are participating in this project.

Referència: IST-2001-32202.

Programa: User-friendly information society.

Títol: *An automatic human model animation environment for augmented reality interaction.*

Acrònim: HUMODAN.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: PERALES LÓPEZ, Francisco José.

Categoria: TU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

Inici: 2002. **Fi:** 2005.

Socis:

Fraunhofer Gesellschaft zur Foerderung der Arngewandten Forshung E.V. (Alemanya)

Kursaal Producciones Audiovisuales, S.L. (Espanya)

Synkronix Incorporation Limited (Regne Unit)

Systema Informatics, S.A. (Grècia)

Coordinador: Centro de Estudios e Investigaciones Técnicas de Guipuzcoa (Espanya)

Summary

The objective of the project is to design, develop and set up an innovative system for automatic recognition and animation of human motion in controlled environments. The most relevant and distinctive feature of this system with respect to existing technologies is that the individual being recorded will not wear any type of marker or special suit and neither will other type of sensors. By this way this system will be highly useful in a wide range of technological areas, like for example TV production, tele-presence, immersive and collaborative interactivity storytelling, medicine diagnose support, tele-operation, education and training.

An example of application of such a system is to animate easily and realistically a virtual performer in a TV set starting from recorded images of a real player. Further applications like virtual reality immersive collaboration environments and real time immersive storytelling will also be investigated. Medical issues are also interesting in the project.

The innovation and challenges of the project rely both in the recognition system to be developed and in both real-time and non real-time applications that such a system will allow.

Principal goal of HUMODAN project is to produce efficiently, realistically and with low cost the virtual animation of an individual by means of processing only a sequence of images recorded from different cameras and avoiding the use of sensors, markers or special suits.

The project addresses following objectives:

To develop a new system of human motion recognition without using sensors or markers.

To obtain automatically and rapidly (real-time in some applications) a realistic animation of an individual using a sequence of images from recorded from different cameras.

To use robust biomechanical analysis.

To develop specific applications, interfaces and plug-ins

To produce an easy-to-use, user-friendly tool

System will be easier and cheaper to use. Also, and possibly more important, with respect to future new application areas in which the slowness of the process and the necessity of

markers are actual main limitations that prevents from using motion capture technology. In the basis, it will be developed an innovative system for recognition of human motion based on the most modern techniques of image processing, analysis and synthesis. Besides, the system will be enhanced to recognize and analyse other biped and no-biped beings, like for example pet animals, robots, etc. In addition, system will be able to focus only in a part of the body but with high detail, like for example the hands or the face.

To ensure the widest range of applications, the individual recorded will not wear any type of marker or special suit. To this end, biomechanical models will be constructed using a hierarchical and articulated structure in order to establish a correlation between each structural element of the biomechanical model with the analytical characteristics of the images obtained using different views. Innovative shape or part recognition techniques will be applied. The biomechanical model will include a knowledge database to retain high-level information of the motions.

The biomechanical model will also require developing specific kinematics and dynamic models, and analysis and synthesis tools to support firstly the recognition phase and later the reconstruction and animation phase.

To make the system usable it will be also necessary to develop specific applications and plug-ins to integrate the animation into end users tools such as digital TV production software, animation software and virtual environments like a CAVE. To this end all developed software from the different subsystems will be integrated using adequate interfaces in order to be able to comply with networking applications and real time requirements.

DEPARTAMENT DE FÍSICA

Referència: HPRN-CT-2000-00137.

Programa: Improving human research potential and the socio-economic knowledge base.

Títol: *Theoretical foundations of sources for gravitational wave astronomy of the next century: synergy between supercomputer simulations and approximation techniques.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [BONA GARCIA, Carles](#).

Categoria: CU (àrea de coneixement: Física Teòrica).

Inici: 2000. **Fi:** 2003.

Socis:

Friedrich Schiller Universität Jena (Alemanya)

Observatoire de Paris. Section de Meudon (França)

Universitat de València. Estudi General (Espanya)

Aristotle University of Thessaloniki. Department of Physics (Grècia)

Universita di Roma 'La Sapienza'. Dipartimento di Fisica (Itàlia)

Scuola Internazionale Supeiore di Studi Avanzati (Itàlia)

University of Southampton (Regne Unit)

University of Portsmouth (Regne Unit)

Coordinador: Max Planck Institut für Gravitationsphysik. Albert Einstein Institut
(Alemanya)

Summary

There are five major objectives that will be achieved through this Network, important for GWA, that will not be possible without it. In summary they are: (1) The formation of a close alliance among the different expert groups to solve urgent problems required for GWA, too large and complex for any single group to tackle. Such a Network is needed, but does not exist at present. (2) The development and training of a young community of researchers to populate this emerging research area of GWA. Although there are strong, isolated European groups working in relevant research areas, there is no coordinated effort to build up the broad-based expertise required for a systematic attack on these problems. (3) The development of a community simulation code for relativistic astrophysics: Cactus. Simulation tools are essential for the success of this research area. As described below, the development and use of Cactus will be an important part of the training program for this Network. (4) The development of appropriate approximation tools, such as perturbation and post-Newtonian theory, to provide better physical understanding and conformation of numerical simulations. Without such schemes, simulations may provide little insight into the actual physics, and may be completely misinterpreted. Further, semi-analytic results may be used to confirm and validate numerical simulations in appropriate regimes. (5) The application of these tools to a set of core astrophysics problems, considered among the most urgent for the detection and interpretation of the first signals seen in the GEO and VIRGO detectors, and also seen as excellent focus problems for the development and training of the community and its research tools. These problems include GW signals from NSs and BHs.

Referència: G3RD-CT-2000-00265.

Programa: Competitive and sustainable growth.

Títol: *Autonomous inspection of subsea telecommunication cables, power cables and pipelines.*

Acrònim: AUTOTRACKER.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: CALVO IBÁÑEZ, Óscar Alberto.

Categoria: TEU int. (àrea de coneixement: Tecnologia Electrònica).

Inici: 2001. **Fi:** 2004.

Socis:

Heriot-Watt University (Regne Unit)
Innovatum International Ltd (Regne Unit)
SEAS Distribution AmbA (Dinamarca)
BP Exploration Operating Company Ltd (Regne Unit)
Alcatel Submarine Network AS (Dinamarca)
Coordinador: Maridan AS (Dinamarca)

Summary

The need for fast communication (telecom and internet) and transport of energy (power, oil and gas) has resulted in an increasing amount of subsea installations (cables and pipelines). To maintain the installations in safe and reliable condition preventive maintenance inspections are needed. The subsea network is greatly developed in certain geographic areas including the European seas (Baltic, North Sea, Atlantic Ocean and Mediterranean Sea), Gulf of Mexico and East Chinese Sea. Several parts of these areas are located at deep water (500-3500 m). Current inspection technology deploys shipboard monitoring sensors either from a free-flying surface towed platform (ROTV), which significantly degrades in quality, or from an ROV which is expensive. ROV operations require a DP survey vessel with some 40-man crew (DP stand for dynamic positioning, which is required for ROV operations). Shipboard inspection technology is not economically effective in water depths greater than 500 m and with oil exploration and development activity now moving into even deeper areas an alternative approach is required. The AUTOTRACKER project will provide a new autonomous platform (the AUTOTRACKER vehicle) for subsea inspections. The new platform can be deployed from any «ship of opportunity» and it can replace current inspection platforms in a much cheaper and safer way. The new platform is not physically connected by cables to the surface, such as ROVs and ROTVs. The sensors used today on ROVs and ROTVs can be used on the new platform giving improved data, and at reduced cost because the need for an expensive DP survey vessel is eliminated. Potential savings are dramatic: a reduction of inspection costs with a factor 10 or more! Typical cost of 20 days ROV inspection in the North Sea is approx. 1 million EURO. Typical cost of 20 days ROV inspection in the North Sea is approx. 1 million EURO. The SMEs in the consortium want to exploit the results of the project on the 1-2 billion EURO world market for subsea inspections. The project contributes to the following EU politics: employment, working conditions, environment, internatl market and standardisation (see section 4 and 5).

Referència: AML/B7-311-97/0666/11-0077-A.

Programa: Latin America social development.

Títol: *Laboratory for distance-learning based on internet technology.*

Acrònim: LABDILEIT.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [GARCIA MORENO, Eugeni](#).

Categoria: CU (àrea de coneixement: Tecnologia Electrònica).

Inici: 2001. **Fi:** 2003.

Socis:

Technische Universität Ilmenau (Alemanya)
Institute National des Sciences Appliquées (França)
UniK, Center for Technology (Noruega)
Universitat Simón Bolívar (Veneçuela)
Instituto Nacional de Astrofísica, Óptica y Electrónica (Mèxic)
Centro de Investigación y de Estudios Avanzados (Mèxic)
Universidade Estadual de Campinas (Brasil)
Coordinador: Universitat de les Illes Balears (Espanya)

Summary

The objective of this proposal is to establish user-friendly and efficient technology for interactive, on-line operation of remote education laboratory experiments, utilizing the Internet and the Web. Through collaboration between several universities, this technology will permit lab courses within many disciplines of engineering and science to be offered to regular and continuing education students locally and remotely. The concept is of particular interest for countries with sparsely populated regions and with large distances between major educational centers. Also, the remote lab can be offered to local colleges that can benefit from this technology to augment their engineering and science curriculum. To demonstrate the feasibility of this concept each participating institution agrees to implement a remote lab site, and to create one experimental lab module. Because of the participants background, such lab modules will be devoted the characterization of electronic devices and circuits. In order to carry out the lab modules, the proposal also includes the fabrication of one Application Specific Integrated Circuit, ASIC. The ASIC will be formed by different test circuits, each one designed by one partner. El lab module to be developed by each partner will be based on the characterisation through Internet of the circuit that he has designed.

Referència: IST-2000-29683.

Programa: User-friendly information society.

Títol: *Optical chaos communications using laser-diodes transmitters.*

Acrònim: OCCULT.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [MIRASSO SANTOS, Claudio Rubén.](#)

Categoria: TU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2001. **Fi:** 2004.

Socis:

University of Wales (Regne Unit)
Centre National de la Recherche Scientifique (França)
Technische Universitaet Darmstadt (Alemanya)
National and Kapodistrian University of Athens (Grècia)
Università degli Studi di Pavia (Itàlia)
Opto Speed SA (Suïssa)
Consell Superior d'Investigacions Científiques (Espanya)
Coordinador: Universitat de les Illes Balears (Espanya)

Summary

The general objective of the proposal is the experimental demonstration of an emitter/receiver chaotic optical system capable to transmit encoded information through optical fibres. Our proposal is directed at improving the privacy in the transmission of secure data in the context of the increasing volumes of data that fibre-based optical networks carry. We concentrate on relatively high bit rate fibre-optic communication systems utilising semiconductor diode lasers as the optical sources. Our approach exploits the properties of the dynamically chaotic emitter and receiver systems that, under specific conditions are able to synchronise, and therefore allow for the encryption and decryption of messages at a device level. Our technique is complementary and fully compatible with other existing methods for encoding information.

Referència: INTERREG IIIB-MEDOC.

Títol: *Hydroptimet: optimisation des outils de prévision hydrométéorologique.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: ALONSO OROZA, Sergio.

Categoria: CU (àrea de coneixement: Física de la Terra).

Inici: 2002. **Fi:** 2004.

Socis:

ARPA Emilia Romagna, Servizio Meteorologico Regionale (Itàlia)

Centro Interuniversitario di Monitoraggio Ambientale (Itàlia)

Regione Toscana: Dipartimento dello Sviluppo Economico (Itàlia)

Regione Calabria: I Dipartimento della Presidenza, Settore 2, Servizio 4 (Itàlia)

Servizio Agrometeorologico Regionale per la Sardegna (Itàlia)

Regione Basilicata: Dipartimento Ambiente e Territorio (Itàlia)

CNR, Istituto di Scienze dell'Atmosfera e del Clima (Itàlia)

Agenzia per la Protezione dell'Ambiente ed i Servizi Tecnici (Itàlia)

Agència Catalana de l'Aigua, Generalitat de Catalunya (Espanya)

Institut Polytechnique de Grenoble, LTHE (França)

Université Joseph Fourier (França)

Etat du Valais (Suïssa)

Coordinador: Regione Piemonte: Direzione Servizi Tecnici di Prevenzione (Itàlia)

Summary

The main project aims are: 1) Optimisation of the connections between the meteorological and hydrological component according to the prevention and the forecast of natural risks, in particular of floods. 2) Experimentation of the operational use of new tools, derived from the meteorological modelling, for the high resolution quantitative forecast of the precipitation. 3) Temporal search of optimisation activities of the methodologies and tools developed in a previous INTERREG II C project and their diffusion to the national and international groups.

Referència: EVK1-CT2001-00092.

Programa: Energy, environment and sustainable development.

Títol: *Towards sustainable water use on mediterranean islands: addressing conflicting demands and varying hydrological, social and economics conditions.*

Acrònim: MEDIS.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [ALONSO OROZA, Sergio](#).

Categoria: CU (àrea de coneixement: Física de la Terra).

Inici: 2002. **Fi:** 2006.

Socis:

Natural Environment Research Council (Regne Unit)
University of Cyprus (Xipre)
Foundation of Research and Technology (Grècia)
Università degli Studi di Messina (Itàlia)
Centre National de la Recherche Scientifique (França)
Universitat Politècnica de Catalunya (Espanya)
Université de Corse Pascal Paoli (França)
National Agricultural Research Foundation (Grècia)
Regional Government of Crete (Grècia)
Coordinador: Universitaet Muenster (Alemanya)

Summary

The availability of water in the Mediterranean in sufficient quantities and adequate quality represents a significant problem of European dimension. This is due to a number of factors which include: the over-exploitation of existing aquifers by various users, insufficient recharge due to diminishing precipitation, excessive and inadequate use through agricultural activities or tourism, significant deficits in water management and distribution schemes and conflicting or unresolved demands and interests between various users, to name just a few. These problems are exacerbated on the islands in the Mediterranean because of their isolation and thus the impossibility to draw on more distant or more divers aquifers in general and because of the threat of saline intrusions, which reduce the utilisation of existing, near-shore aquifers in particular. Consequently, some islands (e.g., Mallorca or Cyprus) because of the inability to cope with the existing water resources on the island have resorted to extremely costly measures such as sea water desalination or the transport of freshwater from the mainland to the island with tankers. While the availability, demand and distribution of water on each island are determined by specific conditions, there are a number of attributes common to all Mediterranean islands which call for the formulation of generic solutions to the above mentioned problems. Such solutions are also pertinent in the context of the Water Framework Directive (WFD), which came into force on 22. 12. 2000. Because most of these problems are mutually related and interdependent, solutions will only be derived through holistic considerations. This calls for a high degree of interdisciplinarity and renders mono-disciplinary studies almost useless. Moreover, enduring solutions will only be found through recommendations and/or regulations that are based on mutually agreed principles between the stakeholders involved. This requires a stakeholder-based participatory process that builds on the results of scientific investigations on the one hand and on the consent of major stakeholders on the other. Only an approach combining interdisciplinarity and stakeholder involvement,

which is central to MEDIS (Towards sustainable water use on Mediterranean Islands: addressing conflicting demands and varying hydrological, social and economic conditions) will result in water management practices that are both sustainable and acceptable/equitable. The overall goal of MEDIS is to contribute towards the sustainable use of water on islands of the Mediterranean where conflicting demand for water is combined with a wide range of hydrological, social and economic conditions. The study will be carried out in one typical catchment each on Corsica, Crete, Cyprus, Mallorca and Sicily. Based on interdisciplinary investigations involving, hydrology, spatial analysis (geo-informatics) and geophysics, improved methodologies for the characterisation of- and basic data on aquifers and the monitoring of water consumption, recharge and safe field will be developed/derived. Because agriculture represents the major user of water on most Mediterranean islands (except for Mallorca, where water demand is highest for tourism), improved agricultural practices that enable smaller water consumption will be recommended. A stakeholder analysis and the collection and examination of information on water demand by various stakeholders in conjunction with the physical data will be used in a decision support system employing multi-criteria analysis in order to derive various mutually agreeable water distribution schemes in a participatory bottom-up approach. This will form the basis for recommendations on equitable and sustainable water management practices under current and possibly decreased precipitation rates resulting from climate change. By carrying out this project on five islands that cover the Mediterranean from west to east and by enabling a dialogue between scientists and stakeholders as well as between principal stakeholders from each island, these recommendations will embrace generic solutions based on the collective experiences of the residents on all islands. Thus, MEDIS will not only enable improved water management practices on each of the islands considered, but will contribute to the implementation of the WFD on Mediterranean islands. It is expected that MEDIS will deliver: extensive maps, databases and electronic atlases of current water resources/supply, water demands and recharge for the islands under investigation; recommendations/guidelines for best practices in agriculture in order to mitigate the inefficient use of water; a detailed analysis and evaluation of the social and economic impacts of current water management practices, the water demands of major stakeholders, and their perception on water and water availability in general; recommendations and/or guidelines for the implementation of an infrastructure for a stakeholder-based, participatory process leading to sustainable and equitable water distribution schemes on the Mediterranean islands. These objectives are realistic, because MEDIS will be carried out by a consortium of partners who have gained extensive experience in earlier studies addressing comparable problems. Moreover, we will seek collaboration with external experts and other ongoing projects in order to improve our investigations and to avoid undue overlap.

DEPARTAMENT DE QUÍMICA

Referència: HPMF-CT-2000-01057.

Programa: Improving human research potential and the socio-economic knowledge base.

Títol: *Development of an automatic analyser coupled with an integrated photocatalytic reactor for the determination of free and complexed heavy metals in water.*

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: CERDÀ MARTIN, Víctor.

Categoria: CU (àrea de coneixement: Química Analítica).

Inici: 2001. **Fi:** 2003.

Socis:

Coordinador: Universitat de les Illes Balears (Espanya)

Our proposal is to design and set-up an in-situ apparatus for sampling and monitoring of waters by on-line and simultaneous measurements of several metals in water bodies. The device will be able to early survey trace metallic pollution. To built up the apparatus for the automated fluorimetric analysis of metals in water, the project foresees primarily the optimisation of a photo-oxidation device. In fact, one main requirement for the development of a metal analyser based on following complexation of the relevant analytes, is that metals occur in sample in a non-complexed form. Metals in natural or industrial water are bound to organic compounds like fulvic and humic acids, or even incorporated in organo-metallic compounds with covalent bonds. In order to achieve a quantitative availability of the relevant metals, these compounds have to be destroyed, or at least have to be released from the complexes.

A suitable method to reach this purpose is the catalysed oxidation with ultraviolet (UV) light, using TiO₂ as catalyst. After the set-up of the photo-oxidation reactor and of the separation and complexing device, the most innovative aspect is the development of a prototype for automatic fluorescence analysis. This prototype will allow to automate all the above steps and will apply traditional techniques, as well as new ones like flow and sequential analysis (FIA, SIA) and multi-syringe flow analysis (MSFA). Actually, this training represents a great opportunity for the applicant to apply his academic/practical experience in a finalised research project and to enlarge its scientific skills in applied environmental catalysis. Furthermore, by entering more in deep into such new analytical technologies, based on flow and sequential injection analysis, the fellowship gives to the applicant the possibility to acquire further (and not common) skills on in-situ environmental analysis. At the same time, he will improve his consciousness and understanding about European Community policies in Environment related matter and measures to be taken against air and water pollution. This will give him a rare and precious degree of expertise in this important and complex scientific/social domain. The research host group has a nice experience in the development of automatic analytical methods, but needs someone with good experience in the set-up, development and optimising of the photo-reactor.

**INSTITUT MEDITERRANI D'ESTUDIS AVANÇATS
(IMEDEA)**

Referència: IC18-CT98-0292.

Títol: *Prediction of the resilience and recovery of disturbed coastal communities in the tropics.*

Acrònim: PREDICT.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: DUARTE QUESADA, Carlos.

Categoria: Professor d'investigació del CSIC.

Inici: 1998. **Fi:** 2002.

Socis:

Hanoi National Pedagogic University (Vietnam)

Instituto do Mar (Portugal)

University Wales (Regne Unit)

Kobenhvns Universitet (Dinamarca)

Internat.Instit. for Infrastrustural ,Hydraulic and Envir. Engineering (Holanda)

University of the Philippines (Filipines)

Coordinador: Institut Mediterrani d'Estudis Avançats (IMEDEA)

Summary

The objective is to contribute to the sustainability of SE Asian coastal ecosystems through the development of models predicting the resilience of SE Asian seagrass and mangrove ecosystems against human pressure. These models, simple enough as to be readily embedded in current frameworks for integrated coastal management, will assist decisions by coastal managers and policy makers.

Referència: EVR1-CT2000-20002.

Programa: Energy, environment and sustainable development.

Títol: *Implementation and networking of large-scale long-term marine biodiversity research in Europe.*

Acrònim: BIOMARE.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [DUARTE QUESADA, Carlos](#).

Categoria: Professor d'investigació del CSIC.

Inici: 2000. **Fi:** 2002.

Socis:

National Environment Research Council
Centre National de la Recherche Scientifique
Ecological Consultancy Services Ltd
Instituto do Mar
Akvaplan-niva AS
Institute of Marine Biology of Crete
Institute of Oceanology-Polish Academy of Sciences
Alfred Wegener Institut für Polar und Meeresforschung
Stazione Zoologica Anton Dohrn
University of Ljubljana
Université de la Méditerranée Aix-Marseille II
Israel Oceanographic & Limnological Research Ltd
Middle-East Technical University
Universiteit Gent
Centre for Environmental Research into Coastal Issues
ABO Akademi University
Helsinki University of Technology
Klaipedos Universitetas
Université de Nantes
Université Pierre et Marie Curie-Paris VI
Coordinador: Nederlands Instituut voor Oecologisch Onderzoek

Summary

The objectives of the concerted action are to achieve a European consensus on the selection and implementation of:

1) a network of reference sites as the basis for long-term and large-scale marine biodiversity research in Europe.

2) internationally agreed standardised and normalised measures and indicators for (the degree of) biodiversity.

3) facilities for capacity building, dissemination and networking of marine biodiversity research, by a) workshops, b) improving training and mobility, c) an internet web-site including an overview of ongoing research programs and existing infrastructure for marine biodiversity research in Europe, d) a database on, reviewed and evaluated, available data, aiming at employing data for socio-economic questions such as the impact of fisheries or tourism.

Referència: EVK3-CT2000-00040.

Programa: Energy, environment and sustainable development.

Títol: *Nutrients cycling and the trophic status of coastal ecosystems.*

Acrònim: EUROTROPH.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [DUARTE QUESADA, Carlos](#).

Categoria: Professor d'investigació del CSIC.

Inici: 2001. **Fi:** 2004.

Socis:

Université Libre de Bruxelles (Bèlgica)
Netherlands Institute of Ecology (Holanda)
Centre National de la Recherche Scientifique (França)
Université Pierre et Marie Curie-Paris VI (França)
Aalborg Universitet (Dinamarca)
University of Hull (Regne Unit)
Coordinador: Université de Liège (Bèlgica)

Summary

EUROTROPH aims to apprehend the functioning of carbon and nutrients storage in coastal ecosystems. The objectives of the projects are: 1- to determine the trophic status of four European coastal sites using different approaches, 2- to breakdown the effects of the various nutrients and organic matter species on the trophic level, 3- to develop biogeochemical and socio-economic models in order to forecast changes and provide management tools, 4- to converse the data into information for wider use and disseminate the results at appropriate levels (end-users), 5- to provide advises for a better control for coastal areas (monitoring procedures, regulation adapted to the trophic status, cost-effective management of nutrients and their disposal).

Referència: EVK3-CT2000-00044.

Programa: Energy, environment and sustainable development.

Títol: *Monitoring and managing of european seagrass beds.*

Acrònim: M&MS.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [DUARTE QUESADA, Carlos.](#)

Categoria: Professor d'investigació del CSIC.

Inici: 2001. **Fi:** 2004.

Socis:

University of Wales-Bangor (Regne Unit)
Universidade do Algarve (Portugal)
Danmarks Miljøundersøgelse (Dinamarca)
Instituto da Conservação da Natureza (Portugal)
Direcció General de Pesca del Govern Balear (Espanya)
Coordinador: Københavns Universitet (Dinamarca)

Summary

The objective of the M&MS project is to define the habitat requirements of European seagrass ecosystems, the present threats to their sustainability, and their resilience to disturbance in order to strengthen our forecast capacity and formulate cost-effective monitoring plans and management strategies. The objective will pursue the specific objectives: (1) to determine if isotopic composition of C, N and S in seagrasses reflects human disturbance, (2) to compile and analyse data on relationships between water column conditions and performance of different seagrass species, (3) to determine the interaction between seagrass performance and sediment conditions, (4) to determine the role of sexual reproduction and genetic diversity on recovery of European seagrass beds, (5) to investigate the dynamics of spatial occupation of seagrasses, its importance for recovery of seagrass beds and their role in coastal protection, and (6) to integrate existing and acquired knowledge into recommendations for monitoring and sustainable management of European seagrass beds.

Referència: Q5RS-2001-02456.

Títol: *Effects of nutrient release from Mediterranean fish farms on benthic vegetation in coastal ecosystems.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: DUARTE QUESADA, Carlos.

Categoria: Professor d'investigació del CSIC.

Inici: 2001. **Fi:** 2004.

Socis:

Institute of Marine Biology of Crete (Grècia)

Universitat de Barcelona (Espanya)

Department of Fisheries and Marine Research, Marine Biology and Ecology Section
(Xipre)

National Environmental Research Institute (Dinamarca)

Universita degli Studi di Ancona (Itàlia)

Coordinador: University of Southern Denmark (Dinamarca)

Summary

The main objectives are to study the environmental impacts of fish farming on benthic vegetation (seagrasses and macroalgae) and benthic fauna and to provide new insights for monitoring purposes. The specific objectives are to explore 1) the loss of nutrients from Mediterranean fish farms, 2) the incorporation of nutrients into pelagic and benthic vegetation in the surroundings of fish farms, 3) the impact of releases nutrients and fish farm effluents on benthic vegetation and fauna. We wish to evaluate if seagrasses and benthic fauna can be used as early warning indicators of fish farming impacts. Finally the obtained information on nutrient release and effects of nutrients on pelagic and benthic vegetation will be incorporated into a dose/response model. An important objective of this project is to include exchange of knowledge between scientist and end-users through workshops and conferences.

Referència: EVK3-CT2000-00028.

Programa: Energy, environment and sustainable development.

Títol: *Satellite-based ocean forecasting.*

Acrònim: SOFT.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [TINTORÉ SUBIRANA, Joaquim](#).

Categoria: Professor d'investigació del CSIC.

Inici: 2001. **Fi:** 2003.

Socis:

Université de Liège (Bèlgica)
Natural Environment Research Council (Regne Unit)
Safege Cetiis, SA (França)
Saclant Undersea Research Center (Itàlia)
Coordinador: Consell Superior d'Investigacions Científiques (Espanya)

Summary

One of the actual challenges in operational oceanography is the prediction of ocean variability. Techniques useful to estimate the near future states of the ocean provide enormous benefits on human activities related to the sea. For such reason, efforts are carried out to get reliable and manageable ocean forecasting systems. Numerical ocean models are by far the most used tools for ocean prediction. This methodology requires the derivation of the dynamical laws controlling the ocean processes as well as the detailed knowledge of the initial conditions, ocean forcings, and monitoring of the space-time ocean variability for their validation. The objectives of SOFT are:

1. To develop an operative, reliable and manageable ocean forecasting system based on satellite imagery.
2. The integration of the above system into numerical ocean models in order to improve their numerical forecasts.

Projecte núm: EVK3-CT-2001-00046.

Programa: Energy, environment and sustainable development.

Títol: *New strategy of monitoring and management of HABs in the mediterranean sea.*

Acrònim: STRATEGY.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [TINTORÉ SUBIRANA, Joaquim](#).

Categoria: Professor d'investigació CSIC.

Inici: 2001. **Fi:** 2004.

Socis:

FOA Ambiental, SL (Espanya)
Università degli Studi di Urbino (Itàlia)
Instituto Español de Oceanografía (Espanya)
National Centre for Marine Research (Grècia)
Consiglio Nazionale delle Ricerche (Itàlia)
Coordinador: Instituto de Ciencias del Mar CSIC (Espanya)

Keywords: HAB Monitoring Coastal management Mediterranean.

Summary

In the last decades there has been a clear trend towards the exploitation of the coastline for recreational purposes causing a significant increase of confined areas. STRATEGY main goal is to provide the keys for tackling one of the main risks of coastal regions on a world scale, and specifically along the Mediterranean coastline: the increased frequency of Harmful Algal Bloom (HAB) as the possible consequence of anthropogenic activities. In particular, STRATEGY aims at elucidating the importance of confined areas created or modified by human activity in HAB events. STRATEGY is centred in three species of the genus *Alexandrium* and is focused mainly through in situ studies in the Northern Mediterranean basin where blooms associated with *Alexandrium* species are recurrent and frequently cause public health, economic, and social problems. These regions have a common characteristic: the exploitation of the coastal zone for recreational use, with important highly established tourism industries or plans for development of the near future, and the same concern to conserve the quality of near-shore waters (substantial economical inputs depend on it). Effective communication and active participation of all the players involved at different levels and areas will be promoted. The outputs of STRATEGY will be essential to develop a new concept of monitoring and will provide the basis of an integrated coastal zone management in relationship with the coastal recreational waters (i.e. formulate new criteria of near-shore waters use).

Referència: LIFE00NAT/E/7303.

Programa: LIFE nature.

Títol: *Protection of Posidonia grasses in SCIs of Balears.*

Acrònim: POSIDONIA.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [TINTORÉ SUBIRANA, Joaquim](#).

Categoria: Professor d'investigació del CSIC.

Inici: 2002. **Fi:** 2005.

Socis:

Fundació Bosch i Gimpera de la Universitat de Barcelona (Espanya)

Direcció General de Pesca del Govern Balear (Espanya)

Coordinador: Conselleria de Medi Ambient del Govern Balear (Espanya)

Summary

Objectives: to warrant the viability and the biological richness of the habitat in the Balearic waters.

Secondary objectives: to preserve an important representation of the habitat, avoiding the main threats (overexploitation, uncontrolled public use, colonisation by exotic species...); To warrant the conservation of the species of the II annex of the Habitats Directive and the priority species of the Annex II of Birds Directive. To acquire and spread further knowledge about their ecology, and role in beach conservation and sedimentary dynamics.

Referència: HPRN-CT-2000-00034.

Programa: Improving human research potential and the socio-economic knowledge base.

Títol: *VCSELS for information society technology applications.*

Acrònim: VISTA.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [SAN MIGUEL RUIBAL, Maximino.](#)

Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2000. **Fi:** 2003.

Socis:

UCC (Irlanda)

CNET (França)

EPFL (Txèquia)

UNI_ULM (Alemanya)

INFN_MI (Itàlia)

UPMC_LKB (França)

KTH (Suècia)

Coordinador: Istituto Nazionale per la Fisica della Materia (INFN.RUF) (Itàlia)

Summary

Opto-electronics will have to play a crucial role in future development of communications and information processing and, as a consequence, will influence very much our society in the next years. The Vertical Cavity Surface Emitting Lasers (VCSEL) are likely to become much more important than standard semiconductor lasers in the near future in opto-electronic devices. In order to reach this major breakthrough, an effort must be faced for solving some problems related to the VCSEL behaviour, in particular for polarisation instabilities pattern complexity, modulation patterning effects, low power, thermal lensing and feedback effects. Even more important, VCSEL special characteristics can be fruitfully used for improving systems performance, for instance with polarisation control, by employing spatial structures for information processing, by achieving quantum-limited performance. The main objectives of the Project are the understanding of the underlying physical mechanisms relevant to VCSEL operation, the subsequent improvement of their efficiency and the transfer of this knowledge to VCSEL based systems. These objectives are achieved by exploring new possibilities associated with VCSEL features and by novel kind of lasers and device concepts.

At this purpose, a tight collaboration is necessary among laboratories with device construction facilities, laboratories with nonlinear and quantum optics and electronics expertise, theoretical groups. Indeed, the samples production requires a large research infrastructure and few European groups (and in few European countries) have this possibility. Besides, a complete characterisation and understanding of the laser behaviour implies specialised competencies and must be performed by groups with the necessary experience. This network will provide the link between the most important European groups in the involved research fields, connecting device production, characterisation and implementation in communication systems.

Referència: IST2000-26019.

Programa: User-friendly information society.

Títol: *Quatum images.*

Acrònim: QUANTIM.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [SAN MIGUEL RUIBAL, Maximino.](#)

Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2001. **Fi:** 2003.

Socis:

Istituto Nazionale per la Fisica della Materia (Itàlia)
University of Strathclyde (Regne Unit)
Universite de Franche-Comte (França)
Centre National de la Recherche Scientifique (França)
Northwestern University (EUA)
Trustees of Boston University (EUA)
Universite des Sciences et Technologies de Lille (França)
Coordinador: Ecole Normale Superieure Paris (França)

Summary

Information technologies, which mostly deal with single channel signals, involve more and more often the manipulation of more complex signals, for example when the information is contained in images, and also in parallel computing. Our general objective is to demonstrate that one can take advantage at the same time of the quantum mechanical aspects of light and of the fundamental and intrinsic parallelism of optical signals to develop new techniques in image and parallel information processing at the quantum level. It is in particular to show how, by tailoring the local quantum fluctuations and the spatial quantum correlations of light beams produced by various optical devices, one can improve the quality of different functions which are of great information technologies, such as recording, encryption, storage, read-out, refreshment and duplication of optical information.

Referència: HPMF-CT-2000-00610.

Programa: Improving human research potential and the socio-economic knowledge base.

Títol: *Modeling and testing of vertical cavity surface emitting laser arrays.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: SAN MIGUEL RUIBAL, Maximino.

Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2000. **Fi:** 2002.

Socis:

Coordinador: IMEDEA (Espanya)

The main objective of the proposed research is the full modelling of the VCSELs (Vertical Cavity Surface Emitting Semiconductor Lasers) array. The VCSEL array is one of the most interesting topic of the today's photonic research. Even through high power arrays have been recently demonstrated many problems such as polarisation synchronisation and spatial patterns are still open. Concerning the research activity, the first training period will be spent by the applicant in learning the main VCSELs model (Spin Flip Model), through the application of this model to the analysis of self-pulsations in VCSELs. This topic is important in itself and will provide a good training to the applicant. The analysis of VCSELs array will start from the study of two coupled VCSELs via evanescent wave and carrier diffusion. The polarisation properties of two coupled VCSELs will be investigated too. The complete understanding of polarization properties is fundamental for all the application requiring a well stabilised polarisation, such as fast polarisation modulation and optical switching. The following step is the VCSELs array. The research objective is the complete modelling of the VCSEL array: polarisation properties and spatial pattern structure. The model will be devoted to characterization of VCSELs devices and arrays and will provide a useful experimental training to the applicant.

The applicant has been working on semiconductor laser dynamics from a non-linear dynamics point of view during the Ph. D. Studies, especially in problem of laser synchronisation. The two years that he wishes to spend at IMEDEA would provide him a complementary training by getting a better knowledge of the semiconductor Physic that needs to be included in realistic modelling of semiconductor lasers. The training will let him learn from fundamental semiconductor physics to laser arrays modelling and designing. Such skills are easy transferable to high-tech industrial companies and will greatly enhance the competencies of the researcher. The Institut Mediterrani d'Estudis Avançats (IMEDEA) is the ideal environment to provide competent sills and valuable spin-off for the proposed project, since it has a world-wide-recongnised competence on semiconductor laser modelling, it has strong links with a large number of European research groups.

Referència: EVK2-CT2000-00074.

Programa: Energy, environment and sustainable development.

Títol: *Exotic plant invasions: deleterious effects on mediterranean island ecosystems.*

Acrònim: EPIDEMIE.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigadora responsable: [TRAVESET VILAGINÉS, Anna](#).

Categoria: Investigadora científica del CSIC.

Inici: 2001. **Fi:** 2004.

Socis:

Centre de Recerca Ecològica i Aplicacions Forestals (Espanya)

University of the Aegean (Grècia)

Università degli Studi di Sassari (Itàlia)

University of Wales-Bangor (Regne Unit)

Lund University (Suècia)

Université de Droit d'Economie et des Sciences d'Aix Marseille (França)

Coordinador: Natural Environment Research Council (Regne Unit)

Summary

To assess the relative importance of the environmental & socioeconomic factors that determine the likelihood of exotic plant invasions in order to evaluate the sustainability of management strategies directed towards reducing the risks of invasion. To quantify the impacts of exotic plants on ecosystem function & services with the purpose of incorporating assessments of the economic and environmental hazards of invasion into management priorities. To integrate assessments of risk & hazard to predict the current & future vulnerability of ecosystems to exotic plant invasions, identify optimum management strategies & highlight appropriate planning & policy development to mitigate harmful impacts. To increase awareness & understanding among the general public, stakeholders, scientists, and policy makers of the vulnerability of semi-natural ecosystems to exotic invasion, the risks posed by exotic plant species and the ecological & economic consequences of invasion in Mediterranean islands.

Referència: Q5RS-2001-00839.

Títol: *Effects of changes in fishery discarding rates on seabird communities.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [ORO DE RIVAS, Daniel](#).

Categoria: Científic titular CSIC.

Inici: 2001. **Fi:** 2005.

Socis:

Universität Hamburg (Alemanya)
University of Joensuu (Finlàndia)
Coordinador: University of Glasgow (Regne Unit)

Summary

To quantify impact of change in fishery discarding rates on seabird communities, in order better to inform fishery discard management. We will determine whether winter at-sea distribution of appropriately selected species of scavenging seabirds is influenced by distribution of fisheries generating large quantities of discards, and quantify how feeding on discards in winter affects seabird demography through influences on adult body condition, breeding and survival. We will use existing databases to determine how changes in discard rates in well-documented fisheries in northwest North Sea and western Mediterranean over many years have influenced seabird breeding season diet, demographic parameters, and populations, and how changes in discarding rates are effecting predatory impacts of scavenging seabirds on smaller seabird species, and hence altering seabird community structure. Our aim is to provide a better understanding of scavenging seabird ecology that can be used to inform policy.

Referència: 15507/01/NL/SF. European Space Agency.

Títol: *RA-2 Tide Gauges and Buoy Deployment.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: GOMIS BOSCH, Damià.

Categoria: TU (àrea de coneixement: Física de la Terra).

Inici: 2001. **Fi:** 2002.

Summary

The main objective of this project funded by the European Spatial Agency is to participate in the ENVISAT calibration team. The ENVISAT will be the largest satellite devoted to the Earth observation, and is expected to be launched the 1st of March, 2002. Within the ENVISAT calibration team, our Group will be involved in the tasks related to the calibration of the Radar Altimeter RA-2, one of the instruments onboard the satellite.

The RA-2 will measure the sea surface height relative to a reference ellipsoid with an accuracy of 1-2 cm. Its calibration will consist of obtaining 'in situ' measures of sea surface height (referred to the same ellipsoid) by means of a set of GPS buoys and tide gauges. The measures will be obtained on the satellite ground track simultaneously to the passage of the satellite. Namely, 4 GPS buoys and 3 tide gauges will be deployed at about 6 nm to the NW of Menorca. The buoys will transmit the data to a Reference Station located on the shore of Menorca and from there to Germany by mobile phone. Another tide gauge will be deployed near Es Vedrà (Eivissa) and a fourth one in Sant Antoni harbour (Eivissa).

The GPS buoys will be produced and instrumented by the Institute of Geodesy and Navigation (Munich), and three tide gauges will be provided by the Univ. of Dresden. IMEDEA will provide the fourth tide gauge (and process all its data) and will be responsible for the deployment, maintenance and retrieval of all the instruments.

The schedule is that nine months of successful measures should be enough to perform the calibration, so that in principle all the instruments would be retrieved by December 2002 or January 2003. More info at:

http://www.imedea.uib.es/Natural/goi/oceanography/html/research/Projects/WEB_ecbi/

Referència: EVR1-CT2002-40025.

Programa: Energy, environment and sustainable development.

Títol: *European sea level service research infrastructure.*

Acrònim: ESEAS-RI.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [GOMIS BOSCH, Damià](#).

Categoria: TU (àrea de coneixement: Física de la Terra).

Socis:

Kort & Matrikelstyrelsen (Dinamarca)
Natural Environment Research Council (Regne Unit)
University of Nottingham (Regne Unit)
Institut Espanyol d'Oceanografia (Espanya)
Ente Público Puertos del Estado (Espanya)
Real Instituto y Observatorio de la Armada (Espanya)
General Command of Mapping (Turquia)
Environmental Agency of the Republic of Slovenia (Eslovènia)
Institute of Meteorological and Water Management (Polònia)
Hydrographic Institute of the Republic of Croatia (Croàcia)
University of Zagreb (Croàcia)
Technische Universitaet Darmstadt (Alemanya)
Vilnius Gediminas Technical University (Lituània)
Universitat Politècnica de Catalunya (Espanya)
Hellenic Navy Hydrographic Service (Grècia)
Israel Oceanographic & Limnological Research Council (Regne Unit)
Natural Environment Research Council (Regne Unit)
Space Research Centre (Polònia)
National Research Council of Italy (Itàlia)
Coordinador: National Mapping Authority (Noruega)

Summary

The primary technological objective of the ESEAS-RI project is to support the ESEAS research infrastructure and to facilitate the transnational coordination, the upgrading of the network of observing sites and the standardisation of the network, the operational routines, the databases and the quality-control. in the as a prerequisite for a full scientific exploitation of the present and future sea level observations. The primary scientific objective of the project is to study sea level variations at inter-annual to century time scales and to quantify potential future changes in mean sea level.

In order to reach the objective, the following main steps are necessary: 1. Quality control of the hourly tide gauge data accessible through the ESEAS. 2. Determination of vertical land movements at tide gauges in order to decontaminate the relative sea level records for this bias. 3. Determination of sea level variations on inter-decadal time scales in the North Atlantic and the semi-enclosed European seas as well as assessment of secular relative sea level trends for the European coasts. 4. Improvement of the network of ESEAS Observing Sites through upgrading of selected tide gauges and co-location of gauges with continuous GPS. Expected impacts: The availability of a quality-controlled database of hourly tide gauge data, and the successful upgrading of the ESEAS network are major milestones. The project is expected to result in a major improvement of the research infrastructure comprised in the ESEAS. The research carried out in the project will result in an empirical model of sea level variations, which provides a unique basis for future studies of climate processes at decadal to inter-decadal time scales, particularly the North Atlantic Oscillation, as well as a coherent description of the occurrence of extreme sea levels.

Referència: QLRT-2001-01610.

Títol: *Integrated approach to the biological basis of age estimation in commercially important fish species.*

Acrònim: IBACS.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigadora responsable: [MORALES NIN, Beatriz](#).

Categoria: Investigador científic CSIC.

Inici: 2002. **Fi:** 2005.

Summary

This project is a co-operative venture to improve our understanding of the biological basis of age estimation for commercial fish species. Our objective is to integrate modelling, laboratory and field observations to provide an objective basis for interpreting the macrostructures of otoliths used for estimation of fish age. We will take a multi-disciplinary approach, including mathematical modelling, geochemical analysis of oxygen isotope ratios, experimentation in controlled conditions with live fish, and collection of biological data from field populations, to develop generic models of otolith growth. We will establish a new age estimation protocol, and enable training through a data base hosted in a web site accessible by fisheries laboratories and fishermen's organisations. The research activities are divided into 4 tasks: Task 1: Model development Task 2: New observations from Laboratory Experiments and Field Investigations Task 3: Generic Model refinement Task 4: Development of ageing protocols and production of an accessible database and interactive web site for fisheries age estimation laboratories and fishermen's organisations. Through the workpackages and activities associated with these tasks, we expect to achieve: Developments of a generic model of otolith formation based on existing information, including functional aspects, and identify gaps in knowledge. Results from field studies of the correlation between temperature history and otolith macrostructure. Results from laboratory studies of the correlation between otolith micro- and macrostructure and feeding, temperature, and fish growth. Refined model of otolith formation, including growth patterns and otolith shape. Improved methodology or age determination in fishes based on objective classification of otolith growth structures using trained artificial neural networks for age identification. Increased confidence in fishery management due to improved reliability (and improved perception of reliability) of data. For nearly 100 years fishery scientists have used growth patterns in the calcified structures (otoliths scales vertebrae, etc) to estimate the age of individual fish. Despite the long familiarity with the technique, our understanding of the time-keeping properties of these structures remains superficial. Growth patterns in these structures need to be interpreted by individual readers to estimate fish age. This interpretation is often based on individual experience and subjective interpretations. The biggest source of subjectivity and thus lack of precision is due to the difficulty in distinguishing between seasonal and secondary growth features. We generally believe that seasonal variations in fish growth result in identifiable patterns, but in many cases our preconceived notions have been proved wrong and cannot be generalised through the distribution range of each species. For example, we have assumed that colder winter temperature and low food availability lead to the formation of thinner, translucent otolith zones. However, direct observations of several populations indicate that these zones are also formed during warmer periods of the year. Likewise, we believe that changes in otolith shape, and characteristic features (e.g. check marks) are indicative of ontological changes in physiology, habitat, or both, corresponding

to changes in inner ear function. We use these features to mark life history events without sufficient direct evidence of their significance or how they are formed. Without an understanding of the basic biological processes, the seasonality of age estimation structures requires empirical observations to test the validity of the technique for each species and each population under study. This adds to the uncertainty in age-based analytical assessments, especially of newly exploited species, and increases the probability that assessments will miss changes in population structure. To improve the situation it is imperative to understand the growth and formation of ageing structures. There is a need for a generalised model to explain the relationship between variations in seasonal conditions, fish growth and the formation of calcified tissues. Working with otoliths, we propose to use laboratory experiments and field observations to develop and refine models of otolith growth. By studying two species within a large and commercially valuable group, the gadiforms, we will develop protocols for age estimation that can be implemented throughout European laboratories. We will evaluate these protocols by direct comparison of the population age structure resulting from traditional methods. Our project will examine, both individually and comparatively, the way in which calcified structures grow in cod (*Gadus morhua*) and European hake (*Merluccius merluccius*). Cod and hake are widespread throughout very different environments. The gadiforms represents the most valuable fishery resources both worldwide, and throughout European waters and therefore our project is also based on the economic and social importance of this group of fish. Without the knowledge of the biological mechanisms of otolith growth, fishery scientists are working with limited tools, and hampered by an antiquated, purely empirical approach. By integrating observations, experiments, and modelling our multi-disciplinary approach will result in better interpretation of the structures, better agreement between age readers, and thus better quality data to support fishery management decisions

ALTRES ACCIONS

Projecte: Acció COST 918. ICC2-CT-2000-04003.
Títol: *Study on obesity and functional foods in Europe.*
Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casasnovas.
Investigador responsable: PALOU OLIVER, Andreu.
Categoria: CU (àrea de coneixement: Bioquímica i Biologia Molecular).
Inici: 2000. **Fi:** 2002.

Projecte: Acció COST 918.
Títol: *Body weight and energy expenditure. Functional food and nutrition technology.*
Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casasnovas.
Investigador responsable: PALOU OLIVER, Andreu.
Categoria: CU (àrea de coneixement: Bioquímica i Biologia Molecular).
Inici: 1998. **Fi:** 2003.

Projecte: Acció COST 267.
Títol: *Semiconductor devices for signal processing.*
Centre: Departament de Física. Edifici Mateu Orfila i Rotger.
Investigador responsable: BALLE MONJO, Salvador.
Categoria: TU (àrea de coneixement: Física de la Matèria Condensada).

Projecte: Acció COST 722.
Títol: *Short-range forecasting methods of fog, visibility and low clouds.*
Centre: Departament de Física. Edifici Mateu Orfila i Rotger.
Investigador responsable: CUXART RODAMILANS, Joan.
Categoria: INVESTIGADOR CONTRACTAT.
Inici: 2001. **Fi:** 2006.

Referència: IST-1999-29064.
Títol: *Quantum information processing & communications network of excellence.*
Acrònim: QUIPROCONE.
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: SAN MIGUEL RUIBAL, Maximino.
Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).
Inici: 2000. **Fi:** 2003.

Referència: Projecte AECI.
Títol: *Desarrollo de métodos automáticos para la especiación de compuestos nitrogenados y fosforados. Aplicación al análisis de aguas residuales.*

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.
Investigador responsable: CERDÀ MARTÍN, Víctor.
Categoria: CU (àrea de coneixement: Química Analítica).
Centre d'aplicació: Laboratorio de Espectroscopia Molecular. Departament de Química. Facultad de Ciencias. Universidad de Los Andes. Núcleo de la Hechicera. Mérida. Venezuela.

Referència: II-02-066 EC.
Títol: *X-ray diffraction study of lamellar, and nonlamellar forming lipids.*
Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.
Investigadora responsable: BARCELÓ MAIRATA, Francesca M.
Categoria: TU (àrea de coneixement: Bioquímica i Biologia Molecular).
Organisme: Deutches Electronen-Synchrotron.
Inici: 2002. **Fi:** 2005.

Referència: NATO-PST-CL6-976135.
Títol: *Non linear and non-adiabatic magnetohydrodynamic waves in solar coronal structures.*
Centre: Departament de Física. Edifici Mateu Orfila i Rotger.
Investigador responsable: BALLESTER MORTES, Josep L.
Categoria: CU (àrea de coneixement: Astronomia i Astrofísica).
Organisme: Deutches Electronen-Synchrotron.
Inici: 1999. **Fi:** 2003.

Referència: NGN-4327.
Títol: *Peroperative monitoring of the anaesthetic affects based on new variables of the chaos theory.*
Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.
Investigador responsable: GAMUNDÍ GAMUNDÍ, Antoni.
Categoria: TEU int. (àrea de coneixement: Fisiologia).
Organisme: NWO-STW (Govern Holandès).
Inici: 2000. **Fi:** 2002.

PROJECTES FINANÇATS PEL GOVERN ESPANYOL

I PEL GOVERN DE LES ILLES BALEARS

DEPARTAMENT DE BIOLOGIA

Referència: FIS00-1029. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

Títol: *Estudio farmacológico y molecular del efecto del ácido oleico sobre la estructura y función de membranas celulares y evaluación de su utilización clínico-farmacológica en pacientes con diversos procesos tumorales.*

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: [ESCRIBÁ RUIZ, Pablo Vicente](#).

Categoria: TU (àrea de coneixement: Biologia Cel·lular).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-----------------------------------------------|-----------|---------------------|
| Escribá Ruiz, Pablo Vicente | TU | 16 |
| Barceló Mairata, Francesca M. | TU | 16 |
| Besalduch Vidal, Joan | | 16 |
| Galmés Llodrà, Antoni | | 16 |
| Novo Garcia, Andrés | | 16 |
| Ventayol Bosch, Pere | | 40 |
| Vila Bonet, Maria À. | | 40 |

Nombre total d'investigadors de la UIB: 2.

Total EJC/setmana: 0,8.

Keywords: cell signaling, receptors, G proteins, blood pathologies.

Summary

During the last few years we have demonstrated that the plasma membrane lipid structure plays a crucial role in peripheral membrane protein-associated signal transduction [Escribá *et al.*, Proc. Natl. Acad. Acad. Sci. USA **92** (1995) 7595-99; Escribá *et al.*, Proc. Natl. Acad. Acad. Sci. USA **94** (1997) 11375-80]. Recently, we have observed that monoinsaturated fatty acids (e. g., oleic acid) are able to regulate (10-50 (M) the interaction between some peripheral proteins involved in signal transduction and the plasma membrane, by modulating the physico-chemical membrane properties provided by phosphatidylethanolamine (unpublished results). Because the consumption of oleic acid is directly associated with a lesser incidence of tumoral processes (Farchi *et alt.*, Eur. J. Cancer Prev. **5**, 113-120) and the antitumor drug daunomycin exhibits a similar effect to that of the fatty acid on the modulation of the plasma membrane structure an function, we propose a pharmacological and molecular study of this fatty acid to evaluate its use in onco-hematological processes, which could result in a similar use to that of trans-retinoic acid (vitamin A) for acute promyelocytic leukemia treatment. For this purpose, we plan two well defined experimental strategies. On one side, it will be performed an in-depth study on the molecular mechanism of interaction between oleic acid and the plasma membrane and its effect on plasma membrane-associated signals. This part of the study will allow a later design of new molecules with better pharmacological activity. On the other hand, it will be evaluated its therapeutic effectivity in humans and its pharmacological efficacy in model systems (tissue cultures and laboratory animals). This study constitutes a complete evaluation of a molecule, from its molecular and cellular mechanism of action to the assessment of its pharmacological and clinical applications. The achievement of the proposed basic aims would mean the elucidation of the

mechanism of peripheral membrane protein translocation, still unknown, and could result in important pharmacological consequences, derived of its pharmacological application to new therapeutical approaches involving the medulation of the plasma membrane structure and function.

Referència: SAF2001-0839. Programa nacional de salut.

Títol: *Modulación farmacológica de la presión arterial mediante lípidos que alteran la estructura de la membrana.*

Centre: Departament de Biologia. Edifici Guillem Colom Casasnovas.

Investigador responsable: [ESCRIBÁ RUIZ, Pablo Vicente](#).

Categoria: TU (àrea de coneixement: Biologia Cel·lular).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació |
|-----------------------------------------------|-----------|-----------|
| Escribá Ruiz, Pablo Vicente | TU | 0.5 |
| Barceló Mairata, Francesca M. | TU | 0.5 |
| Saus Sarrià, Carles | As. | 0.5 |
| Alemany Alonso, Regina | | 1 |
| Benet, Mikhail | | 1 |
| Capó, Damiana | | 1 |
| Kitatja, Klara | | 1 |
| Serghini, Khadija | | 1 |
| Prades, Jesús | | 1 |
| Herrera, Maria Teresa | | 1 |

EDP del grup investigador de l'entitat sol·licitant: 8.5.

Summary

In the present project, we propose the elucidation of a pivotal mechanism of peripheral membrane protein and cell membrane interaction. Propagation of messages is such an important phenomenon that a half of our genome is devoted to this task. In addition, the proteins that will be studied here (G protein-coupled receptors) constitute about 80% of the known hormone and neurotransmitter receptors. For this reason, the study of G protein-membrane interaction mechanisms has a great relevance. On the other hand, these receptors control a wide variety of important physiological functions, so that important human pathologies are associated with the abnormal function of these receptors. This fact makes more relevant the knowledge of their functional properties. In addition to the contribution to basic knowledge, the discovered mechanism can be used for the treatment of human pathologies. In this project we will study the hypotensive effects of a variety of lipid molecules, capable to modulate blood pressure through the new mechanism of action discovered. Finally, new molecules with potential pharmacological interest for clinical treatment of blood pressure will be designed and synthesized. Blood pressure control is very important, since hypertension is the main risk factor for developing cardiovascular pathologies. Moreover, cardiovascular pathologies constitute the main cause of death in occidental societies.

Referència: SAF2000-0164-C02-02. Programa nacional de salud.

Títol: *Estudio del efecto de fármacos opiáceos sobre la viabilidad neuronal y su relación con el desarrollo de la tolerancia al efecto antinociceptivo.*

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: OLMOS BONAFÈ, Gabriel.

Categoria: TEU (àrea de coneixement: Biologia Cel·lular).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-------------------------------------------------------------------------------------------------------------|------------------|------------------|
| Olmos Bonafè, Gabriel Iglesias Durán, Montserrat Minteig Florensa, Gerard Segura Ginard, Miguel F. | TEU | Única |

Nombre total d'investigadors de la UIB: 1.

Keywords: opioid drugs, morphine, heroine, metadone, tolerance, analgesia, pain, neurotoxicity, apoptosis, neuroprotection, cell culture.

Summary

The development of opioid tolerance (decrease in antinociceptive efficacy) is related to the activation of the N-methyl-D-aspartate receptor which induces increased cytoplasmic calcium levels in the neurone and activation of calcium-dependent nitric oxide synthase. It is known that this morphine exposure to cells induces apoptosis or increases their susceptibility to drugs that stimulate apoptosis. This research project is designed to assess the *in vitro* effects of opioid drug exposure on the pathways related with neuronal viability, the potential neuronal damage after chronic *in vivo* treatment and the relationship with the development of tolerance to the antinociceptive effect. The results of this study will help to design new approaches to reduce or protect from the potential neuronal damage after chronic opioid drug exposure and/or block or attenuate tolerance.

Referència: BOS2000-1000. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Dinámica de los haplotipos mitocondriales en poblaciones naturales de Drosophila subobscura: aspectos genético-poblacionales, ecológicos y moleculares.*

Acrònim: mtDNA.

Classificació UNESCO: 2409.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: CASTRO OCÓN, José Aurelio.

Categoria: TU (àrea de coneixement: Genètica).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|------------------------------|-----------|------------|
| Castro Ocón, José Aurelio | TU | Compartida |
| Ramon Juanpere, Misericòrdia | TU | Compartida |
| Picornell Rigo, Antònia | Aj. U | Compartida |
| Oliver Llamas, Pere | Aj. EU | Única |
| Terrasa Pont, Bàrbara | As. | Única |

Nombre total d'investigadors de la UIB: 5.

Keywords: *Drosophila subobscura*, haplotypes, mitochondrial DNA, linkage disequilibrium, chromosomal arrangements, DNA sequencing, biological fitness.

Summary

In most natural populations of *Drosophila subobscura* studied it has been found that there are two frequent haplotypes of mitochondrial DNA, I and II, which differ by a synonymous change in a target of the restriction enzyme *HaeIII*, as well as a series of less common haplotypes (less than 5%) that are different in time and location. The results obtained up to now have not solved yet the populational dynamics of these haplotypes in nature, and, although a superiority of the haplotype II over I in populational cages was initially found, this result has not been confirmed in current experiments. The cytonuclear disequilibrium experiments with haplotypes and enzymatic nuclear markers have not been significant. On the contrary, the association with chromosomal arrangements seems to be so. The hypothesis we are carrying out now is that in order to explain the presence of the most common haplotypes and the less frequent ones in nature, this must be studied from a population-genetics, ecology and molecular point of view that could help to explain their dynamics. For this reason, in the present project we establish the following objectives: 1.- Annual dynamics of the mitochondrial haplotypes in a natural population of *Drosophila subobscura*. 2.- Effect of the environment on the haplotype distribution. 3.- Study of the fitness of the less common haplotypes. 4.- Reaction norm of the population cages with temperature. 5.- Association of mitochondrial haplotypes and chromosomal arrangements. 6.- Association of the mitochondrial haplotypes with nuclear STRs-like markers. 7.- Analysis of the nucleotide sequence in a 5 subunit region of the NADH dehydrogenase.

Referència: BOS2000-1123-C02-01. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Taxonomía, filogenia y ecología de Salinibacter.*

Acrònim: CASAL-1.

Classificació UNESCO: 2414.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: [ROSSELLÓ MORA, Ramon.](#)

Categoria: Científic titular CSIC.

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|---------------------------------------|-------------------|------------------|
| Rosselló Mora, Ramon | Científic titular | Única |
| Antón Botella, Josefa | | Única |

Nombre total d'investigadors de la UIB: 1.

Keywords: prokaryotes, bacteria, extremely halophilic organisms, taxonomy, genomics, ecology.

Summary

This project involves a taxonomic, genomic, and autoecologic study of the new taxon *Salinibacter*, included in the Bacteria Domain. We have recently described the occurrence of such bacteria in crystallizer ponds from solar salterns of the West Mediterranean and East Atlantic. Unexpectedly, this bacteria accounted for up to 30% of the total prokaryotic population. *Salinibacter* is the first extremely halophilic bacteria whose ecological importance has been reported. Additionally, its phylogenetic affiliation shows that it is fairly remote from those bacteria described so far. In this regard, the combined study of physiology, ecology and genomics would help to improve the understanding of the organisms belonging to the domain Bacteria, as well as the mechanisms of haloadaptation. Furthermore, given the extremophilic nature of *Salinibacter*, likely the study of their physiology may lead to the recognition of new compounds of biotechnological interest.

Referència: COO1999-AX108. Ministeri de Ciència i Tecnologia.

Modalitat: Projecte coordinat amb participació interempresarial.

Títol: *Análisis molecular de comunidades microbianas y teledetección, dos apuestas de futuro en la detección de contaminación y en la gestión de aguas territoriales.*

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: BOSCH ZARAGOZA, Rafael.

Categoria: TEU (àrea de coneixement: Microbiologia).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria |
|---------------------------------|------------------|
| Bosch Zaragoza, Rafael | TEU |
| Bergueiro López, José Ramón | TU |
| Ruiz Pérez, Maurici | Tèc. |
| Guasp Mascaró, Caterina | B |
| Nogales Fernández, Balbina | Tèc. |
| Aguiló Ferretjans, Maria del M. | Tèc. |

Nombre total d'investigadors de la UIB: 6.

Keywords: microbial ecology, littoral waters, microbial populations evolution, microbial community, molecular biology, pollution, hydrocarbons, oil and derivatives, geographical information system, GIS, remote sensing, data base, internet, natural areas management, environmental analysis impact.

Summary

Seas and oceans are masses of water that cover more than the 70% of the Earth surface. Their chemical composition is characterized by, constant, lower amounts of solved organic compounds and nutrients. Exceptionally, offshore zones and coastal waters are areas showing high productivity, mainly due to its relative 'high' concentration of organic compounds and nutrients (due to surgery of nutrients and to the continental waters inlet, respectively). Anyhow, these areas are in ecological equilibrium, and they have 'climax' microbial communities. Human activity is able to dilute this equilibrium and thus, harbours and water treatment plant outlets are, for example, focus of oil and pathogenic bacteria contamination. Expensive and less-sensitive chemical analysis can be performed to detect and quantify this pollution. In this project we propose, using molecular biology, to characterize 'climax' microbial community of coastal waters and to analyze its changes in front of human contamination (harbours and water treatment plants effluent). Our aim is to use microbial community and its variations as sensors of pollution in coastal waters. Furthermore, we also propose to use remote sensing technology to study contamination levels and community changes in littoral waters. If both techniques, molecular microbial ecology and remote sensing technology, are able to show presence of pollution, we will possess two really efficient, sensitive, tools to determine the 'health' of a coastal water and to improve its management.

Referència: REN2000-0282/GLO. Ministeri de Ciència i Tecnologia.

Modalitat: P2. Projecte d'investigació bàsica orientada.

Títol: *Estructura poblacional y variabilidad genética en coleópteros endémicos de las islas Canarias pertenecientes a diferentes ambientes.*

Acrònim: CANBIO.

Classificació UNESCO: 2409-03.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: JUAN CLAR, Carles.

Categoria: TU (àrea de coneixement: Genètica).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|----------------------------|------------------|------------------|
| Juan Clar, Carles | TU | Compartida |
| Petitpierre Vall, Eduard | CU | Compartida |
| Contreras Díaz, Hermans G. | B | Única |
| Moya Mesa, Óscar | Tèc. | Única |

Investigadors d'altres entitats

| | |
|------------------------|--------------------------|
| Oromí Masoliver, Pedro | Universitat de La Laguna |
| Fragoso Jerez, Rosario | Universitat de La Laguna |

Nombre total d'investigadors de la UIB: 4.

Keywords: genetic variability, biodiversity, *coleoptera*, endemic beetles, Canary Islands, laurel forest, mitochondrial DNA, PCR, DNA sequencing, phylogenetics, conservation.

Summary

The main goal of this project is to determine the effects of humid forest fragmentation on organisms with limited geographic distribution. We will use populations of carabid and tenebrionid beetles endemic to the Canary Islands as a model system. Also, we want to relate the historical (phylogeny and colonization patterns) and ecological factors (specialization to hypogean life and to different food resources) with the evolutionary success, genetic variability and population structure of these insects. The effect of the laurel forest regression on the decrease of biodiversity and in relation to conservation policies of this important habitat will be preferentially studied. To undertake these objectives, we will use DNA sequences of mitochondrial and nuclear markers obtained from individuals collected in populations of Tenerife, La Gomera, La Palma and El Hierro islands for population and phylogeographic analyses. This study should provide a basis from which to understand the genetic variability and biodiversity in a perspective of habitat fragmentation in insular ecosystems. We expect the results will have a broad application strategies in a wide number of organisms.

Referència: BFI2000-0306. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Biología y regulación por opiáceos de receptores para imidazolinas.*

Acrònim: BRORI.

Classificació UNESCO: 3209-09.

Centre: Departament de Biologia. Edifici Guillem Colom Casasnoves.

Investigador responsable: [GARCÍA SEVILLA, Jesús A.](#)

Categoria: CU (àrea de coneixement: Farmacologia).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|------------------------------------------|------------------|------------------|
| García Sevilla, Jesús A. | CU | Única |
| Miralles Socías, Antoni | TU | Única |
| Esteban Valdés, Susana | TU | Compartida |
| Saus Sarrià, Carles | | Compartida |
| Gómez Bellvert, Cristina | | Compartida |

Nombre total d'investigadors de la UIB: 3.

Keywords: imidazoline receptors, opiate addiction, MAP kinases, β -carbolines, neuroprotection.

Summary

The imidazoline receptors are novel ill-defined molecular entities, but with a great physiological/physiopathological and pharmacological/therapeutic potentials. The aim of this project (a follow-up of DGICYT 94-0002 project) are, on the one hand, to characterize and eventually clone these receptors, and on the other hand, to unravel their participation in opiate addiction and their interaction with endogenous β -carbolines. It is proposed to prepare various probes (mainly antibodies) directed against purified imidazoline receptors, which will be used to assess the cloning of these receptors through cDNA libraries and to characterize the molecular nature of these receptors. Moreover, it is proposed to study the effects of selective I_2 ligands on the MAP kinase signalling, in various models of opiate addiction, to assess whether these drugs are able to counteract the negative effects of opiate drugs on this signal transduction system. Finally, it is proposed to study the eventual participation of β -carbolines, as neuromodulators of imidazoline receptors, in the processes of opiate addiction. The results of this project will contribute to unravel the nature of imidazoline receptors and their involvement in the complex mechanisms of opioid tolerance and dependence, as well as the eventual potential of I_2 -selective ligands as neuroprotectors.

Referència: REN2000-1236/TECNO. Ministeri de Ciència i Tecnologia.

Modalitat: P3. Projecte d'investigació aplicada.

Títol: *Selección de especies leñosas y diseños de rehabilitación paisajística de riberas para la depuración de aguas residuales.*

Acrònim: DENDRODEPURACIÓN

Classificació UNESCO: 250811, 330806, 330811.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: MARTÍNEZ TABERNER, Antoni.

Categoria: TU (àrea de coneixement: Ecologia).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|------------------------------|------------------|------------------|
| Martínez Taberner, Antoni | TU | Única |
| Ramon Pérez de Rada, Guillem | TU | Compartida |
| Morey Andreu, Miquel | CU | Compartida |
| Vadell Adrover, Jaume | TEU | Compartida |
| Moyà Niell, Gabriel | TU | Compartida |
| Sampol Barceló, Pere | | Compartida |
| Cañellas Serrano, Nicolau | | Compartida |
| Salgot Marçay, Miquel | | Compartida |
| Romero Bosch, Joan J. | | Compartida |
| Ocón Buirra, Rosa | | Compartida |
| Garcia Mas, Francesc | | Compartida |

Nombre total d'investigadors de la UIB: 5.

Keywords: waste waters, water purification, trees, riverbanks, landscape restoration, purification efficiency, environmental quality.

Summary

The mediterranean basin is one of the world's sites where the recycling of waste waters is most advanced. The European Union is financing diverse projects in relation to this. On the other hand, there is intense activity at local level correctly manage and recycle such scarce resource as water. The Dendropurification, as waste water improvement by means of trees, is a poorly tested method which may be applied to tertiary water treatment and which also benefits the environment, landscape quality and water table levels. It is thus of special importance to areas dedicated to tourism. This project propose the use of secondary waste waters for the restoration of temporary streams and drainage ditch banks with autochthonous trees previously selected for their capacity for purification. Seepage waters, where levels of pathogenic micoorganism are reduced by the filtering action of the soil and nutrient salts by root uptake, will reappear in the watercourses or replenish the water table with an improved quality. This general objective will be structured in two ways: firstly by an analysis under controlled conditions of plant growth and ion accumulation, particularly CL, Na and nutrients and secondly by a study of nutrient cycling applied to different tree species combinations growing in either restored or field environmental conditions.

Referència: BFI2001-2475-C02-02. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Exclusión, detoxificación y compartimentación como mecanismos básicos de resistencia al estrés iónico en las plantas.*

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigadora responsable: CABOT BIBILONI, Catalina.

Categoria: TU (àrea de coneixement: Biologia Vegetal).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------|-----------|-----------------|
| Cabot Bibiloni, Catalina | TU | 1 |
| Bennàsar Roig, Antoni | CEU | 0.5 |
| Llorens Garcia, Leonard | TU | 1 |
| Gil Vives, Llorenç | Aj. EU | 1 |
| García Oliverors, María C. | B | 1 |

EDP del grup investigador de l'entitat sol·licitant: 4.5.

Keywords: ABA, ATP-ase, exclusion, halophyte, heavy metal, ion stress, metallophyte, phytoremediation, protective substancies, resistance, root exudate, salinity, subcellular compartmentation, tolerance, toxicity.

Summary

Knowledge of ion stress resistance mechanisms is fundamental for improving plant productivity in regions with salinity problems (Na⁺ and Cl⁻ toxicity), acid soils (Al³⁺ toxicity), or sites affected by industrial pollution or toxic spills (heavy metal ions). There is substantial experimental evidence showing that mechanisms that allow plants to perform in environments with a high activity of toxic ions are based on three fundamental strategies: exclusion, detoxification and compartmentation. However, the different biochemical and physiological processes that, in an ion-specific manner, underlie these basic mechanisms are poorly characterized. The main objective of this coordinated project is the study of these mechanisms by using different model plants with clearly distinct behaviours. In subproject 1, tropical varieties of maize that differ in Al resistance will be used to study the exclusion of Al via root exudate analysis and to ascertain the subcellular compartmentation mechanisms with micromanipulation techniques. For the experiments that address the relative importance of exclusion and internal des-toxification of heavy metals (Cu, Ni, Zn) ecotypes of *Silene*, *Alyssum* and other metallophytes with a potential for phytoremediation will be used. Subproject 2 examines the NaCl exclusion and compartmentation mechanisms for two types of models: *Phaseolus vulgaris*, a salt sensitive glucopyte, and two species of the more salt resistant genus *Medicago* (*M. arborea* and *M. citrina*) that also clearly differ in their response to salt stress. Investigations will mainly center on the plasmalemma ATP-ase using kinetic studies, electrophoresis and Western-blot techniques. The study of the importance of heavy metal exclusion and compartmentation in the cuticle and epidermal cells, with the prospect of application to the phytoremediation of arid or semi-arid areas affected by aerial contamination (aerosols, fumes and particulates) will be examined in several species that inhabit an area exposed to pollution sources emitted by airline fuel exhaust. The coordinative character of the project will allow a fluent and continuous exchange of scientific information and experimental techniques between the partners.

Referència: AGL2001-1285-C03-01. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de recursos y tecnologies agroalimentàries.

Títol: *Utilización de indicadores fisiológicos para la aplicación del riego en vid: regulación de la fotosíntesis y del reparto de asimilados y efectos de la calidad del fruto.*

Acrònim: EFICALVID.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: MEDRANO GIL, Hipólito.

Categoria: CU (àrea de coneixement: Biologia Vegetal).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------|-----------|-----------------|
| Medrano Gil, Hipólito | CU | 0.5 |
| Bennàsar Roig, Antoni | CEU | 0.5 |
| Vadell Adrover, Jaume | TEU | 0.5 |
| Escalona Lorenzo, José M. | As. | 1 |
| Alorda Martorell, Maria | As. | 0.5 |
| Bota Salort, Josefina | B | 1 |
| Sampol Trujillo, Bartomeu | B | 0.5 |
| Flexas Sans, Jaume | B | 0.5 |

Investigadors d'altres entitats

| | |
|------------------------------------|-----------------|
| García-Escudero Domínguez, Enrique | CIDA (La Rioja) |
| Zaballa Ogueta, Olga | CIDA (La Rioja) |

EDP del grup investigador de l'entitat sol·licitant: 5.

Keywords: grapevine, *Vitis vinifera L.*, drought, moderate irrigation, photosynthesis, assimilate partitioning, sap flow, quality, leaf senescence, genetic variability.

Summary

The present project is based on previous knowledge, acquired during the development of previous projects on the effects of water stress in grapevine (*Vitis vinifera L.*) physiology. This new project has two aspects: a basic and an applied one. In its basic aspect, it is intended to improve the knowledge about the physiological responses of grapevines to water stress and moderate irrigation, as well as their modulation as a function of the studied cultivar and rootstock. Specifically, the following processes will be studied: hydraulic conductivity and embolism, stomatal regulation by embolism and abscisic acid, non-stomatal inhibition of photosynthesis (photophosphorylation, Calvin cycle and mesophyll resistance), assimilate partitioning between different plant parts, early leaf senescence and abscission, yield, grape quality (specially focussed on colour compounds), and wine quality. In a more applied aspect, it is intended to use different physiological markers to meliorate the application of moderate irrigation, with the aim of optimising the balance between fruit yield and quality. Specifically, the utilisation of sap flow meters and dendrometers will allow a continuous monitoring of plant water expenses, which will be used to control the irrigation schedule. In one of the subprojects, such a control will be supported as well by the establishment of a stomatal conductance threshold, derived from previous studies, in order to maximise water use efficiency and grape quality.

Referència: VIN00-013. Programa nacional d'alimentació.

Modalitat: Acció estratègica de millora de la qualitat i la competitivitat dels vins.

Títol: *Selección clonal y saneamiento de variedades de vid de Baleares.*

Centre: Departament de Biologia. Edifici Guillem Colom Casasnovas.

Investigador responsable: MEDRANO GIL, Hipólito.

Categoria: CU (àrea de coneixement: Biologia Vegetal).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria |
|---------------------------|------------------|
| Medrano Gil, Hipólito | CU |
| Bota Salort, Josefina | B |
| Sampol Trujillo, Bartomeu | B |
| Escalona Lorenzo, José M. | |

Nombre total d'investigadors de la UIB: 3.

Summary

Local grapevine varieties are increasing their interest because they provide peculiar 'regional' characteristics to the wine. For this reason, the genetic improvement of these varieties are matter of interest and, in that way, the selection of clones from current populations with typical characteristics and good sanitary, productivity and quality levels is necessary. For Balearic Islands, the varieties 'Prensal Blanc o Moll', (white wine), Callet and Manto Negro (black wine) are the most widely used in local wineries and also are part of the authorised varieties in the two 'Denominaciones de Origen' of the Island. The present project will try to obtain selected clones with high quality and productivity as well as to achieve an ampelographic description of such varieties according to the international rules (OIV).

Referència: REN2001-3438-C07-02/HID. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de recursos naturals.

Títol: *Estado ecológico de los ríos mediterráneos en ambientes insulares. Regionalización ecológica, estaciones de referencia y métodos predictivos de evaluación de calidad.*

Acrònim: GUADALMED2-Insulares.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: [MOYÀ NIELL, Gabriel](#).

Categoria: TU (àrea de coneixement: Ecologia).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------------------------|------------------|------------------------|
| Moyà Niell, Gabriel | TU | 0.5 |
| Ramon Pérez de Rada, Guillem | TU | 0.5 |
| Aguiló Ribas, Josep Antoni | As. | 1 |

Investigadors d'altres entitats

[Pardo Gamundí, Isabel](#) Universitat de Vigo

EDP del grup investigador de l'entitat sol·licitant: 2.

Keywords: ecological status, mediterranean streams, multimetric indexes, predictive index, macroinvertebrates, reference stations.

Summary

The European Union Water Framework Directive is now in its final step. The last version (CE 41/99, approved by the council in October 22nd 1999) will ask to all the countries to elaborate maps of the Ecological Status of freshwater ecosystems, including streams and rivers. The ecological status is based on the determination of water quality using ecological indicators. The Guadalmed working group is presently studying the application of several ecological indicator's systems in 12 mediterranean stream watersheds, from the Besòs river in Barcelona to river Guadalfeo in Granada, including some temporary streams in Majorca Island. We have focused the effort in the combination of 4 multimetric indexes: habitat, riparian vegetation, macrophytes and macroinvertebrates, together with water physicochemical parameters. Our present results are still not conclusive, as we are in the second year of sampling and collection of data, but some advanced aspects cannot be studied in the Guadalmed1 project and will be the objective of this new proposal Guadalmed2.

Referència: REN2001-3506-C02-01. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de recursos naturals.

Títol: *Evolución de las especies vegetales y efectos de la fragmentación en las islas continentales: aspectos ecológicos y funcionales.*

Acrònim: EVOLUCIÓN E INSULARIDAD.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: MUS AMÉZQUITA, Maurici.

Categoria: TEU (àrea de coneixement: Botànica).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|--------------------------|-----------|-----------------|
| Mus Amézquita, Maurici | TEU | 1 |
| Medrano Gil, Hipólito | CU | 0.5 |
| Rita Larrucea, Joan | TU | 0.5 |
| Bibiloni Oliver, Gabriel | As. | 1 |
| Galmés Galmés, Jeroni | B | 1 |
| Gulías León, Javier | Tèc. | 1 |

EDP del grup investigador de l'entitat sol·licitant: 5.

Summary

The project deals, for the first time in Spain, with one of the main issues concerning the Conservation of Biodiversity and Natural Resources: that of understanding the evolutionary origin, distribution and ability to survive of those endemic plant species inhabiting continental islands in the Mediterranean Basin. The approach followed is based on a comparative analysis of several plant species with similar distribution range but contrasting life-history traits:

(i) Two species that show both similar distribution range and dispersal ability, but occurring in different habitats: *Senecio rodriguezii* and *Crepis triasii*.

(ii) Three outcrossing species that show both similar distribution range and levels of fragmentation, but with a limited ability to disperse: *Digitalis minor*, *Hippocrepis balearica* and *Rhamnus ludovici-salvatoris*. While the last one does not seem to show any kind of differentiation throughout its range, *H. balearica* and *D minor* show well-differentiated and characterized morphs throughout the archipelago.

The specific questions addressed are: (i) Which are the patterns of distribution of the genetic variability and gene flow among populations? (ii) Which is the structure and dynamics of fragmented populations, and which is the relative importance of abiotic factors that best explain the ecophysiological behaviour which might be relevant for the extinction of the species concerned?

(iii) Which is the degree of agreement in the phylogeography of the endemic species that have similar distribution ranges but different dispersal abilities and levels of fragmentation? (iv) Which is the genetic variability for those traits concerning dispersal ability and physiological adaptation?.

The aims of this project are designed to match and complement the objectives addressed in the European Project (*Plant Dispersal*, EVK2-199-00246), and will allow to assess which type of analogies can be established between the consequences of insularity and the effects of habitat fragmentation in continental landscapes.

Referència: BFI2002-00772. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Efectos del déficit hídrico sobre el metabolismo fotosintético y respiratorio de las plantas.*

Acrònim: FORESEC.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: RIBAS CARBÓ, Miquel.

Categoria: INVESTIGADOR CONTRACTAT.

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-----------------------|--------------|-----------------|
| Ribas Carbó, Miquel | Investigador | 1 |
| Flexas Sans, Jaume | TEU | 1 |
| Cifre Llompарт, Josep | As. | 1 |

Investigadors d'altres entitats

Baiges Blanco, Isabel Maria Universitat Rovira i Virgili

EDP del grup investigador de l'entitat sol·licitant: 3.

Summary

This proposal is based on foregoing knowledge obtained from the development of previous projects and the sum of different experiences. In particular, one of the researchers of this project has a large experience on plant respiratory processes and the use of stable isotope techniques as physiological indicators; the second scientist is a specialist in studies of metabolic responses of plants to water stress; the third one is an expert in statistics and experimental design and the fourth scientist is on identification and characterization of the aquaporins' gene expression. Based in the combination of this broad interdisciplinary knowledge, this proposal intends to attain new insights on the regulation of plant metabolism in response to water stress conditions. Specifically, we intend to study the regulation of the mesophyl conductance under stress conditions, process in which the aquaporins might be involved, and its significance on the co-regulation of photosynthesis respiration. This project has a double standpoint, basic and applied. In its basic aspect, the conformation of the regulation of the mesophyll conductance under water stress conditions, process in which the aquaporins might be involved, and its significance on the co-regulation of photosynthesis and respiration.

This project has a double standpoint, basic and applied. In its basic aspect, the conformation of the regulation of the mesophyll conductance under water stress conditions would promote an important conceptual change in the comprehension of the photosynthetic response to drought, contributing to the solution of a long-standing controversy on the preponderance of the stomata and/or metabolic effects on the regulation of photosynthesis under water stress. In its applied aspect, the information derived from this project will allow the use of some physiological parameters as indicators to improve the efficiency of irrigation, and the knowledge of the coregulation of photosynthesis and respiration at the whole plant level will provide a way to improve the existing models that predict plant growth and production under different ambients.

Referència: BOS2001-0303. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Sistemática, ecología y evolución de Pseudomonas stutzeri.*

Classificació UNESCO: 2414.

Centre: Departament de Biologia-IMEDEA.

Investigador responsable: LALUCAT JO, Jordi.

Categoria: CU (àrea de coneixement: Microbiologia).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|------------------------------|-----------|-----------------|
| Lalucat Jo, Jordi | CU | 0.5 |
| García-Valdés Pukkits, Elena | TU | 1 |
| Bosch Zaragoza, Rafael | TEU | 1 |
| Bennàsar Figueras, Antoni | As. | 1 |
| Alonso Frau, Diana | B | 1 |

EDP del grup investigador de l'entitat sol·licitant: 4.5.

Keywords: *Pseudomonas stutzeri*, phylogeny, ecology, evolution, naphthalene, degradation, microdiversity, population genetics.

Summary

Pseudomonas stutzeri is found very frequently in natural environments. Characteristic of the species is the enormous metabolic potential: in the carbon cycle, due to the huge amount of substrates that can be metabolized, specially for the ability to transform or degrade contaminants; in the nitrogen cycle for the ability of certain strains to fix dinitrogen and for being a very active denitrifier. Taxonomically the species is distributed in 9 genomic groups, phylogenetically close related. Main objectives of the project are: 1) Characterization of the genetic microdiversity of the species; 150 collection strains and new relevant isolates will be studied. 2) Determine the genetic structure of the species through MLST. 3) Quantify the abundance of the species in natural environments using traditional and molecular microbiological methods. 4) The evolution of metabolic pathways in *P. Stutzeri* and in the genus *Pseudomonas*, including the naphthalene degradation as a model. 5) To develop a theoretical model on the evolution of the species.

Referència: FIS00-0486. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

Títol: *Regulación de la expresión de cápsula y su relación con la respuesta inmunitaria en las infecciones respiratorias causadas por Streptococcus pneumoniae y Klebsiella pneumoniae.*

Centre: Hospital Son Dureta.

Investigador responsable: ALBERTÍ SERRANO, Sebastià.

Categoria: AS. (àrea de coneixement: Microbiologia).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria |
|--------------------------------|------------------|
| Albertí Serrano, Sebastià | As. |
| Cortés García, Guadalupe | B |
| Borrel Solé, Núria | |
| Noguera Bennàsar, Francesca A. | |
| Riera Jaume, Melcion | |
| Ramírez Rosales, Antoni | |

Nombre total d'investigadors de la UIB: 2.

Summary

Respiratory infections caused by *Streptococcus pneumoniae* and *Klebsiella pneumoniae* are particularly common in patients with certain underlying conditions (i.e. COPD). These patients are more susceptible to these infections, but the reasons for their susceptibility are not clear.

Objectives: to study two aspects involved in the predisposition to bacterial respiratory infections of certain patients: the expression or upregulation of a bacterial virulence factors (i.e. capsule polysaccharide) and the immune response.

Methodology: we will investigate whether the cellular or environmental conditions of the lungs from these patients enhance the production of the capsule polysaccharide, the most important virulence factor of these pathogens. For this purpose, we will study in constructing transcriptional fusions between the promoter regions of the capsule genes and the CAT reporter system using representative strains from both microorganisms. In addition, we will compare the humoral and cellular immune innate response of patients with infections by *Streptococcus pneumoniae* and *Klebsiella pneumoniae* and of healthy controls to identify the predisposing factors leading to those infections. For this purpose, we will characterize the deposition and degradation of complement, and the resistance to opsonophagocytosis and to certain antimicrobials of the bacterial isolates from patients. These experiments will be carried out both with serum and immune cells from patients and healthy controls.

Referència: PI02-1309. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

Títol: *Infecciones neonatales por Enterobacter cloacae: papel de los mecanismos de permeabilidad en la resistencia a los agentes antimicrobianos.*

Centre: Departament de Biologia. Edifici Guillem Colom Casasnovas.

Investigador responsable: [BENEDÍ BENITO, Vicente Javier](#).

Categoria: TU (àrea de coneixement: Microbiologia).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria |
|-------------------------------------------------|------------------|
| Benedí Benito, Vicente Javier | TU |
| Hernández Allés, Santiago | |
| Gil Sánchez, José | |
| Hervás Palazón, Juan Antonio | |
| Gallegos Álvarez, Maria Carmen | |
| Doménech Sánchez, Antonio | B |
| Ballesteros Martínez, Francisca | B |

Nombre total d'investigadors de la UIB: 3.

Summary

Our group has recently characterized and described the neonatal infections that have occurred in the Balearics since 1977. We noted in the last years an important increase in the prevalence. Some of the clones that have described were highly virulent and resistant to multiple antimicrobial agents, and have persisted in our neonatal intensive care unit for years, in coincidence with the observations reported by other authors.

The increase in prevalence could be due to the well-know alternance along the years of the microorganisms causing these infections, and/or because the environmental *Enterobacter* flora have acquired or developed mechanisms that enhance their chance to gain the observed levels of multiresistance. One of these mechanisms that is not well characterized in this bacterial species depends on permeability (porins). This project will take advantage of the basic and clinical experience of our group to a) continue to characterize the clinical aspects of the neonatal infections, paying particular attention to the phenotypic and genotypic analysis of *Enterobacter* clones in our neonatal intensive care units; and b) determine the mechanisms that this microorganism utilizes to cause antimicrobial resistant infections.

Referència: RTA 02-014. Programa nacional de recursos i tecnologies agràries.

Títol: *Estudio bioecológico, incidencia y caracterización del nematodo dorado de la patata (Globodera sp) en las Islas Baleares. Estrategias de control integrado.*

Classificació UNESCO: 2401, 3108.

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigadora responsable: [ALEMANY FERRÀ, Aina](#).

Categoria: TU (àrea de coneixement: Zoologia).

Inici: 2002. **Fi:** 2004.

| Membres de l'equip | Categoría | Dedicació |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|
| Alemany Ferrá, Aina Andrés Yeves, Marifé Martínez Beringola, M. Luisa Durà Blasco, Antoni Rallo Garcia, Joan Mayol, Bartomeu | TU | compartida |

Nombre total d'investigadors a la UIB: 1.

Keywords: bioecology, *Globodera*, pathogenic characterization, potato golden nematode, solarization

Summary

Potato cyst nematode (PCN) *Globodera sp.* is one of the most important nematode pests in the world causing a decline of 90 % potato productions in some cases. Sa Pobla-Muro is a main area in potato productions of Majorca island and PCN is the most expensive pest to control by chemical applications.

The aims of this research are first of all to know distribution and epidemiology of *Globodera sp.* in local area by doing soil and plant analysis. The study of biology and population dynamics is also interesting to know the adaptation of the pest to Balearic conditions. This study will be carried out in two varieties of potatoes, specially in a short cycle Maris Peer variety, may be acting as a trap cropping by being harvested very early. Another important subject in order to carry out an appropriate management of this pest is to know the different PCN pathotypes living in Majorca island. This study will be carried out in CSIC Madrid (Ciencias Medioambientales) laboratories. Finally alternative non-polluting methods to control PCN will be studied, like lower chemicals ap.

**PROJECTES D'ESTIMUL A LA TRANSFERENCIA DE RESULTATS
D'INVESTIGACIO (PETRI)**

Referència: PTR95-0421-OP. Projectes d'estímul a la transferència de resultats d'investigació.

Títol: *Receptores de imidazolinas y adrenoceptores alfa-2 en el SNC. Caracterización bioquímica y molecular, y modulación fisio-farmacológica y patológica.*

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: [ESCRIBÁ RUIZ, Pablo Vicente](#).

Categoria: TU (àrea de coneixement: Biologia Cel·lular).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|---------------------------------------------|------------------|----------------------------|
| Escribá Ruiz, Pablo Vicente | TU | 20 |
| Miralles Socias, Antoni | TU | 20 |
| Estebán Valdés, Susana | TU | 10 |

Nombre total d'investigadors de la UIB: 3.

Total EJC/setmana: 1,25.

Referència: PTR95-0453-OP. Projectes d'estímul a la transferència de resultats d'investigació.

Títol: *Evaluación del análisis del óxido nítrico exhalado para la monitorización de las infecciones bacterianas en la enfermedad pulmonar obstructiva crónica (EPOC).*

Centre: Hospital Son Dureta.

Investigador responsable: [ALBERTÍ SERRANO, Sebastià](#).

Categoria: AS. (àrea de coneixement: Microbiologia).

Inici: 2000. **Final:** 2002.

| Membres de l'equip | Categoria |
|-----------------------------------------------|------------------|
| Albertí Serrano, Sebastià | As. |
| Benedí Benito, Vicente Javier | TU |
| Borrel Solé, Núria | |
| Busquets Xaubet, Xavier | |
| Agustí García-Navarro, Àlvar | |
| Salas Llinàs, Ernest | |
| Sauleda Roig, Jaume | |

Nombre total d'investigadors de la UIB: 2.

**AJUDES DE LA COMISSIO INTERDEPARTAMENTAL DE CIENCIA I
TECNOLOGIA. CONSELLERIA D'INNOVACIO I ENERGIA.
GOVERN BALEAR**

Títol: *Aplicació de les noves tecnologies a l'ensenyament de la Biologia Molecular a la UIB.*

Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.

Investigador responsable: [BENEDÍ BENITO, Vicente Javier](#).

Categoria: TU (àrea de coneixement: Microbiologia).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-----------------------------------------------|------------------|----------------------------|
| Benedí Benito, Vicente Javier | TU | 16 |
| Miralles Socias, Antoni | TU | 16 |
| Escribá Ruiz, Pablo Vicente | TU | 16 |
| Juan Clar, Carles | TU | 16 |

Nombre total d'investigadors de la UIB: 4.

Total EJC/setmana: 1,6.

Keywords: new technologies, teaching, applications in remote servers, molecular biology, DNA, RNA, proteins, 2D and 3D structures of biologically relevant molecules.

Summary

The application of new technologies to the teaching of undergraduate *curricula* and Ph. D. courses is a relatively new field in which the Universitat de les Illes Balears (UIB) has gained a relevant position, within an Autonomous Community which is on the forefront of this field. In the molecular biology area, meant as a multidisciplinary field with technological applications in the classic areas of Biology, such as Microbiology, Cell Biology, Genetics, Biochemistry, Plant Biology, etc., a new concept known as Bioinformatics has born in the last years. This new area assembles those hardware and, in particular, software resources applied to the study of Biology. A typical example of these applications are the building and management of large databases of DNA/RNA and protein sequences, as well as of crystallographic coordinates of biologically relevant molecules. This project aims to build up at the UIB the basic bioinformatic resources and their application to the teaching of molecular biology within the fields of Cell Biology, Microbiology, and Genetics at the Ph. D. level. These basic goals will be of application in the future at the undergraduate level. The bioinformatic resources generated as a consequence of this project will be organized in the form of an on line course in the UIB Internet server, and it will be fully accessible from the web. An obvious advantage of the proposed structure of this course is that it will be used within ongoing teaching initiatives in the UIB, like the noclassroom teaching project *Campus Extens*.

Títol: *Possibilitats tecnològiques d'aprofitament de l'efluent de les indústries formatgeres de Balears (lactosuero) com a estratègia de depuració.*

Centre: Departament de Biologia. Edifici Guillem Colom Casasnovas.

Investigador responsable: BOSCH ZARAGOZA, Rafael.

Categoria: TEU. (àrea de coneixement: Microbiologia).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria |
|------------------------------|------------------|
| Bosch Zaragoza, Rafael | TEU |
| García-Valdes Pukkits, Elena | TU |
| Bergueiro López, José Ramón | TU |
| Jiménez-Flores, Rafael | |
| Guasp Mascaró, Caterina | B |

Nombre total d'investigadors de la UIB: 4.

Keywords: cheese, whey, α -lactalbumin, β -lactoglobulin, lactoferrin, lactose, acid lactic, bacteria, lactate, environmental contamination, depuration, ultrafiltration, reverse osmosis, FPLC, antibodies, ELISA, pathogens, bacteriophage, acid lactic fermentation, whole cell mass, food technology, dairy industry, food industry, animal feed supplement.

Summary

Cheese making is a fermentation process with long history and that allows the preservation of the nutritional value of milk. In cheese making only 10% by weight becomes cheese, the rest is an industrial waste stream (90% of the milk volume), whey. This effluent has a high organic content (mainly protein and lactose) that, accounting to current laws, has to be eliminated before its disposal. Anaerobic and aerobic treatment of whey is a possible solution to the contamination problema that represents whey from cheese. However, the qualities of the main proteins from whey (α -lactalbumin, β -lactoglobulin, BSA and Lactoferrin) such as gelling, water retention, emulsification, foaming and antibacterial capacity, as well as the high lactose concentration, make whey a product with high potential to be used in industries such as feed, meats, dairy and pharmaceutical. In this project, we propose to study the biochemical and microbiological quality of whey using molecular and traditional techniques with the objective of evaluating its particular potential in the above-mentioned industries. We will apply experimental models in the laboratory to process whey produced locally and evaluate its commercial potential. Finally, based on the generated data, an assessment will be made on the possible technological and economical potential of whey within the community of Balearic Islands.

PARTICIPACIONES A ALTRES PROJECTES

Referència: OT00-037-C17-05.

Títol: *Tipificación, cartografía y evaluación de los pastos españoles.*

Investigador responsable: [RALLO GARCÍA, Juan.](#)

Centre: Conselleria d'Agricultura i Pesca del Govern Balear.

Investigador de la UIB: [MEDRANO GIL, Hipólito.](#)

Categoria: CU (àrea de coneixement: Biologia Vegetal).

Inici: 2000. **Fi:** 2003.

**DEPARTAMENT DE BIOLOGIA FONAMENTAL
I CIÈNCIES DE LA SALUT**

Referència: FIS00-0022-01. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.
Títol: *Aplicación de las técnicas de análisis espectral y no lineal de series temporales al estudio de la evolución del sueño y la regulación cardiorespiratoria.*
Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.
Investigador responsable: RIAL PLANAS, Rubén Víctor.
Categoria: CU (àrea de coneixement: Fisiologia).
Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|---------------------------|------------------|----------------------------|
| Rial Planas, Rubén Víctor | CU | 32 |
| Nicolau Llobera, Cristina | TEU | 32 |
| Gené Ramis, Lluís | | 16 |
| Revert Vidal, Xavier | B | 16 |
| Esteban Valdés, Susana | TU | 12 |
| Gamundí Gamundí, Antoni | TEU | 16 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 3,1.

Keywords: sleep, evolution, cardiorespiratory regulation, neonates, reptiles, sudden infant death, spectral analysis, nonlinear analysis.

Summary

This study aims at understanding the origin and the functions of the REM sleep by analysing the cardiorespiratory regulation in reptiles and neonates. This will be performed by using non-linear analysis techniques that seems to overcome the limitations of the linear techniques with regard to EEG sleep studies. Cardiac activity, respiration (frequency, amplitude, pauses) and EEG will be studied in both reptiles and new-borns. Data will be recorded in reptiles by using chronically implanted electrodes, while disk adhesive electrodes will be used in the new-born. The obtained signals will be stored in a computer for further analysis. The obtained results will be used to develop evidence of homology between reptilian rest and human sleep states. It has been claimed that the reptilian respiration shows many characteristics similar to that of the foetus and neonate. In addition it is well known that this physiological variable deeply depends on the vigilance status, with an increased vulnerability during REM sleep. In consequence, the results obtained in reptiles could contribute to increase the knowledge on the cardiorespiratory pathologies in the new-born: periodic breathing, distribution of apneic pauses and their determining factors, irregularity in cardiac frequency, asystolia, sudden infant death, etc.

Projecte coordinat núm.: BFI2000-0988-C06-01. Ministeri de Ciència i Tecnologia.
Modalitat: P1. Projecte d'investigació bàsica no orientada.
Títol del projecte coordinat: *Bases genético-moleculares de la regulación del peso corporal y la obesidad.*
Acrònim: GENOBES.
Classificació UNESCO: 320602, 230221, 230204.
Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.
Investigador responsable: [PALOU OLIVER, Andreu](#).
Categoria: CU (àrea de coneixement: Bioquímica i Biologia Molecular).
Inici: 2000. **Fi:** 2003.

Subprojecte 2: BFI2000-0988-C06-02.
Títol del subprojecte: *Efecto termogénético de nutrientes en el control del peso corporal.*
Acrònim: NUTRITERM.
Investigadora responsable: [SERRA VICH, Francesca](#).
Categoria: CEU (àrea de coneixement: Nutrició i Bromatologia).

Subprojecte 3: BFI2000-0988-C06-03.
Títol del subprojecte: *Caracterización del sistema de la leptina en el tracto gastrointestinal.*
Acrònim: GASTRILEP.
Investigadora responsable: [PICÓ SEGURA, Catalina](#).
Categoria: CEU (àrea de coneixement: Bioquímica i Biologia Molecular).

Subprojecte 4: BFI2000-0988-C06-04.
Títol del subprojecte: *Dimorfismo sexual en la regulación adrenérgica de la termogénesis.*
Acrònim: DISRAT.
Investigadora responsable: [ROCA SALOM, Maria Pilar](#).
Categoria: TU (àrea de coneixement: Bioquímica i Biologia Molecular).

Subprojecte 5: BFI2000-0988-C06-05.
Títol del subprojecte: *Cambios termogénéticos durante la biogénesis y desarrollo mitocondrial.*
Acrònim: CAMTER.
Investigador responsable: [GARCÍA PALMER, Francisco José](#).
Categoria: TU (àrea de coneixement: Bioquímica i Biologia Molecular).

Subprojecte 6: BFI2000-0988-C06-06.
Títol del subprojecte: *Regulación termogénética a nivel mitocondrial.*
Acrònim: TERMIT.
Investigadora responsable: [GIANOTTI BAUZÀ, Magdalena](#).
Categoria: CEU (àrea de coneixement: Bioquímica i Biologia Molecular).

| Membres de l'equip | Categoria | Dedicació |
|---------------------------------------|-----------|------------|
| Palou Oliver, Andreu | CU | Compartida |
| Serra Vich, Francesca | TEU | Única |
| Picó Segura, Catalina | CEU | Única |

| | | |
|-------------------------------|----------|-------|
| Roca Salom, Maria Pilar | TU | Única |
| García Palmer, Francisco José | TU | Única |
| Gianotti Bauzà, Magdalena | CEU | Única |
| Bonet Piña, M. Lluisa | CEU | Única |
| Lladó Sampol, Isabel | TEU | Única |
| Proenza Arenas, Ana María | TEU int. | Única |
| Quevedo Coli, Santiago | As. | Única |
| Oliver Oliver, Jordi | TEU int. | Única |
| Pablo Cànaves, Josep A. | As. | Única |
| Conde Riera, Pere B. | | Única |
| Vilimelis Montsó, Josepa | As. | Única |
| Veny Riera, Guillem | | Única |
| Balaguer Covas, Jaume | As. | Única |
| Guardiola Serrano, Francesca | As. | Única |

Nombre total d'investigadors de la UIB: 15.

Keywords: obesity, thermogenesis, leptin, UCPs, obesity genes, mitochondria, regulation by nutrients.

Summary

This co-ordinated project is aimed to contribute to the knowledge of the genetic and molecular bases of body weight control and obesity. In the last 5 years, basic research in this field has lived a bust, with milestones such as the cloning of the ob gene and the identification of its products, leptin, as a key hormone in the control of food intake (as well as thermogenesis) through the CNS, and the decoding of the thermogenic systems, which determines the energy efficiency of nutrient metabolism. Our group, with a continuous interest in the field dating back 15 years, has been at the centre of this huge activity. Among our more recent contributions are: 1) the discovery that some nutrients can regulate the expression of genes related to thermogenesis and obesity, 2) the discovery of an association between certain gene polymorphisms and obesity and 3) the discovery that leptin, which is produced mainly in adipose tissues, is also produced in the human stomach (results in press). These contributions are the foundations of three of the subprojects presented here, the goals of which are: to further study the effects and mechanisms of action of already identified regulatory nutrients and to identify new putative regulatory nutrients, to establish possible associations between new gene polymorphisms and obesity and to investigate the possible role of leptin as a short-term satiating signal, characterising leptin expression in the gastrointestinal tract. In close association, another subproject deals with the study of the molecular and physiological bases of the sexual dimorphism in the regulation of thermogenesis and the mobilisation of fat stores, which has been previously reported by our group and could be related to the well known gender differences in fat distribution. Finally, two subprojects go further in the characterisation of the distinct thermogenic capacity and activity of the different mitochondrial subpopulations, and its possible implication in body weight disorders. This project is connected to other European activities, since, with complementary objectives, we have already established collaborations with the most important groups in the field, in the framework of COST action 918 (participated by 17 European Countries and managed by the co-ordinator of the present project) and of other projects requested to the V Framework Programme. This co-ordinated project is the natural continuity of our previous efforts in a field that has a great and increasing scientific impact, as well as important economic and social implications.

Referència: FIS01-1379. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

Títol: *Aproximación molecular a la obesidad.*

Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

Investigador responsable: PALOU OLIVER, Andreu.

Categoria: CU (àrea de coneixement: Bioquímica i Biologia Molecular).

Inici: 2001. **Fi:** 2003.

| Membres de l'equip | Categoria |
|-------------------------------|-----------|
| Palou Oliver, Andreu | CU |
| Bonet Piña, M. Lluisa | CEU |
| Picó Segura, Catalina | CEU |
| Roca Salom, Maria Pilar | TU |
| Serra Vich, Francesca | CEU |
| Garcia Palmer, Francisco José | TU |
| Gianotti Bauzà, Magdalena | CEU |
| Lladó Sampol, Isabel | TEU |
| Proenza Arenas, Ana María | TEU int. |
| Oliver Oliver, Jordi | TEU int. |
| Pablo Cànaves, Josep A. | As. |
| Quevedo Coli, Santiago | As. |
| Conde Riera, Pere B. | |
| Vilimelis Montsó, Josepa | As. |
| Veny Riera, Guillem | |
| Balaguer Covas, Jaume | As. |
| Guardiola Serrano, Francesca | As. |
| Ribot Riutort, Joan | B |
| Miralles Barrachina, Olga | |
| Cabello Vives, Mercedes Y. | B |
| Oliver Vara, Paula | B |
| Moreiro Socias, José | |
| Rodríguez Guerrero, Ana M. | B |
| Rodríguez Padrona, Enrique | B |
| Felipe Legaz, Francisco | B |
| Ramis Morey, Joana M. | B |
| Monjo Cabrer, Marta | B |
| Rodríguez Cuenca, Sergio | |
| Pujol Holgado, Maria E. | B |
| Justo López, Roberto | |

Nombre total d'investigadors de la UIB: 24.

Summary

This project is aimed to contribute to the knowledge of the genetic and molecular bases of body weight control and obesity. In the last 5 years, basic research in this field has lived a burst, with the cloning of the ob gene and the identification of its product, leptin, as a key hormone in the control of food intake (as well as thermogenesis), and the decoding of the thermogenic system, which determines the energy efficiency of nutrient metabolism. Our

group, with a continuous interest in the field dating back 15 years, has been at the centre of this huge activity with notable contributions. The present proposal is based in our knowledge and expertise in the field. The main goals of the project are: 1) to establish possible associations between new gene polymorphisms and obesity; 2) to investigate the possible role of leptin as a short-term satiating signal, characterising leptin expression and function in the gastrointestinal tract; 3) to further study the effects and mechanism of action of candidate regulatory nutrients; 4) to study the molecular and physiological bases of the sexual dimorphism in the regulation of thermogenesis and the mobilisation of fat stores; and 5) to characterise the thermogenic capacity and activity of different mitochondrial subpopulations, and their possible implication in body weight disorders.

This project is connected to other European activities, since, with complementary objectives, we have already established collaborations with the most important European groups in the field, in the framework of COST action 918 (participated by 17 European countries and managed by the principal investigator of the present project) and other requested at the VFWP.

Referència: BFI2002-04583-C02-02. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Melatonina, triptófano, edad y sus implicaciones en los ciclos sueño-vigilia de temperatura corporal en la tortola collariza Streptopelia risoria.*

Acrònim: MELTIPRESU.

Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

Investigadora responsable: ESTEBAN VALDÉS, Susana.

Categoria: TU (àrea de coneixement: Fisiologia).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------|-----------|-----------------|
| Esteban Valdés, Susana | TU | 0.5 |
| Rial Planas, Rubén Víctor | CU | 0.5 |
| Nicolau Llobera, Cristina | TEU | 0.5 |
| Gamundí Gamundí, Antoni | TEU int. | 0.5 |

EDP del grup investigador de l'entitat sol·licitant: 2.

Summary

The circadian control over most physiological functions is well recognized, being the wake-sleep and the immune function rhythms two paradigmatic examples. It is also known that melatonin is a key factor relating them. However, age causes important changes, reducing both sleep efficiency and immune capacity, factors which are accompanied with deep changes in melatonin secretion. Our previous research performed in the turtle dove (*Streptopelia risoria*) showed a positive correlation between the seric concentration of melatonin and the phagocytic function. In vitro studies also performed in our laboratory showed that melatonin, both at physiological and pharmacological concentrations, have a stimulant effect over incubated phagocytes. In addition, we have recently found that the circadian secretion rhythm of melatonin vanishes in old turtle doves. On the other hand, it is well known that the sleep suffers deep changes with age, being poor sleep one of the most common complains of old age in humans. In this respect, the powerful hypnotic and body cooling effects of melatonin are well known, the cooling further increasing the hypnotic effects. On the other hand, in order to frame the evolution of sleep from reptiles to mammals and birds, it is felt that the avian sleep needs additional study, most specially after the new developments in the sleep of primitive mammals. This project aims at studying sleep and immunity in the turtle dove used as a model of the circadian changes produced by age. The correlation between tryptophan and melatonin with the circadian sleep, activity-inactivity and immune cycles will be studied as well as their eventual reversion after the administration of exogenous melatonin and tryptophan.

Referència: 10/UNI10/00. Consell Superior d'Esports.

Títol: *Influencia de la ingesta de nutrientes antioxidantes sobre el estado inmunológico, el rendimiento, y la salud de los deportistas de élite de las actividades subacuáticas.*

Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

Investigador responsable: PONS BIESCAS, Antoni

Categoria: TU (àrea de coneixement: Bioquímica i Biologia Molecular).

Inici: 2001. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|------------------------|-----------|---------------------|
| Pons Biescas, Antoni | TU | 16 |
| Tur Marí, Josep Antoni | TU | 16 |
| Aguiló Pons, Antoni | | 16 |
| Cases Porcel, Núria | B | 20 |
| Tauler Riera, Pedro J. | B | 20 |
| Batle Vidal, Joan M. | | 20 |

Nombre total d'investigadors de la UIB: 4.

Total EJC/setmana: 2,7.

Summary

Last years, subaquatic diving have become very popular in the Balearic Islands, and perhaps this increased popularity could be due to the fact of the last world champions of this sport are native and/or living the Balearic Islands. The decompression and oxidative stress are the most important problems, because the sportmen commonly arrive to 63 m deep practising the subaquatic diving. The epidemiological data show that in the Balearic Islands there are a great incidence of letal accidents due to decompression and oxidative stress within the subaquatic divers. The aim of this study is to determine the muscle and nutritive damage, and the immunological and enzymic responses to the exercise of high level subaquatic divers in hypoxia and at 6 atm absolute pression. Also, a relationship between these data with the sport performance, immunological status, and the health of the high level subaquatic divers will be found. Finally, the possible benefits of a supplementary intake of antioxidant nutrients will be evaluated, as well as the control of behaviour at the sea depth.

Referència: PI02-1339. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

Títol: *Papel de los radicales libres en la homeostasis redox. Implicaciones patológicas sobre el metabolismo energético.*

Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

Investigador responsable: [GARCÍA PALMER, Francisco José](#).

Categoria: TU (àrea de coneixement: Bioquímica i Biologia Molecular).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria |
|-----------------------------------------------|------------------|
| García Palmer, Francisco José | TU |
| Roca Salom, Maria Pilar | TU |
| Gianotti Bauzà, Magdalena | CEU |
| Lladó Sampol, Isabel | TEU |
| Proenza Arenas, Ana María | TEU |
| Elorza Guerrero, Miguel Ángel | |
| Sampol Mayol, Antònia | |
| Balaguer Covas, Jaume | As. |
| Monjo Cabrer, Marta | B |
| Pujol Holgado, Maria E. | B |
| Justo López, Roberto | B |
| Rodríguez Cuenca, Sergio | B |
| Frontera Borruco, Margalida | B |

Nombre total d'investigadors de la UIB: 11.

Summary

Nowadays, the radical oxygen species (ROS) constitute a subject of increasing interest, since many physiological and pathological responses are mediated by changes in the redox status of the cell. These molecules present a great toxicity and the main form to palliate their harmful effect is to neutralize them by means of the action of antioxidant systems.

The goal of the present project is to study redox status regulatory mechanisms with the aim of designing nutritional strategies in order to avoid the harmful effects induced by the excessive production of ROS during the aging process, as well as the enhancing effect that overfeeding produces on ROS production.

Methodology will include experiments performed both in vivo, with experimental animals, and in vitro, using primary cultures from different types of animal tissues as well as human cell lines. Experimental design includes the study of mitochondrial function (morphology, respiratory chain, uncoupling proteins, etc.) and oxidative stress (antioxidants and prooxidants) associated to aging in overfeeding and caloric restriction conditions, and the effect of antioxidant supplementation.

Given the involvement of uncoupling proteins in oxidative stress control, the observed differences between genders and the different roles that mitochondrial subpopulations seem to play in the energy status; it seems logical that these subpopulations participate in the regulation of ROS production in a differential way, and even that sexual hormones may play a certain role in this regulation.

Referència: PI02-1593. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

Títol: *Desarrollo de alimentos funcionales a partir de la almendra como complemento de la dieta.*

Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.

Investigador responsable: [TUR MARÍ, Josep Antoni](#).

Categoria: TU (àrea de coneixement: Fisiologia).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria |
|---------------------------------------------|------------------|
| Tur Marí, Josep Antoni | TU |
| Pons Biescas, Antoni | TU |
| Fuentespina Vidal, Emilia | |
| Llompert Alabern, Isabel | |
| Aguiló Pons, Antoni | |
| Tauler Riera, Pedro J. | B |
| Cases Porcel, Núria | B |
| Riesco Prieto, Maria del T. | |
| Córdoba Martínez, Alfredo | |

Nombre total d'investigadors de la UIB: 4.

Summary

To perform physical activity yields obvious benefits but also oxidate stress together with negative consequences on health. Antioxidant nutrients are part of the first level of defense in front of oxidation, containing vitamin E and C, carotenoids, cystein, glutation, phenolic derivatives, and also secondary antioxidants as phytic acid. To intake antioxidant rich diets has been recommended in order to prevent oxidative stress, but lot of food must be intake to achieve the apropiate antioxidant concentrations to prevent oxidative stress. However, the sinergistic effect of antioxidant and their positive effects on enzymatic antioxidant defenses may be useful to design foods with low antioxidant contents, but the antioxidant properties together would be higher than antioxidant individual activities. Our research team has designed a new almond-based, a typical mediterranean fruit, isotonic and energetic beverage rich on antioxidant vitamins of easy assimilation, due to high unsaturated fatty acids contents of almond.

The aim of this project is to evaluate the biological activity and bioassimilation of antioxidant contents of the almond-based beverage in front of oxidative stress associated to physical activity and its effects on the enzymatic antioxidant defenses; this purpose is going to be achieved by means of three concrete objectives: to know the effects of continuous intake of the beverage on the antioxidant defenses, to know the acute effects of the antioxidant contents of the beverage on the post-exercise recovering, and to know the imporvement of antioxidant nutrients assimilation due to their intake through the almond-based beverage. After previous works, our team is devoted to hope that the designed almond-based beverage, as dietary supplement, would be useful to enjoy a positive synergy of the practice of physical activity and the moderate intake of antioxidant nutrients, in front of not desired effects of oxidate stress associated to exercise. Accordingly, another useful tool will be achieved to increased the community health.

PARTICIPACIONS A ALTRES PROJECTES

Referència: PB98-0469. Programa sectorial de promoció general del coneixement.
Títol: *Modificaciones del DNA y la cromatina por factores intrínsecos y extrínsecos: efectos sobre la expresión génica.*
Investigador responsable: PORTUGAL, J.
Centre: Centre d'Investigació i Desenvolupament. CSIC.
Investigadora de la UIB: BARCELÓ MAIRATA, Francesca M.
Categoria: TU (àrea de coneixement: Bioquímica i Biologia Molecular).
Inici: 1998. **Fi:** 2002.

Referència: Xarxes temàtiques d'investigació cooperativa. Ministeri de Sanitat i Consum.
Títol: *Efectos de la dieta tipo mediterránea en la prevención primaria de la enfermedad cardiovascular.*
Investigador responsable: ESTRUCH, Ramon.
Centre: Universitat de Barcelona.
Investigadors de la UIB: ROCA SALOM, M. del Pilar; GIANOTTI BAUZÀ, Magdalena; GARCÍA PALMER, Francisco José; LLADÓ SAMPOL, Isabel; PROENZA ARENAS, Ana María; OLIVER OLIVER, Jordi; BALAGUER COVAS, Jaume.
Inici: 2002. **Fi:** 2005.

DEPARTAMENT DE CIÈNCIES DE L'EDUCACIÓ

Referència: BSO2000-0949. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Diseño e implementación de un dispositivo metodológico para sistemas de enseñanza flexible mediante aplicaciones y servicios telemáticos.*

Acrònim: DIMESEF-TEL.

Classificació UNESCO: 5802.

Centre: Departament de Ciències de l'Educació. Edifici Guillem Cifre de Colonya.

Investigador responsable: SALINAS IBAÑEZ, Jesús.

Categoria: TU (àrea de coneixement: Didàctica i Organització Escolar).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-----------------------------|------------------|------------------|
| Salinas Ibañez, Jesús | TU | Compartida |
| Bibiloni Coll, Antoni | TEU | Compartida |
| Pérez Garcias, Adolfina | TEU | Compartida |
| Urbina Ramírez, Santos | Aj. EU | Compartida |
| Morlà Garcias, M. Miquela | Aj. EU | Única |
| de Benito Crosetti, Bàrbara | Tèc. | Compartida |
| Oliver Ribas, Miquel | Tèc. | Compartida |

Nombre total d'investigadors de la UIB: 7.

Keywords: flexible learning, tele-teaching, real time applications, internet, videoconference, computer mediated communication, virtual training environment, distributed hypermedia, lifelong training.

Summary

The basic objectives of this project refer to the correct use of the Information and Communication Technologies in the teaching and learning process. And more exactly in the Campus Extens project of the University of Balearic Islands. Campus Extens is to offer masters, postgraduate courses and inservice and preservice education to people of Menorca and Ibiza through videoconference systems, hypermedia distributed materials, computer mediated communications, etc.

In this context is planned the identification of the correct integration of the telematic tools in the education and teacher training. Refers to the organization of a methodological system to implement a tele-teaching system of the Campus Extens, the design and development of materials and the validation of methodologies and pedagogic models.

Referència: SEC2000-1620. Ministeri de Ciència i Tecnologia.

Modalitat: P2. Projecte d'investigació bàsica orientada.

Títol: *Análisis y optimización de los itinerarios formativos para favorecer la calidad de vida de las personas con discapacidad.*

Acrònim: FORDIS.

Classificació UNESCO: 5802, 6102.

Centre: Departament de Ciències de l'Educació. Edifici Guillem Cifre de Colonya.

Investigador responsable: [MUNTANER GUASP, Joan Jordi](#).

Categoria: CU (àrea de coneixement: Didàctica i Organització Escolar).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|--------------------------------------------|------------------|------------------|
| Muntaner Guasp, Joan Jordi | CU | Compartida |
| Forteza Forteza, M. Dolors | TEU | Compartida |
| Rosselló Ramon, M. Rosa | TEU | Compartida |
| Verger Gelabert, Sebastià | Aj. EU | Compartida |
| Ferrer Cerdà, Elena | As. | Compartida |

Nombre total d'investigadors de la UIB: 5.

Keywords: transition, handicapped, occupational integration, social integration, quality of life.

Summary

At present nobody questions that the occupational integration of the handicapped persons is an indispensable requirement for the full normalization. Equally, nobody casts doubt on that the adequate professional training, promoting to the maximum the capacities of the handicapped persons, it is the key to improve their situation in the occupational world and consequently the social integration. Nevertheless, in spite of the training proposals adopted by the educational system, exists a vacuum and discontinuity among the obligatory education and the different formative itineraries that prepare for the active life. This study not only intends to analyze these itineraries but also to outline action proposals in order to adjust the formative offer that make possible that the handicapped persons could live a so full life as to them will be possible. As well as in the different educational stages is underlined the importance of a comprehensive curriculum in the professional training of handicapped persons this conceptualization acquires, if fits, a special relevancy. First of all because the transition process to the adult life must answer to a detailed planning and coordinated by an interdisciplinary equipment, on the base of an individualized approach of a needs of handicapped persons. From the premise of the fact that only as of a professional training of agreed quality to the characteristics and possibilities of the handicapped persons is possible the integration of these in the occupational market, the position of this investigation has as end last to guide the work of the professionals towards the community integration of the handicapped persons.

Referència: BSO2002-02542. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *La educación intercultural en las Illes Balears. Propuesta didáctica para la educación primaria.*

Centre: Departament de Ciències de l'Educació. Edifici Guillem Cifre de Colonya.

Investigador responsable: VALLESPÍR SOLER, Jordi.

Categoria: TU (àrea de coneixement: Teoria i Història de l'Educació).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-----------------------------|-----------|-----------------|
| Vallespir Soler, Jordi | TU | 0.5 |
| Oliver Trobat, Miquel F. | TEU int. | 0.33 |
| Casero Martínez, Antonio | As. | 0.5 |
| Rincón Verdera, Juan Carlos | As. | 1 |
| Domingo Palomares, Herminio | CEU | 0.5 |

EDP del grup investigador de l'entitat sol·licitant: 2.83.

Summary

The present research project is focused on the evaluation of the social and educational background and on the analysis of the needs as a previous step in order to put forward the educational innovation in the field of the intercultural education. It is located in the borders of the social and cultural reality of the Balearic Islands Community, which is one of the most special human environments of the Spanish country, due the arrival of immigrants –with very diverse origins-, which has been supported and increased by the development of the tourist in the recent times. The research, after analysing the last reports and surveys that have been done on the field, will be focused on the description and analysis of the social and demographic profiles of the immigrant population of the Balearic Islands; the social and educational profile of the immigrant population schooled at the primary education; an evaluation of the organisational and curricular characteristics –concerning the intercultural education- of the public and private primary school centres in the Balearic Islands, and the attitudes of the diverse educational agents with respect to the multicultural phenomenon. This project will continue by formulating a proposal of educational intervention focused, mostly, on the scholar institution (primary education levels) which will include strategies addressed to several administrations, institutions, and social-cultural groups and scenarios responsible of the reception and care of the immigrant population. In this research its expected to combine qualitative and quantitative methodology. The qualitative perspective will be based on the desk research and analysis of the document provide by the educational institutions (content analysis). The quantitative perspective will be covered by quasi-structured interviews (direction and orientation teams) and questionnaires (students, teachers and parents), which will be statistically analysed.

Referència: BSO2000-0663-C04-02. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Asociaciones juveniles, educación y socialización (1900-1976). Un estudio comparativo entre Cataluña, Valencia y Baleares.*

Classificació UNESCO: 550607.

Centre: Departament de Ciències de l'Educació. Edifici Guillem Cifre de Colonya.

Investigador responsable: [SUREDA GARCIA, Bernat](#).

Categoria: CU (àrea de coneixement: Teoria i Història de l'Educació).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|----------------------------------------|------------------|------------------|
| Sureda Garcia, Bernat | CU | Compartida |
| Pastor Homs, Maria | TU | Única |
| Comas Rubí, Francesca | TEU int. | Única |
| Vallespir Soler, Jordi | TU | Compartida |

Nombre total d'investigadors de la UIB: 4.

DEPARTAMENT DE CIÈNCIES DE LA TERRA

Referència: PB98-0132. Programa sectorial de promoció general del coneixement.

Títol: *El karst y la morfogénesis litoral en las islas Baleares y la costa valenciana: su relación con las oscilaciones del nivel marino a lo largo del Cuaternario.*

Classificació UNESCO: 250619.

Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casasnovas.

Investigador responsable: [FORNÓS ASTÓ, Joan Josep](#).

Categoria: TU (àrea de coneixement: Estratigrafia).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|----------------------------------------------|-----------|---------------------|
| Fornós Astó, Joan Josep | TU | 32 |
| Rodríguez Perea, Antoni | TU | 16 |
| Ginés Gracia, Joaquín | As. | 16 |
| García García, Celso | TEU | 16 |
| Giménez Garcia, Jordi | Aj. U | 16 |
| Servera Nicolau, Jaume | TEU | 16 |
| Gelabert Ferrer, Bernadí | As. | 16 |
| Rosselló Verger, Vicenç M. | | 24 |
| Segura Beltran, Francesca S. | | 16 |
| Pardo Pascual, José E. | | 16 |

Nombre total d'investigadors de la UIB: 7.

Total EJC/setmana: 3,2.

Keywords: speleochronology, geomorphology, sea-level oscillation, littoral karst, pleistocene, holocene.

Summary

Mallorca and Menorca are islands mainly integrated by limestone lithologies. They represent an adequate scenery for developing pluridisciplinary investigations focused on littoral geomorphology and, more particularly, on coastal karst morphogenesis. Several research programmes have been independently devoted in the past to topics such as the study of paleo sea-level related speleothems or the peculiar 'cala' -type landscape, which is one of the most characteristic features along the coast of the Balearic Islands. Within this framework, it is of interest to carry out an integrated investigation of littoral morphogenetic processes controlled by pleistocenic and holocenic Mediterranean sea oscillations; this would contribute to a better understanding of both the recent sea-level history and the geomorphological evolution of associated phenomena. The main subjects to be approached in the proposed project are as follows:

— Speleo-diving techniques aimed at sampling of the phreatic speleotherm alignments that record paleo sea-levels between +0 and -25 m below the current Mediterranean level.

— Isotope dating of the phreatic speleothem samples, in order to determine a eustatic curve that will provide data on negative sea-level stabilizations connected with cold climatic events.

— Correlation of the chronological data obtained on the geomorphological evolution of both littoral endokarst and fluvio-torrential systems which originate the 'cala'-type coast and the infillings associated with them.

— Localization, measurement, and dating of eolianite sets and the study of their karstic evolution in Balearic and Valencian coasts.

— Comparison between coastal morphogenesis on the Balearic Islands and in carbonate littorals of eastern Iberia, and establishment of common and/or differential trends in the tectono-eustatic evolution of both areas.

Referència: BTE2002-04552-C03-02. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *El modelado kárstico y la evolución morfológica y sedimentaria del litoral en las Baleares, Valencia y Cerdeña como resultado de las oscilaciones de nivel marino.*

Acrònim: KALIT.

Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

Investigador responsable: FORNÓS ASTÓ, Joan Josep.

Categoria: TU (àrea de coneixement: Estratigrafia).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------|-----------|-----------------|
| Fornós Astó, Joan Josep | TU | 1 |
| Ginés Gracia, Ángel | As. | 1 |
| Ginés Gracia, Joaquín | As. | 1 |
| Gelabert Ferrer, Bernadí | TEU | 1 |
| Giménez Garcia, Jordi | Aj. U | 0.5 |
| Villanueva Bohigas, Gemma | Aj. EU | 0.5 |
| Gómez Pujol, Lluís | B | 1 |
| Balaguer Huguet, Pau | B | 1 |

EDP del grup investigador de l'entitat sol·licitant: 7.

Summary

The coordinate project that we present is a consequence of the close collaboration maintained during the last decade between some members of the Departments of Earth Sciences of the University of the Balearic Islands (UIB), Geography of the University of Valencia (UV), and Cartography, Geodesy and Topography of the Polytechnic University of Valencia (UPV) around a common research subject: the relationship between karstic landforms, littoral sedimentation, fluvial systems and Pleistocene/Holocene sea level changes.

The carbonate composition of the main part of the Mediterranean littoral, where are located the Balearics, the island of Sardinia and the Valencia coast, is an adequate scenery for developing pluridisciplinary investigations focused on littoral geomorphology and, more particularly, on coastal karst morphogenetics. Several research programmes have been independently devoted in the past to topics such as the study of paleo sea-level related speleothems, beach-dune systems present at the littoral as well as several geomorphological aspects as the peculiar «cala»-type landscape, abrasion platforms or other features present at the sea-cliffs which characterize the coast of these zones.

Within this framework, it is of interest to carry out an integrated investigation of littoral morphogenetic processes controlled by pleistocenic and holocenic Mediterranean sea oscillations; this would contribute to a better understanding of both the recent sea-level history and the geomorphological and sedimentary evolution of associated phenomena. The main subjects to be approached in the proposed project are as follows: a) Sampling of the phreatic speleothem alignments that record paleo sea-levels below the current Mediterranean level, by means of speleo-diving techniques. The isotope dating of the phreatic speleothem samples, in order to determine a eustatic curve that will provide data, mainly, on negative sea-level stabilizations connected with cold climatic events; b)

Correlation along the Western Mediterranean with other data from Sardinia and Valencia coasts; c) Correlation of the chronological data obtained on the geomorphological evolution of both littoral endokarst and fluvio-torrential systems which originate the «cala»-type coast and the infillings of valleys associated with them as well as the «albufera» infillings; d) Analysis of the role that play the tectonic structure in the littoral landscape and the tectono-eustatic evolution of the studied areas; e) Comparison between coastal morphogenesis on the Balearic Islands and in carbonate littorals of eastern Iberia, and establishment of common and/or differential trends in the tectono-eustatic evolution of both areas.

This research project will be an adequate mean of bringing out substantial information on a poorly known topic in the study of the Western Mediterranean Quaternary: the paleo sea-levels lower than the present one, the chronology of the events, and its implications on the littoral morphogenetics.

The interesting results obtained in previous projects in Balearic Islands (especially in Minorca) must be tested in other environmental systems: the valencian area. In Minorca the *calas* are the distal part of the fluvial valleys submerged during of the Holocene transgression, which circular shape is due to doline collapse associated to the changes in the sea level. The same process provokes upstream the formation of dry valleys with an entrenched meander pattern. Although the factors concerning the karst landforms and fluvial model evolution of Balearic Island aren't the same as valencian country, they can be compared: paleolevels sea registered by speleothems can be determined in this area from the lagoon sedimentary record, eolianites and geoarchaeology; limestone platforms and entrenched dry valleys also exist in the prelittoral area. Similarities and differences between the two areas will become evident with the following objectives: a) Eustatic curve will be elaborated for the valencian coast from the pre-existent bibliography. Correlation between lagoons and *calas* sedimentary records will be expected because the two environments have been affected by similar processes; b) Characterization of the Pleistocene/Holocene eolianites. An inventory of outcrops on valencian and Balearics coast will be done in order to study their sedimentary and genetic features. Outcrops located on the Torreblanca beach barrier, deserve an special interest inasmuch as over there is placed a Bronze settlement that excavated grain reservoirs in this formations. This area is the main scope of an interdisciplinary study that is being realized in collaboration with a group of archaeologist from the Valltorta Museum; c) Formation of entrenched dry valleys. Although the alluvial rivers has been studied for many years around the world, the formation of entrenched dry valleys, on a karstified limestone platform, is little known. Preliminary results obtained in previous projects in Mallorca and Minorca suggest an important relationship between *calas* and *barrancos* (dry valleys) with the karst evolution. Base level changes provoked by uplift or sea level changes started upstream entrenchment by collapse of dolines, that improve meander bends. Balearic model will be tested on valencian coastal and prelittoral areas in order to establish similarities and differences. The Valltorta Barranc, an inner gorge entrenched on limestone, where steeped-walls were covered by one of the most important assemblage of neolithic pictures, and the Caroig Platform have been selected to improve the most relevant factors for entrenchment and formation of a meander pattern.

The whole of objectives underlined will be carried out using classical methods (geomorphological surveys, field works, sedimentology, stratigraphy) and new technologies as GIS. In that sense, we will attempt to supply methods and procedures of automatized analysis –using Digital Terrain Models and systems of digital imagery processing– to the

geomorphological investigation of limestone territories. This part of the project tries to provide morphometrical informations on existing landforms, obtained in an automatized and systematic way; these methodologies will allow us an increasing swiftness in the data collection, together with a greater objectivity of the results that must make easier the comparisons between different geographical areas. The envisaged works are directed to three main objectives: (1) the morphometrical analysis of limestone platforms, using Digital Terrain Models; (2) the automatic detection of particular landscape trends which have some geomorphological significance, by means of aerial photography and satellite imagery; and (3) the achievement of a map of homogeneous geomorphological microunits in the limestone platforms studied, utilizing classification techniques of digital images. Objectives 1 and 2 will try to attain an accurate and systematic characterization of the geomorphological trends of the investigated areas. In order to achieve this purpose, it must be necessary to generate analytical tools that run on a GIS, and to check the obtained results both on the field and with the other experts participating in the project. The third objective consists in attaining the generation of geomorphological maps with known accuracy standards. This scope requires the implementation of a methodology that allows an adequate exploitation of the obtained results, coming from classic geomorphological analysis coupled together with the application of digital classification techniques.

To obtain goods results, the collaboration between groups of the University of Balearic Islands, University of Valencia and Polithecnic University of Valencia become absolutely necessary. The effort make in the last decade has been reflected by an elevated number of papers published in journals and congresses and should be continued in the future. The group interdisciplinarity (geologists, geographers, engineers, speleologists, archaeologists) has allowed to have an enriching and plural vision of the processes and forms involved.

Referència: BSO2000-1207. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació no orientada.

Títol: *Cambio rural y productivismo. Las repercusiones de la reforma de la PAC de 1992 en las islas Baleares.*

Acrònim: POST-CHANGE.

Classificació UNESCO: 540402.

Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

Investigador responsable: [SALVÀ TOMÀS, Pere A.](#)

Categoria: CU (àrea de coneixement: Geografia Humana).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|--------------------------------------------|------------------|------------------|
| Salvà Tomàs, Pere A. | CU | Única |
| Binimelis Sebastián, Jaume | TEU | Única |
| Ginard Bujosa, Antoni | TEU | Única |
| Picornell Bauzà, Climent | TU | Única |
| Seguí Pons, Joana Maria | TU | Única |
| Ramon Molinas, Jerònia | Tèc. | Compartida |
| Martínez Reynés, Maria R. | As. | Compartida |

Nombre total d'investigadors de la UIB: 7.

Keywords: ACP, rural change, post-productivism, Balearic islands.

Summary

They are tried to analyze the repercussions of the CAP in the rural spaces of the Balearic Islands, mainly the consequences of the Reformation McSharry of 1992. The situation of the society and the rural space of the islands will study verifying the diverse mechanisms of adjustment of the agrarian active population before the communitarian norm of the Nineties, which have supossed the take effect of the post-productivistas expositions.

Referència: REN2000-1769-C06-06. Ministeri de Ciència i Tecnologia.

Modalitat: P2. Projecte d'investigació bàsica orientada.

Títol: *Análisis de la variabilidad espacial y temporal en la ocurrencia de fenómenos térmicos extremos en las islas Baleares.*

Classificació UNESCO: 250201, 250202, 250207, 250507.

Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casasnovas.

Investigadora responsable: LAITA RUIZ DE ASÚA, M. Mercedes.

Categoria: CEU (àrea de coneixement: Geografia Física).

Inici: 2001. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació |
|---------------------------------|------------------|------------------|
| Laita Ruiz de Asúa, M. Mercedes | CEU | Compartida |
| Grimalt Gelabert, Miquel | TU | Compartida |
| Rosselló Geli, Joan | As. | Única |
| Ruiz Pérez, Maurici | Tèc. | Compartida |
| Ramon Molinas, Jerònia | Tèc. | Compartida |

Nombre total d'investigadors de la UIB: 5.

Keywords: extreme temperature events, heat weaves, cold weaves, freezes, homogenised daily temperatures, gridded data set, Spain.

Summary

The aim of this project is to analyse the spatial and temporal variations and trends in the occurrence of extreme thermal events in Spain and to estimate the high-frequency variability of the several spanish regions incorporated in the study. The first step will be the creation of a long-term high-quality and homogenised daily temperature data set (daily maximum and minimum temperatures). The spatial dimension of this work will be established through the combination of individual station records to generate a regional gridded data set. The analyse of temporal changes and trends in the frequency of extreme temperature events in the entire territory and in the different regions will ground on the initial establishment of this events (heat weaves, cold weaves, number days exceeding temperature thresholds). Estimations of variations and trends (total and partial) will be performed with several statistical techniques (lineal trends, low-pass filters, change point detection, etc). We will also study the characteristics persistence and intensity of previously established events, both for Spain and sub-regions, to detect different spatial signals in these events. Finally, we will examine its inter-seasonal and inter-annual variability to determine the modes of change that have influenced its temporal pattern.

Referència: BTE2001-0372-C02-01. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement (PGC).

Títol: *Análisis comparativo entre plataformas carbonatadas: la arquitectura de facies en función de los campos de producción de sedimento y de acomodación.*

Acrònim: PRODAC.

Classificació UNESCO: 250619.

Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

Investigador responsable: POMAR GOMÀ, Lluís.

Categoria: CU (àrea de coneixement: Estratigrafia).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------|------------------|------------------------|
| Pomar Gomà, Lluís | CU | 1 |
| López García, José María | As. | 0.5 |

Investigadors d'altres entitats

Mateos Ruiz, Rosa Instituto Geológico-Minero de España

EDP del grup investigador de l'entitat sol·licitant: 1.5.

Keywords: carbonates, platforms, shelves, facies architecture.

Summary

Depositional profile and facies architecture develop in response to sediment flux and the available space for sediment accumulation (accommodation). In terrigenous systems, these two parameters are independent. In carbonates, however, they are highly interdependent: (1) Sediment input (carbonate production) highly depends on biological systems and, consequently on intrabasinal conditions (nutrients, temperature, salinity, etc). (2) Sediment dispersal depends on the production loci and on the interaction between the amount and type of sediment being produced and the hydraulic energy; additionally biological processes (binding, baffling, framework construction) and even cementation frequently modify it. (3) Accommodation is not an independent factor with respect to sediment input: type, efficiency and area of the carbonate factory depend on sea-level changes and sea-floor morphology. The base level for sediment to accumulate (accommodation) depends on the type and locus of sediment being produced. The aim of this project is to establish the relationships between carbonate production, accommodation changes and facies architecture in four examples of carbonate platforms and shelves from the Lower Cretaceous (Iberian range), Upper Cretaceous and Paleogene of the southern-Pyrenees, and Upper Miocene of Menorca (Balearic Islands). Carbonate production in these examples to different types of biota, climate and geodynamic context.

Referència: REN2001-0281. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de recursos naturals.

Títol: *Caracterización hidrológica y transporte de sedimentos bajo diferentes usos del suelo en la cuenca del torrent de na Borges (Mallorca).*

Acrònim: NA-BORGES.

Classificació UNESCO: 250507, 250801, 250806.

Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

Investigador responsable: GARCÍA GARCÍA, Celso.

Categoria: TEU (àrea de coneixement: Geografia Física).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-----------------------------|-----------|-----------------|
| García García, Celso | TEU | 0.5 |
| Servera Nicolau, Jaume | TEU | 0.5 |
| Pons Buades, Guillem Xavier | TEU int. | 0.5 |

Investigadors d'altres entitats

| | |
|-----------------------------|---------------------------------|
| Sala Sanjaume, Maria | Universitat de Barcelona |
| Ubeda Cartaña, Xavier | Universitat de Barcelona |
| Sánchez-Mateos Rubio, María | Direcció G. de Recursos Hídrics |

EDP del grup investigador de l'entitat sol·licitant: 1.5.

Keywords: hydrological response, sediment transport, land-use, experimental basin, flood risk, Mallorca.

Summary

The project has the main aim of study the hydrological response of the *torrent na Borges* (Mallorca) through the experimental research on runoff production under different types of land use, calculating flood frequency discharges, establishing flood risk areas, and computing the sediment yield of the basin. The drainage basin of the *torrent na Borges* (327 km²) will be used as experimental basin for the study of the main hydrological and geomorphological processes. The field and laboratory work will permit to achieve the following objectives:

— Analysis of the hydrological response of the basin. The purpose is to know the behaviour of different types of land use (irrigated lands, crops, abandoned fields, shrubs and wood) to rainfall and how each type contributes to runoff. Using rainfall frequency estimation and applying hydrological models and field data, will be calculated infiltration capacity, runoff and the final flood discharge.

— Establish the food risk areas for different magnitude and frequency discharges. A hydraulic study will be carried out along the fluvial network and the different flood frequency discharge levels will be represented in a flood-risk mapping. The area existent of inundation is determined by taking each flooded river point in turn and using a Digital Terrain Model (DTM) to identity contiguous areas of its catchment that are lower or equal to the flood surface elevation.

— Compute seament yield of the basin for different flood frequency. This objective will be achieved using sediment transport measurements during floods and total sediment transport equations.

Referència: REN2001-2865. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de recursos naturals.

Títol: *Análisis de la irregularidad pluviométrica a diferentes escalas temporales en la península ibérica y Baleares, y sus conexiones regionales.*

Classificació UNESCO: 2502.

Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

Investigador responsable: GRIMALT GELABERT, Miquel.

Categoria: TU (àrea de coneixement: Geografia Física).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------------|-----------|-----------------|
| Grimalt Gelabert, Miquel | TU | 0.5 |
| Laita Ruiz de Asúa, M. Mercedes | TEU | 0.5 |
| Ordinas Garau, Antoni | As. | 1 |
| Rosselló Geli, Joan | As. | 0.5 |
| Segura Cortés, Pere | As. | 1 |

EDP del grup investigador de l'entitat sol·licitant: 3.5.

Summary

The aim of the project is to improve our knowledge of rainfall irregularity and variability over the Spanish peninsula and Balearic Islands, from the daily to the centennial scale, paying special attention to the Peninsula-Balearic connexions.

With this objective, an instrumental daily (with 40 observatories, 1951-90) and monthly (with 50 observatories covering more than a century) database will be constructed together with an historical database (proxy-data) over Catalonia and the Balearic Islands.

The main goals of the proposal are: to assess the yearly, seasonally and monthly rainfall irregularity by means of temporal irregularity indices; to analyze the daily rainfall irregularity by means of temporal irregularity indices; to analyze the daily rainfall persistence and concentration; to assess the fractal distribution of precipitation; to define an index of variability, irregularity, persistence and fractality, and its regional distribution over the area of study, as well as to analyze the connexions patterns; to study the plurisecular evolution of rainfall irregularity, and to define future scenarios of precipitation over the Western mediterranean. The results obtained will improve our knowledge of the WeMO and the evolution of the probability of dry and rainy sequences, will fix rainfall anomalies hazards depending on the regions and will be used to determine rainfall variability trends. As a result, and from another point of view, the results could be applied to define rainfall hazards, soil degradation and hydrological policies.

Referència: BSO2001-3302-C02-02. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació no orientada.

Títol: *Gestión turística del patrimonio natural y cultural, y desarrollo local en espacios de interior en las Islas Baleares.*

Acrònim: Gestur-Patrimoni IB.

Classificació UNESCO: 540104.

Centre: Departament de Ciències de la Terra. Edifici Guillem Colom Casanovas.

Investigador responsable: [BLÀZQUEZ SALOM, Macià](#).

Categoria: TU (àrea de coneixement: Anàlisi Geogràfica Regional).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-------------------------------------------|------------------|------------------------|
| Blàzquez Salom, Macià | TU | 1 |
| González Pérez, Jesús M. | TU int. | 0.5 |
| Seguí Llinàs, Miquel | TEU | 0.5 |
| Artigues Bonet, Antoni A. | TEU | 0.5 |
| Cors Iglesias, Martí | Aj. EU | 1 |
| Novo Malvárez, Margarita | As. | 0.5 |

EDP del grup investigador de l'entitat sol·licitant: 4.

Summary

This research is aimed to analyse, from social sciences and especially from geographic perspective, the results of the tourism as local development factor. Also to determine the basis, potentialities and preventions of the management and setting in value of the heritage (cultural and natural), for tourist uses and activities in the inland areas of two autonomous communities: Balearic Islands and Catalonia. In Balearic Islands the tourism is an almost exclusive activity, while Catalonia presents a diversified economy with an outstanding role of the tourism. In both the tourist systems are in need of bigger competitiveness, for it reason, its inland districts and municipalities are being developed as new tourist sceneries, fact that agrees the necessity that these areas have of joining new activities for its revival. The study of two community –Catalonia and Balearic Islands- which is the basis of the application of a Coordinated Project with two Subprojects, which will allow to detect the results in every case of the processes that are studied, its similitudes and differences and its evaluation to formulate the development strategies more suitable.

**DEPARTAMENT DE CIÈNCIES HISTÒRIQUES
I TEORIA DE LES ARTS**

Referència: PB98-0166. Programa sectorial de promoció general del coneixement.

Títol: *Vivir en Mallorca medieval: documentació iconogràfica.*

Classificació UNESCO: 5503.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigadora responsable: [BARCELÓ CRESPI, Maria](#).

Categoria: TU (àrea de coneixement: Història Medieval).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|------------------------------------------|------------------|----------------------------|
| Barceló Crespi, Maria | TU | 16 |
| Rosselló Bordoy, Guillem | | 16 |

Nombre total d'investigadors de la UIB: 1.

Total EJC/setmana: 0,4.

Keywords: majorca, medieval history, iconography, documentation, dayly living, archaeology, cultural history.

Summary

The combination of different methods of investigation makes possible the intention of obtaining a documentary vision, archaeological and iconographic, of dayly living in a concrete period of the history of Majorca (XIII-XVI centuries). That was a period of special importance, inasmuch as it meant the integration of the island in the Christian ambit (1229). It involved an evident cultural change. XIII and XIV centuries meant the full immersion in the european medieval culture, while the XV century. Although the social and economical problems linked to the period, was the prelude to the access to the new renacentist mentality.

Referència: PB98-0173. Programa sectorial de promoció general del coneixement.

Títol: *Bases para una sistematización de las fuentes documentales y gráficas para el estudio de la historia de las artes plásticas y de la fotografía en Baleares entre 1890 y 1980.*

Classificació UNESCO: 550602.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigadora responsable: [CANTARELLAS CAMPS, Catalina](#).

Categoria: CU (àrea de coneixement: Història de l'Art).

Inici: 1999 **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|------------------------------------------------|------------------|----------------------------|
| Cantarellas Camps, Catalina | CU | 32 |
| Mulet Gutiérrez, M. Josep | TEU | 32 |
| Lladó Pol, Francesca | TU | 32 |
| Falero Folgoso, Francisco José | TEU | 32 |
| Reus Morro, Jaume | Aj. EU | 32 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 4.

Keywords: painting, sculpture, photography, art criticism.

Summary

This research project is devoted to solve two main questions. 1) To compile systematically, and at the same time, selectively all kinds of sources -bibliographics, documentaries and graphics- related to the working, theory and criticism of Plastic Arts and Photography made at Balearic Islands between 1890 and 1980. 2) The artistic products research begin by choosing the most representative episodes and also the worst known of them belonging to this period. Together to this we also accomplish the task of contextualize the different artistic languages used. Two significative examples are the Modern Style and the art of the 70's. In short, this research try to developed a historical-artistic point of view, nowadays non-existent, from the work on two areas, concerning, in one hand, to document and cataloguing, and in the other hand, to analyze artistic products.

Referència: BHA2000-1335. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Sociedades prehistóricas y cambio paleoecológico en ecosistemas insulares. El paradigma balear.*

Acrònim: ARQUEOBALEAR.

Classificació UNESCO: 55045, 550501.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigador responsable: GUERRERO AYUSO, Víctor Manuel.

Categoria: TU (àrea de coneixement: Prehistòria).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-------------------------------|------------------|------------------|
| Guerrero Ayuso, Víctor Manuel | TU | Única |
| Calvo Trias, Manuel A. | Aj. EU | Única |
| Villanueva Bohigas, Gemma | Aj. EU | Única |
| Gomés Hachero, José S. | | Compartida |
| Gual Cerdó, Joana M. | | Compartida |
| López Pons, Antoni | | Compartida |
| Costa Ribas, Benjamí | | Compartida |
| Ensenyat Alcover, Josep F. | | Compartida |
| Pons Homar, Gabriel | | Única |
| Coll Conesa, Jaume | | Compartida |
| Fornès Bisquerra, Joan F. | | Única |
| Garcia Rosselló, Jaume | | Única |
| Salvà Simonet, Bartomeu | | Única |
| Quintana Abraham, Carles A. | | Única |

Nombre total d'investigadors de la UIB: 3.

Keywords: Balearic islands, palaeoecology, biogeography, prehistoric societies.

Summary

The project aims to establish the impact that prehistoric groups with different degree of development have had on the insular ecosystem of the Balearic Islands. One of the main goals of the project will be to ascertain the principal changes that have occurred in the local vegetation through time, including how the introduction of domesticated species has affected the existing flora and how these plants have been cultivated. Another important aspect of the project is to determine when domestic animals were introduced in the islands, to study the development of stockbreeding throughout prehistory (c. 6500-2000 BP) as well as other complementary subsistence means (fishing, hunting and gathering). The project will also focus on the use of non biological resources, their transformation, supply and exchange.

Referència: BXX2000-1463. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Imaginería y retablo en Mallorca (época medieval y moderna). Bases científico-técnicas para su conservación.*

Acrònim: IRMC.

Classificació UNESCO: 550602-2301.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigadora responsable: [GAMBÚS SAIZ, Mercè](#).

Categoria: TU (àrea de coneixement: Història de l'Art).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|---------------------------------------------|------------------|------------------|
| Gambús Saiz, Mercè | TU | Única |
| Genestar Julià, Catalina | TU | Única |
| Palou Franco, Josefina | TU | Única |
| Sabater Rebassa, Sebastiana | TEU | Única |
| Sastre Moll, Jaume | | Compartida |
| Reig Morro, Antònia | | Compartida |

Nombre total d'investigadors de la UIB: 4.

Keywords: itarpiece, sculpture, painting, polychromy, pigment/binding media determination, FTIR, SEM, TG, DTA conservation/restoration, catalogue/finger-prints of works of art.

Summary

The proposed research project establishes a line of continuity with a project which is actually being carried out in the scientific-technical study of alterpieces in Majorca during modern times, in this case incorporating statues is a specific object of study and extending the chronology to medieval times.

The main aim of this project is, with an interdisciplinary approach, to draw up scientific-technical bases for the conservation of alterpiece and statue heritage in Majorca, which corresponds, to medieval and modern times. With this in mind we propose a scheme based on the conservation and restoration of a series of works by means of dialogue between art historians, archivists, chemists and restorers which would enable us to establish a diagnosis before hand and to supervise all the processes related to the protection of the art heritage studied all included at the memory.

Referència: BHA2001-0770. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *La Comisión Provincial de Monumentos Históricos y Artísticos de Baleares (1844-1987).*

Acrònim: CPMB.

Classificació UNESCO: 550602.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigador principal: MORATA SOCIAS, Josep.

Categoria: TU (àrea de coneixement: Història de l'Art).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació |
|---------------------------|------------------|------------------|
| Morata Socias, Josep | TU | Única |

Keywords: art history, protection of historical and artistic heritage, Balearic Isles, 19th and 20th centuries.

Summary

The target of this project is to analyse the history of the Country Monuments Commission of the Balearic Isles, starting at the moment of its establishment in 1844 until the moment of its dissolution in 1987. Different changes in the objectives and composition of the Commission succeeded in its life but always remained as the institution responsible for the conservation and protection of the historical and artistic heritage in the region. This work intends to study the commission composition characteristics, the bureaucracy complexity and the economic difficulties. It will be made in order to explain the results that made possible the conservation of an important and relevant part of the heritage of the Balearic region; and in the other hand, to show the failures and to know the encountered difficulties.

Referència: BHA2002-03177. Ministeri de Ciència i Tecnologia.

Modalitat: Programa sectorial de promoció general del coneixement.

Títol: *Diccionario de partidos políticos, organizaciones patronales y sindicales de las Islas Baleares en el siglo XX.*

Acrònim: DPPS.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigador responsable: [SERRA BUSQUETS, Sebastià](#).

Categoria: TU (àrea de coneixement: Història Contemporània).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|------------------------------------------|-----------|-----------------|
| Serra Busquets, Sebastià | TU | 1 |
| Marimon Riutort, Antoni | TU | 1 |
| Duran Pastor, Miquel | CU | 1 |

Investigadors d'altres entitats

[Matas Pastor, Joan Josep](#)

[Cuesta Labernia, Maurici](#)

[Pons Bosch, Jordi](#)

[Company Matas, Arnau](#)

[Buades Juan, Josep Maria](#)

EDP del grup investigador de l'entitat sol·licitant: 3.

Summary

The basic objectives are the analysis of the strategies, the members and the behaviour of political organizations, employer's association and work unions all through the 20th century, namely in their most complex articulation.

The history of each of this organizations will be covered its foundation to its discrepancy or – if it applies – to the present time, if still in existence.

Their evolution and collaboration in key historical dates analysed. Therefore, paying a method to the following: the situation at the beginning of the 20th century, the twenties, the pre-civil ward period, the sixties, the democratic transition and the Autonomous Communities system.

A part from paying a meta to socio-political aspects we will go in detail in two relevant socio-economic aspects much as the effects of mass tourism and the transition from emigration to immigration.

The systematic analysis of the political organizations, employer's associations and working unions will also deal with the economic development and socio-cultural changes in the society in Majorca, Minorca, Ibiza and Formentera.

When making the dictionary both qualitative and quantitative aspects will be balanced although strategies, specific guidelines and achievements will be given priority.

Referència: BHA2002-00352. Ministeri de Ciència i Tecnologia.

Modalitat: Programa sectorial de promoció general del coneixement.

Títol: *Élites de poder y grupos sociales en la Mallorca Moderna.*

Acrònim: EDPGS.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigador responsable: [JUAN VIDAL, Josep](#).

Categoria: CU (àrea de coneixement: Història Moderna).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|------------------------------------------|------------------|------------------------|
| Juan Vidal, Josep | CU | 1 |
| Deyà Bauzà, Miquel Josep | TEU | 1 |
| Vaquer Bennàssar, Onofre | As. | 1 |
| Coll Coll, Aina Maria | Aj. EU | 1 |
| Sánchez Nievas, Enrique | B | 1 |

EDP del grup investigador de l'entitat sol·licitant: 5.

Summary

The study of the power elites existing in Mallorca during de Modern Age proposes to comprise a collection of biographies of people connected with the exercise of power, including not only representatives of the high royal administration within the island kingdom but also members of the reigning administration. On the one part viceroys, captain generals, royal magistrates, commissioners, regents and Royal Court judges, and on the monarchy, circulated around the various kingdoms of the Crown of Aragon, the Crown of Castile and the Crown of Italy. It is interesting to reveal their family relationships, social interactions and the relation between their kinship, their economic interests and their aspirations to power.

The primary objectives will be, by means of the cross-referencing of documentary sources, to identify those people who occupied positions of great importance in the kingdom, determining their «cursus honorum», their economic relations, their heritage, their patronage and political customers as well as other mechanisms whereby the enjoyment of power was assured to them for a determined length of time in modern age Mallorca.

Referència: BHA2002-03783. Ministeri de Ciència i Tecnologia.

Modalitat: Programa sectorial de promoció general del coneixement.

Títol: *La acción de la Administración y de la Iglesia en el proceso de dotación de servicios públicos en España (1845-1930). Un análisis regional.*

Acrònim: SP.

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigadora responsable: [MOLL BLANES, Isabel](#).

Categoria: CU (àrea de coneixement: Història Contemporània).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|------------------------------------------|------------------|------------------------|
| Moll Blanes, Isabel | CU | 0.5 |
| Salas Vives, Pere | As. | 1 |
| Fullana Puigserver, Pere | As. | 0.5 |
| Gallego Caminero, Gloria | TEU | 1 |

EDP del grup investigador de l'entitat sol·licitant: 4.

Summary

The aim of the project points toward the analysis of public and private developments, in the provision of Social Welfare in rural Spain along 19th and early 20th centuries. In the context of theoretical proposals, like Sen's quality of life, and the changing role of local, and national governments, non-governmental organisations, and individual healers in mortality reduction. The empirical bases of the study are organised in order to collect as much information as possible, not only on public and private provision against misfortune, but on the provision on services regarding the possibility to guarantee citizenship right's of good health, and access to cultural improvements. The main idea consist on testing the existence of those services before the rise of Welfare State, and see if its responsibility was due to the Spanish government–local and national- or to private organisations like the Catholic Church. The project focuses a rural Mediterranean region with the lowest infant mortality rates among all the Spanish provinces, featuring also a quite important agrarian development. That means the possibility to test the relationship between mortality reduction and public policies, as well as between mortality reduction and economic development.

PARTICIPACIONS A ALTRES PROJECTES

Referència: BHA2000-0192-C08-03.

Modalitat: Programa sectorial de promoció general del coneixement.

Títol: *El comportamiento de las catedrales españolas del Barroco a la Restauración en el Levante Mediterráneo: Sigüenza, Cuenca, Segorbe, Valencia, Orihuela, Murcia, Almería, Mallorca, Menorca e Ibiza.*

Investigador responsable: RAMALLO ASENSIO, Germán.

Centre: Universitat de Múrcia.

Investigador de la UIB: SEGUÍ AZNAR, Miquel.

Categoria: CU (àrea de coneixement: Història de l'Art).

Total EJC/setmana: 0,8.

Referència: PB98-0478. Programa sectorial de promoció general del coneixement.

Títol: Poder y fiscalidad en la Cataluña de los siglos XIII-XIV: bases jurídicas y trasfondo político.

Classificació UNESCO: 5503.

Investigador responsable: SÁNCHEZ MARTÍNEZ, Manuel.

Centre: CSIC.

Investigador de la UIB: MORELLÓ BAGET, Jordi.

Categoria: Aj. U (àrea de coneixement: Història Medieval).

Total EJC/setmana: 0,4.

Inici: 1999. **Fi:** 2002.

**DEPARTAMENT DE CIÈNCIES MATEMÀTIQUES
I INFORMÀTICA**

Referència: TIC99-0266. Programa nacional de tecnologies de la informació i de les comunicacions.

Títol: *Modelos para el análisis de imágenes: análisis del movimiento, imágenes en color y aplicaciones médicas.*

Classificació UNESCO: 120304.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: [COLL VICENS, Bartomeu](#).

Categoria: TU (àrea de conixement: Matemàtica Aplicada).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|----------------------------------------------|------------------|----------------------------|
| Coll Vicens, Bartomeu | TU | 32 |
| Prohens Sastre, Rafael Jaume | TEU int. | 32 |
| Sbert Juan, Catalina | TU | 32 |
| Lisani Roca, Josep Lluís | TEU int. | 32 |
| Petro Balaguer, Ana Belén | Aj. EU | 32 |

Nombre total d'investigadors de la UIB: 4.

Total EJC/setmana: 3,2.

Keywords: informing processing, images, vision, algorithms, movement, compression, medical applications.

Summary

The aims of these project are:

1) From the description of the image given by the topographic map and the junctions in T, we try to extend this concept to the image movement, and, on the other hand, to define the topographic map of colour image. The applications will be given to follow the objects in a sequence of images, and, in the colour images, to give a compression model of the image from the structure of the topographic map.

2) The reconstruction 3D of the objects of a scene from two or more images taken on the scene. The model we suggest is based on the idea of evolution of curves of surfaces, the active contours. The medical application we pretend is the 3D reconstruction of the veins and blood vessels from two angiographies images.

3) To developp the corresponding software of these projects and integrate it in a software platform with a friendly user interface which allows a more generalized use of it.

Referència: TIC2002-02172. Ministeri de Ciència i Tecnologia.

Modalitat: Tecnologies de la informació i les comunicacions.

Títol: *Representación y tratamiento de imágenes: aplicación al análisis del movimiento en secuencias de video, imágenes en color y extracción de la información 3D.*

Acrònim: RTIMC3D.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: [COLL VICENS, Bartomeu](#).

Categoria: TU (àrea de coneixement: Matemàtica Aplicada).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------------------------|-----------|-----------------|
| Coll Vicens, Bartomeu | TU | 1 |
| Rocha Cárdenas, Jairo | TEU | 0.5 |
| Prohens Sastre, Rafael Jaume | TU | 0.5 |
| Lisani Roca, Josep Lluís | TEU | 1 |
| Sbert Juan, Catalina | TU | 1 |
| Petro Balaguer, Ana Belén | Aj. EU | 1 |

EDP del grup investigador de l'entitat sol·licitant: 5.

Summary

Based on the description of the images provided by the geometry of their topographic map, which we have studied in the current project, we seek for the optimization of the developed algorithms (meaningful information) and for the application of the general method to specific problems.

The main goals of the proposed project are:

1. Optimization of the set of features given by the level lines, for the simplification of the tree structure of the topographic map, both for grey level and color images. Potential applications are, on the one hand, the analysis of the motion for a set of shapes (mosaic reconstruction from a video sequence), and, on the other hand, for color images, the extraction of features applied to an e-commerce software product.

2. Concerning the 3D scene reconstruction problem, we have two goals: automatic camera calibration from images correspondences between pieces of level lines, and depth information extraction (3D sketch) from video sequences.

3. Software development and integration of the developed algorithms in a public, distribution free, software platform, already under construction. This will improve the feedback between the theoretical research and the practical problems.

Referència: BFM2000-1113-C02-01. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Modelos formales y lógicos en computación biomolecular.*

Acrònim: MOBIOCO.

Classificació UNESCO: 1201, 1203, 1199, 2415.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: [ROSSELLÓ LLOMPART, Francesc A.](#)

Categoria: CEU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|------------------------------------------------|------------------|------------------|
| Rosselló Llompart, Francesc A. | CEU | Única |
| Alberich Martí, Ricard | TEU | Única |
| Casasnovas Casasnovas, Jaume | CEU | Compartida |
| Llabrés Segura, Mercè | Aj. U | Única |
| Miró Julià, Josep J. A. | TU | Única |

Nombre total d'investigadors de la UIB: 5.

Keywords: biomolecular computing, rewriting systems, fuzzy logic, cryptology.

Summary

Biomolecular computing is the computing paradigm where information is encoded in nucleic acid and protein molecules and is processed by means on biochemical operations on these molecules. The goal is to contribute to the following three aspects of biomolecular computing:

- i) The development of formal rewriting models of the nucleic acids' and proteins' non-linear structure.
- ii) The analysis of biomolecular computing processes by means of fuzzy logic and the implementation of different logic and arithmetic gates within this paradigm.
- iii) The use of biomolecular computing in cryptology.

Referència: BSO2000-1413. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Mortalidad infantil y condiciones de vida en las Baleares (1876-1936).*

Acrònim: MI.

Classificació UNESCO: 520404.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: [BUJOSA HOMAR, Francesc](#).

Categoria: CU (àrea de coneixement: Història de la Ciència).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-----------------------------------------------|------------------|------------------|
| Bujosa Homar, Francesc | CU | Única |
| Moll Blanes, Isabel | TU | Única |
| Sureda Garcia, Bernat | CU | Compartida |
| Fernández Bennàssar, M. Carme | CEU | Compartida |

Nombre total d'investigadors de la UIB: 4.

Keywords: infant mortality, health conditions, education, quality of life, economic development.

Summary

This project develops the findings of a previous one (health, education and culture as factors concerning the decline of infant mortality, Mallorca 1860-1930), by the analysis of the geographical patterns of infant mortality in two different contexts: the city of Palma (and inside the city too) and the rural area of Mallorca. Next, we shall relate those patterns to the forms how medical care is organized, as well as health, education and hygiene services, making a distinction between Palma (and within Palma), and the rest of the Island, as well as between public and private services. One of the aims of the project consist on to test if the supply of public services is more relevant than the economic growth, regarding the infant mortality decline. And also, to see the proportion of population with the capability to enjoy the benefits of these services. We can work with a set of data from the previous project, but it is necessary to enlarge it with more information about the city of Palma. Besides, we are going to get more data on demography, health, education and hygiene questions.

Referència: BFM2000-1114. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Funciones de agregación y ecuaciones funcionales. Estudio teórico y aplicaciones a la fusión de información.*

Acrònim: FAEF.

Classificació UNESCO: 1203.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: [MAYOR FORTEZA, Gaspar](#).

Categoria: CU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|----------------------------------------------|-----------|------------|
| Mayor Forteza, Gaspar | CU | Única |
| Calvo Sánchez, Tomasa | TU | Compartida |
| Casasnovas Casasnovas, Jaume | CEU | Compartida |
| Torrens Sastre, Joan | CEU | Única |
| Montserrat Antich, Miquel | TU | Única |
| Mas Grimalt, Margarida | TEU | Única |
| Suñer Llabrés, Jaume | TEU | Única |
| Martín Pelayo, Javier | Aj. EU | Única |

Nombre total d'investigadors de la UIB: 8.

Keywords: aggregation functions, t-norms, uninorms, t-operators, means, multi-dimensional, aggregation functions, discrete measures and integrals, generalized natural numbers and fuzzy numbers, functional equations, functional equations related to idempotency, distribuity and modularity, measures of dispersion, optimization, fusion of information.

Summary

In this projecte we intent to give a new impulse to the theory and applications of the Aggregation Functions, meaning functions/operators which allow to (functionally) modelize the action of «aggregating» several inputs in order to produce a unique output. In the same way, it will be strengthened the use of technics for solving Functional Equations to obtain solutions to problems derived from the study mentioned above. It is worth to emphasize our interest in finishing the study and characterization of associative aggregation functions (like t-norms, uninorms and t-operators) defined on ordered sets, as well as non-associative ones (like quasi-linear means and weighted ordered means) defined in various domains. In particular, previous studies related to (non-associative) aggregation functions of a multi-dimensional nature are going to be finished, as well as the study of discrete measures which determine (non-associative) aggregation functions with interesting properties through integrals (like Choquet or Sugeno). With regard to applications, it is intended to obtain final results corresponding to the determination of aggregation functions like weighted means with maximum dispersion (entropy) of its weighting list, subjected to restrictions which can be related for example to a degree of optimism ('orness'). In this section, it will be dealt as well with the practical problem of the fusion of imprecise information through the aggregation of fuzzy numbers, in particular of those representing generalized natural numbers.

Referència: TIC2001-0931. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de tecnologies de la producció i les comunicacions.

Títol: *Análisis y síntesis del movimiento humano mediante técnicas de visión y animación por ordenador.*

Acrònim: ADAN.

Classificació UNESCO: 120318.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: PERALES LÓPEZ, Francisco José.

Categoria: TU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-------------------------------|-----------|-----------------|
| Perales López, Francisco José | TU | 1 |
| González Hidalgo, Manuel | TU | 0.5 |
| Mir Torres, Arnau | TU | 0.5 |
| Mas Sansó, Ramon | TU | 0.5 |
| Colom Muntaner, Guillem | TEU | 1 |
| Mascaró Oliver, Miquel | TEU | 1 |
| Abasolo Guerrero, María José | Visitant | 1 |
| Buades Rubio, Josep M. | Aj. EU | 1 |
| Amengual Alcover, Esperança | Aj. EU | 0.5 |
| Igelmo Ganzo, Ángel | CEU | 1 |
| Fontanet Nadal, Gabriel | TEU | 0.5 |
| Palmer Rodríguez, Pere A. | TEU | 0.5 |
| Mascaró Portells, Miquel | TEU | 0.5 |
| Bibiloni Coll, Antoni | TEU | 0.5 |
| Tous Duran, Pere | As. | 1 |

Investigadors d'altres entitats

| | |
|----------------------|--------------------------------------|
| Escoda Saloni, Josep | Centre d'Alt Rendiment de Sant Cugat |
| Balius Matas, Xavier | Centre d'Alt Rendiment de Sant Cugat |
| Aguiló Pons, Antoni | Conselleria d'Educació i Cultura |
| La Fuente, Diego | EPTRON, SA |

EDP del grup investigador de l'entitat sol·licitant: 11.

Summary

The aim of the proposed project is the design of an integrated system which would enable us to carry out multiple studies on human motion by computer. The system proposed is based on an existing model which allows for the modelization, analysis and simulation of human motion at different levels. Our fundamental aim is -in a reasonable amount of time and, if possible, in real time for some applications- to obtain a 3D model of the person or persons by means of a sequence of grey and/or colour images taken from different viewpoints. With this information we aim to carry out different tasks such as: realistic animation of a person, biomechanical study of sports or dance movements, recognition of a person (face and movements), integration of a virtual humanoid with real characters,

interaction in a person and humanoid immersed environment, robot tracking of a person, etc. This project is the continuation of an existing system (TIC98-0302) in which the main current techniques are brought together in order to carry out the processes of analysis and synthesis of human motion in a common environment.

Referència: DPI2001-2311-C03-02. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de disseny i producció industrial.

Títol: *Plataformas de experimentación en robótica submarina.*

Acrònim: PERSUB.

Classificació UNESCO: 331913, 220990, 331102, 530603, 120304.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: OLIVER CODINA, Gabriel.

Categoria: TU (àrea de coneixement: Arquitectura i Tecnologia de Computadors).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|--------------------------|-----------|-----------------|
| Oliver Codina, Gabriel | TU | 1 |
| Garí Ruiz, Rut | Aj. EU | 1 |
| González Cid, Yolanda | TEU int. | 0.5 |
| Llamosí Casas, Albert | CU | 1 |
| Ortiz Rodríguez, Alberto | TEU | 0.5 |
| Proenza Arenas, Julián | TEU | 0.5 |
| Rigo Vadell, Joan | As. | 0.33 |
| Rocha Cárdenas, Jairo | TEU int. | 0.5 |
| Valverde Garcia, Llorenç | CU | 0.5 |

Investigadors d'altres entitats

Bernat Nicolau, Guillem University of York

EDP del grup investigador de l'entitat sol·licitant: 5.83.

Summary

The current project is basically oriented towards the know-how transfer, as well as basic research aspects and to define the future technological transfer in the field of underwater robotics, as a natural result of the last year's research financed through the CICYT program. The main objectives can be summarised in two blocks:

1. The first block tackles the aspects related to scientific research and know-how transfer. Our proposal consists on putting at the disposal of the scientific community the underwater facilities funded by the CICYT, including the water pool and the underwater vehicles that have been developed by our university. All these resources would be available through Internet to any other university, research centre or private company working on artificial intelligence, automatic control, autonomous navigation, underwater robotics, etc. This part of the project involves research in the fields of artificial intelligence oriented towards autonomous navigation. This approach is based on advanced sensors such as computer vision or inertial navigation systems. Teleoperatio-based communication aspects through Internet will also be tackled.
2. Along with the objectives described above, the present underwater vehicles should be adapted to the requirements of these new objectives, allowing the development of the culture medium to allow the Spanish technology on this field to shortly be on the market.

Referència: TIC2001-0287. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de tecnologies de la informació i les comunicacions.

Títol: *Demostrador adaptatiu reconfigurable de un WLAN para entornos interiores.*

Acrònim: DARWIN.

Classificació UNESCO: 332505.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: FEMENIES NADAL, Guillem.

Categoria: TU (àrea de coneixement: Enginyeria Telemàtica).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-----------------------------|-----------|-----------------|
| Femenies Nadal, Guillem | TU | 1 |
| Huguet Rotger, Llorenç | CU | 0.5 |
| Ferrer Gomila, Josep Lluís | TEU | 0.5 |
| Furió Caldentey, Ignasi | TEU | 1 |
| Carrasco Martorell, Lorenza | TEU int. | 1 |
| Payeras Capellà, Magdalena | Aj. EU | 0.5 |
| Vidal Planas, Josep Lluís | TEU int. | 1 |
| Mut Puigserver, Macià | As. | 0.5 |

EDP del grup investigador de l'entitat sol·licitant: 6.

Keywords: WLAN, UMTS, smart antennas, OFDM, MAC, DLC, handover, security.

Summary

The primary goal of DARWIN is the definition, analysis, simulation and demonstration of a high performance adaptative WLAN (Wireless LAN) providing wireless access to packet switching networks (IP, ATM, UMTS,...). All the subsystems of an equalization, decoding approach, etc., will be jointly optimized. The system will not be optimized in advance but it will adapt itself as a function of the user needs and the changing characteristics of the environment. This is a step towards a software radio, which is presently too far in the future due to technological problems, and goes beyond the state-of-the-art of current mobile communication systems. The project will concentrate on following issues: physical (PHY) and medium access control (MAC) layers, data link control (DLC) protocols, mobility management and security aspects. Another goal of DARWIN will be to go deeply into the theoretical analysis of space-time signal processing schemes, both in base stations and mobile terminals, beamforming techniques for SDMA, coding/decoding schemes including turbo coding, turbo-TCM, space-time codes, multidimensional rotations, MAC protocols, etc. that could be applied to third and fourth generation mobile communications systems (3G/4G). The simulation platform will be based on the use of software tools to perform high-level simulations. Once debugged, these simulation programs will be translated to the VHDL language. Having the VHDL description of the system, an integrated design of programmable logic will be used to implement the system demonstrator. The DARWIN demonstrator will contain six subsystems, namely two mobile terminals (TM), two base stations (EB), ATM switch and control station. This architecture allows for the implementation of two radio cells and, therefore, allows for the evaluation of handover protocols. The radio links and, thus, the integration of physical (PHY), media access control (MAC), data link control (DLC) and network control sublayers with the DARWIN protocol stack, will be simulated using standard DSP, FPGA and/or ASIC boards controlled by using either PCs or a workstation.

Referència: TIC2001-1374-C03-01. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de tecnologies de la informació i les comunicacions.

Títol: *Análisis de las prestaciones de los entornos web.*

Classificació UNESCO: 120318.

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador principal: PUIGJANER TREPAT, Ramon.

Categoria: CU (àrea de coneixement: Arquitectura i Tecnologia de Computadors).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-----------------------------|-----------|-----------------|
| Puigjaner Trepato, Ramon | CU | 0.5 |
| Serra Cifre, Bartomeu Jaume | CU | 0.5 |
| Galmés Obrador, Sebastià | TEU | 0.5 |
| Vidal Rodríguez, Damià | TEU int. | 0.5 |
| Juiz García, Carlos | TEU int. | 0.5 |
| Santamaría Pérez, M. Luisa | TEU | 0.5 |
| Servera Rullan, Guillem | As. | 1 |
| Lladó Matas, Catalina | Aj. EU | 0.5 |
| Erice Ruiz, M. Carmen | TEU | 0.5 |
| Sola Venteo, Antonio | As. | 1 |
| Mañas Florit, Josep | As. | 1 |

EDP del grup investigador de l'entitat sol·licitant: 7.

Keywords: performance analysis, workload characterisation, benchmarking, web environments.

Summary

The growing of internet has led to the development of new services and applications, a e-commerce and multimedia application all of them characterised by a high degree of complexity, heterogeneity and interactivity. Web servers are faced to the increasing number of fast, secure, reliable and highly available service requirements. For giving an answer to these requirements, web servers' design and management should be based on a precise knowledge of their workload. However, workload characterisation requires the existence of real traces of request generated by the different Internet services. After the characterisation of the workload, different predictive performance evaluation techniques can be used. In this case we will use benchmarking and modelling. The Transaction Processing Performance Council (TPC) has defined the TPC-W, the first benchmark oriented to web environments (servers), that simulate e-commerce activities. The goal of the TPC benchmarks is to provide the industry with relevant and objective performance data. The benchmark results are very dependent on the workload, on the specific requirements, design and implementation of the application. So, the TPC-W should not replace an application specific benchmark if important decisions should be based on its measurements. This is the reason for developing a configurable and parametrised benchmark for evaluating the web server's performance when they are processing workloads different to those defined by the TPC-W. as for e-learning, e-work, e-mail, etc.

From the statistical workload characterisation it is intended to develop a workload generator to be used as input to a generic model of a web server. This model will be used in the study of alternative web and proxy architectures.

PARTICIPACIONS A ALTRES PROJECTES

Referència: BFF2000-0841. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Textos especializados y terminología: selección y recuperación automática de la información.*

Acrònim: TEXTERM.

Investigadora responsable: CABRÉ CASTELLVÍ, M. Teresa.

Centre: Universitat Pompeu Fabra.

Investigadora de la UIB: DELGADO DOMÍNGUEZ, Adelaida.

Categoria: TEU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

Inici: 2001. **Fi:** 2003.

Referència: TIC2000-1191. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de tecnologies de la informació i de les comunicacions.

Títol: *Sistema de recuperación de información con control terminológico y discursivo.*

Acrònim: RICOTERM.

Investigadora principal: LORENTE CASAFONT, Mercè.

Centre: Universitat Pompeu Fabra.

Investigadora de la UIB: DELGADO DOMÍNGUEZ, Adelaida.

Categoria: TEU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

Inici: 2001. **Fi:** 2003.

Referència: VII.19. CYTED.

Títol: *Recuperación de información y bibliotecas digitales.*

Acrònim: RIBIDI.

Investigador principal: BAEZA-YATE, Ricardo.

Centre: Universitat de Xile.

Investigadora de la UIB: DELGADO DOMÍNGUEZ, Adelaida.

Categoria: TEU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

Inici: 2001. **Fi:** 2003.

DEPARTAMENT DE DRET PRIVAT

Referència: PB98-0169. Programa sectorial de promoció general del coneixement.

Títol: *Aspectos jurídicos de la seguridad en el comercio electrónico; en particular, estudio de la firma electrónica y las autoridades de certificación.*

Classificació UNESCO: 5699.

Centre: Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

Investigadora responsable: MARTÍNEZ NADAL, Apol·lònia.

Categoria: TU (àrea de coneixement: Dret Mercantil).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|----------------------------|------------------|----------------------------|
| Martínez Nadal, Apol·lònia | TU | 16 |
| Alcover Garau, Guillem | CU | 16 |
| Huguet Rotger, Llorenç | CU | 16 |
| Ferrer Gomila, Josep Lluís | TEU | 16 |
| Blas Guasp, Javier | As. | 16 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 2.

Keywords: electronic commerce, electronic signature, certification authorities, certificates.

Summary

Study of security in electronic commerce because of the problems of authentication, integrity, confidentiality and repudation in electronic communications developed through open and insecure channels. Electronic signature in general, and digital signature in particular, as instrument of security. Necessity of certificates and certification authorities as complement of electronic signature in order to obtain a secure electronic commerce; objective aspects: the cycle of life of certificates; subjective aspects: certification entity, subscriber and relying party. Study of juridic and technical aspects about these new concepts.

Referència: BJU2000-0280. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *La protección de los consumidores en los contratos de alojamiento turístico.*

Acrònim: PC CAT.

Classificació UNESCO: 560502.

Centre: Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: [COCA PAYERAS, Miquel](#).

Categoria: CU (àrea de coneixement: Dret Civil).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|--------------------------------------------|------------------|------------------|
| Coca Payeras, Miquel | CU | Única |
| Munar Bernat, Pedro A. | TU | Única |
| Llodrà Grimalt, Francesca | Aj. EU | Compartida |
| Verdera Izquierdo, Beatriz | Aj. EU | Compartida |

Nombre total d'investigadors de la UIB: 4.

Keywords: protection of the consumers, turistic acommodation.

Summary

The project aims to study some of the most legal aspects to protect the consumers in the turistic acommodation contracts. The first field of research analyse the protection system of the spanish normative. The second fiel fo research refers to the European Community normative an to try to harmonize the contract of this sector. Finally, the third aspect that is going to be developed is a concret study of the last legal spanish normative (Act 42/1998, of 15 december, about time-sharing and Act 7/1998, of 13 April, of contract terms and others acts that will be promulgate, RD 515/1989, of information in the contract of letting.

Referència: BJU2000-0974. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *La adaptación del derecho de familia propio de las islas Baleares a la nueva realidad social.*

Acrònim: ADF IB.

Classificació UNESCO: 560502.

Centre: Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

Investigadora responsable: [FERRER VANRELL, M. Pilar](#).

Categoria: CU (àrea de coneixement: Dret Civil).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|--------------------------------------------|------------------|------------------|
| Ferrer Vanrell, M. Pilar | CU | Única |
| Vila Ribas, M. del Carme | TU | Compartida |
| Llodrà Grimalt, Francesca | Aj. EU | Compartida |
| Verdera Izquierdo, Beatriz | Aj. EU | Compartida |

Nombre total d'investigadors de la UIB: 4.

Keywords: economic matrimonial rules, living more uxorio, single family.

Summary

This project deals with the analysis of the regulation of the family law and it has the objective of studying the adaptation of the family law of the Balearic Islands to the new reality in this issues. In this project we begin the study of the sentence of the *Tribunal Superior de Justicia de las islas Baleares*, of the 3th September of 1998, where the Court studies the article 1320 of the Spanish Civil Code.

Referència: BJU2002-00499. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional d'I+D orientada.

Títol: *Estudio interdisciplinar de las responsabilidades de los proveedores de información en internet. Problemas de segunda generación: los límites de la neutralidad tecnológica.*

Acrònim: RPII.

Centre: Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: CAVANILLAS MÚGICA, Santiago José.

Categoria: CU (àrea de coneixement: Dret Civil).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació |
|------------------------------------|-----------|-----------|
| Cavanillas Múgica, Santiago José | CU | 1 |
| González de Alaiza, José Javier | Aj. U | 0.33 |
| Payeras Capellà, Magdalena | TEU int. | 0.33 |
| Feliu Álvarez de Sotomayor, Silvia | Aj. U | 0.33 |
| Garau Sobrino, Federico F. | TU | 0.33 |
| Huguet Rotger, Llorenç | CU | 0.33 |
| Tur Faúndez, María Nélica | TU | 0.33 |
| Grimalt Servera, Pedro | TU | 0.33 |
| Quintero Olivares, Gonzalo | CU | 0.33 |
| Iglesias Portela, M. José | B | 1 |

Investigadors d'altres entitats

Valero Torrijos, Julián Universitat de Murcia

EDP del grup investigador de l'entitat sol·licitant: 4.64.

Summary

The research project starts with the existence of a specific regulation of the liability of electronic intermediaries in the LSSICE (presently it is a Draft Law, however and without any doubts, it will be already Law at the moment of the beginning of this project). The purpose of this research project is not to analyse such system of liability, that has been already discussed enough, but to deal with the so-called «problems of second generation». The limited liability of electronic intermediaries (mere conduit, caching and hosting) relies on its technological neutrality. The aim of this project is to mark the borders of such «technological neutrality» and to analyse the liabilities of all those services of the information society which are placed further than those borders.

The approach to the above issues, not only in its delimitation but also in its system, will be interdisciplinary. The detection and description of the «border» services of the information society (portals, vortals, electronic agents, search engines increasingly intelligents, directories, etc.) will be developed with the participation of experts in Computers and Telecommunications. The analysis of its legal system will be multilateral, as it could imply: a) criminal, civil and patrimonial liability of the Public Administration; b) application of special systems of liability (intellectual property rights, rights of the legal status of a person, data protection, consumer protection, industrial property rights and unfair competition, etc.); c) the existence of involvements referred to International Private Law, concerning competent jurisdiction as well as applicable law.

Referència: SEC2002-04384-C02-02. Ministeri de Ciència i Tecnologia.

Modalitat: Programas nacionales de I+D orientada.

Títol: *El nuevo derecho concursal español.*

Acrònim: NDCE.

Centre: Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: [ALCOVER GARAU, Guillem](#).

Categoria: CU (àrea de coneixement: Dret Mercantil).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació |
|----------------------------------------------|------------------|------------------|
| Alcover Garau, Guillem | CU | 0.5 |
| Mateo Hernández, José Luis | TEU int. | 1 |
| Flaquer Riutort, Joan | TU | 0.5 |
| Martínez Cañellas, Anselm M. | TEU int. | 1 |
| Arbona Femenia, Miquel | As. | 1 |
| Oliver Barceló, Santiago | As. | 1 |
| Nadal Gómez, Irene | Aj. U | 0.5 |
| Conde Tejón, Antonio | Aj. U | 1 |

EDP del grup investigador de l'entitat sol·licitant: 6.5.

Referència: PB98-1468-C02-02. Programa sectorial de promoció general del coneixement.

Títol: *La reforma de la justícia civil. Incidencia en los procesos de otros órdenes jurisdiccionales. Estudios preparatorios para su aplicación.*

Classificació UNESCO: 520402.

Centre: Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

Investigadora responsable: [TAPIA FERNÁNDEZ, Isabel](#).

Categoria: CU (àrea de coneixement: Dret Processal).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-----------------------------------------|------------------|----------------------------|
| Tapia Fernández, Isabel | CU | 32 |
| López Simó, Francisco | TU | 16 |
| Nadal Gómez, Irene | Aj. U | 16 |

Nombre total d'investigadors de la UIB: 3.

Total EJC/setmana: 1,6.

Referència: BJU2002-04544-C02-01. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Reforma del proceso penal español.*

Acrònim: REFPROCPEN.

Centre: Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

Investigadora responsable: [TAPIA FERNÁNDEZ, Isabel.](#)

Categoria: CU (àrea de coneixement: Dret Processal).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació |
|-----------------------------------------|------------------|------------------|
| Tapia Fernández, Isabel | CU | 1 |
| Nadal Gómez, Irene | Aj. U | 0.5 |
| López Simó, Francisco | TU | 1 |
| Arrom Loscos, Rosa | CEU int. | 1 |

EDP del grup investigador de l'entitat sol·licitant: 3.5.

AJUDES A PROJECTES D'INVESTIGACIO DEL CENTRE D'INVESTIGACIO I TECNOLOGIES TURISTIQUES DE LES ILLES BALEARS (CITTIB)

Títol: *La protección del turista como consumidor.*

Centre: Departament de Dret Privat. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: TORRES LANA, José Ángel.

Categoria: CU (àrea de coneixement: Dret Civil).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-----------------------------|-----------|---------------------|
| Torres Lana, José Ángel | CU | 24 |
| Blasco Esteve, Avel·lí | CU | 8 |
| Huesa Vinaixa, M. Rosario | CU | 8 |
| Tur Faúndez, María Nélide | TU | 24 |
| Socias Camacho, Joana Maria | TU int. | 8 |
| Janer Torrens, Joan David | Aj. U | 8 |

Nombre total d'investigadors de la UIB: 6.

Total EJC/setmana: 2.

Summary

The project tries to design what is the legal and judicial system of tourist protection as a consumers in European ground, from three different territorial levels and two institutional basis. Those three levles are those of EU legal system, the spanish one and the concerning to autonomical communities. This institutional basis deal about the analysis of the several Acts on the topic, and the study of judicial decissions and sentences on the matter.

DEPARTAMENT DE DRET PÚBLIC

Referència: PB98-0165-C02-01. Programa sectorial de promoció general del coneixement.

Títol: *Propiedad intelectual, propiedad industrial y nuevas tecnologías en el ámbito jurídico penal.*

Classificació UNESCO: 5699.

Centre: Departament de Dret Públic. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: [QUINTERO OLIVARES, Gonzalo](#).

Categoria: CU (àrea de coneixement: Dret Penal).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|--------------------------------------------|------------------|----------------------------|
| Quintero Olivares, Gonzalo | CU | 32 |
| Garcia Solé, Marc | | 32 |

Nombre total d'investigadors de la UIB: 1.

Total EJC/setmana: 0,8.

Keywords: intellectual property, industrial propriety, new technologies, penal project leader.

Summary

Our research project is aimed at studying the limits to the criminal and civil action upon the intellectual and industrial property rights exploited by telematic means and specially over the Internet. In order to do so, we need first to focus on the means through which this exploitation is conducted, which presents in itself several juridical problems due to a generalized *anomia* and the usage developed by web-operators. This study also includes the structure of the service providers as well as their responsibility regime. Once this first step is concluded, we will study the different domestic laws on the protection of industrial and intellectual property as well as on the protection of data and intimacy. Afterwards, we will focus on the several infringing conducts developed and the civil and criminal responsibility regimes applicable to them.

Referència: BJU2002-00559. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Derechos humanos, responsabilidad internacional y seguridad colectiva: intersección de sistemas.*

Acrònim: DHRISCIS.

Centre: Departament de Dret Públic. Edifici Gaspar Melchor de Jovellanos.

Investigadora responsable: [HUESA VINAIXA, M. Rosario](#).

Categoria: CU (àrea de coneixement: Dret Internacional Públic i Relacions Internacionals).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació |
|-------------------------------------------|-----------|-----------|
| Huesa Vinaixa, M. Rosario | CU | 1 |
| Rupérez Cornell, Pilar | TEU int. | 1 |
| Janer Torrens, Joan David | Aj. U | 1 |
| Capellà Roig, Margalida | Aj. EU | 1 |

Investigadors d'altres entitats

| | |
|-------------------------------------------|-----------------------------------|
| Torres García, Carmen I. | Universitat de Castilla-La Mancha |
| Forcada Barona, Ignacio | Universitat de Castilla-La Mancha |
| Quel López, Francisco J. | Universitat del País Basc |
| Martínez Carmena, María | Universitat de Castilla-La Mancha |
| Soroeta Licerias, Juan | Universitat del País Basc |
| Bollo Arocena, María D. | Universitat del País Basc |
| Fernández Tomás, Antonio | Universitat de Castilla-La Mancha |
| Sánchez Legido, Ángel | Universitat de Castilla-La Mancha |
| Ortega Terol, Juan Miguel | Universitat de Castilla-La Mancha |
| Ferrer Lloret, Jaume | Universitat d'Alacant |

EDP del grup investigador de l'entitat sol·licitant: 4.

Summary

The project's aim is to identify the areas of coincidence, intersection or collision of the three international systems which come into play when there is a serious and massive violation of human rights or humanitarian international law. Those systems are: individual's international criminal responsibility, State's international responsibility and the coercive action under Chapter VII of the UN Charter. The aim of the project is to study and identify the problems implied by the coexistence of this three systems within the international legal framework, both from a legal and technical point of view; the analysis of malfunctions, its causes and consequences; the interference and interactions among systems and the raising of proper solutions, taking into account the safeguard of international security and the need to promote the concepts of Justice and Rule of Law at international level. The project plans to analyse the most recent developments in the three areas mentioned above and the existing points of coincidence. The most important objectives are the analysis of the problems which have arisen, the simultaneousness of State and individuals responsibility, the incidence of the competences of the UN Security Council over the mechanisms of effectiveness of State and individual responsibility, and the scope of institutional and non-institutional coercion and the existing restraints in order to protect human rights.

PARTICIPACIONS A ALTRES PROJECTES

Referència: PB98-1027. Programa sectorial de promoció general del coneixement.

Títol: *Los intereses de España, y los desarrollos recientes y pendientes en el derecho internacional del mar.*

Investigador responsable: CASADO RAIGON, Rafael.

Centre: Universitat de Córdoba.

Investigadora de la UIB: HUESA VINAIXA, M. Rosario.

Categoria: CU (àrea de coneixement: Dret Internacional Públic i Relacions Internacionals).

Total EJC/setmana: 0,4.

Inici: 1999. **Fi:** 2002.

DEPARTAMENT D'ECONOMIA I EMPRESA

Referència: BEC2001-2552-C03-03. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Estructura organizativa y gobierno de la empresa española.*

Classificació UNESCO: 531103.

Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: [CRESPÍ CLADERA, Rafael](#).

Categoria: TU (àrea de coneixement: Economia Financera i Comptabilitat).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------------------------|-----------|-----------------|
| Crespí Cladera, Rafael | TU | 1 |
| Lozano Arnica, Gonzalo | TU | 1 |
| Munar Muntaner, Esperança | CEU | 1 |
| Calveras Maristany, Aleix | TEU int. | 1 |
| Solà Belda, Carles | TEU int. | 1 |
| Pascual Fuster, Bartomeu | TEU int. | 1 |
| Alemany Hormaeche, Margalida | TEU | 1 |
| Deyà Tortella, Bartomeu | Aj. EU | 1 |
| Orfila Sintés, Francesca M. | Aj. EU | 1 |
| Rivas Yarza, Pedro Antonio | TEU | 1 |
| Massot Perelló, M. Magdalena | TEU | 1 |

EDP del grup investigador de l'entitat sol·licitant: 11.

Keywords: organizational design, property issues, financing, corporate governance, competitiveness.

Summary

This research programme focuses on the study on the study of Spanish enterprises and it deals, from a microeconomic perspective, with different organizational factors that might favor their competitiveness. We combine empirical analysis with theoretical models already contrasted in economic analysis. The efficiency and competitiveness of our enterprises are conditioned, among other factors, by the organizational solutions which the enterprises themselves adopt for their internal configuration, the legal norms in use where the enterprises carry out their activity and, specially, the regulations related to the financial and labour markets. This complexity has been in the past the main reason for developing various lines of complementary research in these fields, which we intend to continue in this project and extend to the analysis of some related topics. Specifically, we propose to continue the analysis in depth of the consequences that different financial and corporate governance structures have on firm's efficiency, human resource management or the protection that legal norms offer to the creditors. Furthermore, we pretend to extend our analysis to include also topics such as the organization of R&D activities, or the implementation of organizational changes that allow the enterprise to better adapt to the important technological changes it has to face nowadays.

Referència: SEC2002-01512. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Análisis de la fidelidad y de la estacionalidad como puntos críticos de la fase de post-estancamiento de los destinos turísticos maduros de sol y playa.*

Acrònim: AFEDM.

Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.

Investigadora responsable: [JUANEDA SAMPOL, C. Nativitat](#).

Categoria: CU (àrea de coneixement: Economia Aplicada).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------------------------|------------------|------------------------|
| Juaneda Sampol, C. Nativitat | CU | 1 |
| Parera Nicolau, M. Antònia | Aj. EU | 0.5 |
| Cladera Munar, Magdalena | Aj. EU | 1 |
| Alegre Marín, Joaquín | TU | 1 |
| Matas Mir, Antoni | TEU int. | 1 |
| Rosselló Nadal, Jaume | TEU int. | 1 |
| Sansó Rosselló, Andreu | TU | 0.33 |
| Pou Garcias, Llorenç | TEU int. | 1 |

EDP del grup investigador de l'entitat sol·licitant: 6.83.

Summary

Some of the mediterranean sun and sand tourist resorts, like the Balearic Islands, are often presented as cases of environmental and economic decline. Their history is linked to mass holiday resorts and to policies based on price competition. As a result of the appearance of a new type of consumer (more aware of environment issues, more sophisticated, and with a taste for more tailor-made products), these tourists resorts are considered to be in a post-stagnation phase, characterised by the progressive disappearance of their competitive advantages. We believe that the analysis of the weaknesses and strengths of the sun and sand model is a necessary first step to a guide for the design of public policies and business strategies to facilitate its survival. In this project, two key elements of the tourist demand are analysed: loyalty and demand seasonality. On one hand, loyalty to a particular holiday resort can be thought of as one of the basic elements of the success of any tourism model. On the other hand, seasonality imposes important limitations on the tourism structure, together with a high pressure on natural resources. Therefore, it is particularly important to find out which are the seasonal characteristics of tourism and to analyse the possibilities of enhancing tourism demand out of high season. A better understanding of the behaviour of new consumers should help the detection of new market segments which, in turn, will prove useful to the reorientation of the sun and sand model. Without any doubt, loyalty and demand seasonality are two crucial issues to the study of that behaviour. Even though the analysis proposed here is based on the particular case of the Balearic Islands, the lessons obtained from it will provide a useful tool for the future planning of the tourism policy of other Mediterranean tourist resorts.

Referència: SEC2002-02606. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Microsimulación y análisis de las políticas públicas: redistribución e incentivos.*

Acrònim: INCRESIM.

Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: SPADARO, Amedeo.

Categoria: TU (àrea de coneixement: Economia Aplicada).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------------|-----------|-----------------|
| Spadaro, Amedeo | TU | 0.5 |
| Sansó Rosselló, Andreu | TU | 0.33 |
| Rosselló Villalonga, Joan Carles | TU int. | 1 |
| Tugores Ques, Maria | TU int. | 0.5 |
| Oliver Rullan, Francesc | Aj. EU | 1 |
| Cardona Coll, Daniel | TU int. | 0.5 |
| Parera Nicolau, M. Antònia | Aj. EU | 0.5 |

Investigadors d'altres entitats

| | |
|------------------------|-----------------------------------|
| Del Rey Canteli, Elena | Universitat de Girona |
| Arrondel Arrondel, Luc | DELTA |
| Badenes Plá, Nuria | Universitat Complutense de Madrid |

EDP del grup investigador de l'entitat sol·licitant: 4.33.

Summary

Since the 1970s there has been a growing concern in Western societies regarding the performance and the re-design of tax-benefit systems. At the same time the process of European integration activates by itself forces that lead to the harmonisation of country-specific taxation systems. The task of designing, governing and evaluating these processes requires specific data-sets and modelling tools. This proposal has two main objectives. The first one is to homogenize internationally the construction of tax-benefits models for EU countries including, in a robust way, agent's behaviour reactions previously estimated on household budget surveys. The second one is to evaluate, using the behavioural micro simulation models previously developed, fiscal and social policies in Spain and to compare it with others EU countries.

PARTICIPACIONS A ALTRES PROJECTES

Referència: PB98-0030. Programa sectorial de promoció general del coneixement.

Títol: *Liquidez, microestructura y gestión de riesgos.*

Investigador responsable: PEÑA SÁNCHEZ DE RIVERA, Juan I.

Centre: Universitat Carlos III de Madrid.

Investigadora de la UIB: PASCUAL GASCÓ, Robert.

Categoria: TU int. (àrea de coneixement: Economia Financera i Comptabilitat).

Total EJC/setmana: 0,4.

Inici: 1999. **Fi:** 2002.

**AJUDES A PROJECTES D'INVESTIGACIO DEL CENTRE D'INVESTIGACIO I
TECNOLOGIES TURISTIQUES DE LES ILLES BALEARS (CITTIB)**

Títol: *Estructura contractual i qualitat de gestió mediambiental. Implicacions per a la competitivitat de la indústria hotelera balear.*

Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: [CRESPÍ CLADERA, Rafael](#).

Categoria: TU (àrea de coneixement: Economia Financera i Comptabilitat).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|---------------------------------------------|------------------|----------------------------|
| Crespí Cladera, Rafael | TU | 32 |
| Rivas Yarza, Pedro Antonio | TEU | 32 |
| Calveras Maristany, Aleix | TEU int. | 32 |
| Solà Belda, Carles | TEU int. | 32 |
| Orfila Sintès, Francesca M. | Aj. EU | 32 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 4.

Keywords: quality management, ownership structure, environmental sustainability.

Summary

The present research project (which enjoys partial financing through DGES projects) proposes to undertake a detailed analysis of two complementary issues of great importance for the Balearic hotel (and tourist) industry. The project will analyze, from an empirical and theoretical perspective, the ownership structure and, more specifically, the contractual form and structure existing in the Balearic hotel industry. We propose to start doing an empirical analysis of the ownership structures and its contractual forms. To do so we pretend to use the infrastructure and resources (data, contacts,...) of CITTIB, doing also a detailed analysis of these contractual forms (including existing contract clauses) in the Balearic hotel industry. Next, we will undertake a theoretical analysis identifying the determinants (economic, legal,...) of the contractual structures, and its implications, both for hotel management and for the design of regulation and promotion of the Balearic hotel sector. The second research issue of this project lies within this context of analysis of hotel management and design of regulation: the study of environmental management systems (SGM). A crucial factor in the development and competitiveness in the medium and long term of the tourist industry (and the hotel sector) lies in the consideration by industry managers of environmental aspects, and SGM are part of it. Thus, the project aims at studying (from the double theoretical and empirical perspective) in line with Govern Balear projects such as ECOTOUR, the application of SGM undertaken until today by the Balearic hotel (and tourist) industry. This analysis includes considering the incentives (via product differentiation or cost reduction) which have hotel managers to undertake this application. This will allow providing specific policy recommendations with the goal of promoting an internalization by hotel managers of environmental issues. Both objectives are related to the extent that the design of competitive strategies based in the implementation of SGM are conditioned to the contractual form which relates ownership and management.

Títol: *Aplicació dels sistemes de gestió i de comptabilitat medi ambientals al sector turístic.*

Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: SOCIAS SALVÀ, Antoni.

Categoria: CU (àrea de coneixement: Economia Financera i Comptabilitat).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|----------------------------|------------------|----------------------------|
| Socias Salvà, Antoni | CU | 32 |
| Llull Gilet, Antoni | TEU | 32 |
| Perelló Julià, Miquel | TEU int. | 32 |
| Aleñar Rebassa, Margalida | Aj. EU | 32 |
| Horrach Rosselló, Patrícia | Aj. EU | 32 |
| Larrinaga González, Carlos | | 32 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 4.

Keywords: environmental accounting, environmental management, tourism, sustainability.

Summary

The economy of the Balearic islands depends in a fundamental way on the tourist trade. The protection of the environment and the achievement of a model of sustainable growth constitute real survival challenges for the tourist industry, as the quality of the environment of a tourist destination is a key factor in choosing among competing holiday destinations. This project intends to diagnose what the situation of our tourist enterprises is -in terms of facts and attitudes- with regards to environmental management, the incorporation of environmental variables into their accounting systems and their release of relevant information to the public.

The main aims of the project are:

- to find out about our tourist enterprises perceptions with respect to their relationship with the environment and the position they adopt as organisations;
- to research their attitudes with regards to the implementation of environment management procedures and the release of relevant accounting information, as well as to assess the degree of their actual implementation;
- to analyse the environmental content of the external information made public by the enterprises;
- to apply the case study method to a concrete tourist municipality as a means to allow the study of environmental problems that go beyond the microeconomic level.

The study will enable us to detect the advantages and disadvantages taken into account by the enterprises, their resistance to change and the main difficulties. We will conclude with a realistic proposal that contributes to improve the implementation of standard systems of environmental management and accounting, with special reference to the European Union's EMAS System and the Decree of the Government of the Balearics which applies it to the tourist industry.

Títol: *Estimació de la demanda dels atributs ambientals que sustenten les activitats turístiques d'allotjament.*

Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: AGUILÓ PÉREZ, Eugeni.

Categoria: CU (àrea de coneixement: Economia Aplicada).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-------------------------------|------------------|----------------------------|
| Aguiló Pérez, Eugeni | CU | 16 |
| Riera Font, Antoni | TU | 16 |
| Aguiló Segura, Paula Maria | TEU | 32 |
| Monfar Palou, Carles | TEU | 32 |
| Alcover Casasnovas, Antoni L. | TEU int. | 32 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 3,2.

Keywords: environmental valuation, hedonic prices.

Summary

The hedonic hypothesis tells us that goods and services are valued for their utility bearing attributes or characteristics. From this hypothesis we can accept that the choice of an individual depend on structural characteristics of the services and on the quality of the environment which they take place. Therefore, it would be correct to use the hedonic prices valuation technique to approach us to the economic valuation that tourists suggest for the environmental attributes, which are relevant for the tourist activities of lodging. Then we will be able to value the significance of the environmental attributes in the choice of lodging establishments (hotel, apartment,...) to specify the demand of these attributes and to rationalise the public policies and private strategies in the tourists lodging sector. To show the applicability of this methodology we will make a study of a tourist area of the Balearic Islands.

Títol: *Models de creixement sostenible i problemes de transició a l'economia de les illes Balears.*

Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: REY-MAQUIEIRA PALMER, Javier.

Categoria: TU (àrea de coneixement: Economia Aplicada).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-----------------------------|------------------|----------------------------|
| Rey-Maqueira Palmer, Javier | TU | 32 |
| Lozano Ibáñez, Fco Javier | TEU | 32 |
| Matas Mir, Antoni | TEU int. | 32 |
| Spadaro, Amedeo | TU | 32 |
| Ramos Mir, Vicenç | Aj. EU | 32 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 4.

Summary

Our research project aims to clarify and give analytical soundness to the current debate over the proper tourist development strategy for the Balearic Islands. We believe that this aim requires, as a first step, to analyse the sustainability of different tourist development strategies from a long-run perspective. In order to do this, we should consider the close dependence of the tourist sector on competitiveness factors other than the price, specially its dependence on the environmental quality. Our aim would demand several targets. Firstly, the concept of sustainability should be clarity. Thirdly, the previous findings ought to be used in order to evaluate different public intervention alternatives aimed at sustainability. As a second step, our purpose is to shed light on the possible transition and readjustment costs of a change in the tourist development strategy. We would focus on the short-run effects on the labour market coming from changes in the size and composition of the tourist offer, such us changes in wages and unemployment, mismatch between labour skills and labour demand and so on.

**DEPARTAMENT DE FILOLOGIA CATALANA
I LINGÜÍSTICA GENERAL**

Referència: BFF2000-1268. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Edición del Llibre de Déu, de Ramon Llull.*

Acrònim: ELDRL.

Classificació UNESCO: 6202, 7204, 5506.

Centre: Departament de Filologia Catalana i Lingüística General. Edifici Ramon Llull.

Investigador responsable: [ROSSELLÓ BOVER, Pere](#).

Categoria: TU (àrea de coneixement: Filologia Catalana).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-----------------------------------------------------|------------------|------------------|
| Rosselló Bover, Pere | TU | Única |
| Ensenyat Pujol, Gabriel | TU | Única |
| Bonner, Anthony | | Compartida |
| Alomar Canyelles, Antoni Ignasi | As. | Única |
| Mesquida Cantalops, Joan Antoni | TEU | Compartida |
| Amengual Bunyola, Guillem Alexandre | As. | Única |

Nombre total d'investigadors de la UIB: 5.

Keywords: lullism, edition of texts.

Summary

Preparation of a critical edition of the *Llibre de Déu*, by Ramon Llull, which consist of three works: *Llibre del és de Déu*, *Llibre de la coneixença de Déu* and *Llibre de Déu*.

Referència: BFF2001-0362. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Análisis y edición del Bolletí del Diccionario de la Lengua Catalana (1901-1936).*

Acrònim: BDLC.

Classificació UNESCO: 570503.

Centre: Departament de Filologia Catalana i Lingüística General. Edifici Ramon Llull.

Investigador responsable: [DOLS SALAS, Nicolau](#).

Categoria: TEU (àrea de coneixement: Filologia Catalana).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------------------------|------------------|------------------------|
| Dols Salas, Nicolau | TEU | 1 |
| Miralles Monserrat, Joan | CU | 0.33 |
| Grimalt Gomila, Josep Antoni | TU | 0.33 |

EDP del grup investigador de l'entitat sol·licitant: 1.66.

Keywords: linguistics, lexicography, romance languages.

Summary

First initiated by Antoni M. Alcover in 1901, the *Bolletí del Diccionario de la Lengua Catalana* was envisaged as a to circulate ideas between the editor and fieldworkers. The dictionary, finally published in 1962 as *Diccionari Català-Valencià-Balear* collected both vocabulary and aspects of folk culture from all over Catalan-speaking areas. Forms, meanings, sources, etymologies, pronunciation, sayings, dialects and cultural information intending to complete general understanding of words are included in this work. For its length (10 volumes with 9737 pages), conception and quality this dictionary is well known as one of the most outstanding works in romance lexicography. The *Bolletí del Diccionario de la Lengua Catalana* is especially interesting on two different grounds: (i) the information it provides on data collection and selection, and (ii) for the large amount of information it supplies on major trends in early century linguistics, mainly because of articles included for fieldworkers training and for theoretical discussion it can be worth taking into accounts that this first spanish journal on philology conveys a good number of contributions signed by foreign philologists like Bernard Schädel, Jean Joseph Saroïhandy, Wilhelm Meyer-Lübke, Alfred Morel-Fatio, among others. It is in this project to investigate methodological issues that led to the production of the *Diccionari Català-Valencià-Balear*, among with its theoretical foundations through a thorough analysis of the *Bolletí del Diccionario de la Lengua Catalana*. The aims and methodology that we propose below are expected to implement resources for the investigation of individuals involved either in fieldwork related to or the edition of the dictionary, as well as to increase knowledge of it sources (both archives and literary sources investigated during fieldwork). Another benefit of this project will be a critical edition of theoretical articles appeared in the journal under investigation. An important advantage point for researchers in this project is the fact that the Alcover-Moll legacy (including the whole of dictionary files and the correspondence generated by the *Bolletí*) has recently been placed in their university.

**DEPARTAMENT DE FILOGIA ESPANYOLA,
MODERNA I LLATINA**

Referència: BFF2000-1068. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Estudio y edición crítica de las obras teatrales inéditas de Diego de Torres Villarroel (Salamanca, 1694-1770).*

Classificació UNESCO: 6202.

Centre: Departament de Filologia Espanyola, Moderna i Llatina. Edifici Ramon Llull.

Investigador responsable: [GARAU AMENGUAL, Jaume](#).

Categoria: TU (àrea de coneixement: Literatura Espanyola).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-------------------------------------------------|------------------|------------------|
| Garau Amengual, Jaume | TU | Única |
| Madroñal Duran, Abraham | TU int. | Única |
| Monterrubio Prieto, Juan Miguel | TEU | Única |
| Servera Baño, Josep | CU | Única |

Nombre total d'investigadors de la UIB: 4.

Keywords: critical edition, Diego de Torres Villarroel, plays.

Summary

The aim of this project is to carry out a study, catalogue and critical edition of the works by Diego Torres de Villarroel (Salamanca, 1694-1770), which remain unstudied, unpublished or practically unknown. An important part of this project will consist in the study of this author's short plays including short farces such as *El duende*, or *El médico sordo y el vecino gangoso* and the following one-act farces *El poeta*, *Los gitanos*, *La peregrina*, *El valentón*, *La tabernera de la puerta de Vilamayor* or *La ronda del uso*, in addition to other works such as *La zarzuela del juicio de París*, *El hospital en que Amo se cura*, *Juguetes de Talía* (Salamanca, 1738) and such curious predictions as *La casa del ensayo de las comedias* (Madrid, 1755).

Referència: BFF2001-0916. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Los textos como fuente de información pragmática: estudio de la gestualidad en la antigüedad romana.*

Acrònim: TFIPEGAR.

Classificació UNESCO: 5705.

Centre: Departament de Filologia Espanyola, Llatina i Moderna. Edifici Ramon Llull.

Investigador responsable: [FORNÉS PALLICER, M. Antònia](#).

Categoria: TU (àrea de coneixement: Filologia Llatina).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------------------------|------------------|------------------------|
| Fornés Pallicer, M. Antònia | TU | 0.5 |
| Bosch Juan, M. Carme | CU | 1 |

Investigadors d'altres entitats

| | |
|------------------------------------------------|--------------------------|
| Quetglas Nicolau, Pere J. | Universitat de Barcelona |
| Cabré Lunas, Laura | Universitat de Barcelona |
| Espinilla Buisán, Empar | Universitat de Barcelona |
| González Páez, Carmen | Universitat de Barcelona |
| Nofre Maíz, Montserrat | Universitat de Barcelona |
| Puig Rodríguez-Escalona, Mercè | Universitat de Barcelona |
| Iranzo Abellán, Salvador | Universitat de Barcelona |

EDP del grup investigador de l'entitat sol·licitant: 1.5.

Keywords: linguistics, latin, pragmatics, gesture.

Summary

This project deals with pragmate positioning and, specifically, with gesture. It intends to analyze as completely as possible, gesture in the Roman world. This research aims to establish a corpus when includes the descriptive literary and the iconographic fields, which are well differentiated. Taking these data as starting point, it will be possible to reveal the existence of gesture, to define it and to classify it.

PARTICIPACIONES A ALTRES PROJECTES

Referència: PB98-1274. Programa sectorial de promoció general del coneixement.

Títol: *Corpus de poéticas en España (siglos XVIII-XIX-XX). Estudio y edición.*

Investigador responsable: SORIA OLMEDO, Andrés.

Centre: Universitat de Granada.

Investigadors de la UIB:

[DÍAZ DE CASTRO, Francisco J.](#)

Categoria: CU (àrea de coneixement: Literatura Espanyola).

Total EJC/setmana: 0,4.

[DEL OLMO ITURRIARTE, Almudena.](#)

Categoria: TU (àrea de coneixement: Literatura Espanyola).

Total EJC/setmana: 0,4.

Inici: 1999. **Fi:** 2002.

Referència: TEL99-0335-C04-01. Programa nacional d'aplicacions i serveis telemàtics.

Títol: *Biblioteca virtual de textos españoles del Siglo de Oro accesibles vía internet.*

Subproyecto 1: Edición digital y base de datos de las obras de emblemática traducidas al español.

Investigadora responsable: LÓPEZ POZA, Sagrario.

Centro: Universitat de La Coruña.

Investigador de la UIB: [BERNAT VISTARINI, Antonio.](#)

Categoria: TU (àrea de coneixement: Literatura Espanyola).

Total EJC/setmana: 0,4.

Inici: 1999. **Fi:** 2002.

Referència: BFF2001-1593. Programa sectorial de promoció general del coneixement.

Títol: *Principales aspectos de la entonación del discurso en español. Estudio experimental de las unidades prosodicas del discurso y sus funciones.*

Investigadora responsable: ELORDIETA ALCIBAR, Gorka.

Centro: Universitat del País Basc.

Investigadora de la UIB: [ROMERA CIRIA, Maria Magdalena.](#)

Categoria: Aj. U (àrea de coneixement: Llengua Espanyola).

EDP: 1.

Inici: 2001. **Fi:** 2004.

Referència: BFF2001-2988. Programa sectorial de promoció general del coneixement.

Títol: *Creación de una base de datos de combinaciones léxicas en el inglés científico.*

Investigadora responsable: VERDAGUER CLAVERA, Isabel.

Centro: Universitat de Barcelona.

Investigadora de la UIB: [JUAN GARAU, Maria.](#)

Categoria: TU (àrea de coneixement: Filologia Anglesa).

EDP: 0.5.

Inici: 2001. **Fi:** 2004.

Referència: BFF2001-0820. Programa sectorial de promoció general del coneixement.

Títol: *Los efectos de la movilidad (estancia en el país de lengua meta) en la competencia oral y escrita de los estudiantes de inglés universitarios: la variación en la adquisición y en el aprendizaje de la lengua inglesa a niveles avanzados.*

Investigadora responsable: TURELL JULIÀ, M. Teresa.

Centro: Universitat Pompeu Fabra.

Investigadora de la UIB: [JUAN GARAU, Maria.](#)

Categoria: TU (àrea de coneixement: Filologia Anglesa).

EDP: 0.5.

Inici: 2001. **Fi:** 2004.

**DEPARTAMENT DE FILOSOFIA I TREBALL
SOCIAL**

Referència: BSO2000-1116-C04-01. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Estudio interdisciplinar de rasgos funcionales del grado humano. Aspectos sistemáticos.*

Classificació UNESCO: 7205, 2416, 6107, 5101.

Centre: Departament de Filosofia i Treball Social. Edifici Ramon Llull.

Investigador responsable: CELA CONDE, Camilo José.

Categoria: CU (àrea de coneixement: Filosofia Moral).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-----------------------------|------------------|------------------|
| Cela Conde, Camilo José | CU | Única |
| Riutort Serra, Bernat | TU | Compartida |
| Miquel Novajra, Alexandre | TU | Compartida |
| Burges Cruz, Lucrecia | Aj. EU | Única |
| Valdivieso Navarro, Joaquín | Aj. EU | Compartida |
| Afonso Marrero, José A. | Aj. EU | Única |
| Ruiz Altaba, Cristian | | Compartida |
| Castro Nogueira, Laureano | | Única |

Nombre total d'investigadors de la UIB: 8.

Summary

The study of evolution in terms of grades has been proposed as an alternative to cladistics limits existing to interpret ancestor-descendant relationships. However, «grades» are widely grounded on functional assumption, thus being difficult to quantify. The current project tries: Firstly, to stablish an interdisciplinary evolutive scenario of the main functional traits of Homo sapiens (such as, language, aesthetics, and morals. Secondly, to perform experimental studies to obtain stimuli capable of activating brain areas of processing of these tasks. Thirdly, to localize brain areas functionally active during the mentioned tasks, to check the hypothesis of a prefrontal localization of moral judgement, aesthetic appreciation and metaphorical using of language -the development of which would have been responsible for the late hominization period. Fourthly, to built computer simulated models of the evolution of the capacity af analyzing and cultullay transmitting evaluations. Fifthly, to analyse some turning point on the cultural evolution. Finally, to set up a model on the phylogeny of the already mentioned functional traits. How to identify grades and clades in the fossil record was mentioned in the Colloquium «Taxonomy and Systematics of the Human Clade» (Palma, February, 2000) as an area of particular interest of research in face of the V Congress of the IAHP (Barcelona 2003). The participants agreed in organising an International Group of research in human systematics to promote that kind of studies. To reach a tipification of the human grade is important in the systematics and paleontology fields, as well as in psychology, psychiatry, neurology, ethics, ethology, anthropology, biodiversity, and environmental studies.

Referència: SEC2000-1235. Ministeri de Ciència i Tecnologia.

Modalitat: P2. Projecte d'investigació bàsica orientada.

Títol: *La justicia, las transformaciones sociales y los límites del Estado del Bienestar: políticas públicas, mercado de trabajo, exclusión social y sostenibilidad.*

Classificació UNESCO: 6307.

Centre: Departament de Filosofia i Treball Social. Edifici Ramon Llull.

Investigador responsable: RIUTORT SERRA, Bernat.

Categoria: TU (àrea de coneixement: Filosofia Moral).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-------------------------------|------------------|------------------|
| Riutort Serra, Bernat | TU | 16 |
| Miquel Novajra, Alexandre | TU | 16 |
| Carbonero Gamundí, M. Antònia | TEU | 16 |
| Valdivieso Navarro, Joaquim | Aj. EU | 16 |

Nombre total d'investigadors de la UIB: 4.

Keywords: justice, social changes, welfare state, public policies, labour market, social exclusion, globalization, modernization, recionality, sustainable development.

Summary

It tries to continue the research on social changes in developed countries, focused, first, on theoretical general analysis and, second, on application to spanish society as well as balearic context. This analysis approaches on equity perspective. The analysis places on impact produced by globalization and complex modernity on social structure and welfar state. The emphasis is on social changes and citizenshpi rights. The contrast between factual changes and contra-factual equity assumptions allows to evaluate public policies, labour market and social exclusion from the double view of facticity and validity. This theoretical analysis founds the cuantitative and valorative evaluation of such changes in spanish and balearic context.

Referència: BFF2001-0377. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Ciencia reguladora y riesgos tecnológicos.*

Acrònim: CRRT.

Classificació UNESCO: 720599, 720703.

Centre: Departament de Filosofia i Treball Social. Edifici Ramon Llull.

Investigador responsable: LUJÁN LÓPEZ, José Luis.

Categoria: TU (àrea de coneixement: Lògica i Filosofia de la Ciència).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------|------------------|------------------------|
| Luján López, José Luis | TU | 0.5 |
| Ambrogí Álvarez, Adelaida | TU | 0.5 |

Investigadors d'altres entitats

| | |
|---------------------------------|--------------------------------|
| Rodríguez Alcázar, Francisco J. | Universitat de Granada |
| Blanco Merlo, José R. | Universitat Autònoma de Madrid |
| Sanmartín Esplugues, José | |

EDP del grup investigador de l'entitat sol·licitant: 1.

Keywords: regulatory science, technological risks, uncertainly, methodology.

Summary

This research project deals with a particular kind of scientific activity: regulatory science. In fact, the regulatory science that studies technological risks and is the knowledge ground for the public policies that regulate technological applications. The objectives of the project are the following ones:

1. to study regulatory science in opposition to research science, and in what measure the objectives of regulatory science influence this kind of scientific activity.
2. to study the conflicts among different values in regulatory science, e. g., epistemic values and values related to the protection of environment and of public health.
3. to analyze the different strategies that in fact scientists use to save the uncertainty in their recommendations to public decision makers.

The research project will be developed in three phases: general analysis of regulatory science: two case studies (health technology assessment and Genetically Modified Organisms risk-analysis), both in Spain: and a comparative analysis (with studies on regulatory science carried out in other countries).

Referència: BFF2002-04454-C10-02. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Uso del vocabulario genético y reduccionismo.*

Acrònim: USOGEN.

Centre: Departament de Filosofia i Treball Social. Edifici Ramon Llull.

Investigadora responsable: [AMBROGI ÁLVAREZ, Adelaida](#).

Categoria: TU (àrea de coneixement: Lògica i Filosofia de la Ciència).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-------------------------------------------|------------------|------------------------|
| Ambrogi Álvarez, Adelaida | TU | 0.5 |
| Luján López, José Luis | TU | 0.5 |

Investigadors d'altres entitats

| | |
|----------------------------------------------|------------------------------|
| Corrales Rosales, José María | Fundació Hospital de Manacor |
| Morange Morange, Michel | Universitat de París |

Summary

The aim of the present project is the study of the use of genetic vocabulary. We will center our study on the field of genetics of human diseases, and the focus will be the impact of the use of this vocabulary in the proper receptivity and understanding of the advances of human genetics. Starting from the acknowledgement that human genetic is a field of research with high priority, yet also of high social sensibility, we will try to identify critical issues associated to the use of key genetic concepts, in the technical literature, as well as in the print mass media.

DEPARTAMENT DE FÍSICA

Referència: PB98-0124. Programa sectorial de promoció general del coneixement.

Títol: *Sistemas cuánticos de muchos cuerpos: fermiones y bosones.*

Classificació UNESCO: 2207.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigadora responsable: CASAS AMETLLER, Montserrat.

Categoria: CU (àrea de coneixement: Física Atòmica, Molecular i Nuclear).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|----------------------------|-----------|---------------------|
| Casas Ametller, Montserrat | CU | 32 |
| Garcias Gomila, Francesca | TU | 32 |
| Serra Crespí, Llorenç | TU | 32 |
| Puente Ferrà, Antoni | TU | 32 |

Nombre total d'investigadors de la UIB: 4.

Total EJC/setmana: 3,2.

Keywords: electronic nanostructures, metal clusters, superconductivity, nuclear multifragmentation, halo nucle and quantum liquids.

Summary

The aim of this project is to analyse several quantal many body systems. In particular we are interested in the following items:

- Electronic nanostructures and clusters of transition metals: ground state and excitations, temporal processes.
- High T_c superconductivity as a Bose-Einstein Condensation (BEC). Determination of critical temperatures.
- Nuclear multifragmentation and halo nuclei. Molecular dynamics and Information theory.
- Large He clusters doped with alkaline and alkaline earth metals. Energy Density functional model.

Referència: BFM2002-03241. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Dinámica de nanoestructuras electrónicas y comunicación cuántica.*

Acrònim: DINECC.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigadora responsable: CASAS AMETLLER, Montserrat.

Categoria: CU (àrea de coneixement: Física Atòmica, Molecular i Nuclear).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------|--------------|-----------------|
| Casas Ametller, Montserrat | CU | 1 |
| García, Martín Ezequiel | Investigador | 1 |
| Serra Crespí, Llorenç | TU | 1 |
| Nazmitdinov, Rashid | Investigador | 1 |
| Puente Ferrà, Antoni | TU | 1 |
| Garcias Gomila, Francesca | TU | 1 |
| Batle Vallespir, Josep | B | 1 |
| Valín Rodríguez, Manuel | B | 1 |

EDP del grup investigador de l'entitat sol·licitant: 8.

Summary

The main purpose of this project is the study of dynamical processes in electronic nanostructures, their possible use to obtain quantum entangled states, the characterisation of the latter and their application in quantum communication. In particular we are interested in the following items:

a. Electronic nanostructures: a1) Isolated quantum dots: spin-orbit interaction effects. Quantum entangled states. Dissociation of quantum artificial molecules. Laser induced ultrafast phase transitions. a2) Open systems in 1, 2 and 3 dimensions. Conductance properties. Propagation of excited states in quantum dot chains. Coherent control of wave packet propagation.

b. Quantum entangled states: Mixedness and separability. Entanglement evolution and decoherence time.

c. Bose-Einstein condensation (BEC): c1) Superconductivity as a BEC of particles and holes in exotic materials. Critical temperatures. C2) Dynamics of condensates of atoms.

Referència: PB98-0127. Programa sectorial de promoció general del coneixement.

Títol: *Caracterización de aleaciones con memoria de forma producidas por solidificación rápida ('melt-spinning')*.

Classificació UNESCO: 331208.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [CESARI ALIBERCH, Eduard](#).

Categoria: CU (àrea de coneixement: Física Aplicada).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|--------------------------------------------|------------------|----------------------------|
| Cesari Aliberch, Eduard | CU | 20 |
| Picornell Alou, Catalina | CEU | 32 |
| Seguí Palmer, M. Concepció | TU | 32 |
| Pons Morro, Jaume | TU | 16 |
| Amengual Colom, Antoni | TU | 16 |
| Hierro Riu, Ferran | Tèc. | 16 |
| Font Ferrer, Joan | TU (UPC) | 32 |
| Muntasell Pla, Joaquim | TU (UPC) | 32 |
| Santamarta Martínez, Rubén | Aj. U | 40 |

Nombre total d'investigadors de la UIB: 7.

Total EJC/setmana: 5,9.

Keywords: martensitic transformation, shape memory, rapid solidification, melt-spinning, microstructure.

Summary

The characterization of Cu- and Ni-Ti-based shape memory alloys (SMA) produced by means of rapid solidification (melt-spinning, MS) constitutes the objective of the present project. Finished (or almost finished) products can be obtained by means of the MS technique, although some microstructural features, like small grain size, high vacancy concentration and incomplete atomic order, which influence the martensitic transformation responsible of the particular properties of SMA, are also introduced. The major number of applications, already developed or potential, use the Cu- and Ni-Ti-based systems. A special focus of interest is constituted by the SMA with high transformation temperatures (above 100°C) and good stability at temperatures 200-300°C, which limits the selection to the Cu-Al-Ni (with additions like Mn, B, Ti) and Ni-Ti-X (X=Cu, Hf, Nb). The MS ribbons already produced (in the frame of an european INCO project) show a good macroscopic quality, although its extensive and systematic characterization is needed. The work plan is divided in four topics: (1) Reproducibility and stability of transformation temperatures; (2) Ageing effects; (3) Thermomechanical cycling and (4) Superelasticity and DMA. These topics are closely related with the applications requirements and the results will also give information on processes like ordering, precipitation and defects generation, whose basic interest extends beyond the SMA field.

Referència: MAT2002-00319. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Desarrollo y caracterización de aleaciones con memoria de forma ferromagnéticas.*

Acrònim: ALMEMFER.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [CESARI ALIBERCH](#), [Eduard](#).

Categoria: CU (àrea de coneixement: Física Aplicada).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|--------------------------------------------|-----------|-----------------|
| Cesari Aliberch, Eduard | CU | 1 |
| Seguí Palmer, M. Concepció | TU | 1 |
| Pons Morro, Jaume | TU | 0.5 |
| Picornell Alou, Catalina | CEU | 1 |
| Santamarta Martínez, Rubén | Aj. U | 1 |

Investigadors d'altres entitats

| | |
|-----------------------------------------|--------------------------------------|
| Muntasell Pla, Joaquim | Universitat Politècnica de Catalunya |
| Font Ferrer, Joan | Universitat Politècnica de Catalunya |
| Chernenko, Volodymyr A. | Institute of Magnetism (Ucraïna) |

EDP del grup investigador de l'entitat sol·licitant: 4.5.

Summary

Ferromagnetic shape memory alloys can show, in addition to the conventional functional properties arising from the thermoelastic martensitic transformation that they undergo, the as-called Magnetic Memory Effect (MME), consisting of the occurrence of deformation (up to 5% in alloys close to Ni_2MnGa) under the action of magnetic field. The basic objectives of the project are to gain knowledge on the thermal stability of Ni-Mn-Ga and Co-Ni-Ga (close to Co_2NiGa) alloys, to quantify the MME and to clarify the mechanisms responsible for it. The proposal is structured around two main activities: (1) Study of the thermal stability of the alloys, both in parent phase and in martensitic phase; these aspects are basic to the practical use of the alloys, but nevertheless unknown. Particular attention will be paid to the effects of precipitation at moderate temperatures (200-300°C) and the stabilisation of martensite, as well as to the relationship of both effects with the MME. (2) Study of the MME: quantification of the strain produced by a magnetic field as a function of the martensite structures; this aspect will be studied in single and polycrystalline specimens (including melt-spun ribbons). Moreover, to clarify the relationship between the MME and the reorientation of martensite variants and the stress induced martensitic transformation, the following issues will be analysed: (a) the critical stresses needed to reorientate the martensite variants under load; (b) the characteristic stresses and strains involved in the stress induced transformation; (c) the strain-temperature cycles obtained under constant load (thermomechanical cycling), which allow to characterise the shape memory effect besides of giving complementary information on the formation of preferential martensite variants (issues (b) and (c)). Quantitative knowledge on the generation of martensite variants and their mobility is essential to the discussion and validation of the models for the MME.

Referència: TIC99-0277. Programa nacional de tecnologies de la informació i de les comunicacions.

Títol: *Herramientas para el desarrollo del test en circuitos integrados mixtos analógicos/digitales.*

Classificació UNESCO: 330703.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [GARCIA MORENO, Eugeni](#).

Categoria: CU (àrea de coneixement: Tecnologia Electrònica).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|----------------------------------------------|------------------|----------------------------|
| Garcia Moreno, Eugeni | CU | 16 |
| Isern Riutort, Eugeni Miquel | TEU | 16 |
| Picos Gaya, Rodrigo | | 32 |
| Roca Adrover, Miquel Jesús | TEU | 16 |
| Segura Fuster, Jaume Agapit | TU | 16 |

Nombre total d'investigadors de la UIB: 4.

Total EJC/setmana: 1.

Keywords: fault modelling and simulation, text mixed A/D circuits, current consumption, sensors, stimuli generation, submicron technologies.

Summary

Testing is a crucial part in the design and production of integrated circuits. Its difficulty grows with the device dimension shrinking, the increase in the circuit complexity and with the coexistence of analog and digital parts in the same chip. In mixed analog/digital (A/D) circuits, testing analog blocks require more time effort, although the area of the analog blocks often smaller. The production of VLSI analog mixed A/D circuits has suffered a tremendous increase in the last years. But testing of the analog blocks is now the bottleneck in its future development. Therefore, test optimisation in mixed A/D circuits is a very active research field nowadays. Test optimisation requires better fault models than existing ones. The proposed work is oriented towards the creation of a realistic fault model dictionary in mixed A/D CMOS circuits, at high abstraction levels. These models will be incorporated in circuit simulators based on SPICE. The goal is to obtain fault simulation tools, easy to use and effective, oriented to test optimisation. These tools could be used by the teams devoted to test development in analog and mixed A/D circuits. The scope of the project includes experimental validation of the fault models developed, designing specific circuits for this task. Also the effectiveness of the input stimuli in revealing faulty circuits will be analysed.

Referència: CLI99-0269. Programa nacional d'I+D sobre el clima.

Títol: *Frecuencia e intensidad de lluvias fuertes en un clima modificado en zona mediterránea española.*

Acrònim: FIRME.

Classificació UNESCO: 2502.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: RAMIS NOGUERA, Climent.

Categoria: TU (àrea de coneixement: Física de la Terra).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-----------------------------|-----------|---------------------|
| Ramis Noguera, Climent | TU | 16 |
| Alonso Oroza, Sergio | CU | 16 |
| Romero March, Romuald | TU | 16 |
| Ruiz Pérez, Maurici | Tèc. | 16 |
| Homar Santaner, Víctor | Aj. U | 16 |
| García-Moya Zapata, José A. | | 16 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 2.

Keywords: heavy rain, western mediterranean, numerical situation, climate change, downscaling.

Summary

The main aim of the project is the determination of the frequency and intensity of heavy rains in a modified climate scenario (towards the half next century) in the spanish area that, at present, is more frequently affected by these hazardous phenomena, the mediterranean coastal zone. The methodology will use numerical simulations, with the HIRLAM model, of the 165 heavy rain events identified during the decade 1984-93. The model, which will have the same resolution in all the experiments, will be nested in ECMWF analysis data. Different resolution of the ECMWF data will be used to nest the HIRLAM, in order to relate the results obtained using coarse or finer resolution by means of downscaling techniques. Such results will be used to improve the rainfall predicted fields for future potentially hazardous meteorological situations given by a climate model for the decade 2051-60. Such situations can be identified by comparison with those observed during 1984-93 and from a control run of a climatic model. Applications are the knowledge of such hazardous phenomenon in the next future, with the same uncertainty that climate models simulate future atmospheric circulation. Results can be used for future hydrologic purposes and may be of interest for insurance and agriculture.

Referència: REN2002-03482/CLI. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Estudio de la estructura y previsibilidad de los ciclones mediterráneos que producen situaciones de tiempo peligroso: aportación de Illes Balears al proyecto Medex de la OMM.*

Acrònim: MEDEXIB.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: RAMIS NOGUERA, Climent.

Categoria: TU (àrea de coneixement: Física de la Terra).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|------------------------------|-----------|-----------------|
| Ramis Noguera, Climent | TU | 0.5 |
| Homar Santaner, Víctor | Aj. U | 1 |
| Alonso Oroza, Sergio | CU | 0.5 |
| Romero March, Romuald | TU | 0.5 |
| Arreola Contreras, José Luís | B | 1 |

Investigadors d'altres entitats

| | |
|--------------------------|-----------------------------------|
| Campins Pons, Joan | Institut Nacional de Meteorologia |
| Jansà Clar, Agustí | Institut Nacional de Meteorologia |
| Genovés Terol, Ana | Institut Nacional de Meteorologia |
| Picornell Alou, Maria À. | Institut Nacional de Meteorologia |

EDP del grup investigador de l'entitat sol·licitant: 3.5.

Summary

Recent studies have evidenced that, in the Mediterranean, there is a possible relation between hazardous weather phenomena (mainly heavy rain and strong winds) and cyclones. Such cyclonic disturbances would influence directly or indirectly on the development of the hazardous event. The aforementioned evidence favoured that, from an international front, a research program called MEDEX was presented to the WMO. The main objective of the MEDEX project is the study of the structure and predictability of the cyclones that produce hazardous weather which have high social impact. The SSC of the WWRP accepted the proposal highlighting its scientific and practical interest by the end of 2000. However, it is well known that the WMO does not provide economical support. The project we present, MEDEXIB, represents the contribution to the MEDEX from researchers located in the Balearic Islands. Although the objectives of the MEDEX are general for the Mediterranean area, the MEDEXIB will concentrate the attention on the western Mediterranean. The main objectives are: a) to produce a dynamical climatology of the cyclones in the Mediterranean in order to know its 3D structure and relate that climatology with the hazardous weather events, b) the study of the physical and dynamical factors that determine the formation, development and evolution of the cyclones that produce hazards, c) analyse the possibility to improve the skill of numerical forecasts by optimising physical parameterisations or improving initial conditions in the models. The benefits of the project are evident: improving the prediction of the cyclones that produce hazardous weather will consequently improve the prediction of the event itself and, then, the optimisation of the warnings to the population as well as to civil defence services and marine safety. For MEDEX information visit: <http://www.inm.es/MEDEX>.

Referència: BFM2000-1329. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Sismología de la corona solar y actividad solar.*

Acrònim: SICOAS.

Classificació UNESCO: 2106-02.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [BALLESTER MORTES, Josep Lluís](#).

Categoria: CU (àrea de coneixement: Astronomia i Astrofísica).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|-----------------------------------------------|------------------|------------------|
| Ballester Mortes, Josep Lluís | CU | Única |
| Oliver Herrero, Ramón | TU | Única |
| Carbonell Huguet, Marc | CEU | Única |

Nombre total d'investigadors de la UIB: 3.

Keywords: magnetohydrodynamics, magnetohydrodynamic waves, solar activity, solar cycle.

Summary

Our proposal is based on a feed-back between theory and observation, our general goals being: (1) to use observational data to improve theoretical models; (2) to use the predictions of these models for subsequent observational campaigns; (3) to use theoretical models to reproduce the behaviour of solar activity in the past and to forecast its future behavior.

Two topics are included in the proposal: on one hand, we plan to study wave propagation within magnetic coronal structures and, on the other hand, to forecast and analyze the behavior of solar activity.

In the first part of the proposal, the specific goals are: (1) to study the effects of magnetic shear in MHD wave propagation in coronal structures such as magnetic arcades and prominences; (2) by considering quiescent solar prominences as slabs of material or composed by fibril structures, to bring a theoretical explanation to the observations of damping and growing of oscillations within them.

In the second part, we plan to study the behavior of solar and geomagnetic activity with the following specific goals: (1) to set up a forecasting method based on genetic algorithms, of the future behavior of the solar cycle and geomagnetic activity, based on genetic algorithms; (2) to analyze, using solar magnetograms obtained by ground-based solar telescopes and the MDI instrument onboard SOHO, the magnetic flux emergence during the recent solar cycles in order to confirm, or not, a hypothesis about the cause of the periodicity near 160 days in high-energy solar flares.

Referència: MAT2000-0862-C03-02. Ministeri de Ciència i Tecnologia.

Modalitat: P3. Projecte d'investigació aplicada.

Títol: *Desarrollo de nuevas aleaciones de memoria de forma con elevadas temperaturas de transformación. Mejora de procesos de obtención y procesado: prototipos industriales.*

Acrònim: DEMEFOR.

Classificació UNESCO: 331507, 331208, 331212, 331614, 221129, 221101.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: PONS MORRO, Jaume.

Categoria: TU (àrea de coneixement: Física Aplicada).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|---------------------------|------------------|------------------|
| Pons Morro, Jaume | TU | Compartida |
| Amengual Colom, Antoni | TU | Compartida |
| Cifre Bauzà, Joan | Tèc. | Compartida |

Nombre total d'investigadors de la UIB: 3.

Keywords: shape memory alloys, smart materials, stabilisation, martensite, training, diffusion welding, microstructure, properties, guaranteed behaviour, rapid solidification, melt-spinning.

Summary

The main limitations of the shape memory alloys are the low transformation temperatures with the low stability of these temperatures and the structures involved in shape memory properties. To increase these transformation temperatures, a lot of people are working in complex Cu-Al-Ni-Ti-Mn alloys. The more complex the alloys, the higher the complexity of the degradations of the alloy at high temperatures. The aim of the project is to get shape memory alloys. It is also the scope of the project to get alloys with high stability of the transformation temperatures and phases. Hence the shape memory alloys can be guaranteed for industrial applications once improved the attainment and the processing to get, at the end, prototypes of industrial interest.

Referència: BFM2001-0988. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Radiación gravitatoria en sistemas relativistas axialmente simétricos. Un estudio analítico-numérico.*

Acrònim: GRASS.

Classificació UNESCO: 221205.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: CAROT GINER, Jaume Jesús.

Categoria: TU (àrea de coneixement: Física Teòrica).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------------|------------------|------------------------|
| Carot Giner, Jaume Jesús | TU | 1 |
| Mas Franch, Lluís | CU | 1 |
| Stela Fiol, Joan | TU | 1 |
| Palenzuela Luque, Carlos | Aj. EU | 1 |
| Sintes Olives, Alícia Magdalena | Aj. U | 1 |

Investigadors d'altres entitats

| | |
|--------------------------|-----------------------|
| Collinge March, Maria M. | IES Guillem Sagrera |
| Lázkoz Sáez, Ruth | Universitat de Deusto |

EDP del grup investigador de l'entitat sol·licitant: 5.

Keywords: general relativity, gravitational radiation, axial symmetry.

Summary

Within the framework of the theory of General Relativity, we propose to carry out a rigorous and thorough study of axially symmetric spacetimes (regular and singular cases); with special attention to the production, propagation and detection of gravitational radiation: wave pattern elucidation and theoretical studies on the detectability of those wave patterns by means of the interferometric detectors currently under construction. Also, we intend to develop numerical codes adapted to the particular geometry of the above systems, with an emphasis on the introduction of coordinates with a precise geometrical meaning which allow for an adequate treatment of the numerical divergences occurring in a neighbourhood of the axis, and such that allow to carry out simulations in situations of physical interest.

Referència: REN2002-00486/CLI. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Estudio y parametrización de los intercambios de calor, humedad y momento en la capa estable.*

Acrònim: INTERCLE.

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: CUXART RODAMILANS, Joan.

Categoria: INVESTIGADOR CONTRACTAT.

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-------------------------------|--------------|-----------------|
| Cuxart Rodamilans, Joan | Investigador | 0.5 |
| Jiménez Cortés, Maria Antònia | B | 1 |

Investigadors d'altres entitats

| | |
|------------------------------|--------------------------------------|
| Ferreres Soler, Enriqueta | Universitat Politècnica de Catalunya |
| Mahrt Nil, Larry | Oregon State University |
| Joergensen Nil, Hans E. | Risoe National Laboratory |
| Terradellas Jubanteny, Enric | Institut Nacional de Metereologia |
| Soler Duffour, Maria Rosa | Universitat de Barcelona |
| Conangia Triviño, Laura | Universitat Politècnica de Catalunya |

EDP del grup investigador de l'entitat sol·licitant: 1.5.

Summary

Under conditions of clear skies and weak winds, the dynamics of the Atmospheric Boundary Layer (ABL) are complex. The stable stratification favours a special phenomenology of coherent structures, partly determined by the physiography of the area of study and its surroundings. We can mention the presence of Internal Gravity Waves, Gravity currents (katabatic flows) and low-level jets. These phenomena perform transport by themselves and there is turbulent transport related to their inestabilisations, mainly of sporadic or intermittent character. Recent experimental studies indicate that an important part of the total exchange of matter and energy between the surface and the free atmosphere under very stable stratification is performed by coherent structures as mentioned.

This project intends to evaluate the effects of these structures through the study of the available data out of recent experimental campaigns (SABLES-98, CASES-99, data from the continuous CIBA database) and also by means of explicit simulation, using Large-Eddy Simulation models (LES). The validity of available parameterisations arisen from the application of the similarity theory for the Stable ABL will be checked, and new proposals will be searched that account with the effects of the coherent structures metioned above. LES will be used as a numerical laboratory to study idealised isolated phenomena and the turbulence associated to them. All the terms of the complete second-order turbulence equations will be explicitly computed. Any finding leading to modifications in the current available parameterisations will be tested in the frame of a ABL 1D-model, in order to elaborate new proposals for implementations in mesoscale, NWP or climate models. The current parameterisations do not explicitly account for any contribution of these phenomena. An immediate practical application will be the introduction of any finding in a operational 1D-model for fog forecasting of the Spanish Meteorological Institute.

Referència: BFM2001-0341-C02-01. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Sincronización en sistemas físicos y biológicos.*

Acrònim: SINFIBIO.

Classificació UNESCO: 220510.

Centre: Departament de Física-IMEDEA.

Investigador responsable: [TORAL GARCÉS, Raúl](#).

Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-----------------------------------------------|------------------------|-----------------|
| Torral Garcés, Raúl | CU | 0.5 |
| Mirasso Santos, Claudio Rubén | TU | 0.33 |
| Sintes Olives, Tomàs Miquel | Aj. U | 0.5 |
| Scire, Alessandro | B | 0.5 |
| Calvo Ibáñez, Óscar Alberto | TEU int. | 0.5 |
| Gomes da Siva, Iacyel | B | 1 |
| Matias Muriel, Manuel A. | Científic titular CSIC | 0.5 |
| Colet Rafecas, Pere | Científic titular CSIC | 0.33 |
| Gomila Villalonga, Damià | B | 1 |

Investigadors d'altres entitats

[Chialvo, Dante Renato](#) The Rockefeller University

EDP del grup investigador de l'entitat sol·licitant: 5.16.

Summary

Synchronization processes, besides appearing in many natural phenomena, are very important both from the theoretical point of view as well as for the many technological applications. In the last years, attention has shifted from the classical studies of non-linear, limit cycle-type, oscillators to the synchronization in chaotic systems and that induced by noise and people have explored its use in encoding systems for communications. In this project we aim to study several aspects related to synchronization in some physical and biological systems. Our objectives in this vast field will focus on three main topics: (a) general studies, (b) semiconductor lasers, (c) biological systems. Concerning topic (a) we plan to contribute towards our understanding of synchronization whenever there is dispersion in the elements to be synchronized, as well as the influence of noise terms which, surprisingly, can trigger synchronization. In topic (b) we plan to study semiconductor lasers arrays with different couplings and the possible applications of chaotic synchronization for communications. Finally, in (c) biological systems, we will study the synchronization of intracellular calcium spikes, designing specific models and analyze them using Monte Carlo techniques, and the synchronization phenomena that are known to occur in large areas of brain during pain periods. In all the cases, we will be using analytical and numerical techniques as well as analogic simulations in electronic circuits.

Referència: TIC2002-01238. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Test multiparamétrico de circuitos microelectrónicos digitales y mixtos de altas prestaciones.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [SEGURA FUSTER, Jaume Agapit](#).

Categoria: TU (àrea de coneixement: Tecnologia Electrònica).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------------------------|-----------|-----------------|
| Segura Fuster, Jaume Agapit | TU | 1 |
| Roca Adrover, Miquel Jesús | TU | 1 |
| Isern Riutort, Eugeni Miquel | TU | 0.5 |
| Rosselló Sanz, Josep Lluís | TEU int. | 0.5 |
| de Benito Crosetti, Carola | TEU int. | 1 |
| Alorda Ladaria, Bartomeu | Aj. | 1 |

Investigadors d'altres entitats

| | |
|----------------------------------------------|---------------------------|
| Sainz Gómez, José Antonio | Universitat del País Basc |
| Gil García, José M. | Universitat del País Basc |
| Sánchez Etchegaray, Jesús M. | Universitat del País Basc |

EDP del grup investigador de l'entitat sol·licitant: 5.

Summary

Scaling advanced CMOS technology to the next generations improves performance, increases transistor density, and reduces power consumption. As a result of a constant device and interconnect scaling, current CMOS technology processes are in the 100nm range, and are referred to as nanometer technologies. One of the drawbacks of technology scaling is related to process parameter fluctuations. Parameter fluctuations in nanometer technologies come from poor control in critical dimensions and doping profiles, impacting geometric and electrical parameter distribution as the MOSFET transistor voltage (V_{t}), the off-state current (I_{off}), and the saturation current (I_{Dsat}). Recent studies point that parameter fluctuation will have a significant impact on IC test and verification effectiveness in nanometer technologies. The objective of this research project is to analyze the impact of parameter variation on the IC behavior, and to include this source of circuit malfunction into the test flow through specific compact fault models. The main goal of the research plan is to develop a new test technique based on correlating multiple parametric test observables to predict circuit integrity. This is required since parameter variations limit the effectiveness of single-parameter non-logic based test methods due to the difficulty to establish golden reference values. We will investigate the merits of a multi-parameter based test strategy that correlates a number of circuit parameters (delay, leakage current, active energy, temperature variation, etc.), to distinguish between faulty and fault-free circuits. The project is built on the basis of technology transfer to industry and incorporates tasks oriented to develop CAD modules and also specific circuit monitors to capture the parametric observables considered. The development of circuit monitors is of high importance since automatic test equipment (ATE) has limited compatibility with non-logic parameters, thus limiting the implementation of the proposed technique in production environments.

DEPARTAMENT D'INFERMERIA I FISIOTERÀPIA

Referència: PI02-0925. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.

Títol: *Cuidadores informales de salud del ámbito domiciliario: percepciones y estrategias de cuidado ligadas al género y a la generación.*

Centre: Departament d'Infermeria i Fisioteràpia. Edifici Guillem Cifre de Colonya.

Investigador responsable: [BOVER BOVER, Andreu](#).

Categoria: TEU (àrea de coneixement: Infermeria).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria |
|--------------------------------------|------------------|
| Bover Bover, Andreu | TEU |
| Gastaldo, Denise | |
| Calvo Sastre, Ana M. | TU |

Nombre total d'investigadors de la UIB: 2.

Summary

The informal care giving that takes place in homes is very relevant from a quantitative and qualitative perspective for the population health maintenance and protection. Current socio-demographic and health care changes have generated an increase in the number of dependent people who require home care and a diminished availability of informal care givers. In a short or medium term, this situation can lead into a care provision crisis which would collapse the current health care system model. The main factors influencing the role of informal caregivers are gender and generation. Hence, an in-depth exploration about how these variables impact on informal care giving is needed to plan healthy public policies. These policies should establish a material and human resource network necessary to keep informal care giving as a source of health for our population. The objective of this study is to understand how informal care givers' gender and generation affect specific care strategies and the perceptions of the impact that such activity has over their personal and family well-being. The research design is qualitative. The participants are women and men who are family care givers in Mallorca island (n=66). The data collection will be done through individual interviews and focus groups, which will vary according to participants' gender and generation. The content of the interviews and focus groups will be transcribed and analysed with the software NUD.IST. The analysis rigour will be assured by triangulation of sources and methods.

DEPARTAMENT DE PSICOLOGIA

Referència: PB98-0167. Programa sectorial de promoció general del coneixement.
Títol: *Variables predictoras de la eficacia de un tratamiento de exposición asistida por ordenador en el tratamiento del miedo a volar.*
Classificació UNESCO: 610301.
Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.
Investigador responsable: BORNAS AGUSTÍ, F. Xavier.
Categoria: TU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).
Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-----------------------------------|------------------|----------------------------|
| Bornas Agustí, F. Xavier | TU | 32 |
| Tortella Feliu, Miquel Rafael | TEU | 32 |
| Llabrés Bordoy, Jordi | Aj. EU | 16 |
| García de la Banda García, Gloria | TEU | 16 |
| Miró Martínez, Jordi | | 16 |
| Martínez-Abascal García, Ángeles | TEU int. | 16 |

Nombre total d'investigadors de la UIB: 5.

Total EJC/setmana: 2,8.

Keywords: specific phobia, fear or flying, computer-assisted exposure.

Summary

The research project has two main goals. The first aim is to know the characteristics of the patients with fear of flying that are the most relevant ones in order to predict the effectiveness of a computer-assisted exposure (CAE) treatment. The focus of the patient's fear, his or her before-flight anxiety level, and the intensity of his or her fear are the target variables of this research project. The second goal is to make available a self-administered version of the CAE treatment. Any company dealing with air passenger transportation (airlines, tour operators, travel agencies, tourism institutions, etc) could use the CAE treatment with those of their clients who show the personal characteristics found relevant by the research.

Referència: BSO2002-03807. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *El tratamiento del miedo a volar y la teoría de los sistemas dinámicos: hacia una mejor comprensión del cambio terapéutico.*

Acrònim: CAFFT3.

Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.

Investigador responsable: BORNAS AGUSTÍ, F. Xavier.

Categoria: TU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-------------------------------|-----------|-----------------|
| Bornas Agustí, F. Xavier | TU | 1 |
| Tortella Feliu, Miquel Rafael | CEU | 0.5 |
| Llabrés Bordoy, Jordi | Aj. U | 1 |

Investigadors d'altres entitats

| | |
|-----------------------------|--------------------------------------|
| Noguera Batlle, Miquel | Univierstat Politècnica de Catalunya |
| Fullana Rivas, Miquel Àngel | Universitat Autònoma de Barcelona |
| López Jiménez, Ana | Universitat de Sevilla |

EDP del grup investigador de l'entitat sol·licitant: 2.5.

Summary

We continue with this project the research line on fear of flying that we started six years ago and whose most important result is the computer-assisted exposure treatment, CAFFT –Computer Assisted Fear of Flying Treatment. The main novelty is that we incorporate some concepts and methods from the Dynamical Systems Theory, with the aim of improving our knowledge on three essential aspects related to fear of flying which still remain obscure: a) the dynamic characteristics of brain activity and heart rate of patients with fear of flying, b) the evolution of the system/patient along the treatment, that is, the process of therapeutic change, and c) the prediction of treatment outcome, starting from the knowledge of the system dynamics and, more specifically from his degree of chaocity/flexibility. To achieve these goals we would perform a series of experimental studies with phobic patients. It is to note that, besides traditional analysis, the obtained data will be analysed trough non-linear techniques, which are specially addressed to better understand dynamic systems. This knowledge could redound to an improved efficacy and usefulness of the CAFFT program and other treatments for this problem.

Referència: BSO2000-1116-C04-02. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Estudio interdisciplinar de rasgos funcionales del grado humano. Estudio experimental de los correlatos cerebrales de los rasgos funcionales de conducta moral, capacidad estética y lenguaje metafórico.*

Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.

Investigadora responsable: MARTY BROQUET, Gisèle.

Categoria: CU (àrea de coneixement: Psicologia Bàsica).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|----------------------------|-----------|------------|
| Marty Broquet, Gisèle | CU | Única |
| Roca Bennàsar, Miquel | TU | Compartida |
| Escudero López, Juan Tomás | Aj. EU | Única |
| Munar Roca, Enric | TEU | Única |
| Rosselló Mir, Jaume | TEU | Única |
| Espino Ibáñez, Ana María | As. | Compartida |

Nombre total d'investigadors de la UIB: 6.

Summary

The study of evolution in terms of grades has been proposed as an alternative to cladistics limits existing to interpret ancestor-descendant relationships. However, «grades» are widely grounded on functional assumption, thus being difficult to quantify. The current project tries: Firstly, to stablish an interdisciplinary evolutive scenario of the main functional traits of Homo sapiens (such as, language, aesthetics, and morals. Secondly, to perform experimental studies to obtain stimuli capable of activating brain areas of processing of these tasks. Thirdly, to localize brain areas functionally active during the mentioned tasks, to check the hypothesis of a prefrontal localization of moral judgement, aesthetic appreciation and metaphorical using of language -the development of which would have been responsible for the late hominization period. Fourthly, to built computer simulated models of the evolution of the capacity af analyzing and cultullay transmitting evaluations. Fifthly, to analyse some turning point on the cultural evolution. Finally, to set up a model on the phylogeny of the already mentioned functional traits. How to identify grades and clades in the fossil record was mentioned in the Colloquium «Taxonomy and Systematics of the Human Clade» (Palma, February, 2000) as an area of particular interest of research in face of the V Congress of the IAHP (Barcelona 2003). The participants agreed in organising an International Group of research in human systematics to promote that kind of studies. To reach a tipification of the human grade is important in the systematics and paleontology fields, as well as in psychology, psychiatry, neurology, ethics, ethology, anthropology, biodiversity, and environmental studies.

Referència: BSO2000-1200. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Estudio de la prevalencia de la hiperactividad en edad escolar.*

Acrònim: EPHEE.

Classificació UNESCO: 320105.

Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.

Investigador responsable: [SERVERA BARCELÓ, Mateu](#).

Categoria: TU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|----------------------------------------|------------------|------------------|
| Servera Barceló, Mateu | TU | Única |
| Cardo Jalón, Esther | | Única |
| Llobera Cànaves, Joan | | Compartida |

Nombre total d'investigadors de la UIB: 1.

Total EJC/setmana: 0,8.

Keywords: prevalence, hyperactivity.

Summary

Attention Deficit Hyperactivity Disorder (ADHD) is a common dysfunction in childhood, with a genetic basis and neuroanatomic and psicologic factors that produce attention deficit, impulsiveness and motor hyperactivity in children. In anglosajons countries the prevalence is of 5%, but they exist few study in our country. Our objective is to obtain the prevalence of the different subtypes of the ADHD in the school population between 6 and 10 years of the Island of Mallorca. We will use a neuropsychologic protocol of evaluation that includes questionnaires for parents and teachers, evaluation of the cognitive profile, evaluation of attention and impulsiveness through computers program (own versions) and full neurological evaluation of «soft neurological signs». The analysis of data will allow, to establish the prevalence, but also to compare the different evaluation methods used and to detect good screening tools for early detection.

Referència: BSO2000-0956. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Factores cognitivos y aptitudinales con el consumo de alimentos en la población infantil de 10 a 14 años.*

Classificació UNESCO: 610201.

Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.

Investigador responsable: [PICH SOLÉ, Jordi](#).

Categoria: TU (àrea de coneixement: Psicologia Bàsica).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|---------------------------------------------|------------------|------------------|
| Pich Solé, Jordi | TU | Única |
| Domingo Palomares, Herminio | CEU | Única |
| Canals Casas, Ramon | Emèrit (UdG) | Única |

Nombre total d'investigadors de la UIB: 2.

Keywords: food behavior, food preferences, implicit theories.

Summary

Leaving of the supposition that the feeding is not only a nutritional act but a behavior psychological as well as culturally determined, we intend the elaboration of a questionnaire and its application to a population of 400 subjects of 10 to 14 years of age dedicated to investigate the main factors implied in the appreciation or the infantile rejection of a list of basic foods in our culinary tradition. Later on another questionnaire dedicated to the parents will explore their implicit theories about the infantile feeding including its dietary beliefs, its valuation of the alimentary behavior of their children as well as the strategies before problematic alimentary behavior.

In the methodological order, the infantile subjects will value by means of scales from 1 of 5 for each food diverse parameters: consumption frequency, longing degree or aversion, healthfulness, consumption observed in parents and friends and existence of publicity. A global analysis of these answers will establish the influence of the growth and the sex of the children on the consumption of the diverse foods. Subsequently a multiple lineal regression will allow us to determine to what extent the consumption frequency can be dear starting from the qualities that the child attributes to the food (pleasantness and healthfulness) as well as of the models and social values (observation of the consumption on the part of his parents and friends and impact of the alimentary publicity).

Finally, the crossing between the questionnaires of the parents and their children will try to determine if the theories and more correct paternal alimentary attitudes belong together with the most varied and healthy diets on the part of the children.

Projecte: BSO2001-0369. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Redes neuronales artificiales aplicadas al análisis transversal y longitudinal en el campo de las conductas adictivas.*

Acrònim: RNA-CA.

Classificació UNESCO: 006106.

Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.

Investigador responsable: PALMER POL, Alfons Lluís.

Categoria: TU (àrea de coneixement: Metodologia de les Ciències del Comportament).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|---------------------------|------------------|------------------------|
| Palmer Pol, Alfons Lluís | TU | 1 |
| Cajal Blasco, Berta | TU | 0.5 |
| Sesé Abad, Albert | TEU int. | 0.5 |
| Montaño Moreno, Juan José | Aj. U | 1 |
| Sospedra Baeza, M. José | Aj. EU | 1 |
| Jiménez López, Rafael | Aj. EU | 1 |

EDP del grup investigador de l'entitat sol·licitant: 5.

Summary

The aim of this research is to apply Artificial Neural Networks (ANN) in the field of the addictive behaviors. Two different approaches will be applied: traverse and longitudinal. ANN is an information processing system based on biological neural networks. Parallel, distributed and adaptative systems characterize ANN. Traverse approach tries to indentify bio-psycho-social risk factors associated whit european young people drug use. Longitudinal approach tries to indentify bio-psycho-social risk factors associated whit drug addict relapse under treatment.

Referència: BSO2001-0693. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Evaluación psicofisiológica de la sensibilización central en el dolor crónico y su influencia sobre el procesamiento emocional y cognitivo.*

Acrònim: DOLOBRAIN.

Classificació UNESCO: 610601.

Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.

Investigador responsable: [MONTROYA JIMÉNEZ, Pedro](#).

Categoria: TU (àrea de coneixement: Psicobiologia).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|--------------------------------------------|------------------|------------------------|
| Montoya Jiménez, Pedro | TU | 1 |
| Barceló Galindo, Francesc | TU int. | 0.5 |
| Escudero López, Juan Tomás | Aj. EU | 0.5 |
| Revert Vidal, Xavier | B | 1 |

Investigadors d'altres entitats

| | |
|-------------------------------------------|------------------------------------------|
| García Herrera, Manuel | Institut Nacional de la Seguretat Social |
| Izquierdo Rodríguez, Raúl | Institut Nacional de la Seguretat Social |

EDP del grup investigador de l'entitat sol·licitant: 3.

Keywords: somatosensory and visual evoked-potentials, hyperalgesia, stress, Wisconsin sorting card test, pain memory, emotions.

Summary

The research project aims to examine how can affect the central sensitization, characteristic of chronic pain states, on the cognitive processing and its cerebral correlates. Basically, it will analyze the brain electrical activity in patients with fibromyalgia, rheumatoid arthritis and healthy volunteers during three experimental tasks: non nociceptive somatosensory information processing, Wisconsin sorting card test, and encoding/retrieval of pain-related information. Standardized protocols will be used for psychophysiological evaluation of somatosensory perception, voluntary attention, and pain memory, based on parameters of brain electric activity (evoked potentials and localization of brain electric source generators). In addition of establishing differences between chronic pain patients and healthy subjects on cognitive performance and brain functioning, the modulating role of continuous non-nociceptive somatosensory stimulation and stress on cognitive functioning of chronic pain patients will be also assessed.

Referència: BSO2002-04483-C03-03. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Influencia del trabajo emocional en la satisfacción de los clientes y en el desempeño de los empleados: un estudio experimental y longitudinal.*

Acrònim: ITESCDE.

Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.

Investigadora responsable: [MANASSERO MAS, M. Antònia](#).

Categoria: CU (àrea de coneixement: Psicologia Social).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-------------------------------------------|-----------|-----------------|
| Manassero Mas, M. Antònia | CU | 1 |
| Gili Planas, Margalida | TEU | 0.5 |
| Ramis Palmer, M. Carme | As. | 0.5 |
| Garcia Buades, M. Esther | TEU int. | 0.5 |

Investigadors d'altres entitats

| | |
|-------------------------------------------|--------------------|
| Roca Moll, Joan | Escola d'Hoteleria |
| Ferré Roig, Maria del Mar | Escola d'Hoteleria |

EDP del grup investigador de l'entitat sol·licitant: 2.5.

Summary

Jobs with elevated demands of personal interaction in dealing with clients require emotional work from employees. Emotional work affects employees as well as clients satisfaction. This subproject will specifically analyse the influence of emotional work in the performance of employees and the quality of service perceived by clients. The effects of «survey feedback» on emotional work and its relationships with other variables (employee performance and burnout, perceived service quality) will also be explored.

In order to achieve this, an experimental and longitudinal field study has been designed in which supervisors, contact employees and clients of these establishments will participate. The sample consists of 120 tourist establishments (60 hotels and 60 restaurants) of the Valencian Community and the Balearic Islands. The information will be collected at two different moments in time.

At Time of measurement 1 (T1) emotional work and its relationship with burnout and employee performance, as well as with perceived service quality and clients satisfaction will be evaluated in this subproject. Following this measurement, companies will be divided randomly in three groups: in the first group companies will not receive any type of information (group control), in the second group supervisors will receive a report with the quality evaluations made by clients, in the third group, supervisors and employees receive the report with the quality evaluations made by clients and, additionally, training on how to use this information to help improve the quality perceived by clients (survey feedback technique). Four months later, at Time of measurement 2 (T2), emotional work, employee performance and burnout as well as perceived quality by clients will be re-evaluated.

Projecte: 83/00.

Modalitat: Acció estratègica per al foment de la igualtat d'oportunitats entre dones i homes. Ministeri de Treball i Assumptes Socials.

Títol: *Evaluación de los factores psicosociales y su influencia sobre las mujeres sometidas a tratamientos de infertilidad. Construcción y validación de programas de intervención para la reducción de su impacto en dichas mujeres y en sus parejas.*

Classificació UNESCO: 610501.

Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.

Investigador responsable: [PÉREZ PAREJA, F. Javier](#).

Categoria: TU (àrea de coneixement: Personalitat, Avaluació i Tractament Psicològics).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|------------------------------------------------|------------------|----------------------------|
| Pérez Pareja, F. Javier | TU | 32 |
| Borràs Sansaloni, Carme | As. | 32 |
| Palmer Pol, Alfons Lluís | TU | 16 |
| Cajal Blasco, Berta | TU | 16 |
| Sesé Abad, Albert | TEU int. | 32 |
| Castro Iglesias, M. del Carmen | As. | 32 |
| Roses, A. | | 32 |
| Marqueta Sobrino, L. N. | | 32 |

Nombre total d'investigadors de la UIB: 6.

Total EJC/setmana: 4.

DEPARTAMENT DE QUÍMICA

Referència: PB98-0129. Programa sectorial de promoció general del coneixement.

Títol: *Estudios en química supramolecular: reconocimiento molecular, quimiosensores y autoensamblaje.*

Classificació UNESCO: 23061.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: BALLESTER BALAGUER, Pau.

Categoria: TU (àrea de coneixement: Química Orgànica).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|---------------------------|-----------|---------------------|
| Ballester Balaguer, Pau | TU | 32 |
| Costa Torres, Antoni | CU | 32 |
| Morey Salvà, Jeroni | TU | 32 |
| Deyà Serra, Pere M. | CU | 32 |
| Quiñonero Santiago, David | B | 40 |
| Prohens López, Rafael | B | 40 |

Nombre total d'investigadors de la UIB: 6.

Total EJC/setmana: 5,2.

Keywords: molecular recognition, host-guest chemistry, guanidinium salts, squaramides, receptors, self-assembly, porphyrins, anion recognition.

Summary

In this research project we propose the synthesis and the study of abiotic receptors active in highly competitive solvents. The receptors will be prepared following a modular strategy and using charged interactions centers (guanidinium salts and squaramides) which will allow to establish simultaneously electrostatic and hydrogen bonding interactions with the substrate in order to compete with the solvating power of the solvent. These and other receptors developed by us will be used in conjunction with a signaling group (fluorescent) as the critical components in the development of new chemosensors. The utility of these chemosensors in the signaling and quantification of organic substrates and biologically relevant molecules will also be studied. We also propose the synthesis of giant acrobicyclic hosts, soluble in polar and non-polar solvents, having «box» like structures and featuring an enormous interior cavity, and the study of its complexation processes with organic guests. The self-assembly process of suitable tris-porphyrins leading to box «like» supramolecular assemblies will be investigated, as well as, its structures and functionality as an alternative to the previous covalent approach.

Referència: PB98-0123. Programa sectorial de promoció general del coneixement.

Títol: *Complejos de metales de transición con moléculas que presentan actividad biológica y/o farmacológica.*

Classificació UNESCO: 230307.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: TERRON HOMAR, Àngel.

Categoria: TU (àrea de coneixement: Química Inorgànica).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|--------------------------|-----------|---------------------|
| Terron Homar, Àngel | TU | 32 |
| Fiol Arbós, Joan Jesús | TU | 32 |
| García Raso, Àngel | TU | 32 |
| Herrero Aísa, Luis Àngel | As. | 16 |
| Adrover Fiol, Bartomeu | | 16 |

Nombre total d'investigadors de la UIB: 4.

Total EJC/setmana: 2,8.

Keywords: antiviral, schiff bases, nucleosides, nitrogen bases, peptides, metal coordination complexes.

Summary

The main purpose of this project is the synthesis of new transition metal complexes with molecules that are known having biological and/or pharmacological activity. The research will be focused in derivatives of oligopeptides, nucleosides or nitrogen bases; in binary or ternary complexes of Schiff bases obtained from salicylidene aldehyde with peptides or amino acids, and in the obtention and study of binary complexes from bases with antiviral activity (acyclovir and others), or antineoplastic properties (thiopurines and others). The pharmacological and mutagenic activity of the complexes obtained will be also studied.

Referència: BQU2002-02546. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Síntesis y caracterización de ligandos derivados de bases púricas, pirimidínicas y compuestos con propiedades farmacológicas. Estudio de su química de coordinación con cationes metálicos.*

Acrònim: SCLDBPPCPF.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: TERRON HOMAR, Àngel.

Categoria: TU (àrea de coneixement: Química Inorgànica).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|--------------------------|-----------|-----------------|
| Terrón Homar, Àngel | TU | 1 |
| Fiol Arbós, Joan Jesús | TU | 1 |
| Herrero Aisa, Luis Àngel | As. | 0.5 |
| Adrover Fiol, Bartomeu | As. | 0.33 |
| García Raso, Àngel | TU | 1 |

EDP del grup investigador de l'entitat sol·licitant: 3.83.

Summary

The presence of purine and pyrimidine rings into chemical compounds is very interesting due to the possible interactions between themselves and the nitrogenated bases present in nucleic acids. Thus, many antiviral and antitumour agents show this type of heterocycles in their structure. On the other hand, the activity of a particular drug can be modulated by means of the presence of metal ions. These complexes could modify its pharmacokinetic properties, mechanism of action, selectivity or toxicity. In this context, our main purpose is the synthesis and structural characterisation of bispurines, bispyrimidines, modified antiviral molecules, lateral chain modified amino acids and the study of their coordination complexes with transition metal ions. In addition, the formation of metal complexes of related modified ligands with pharmacological properties will be studied.

Referència: BQU2000-0242. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Estudio químico-físico de la inactivación de serin-enzimas por antibióticos beta-lactámicos.*

Classificació UNESCO: 2307.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: MUÑOZ IZQUIERDO, Francisco.

Categoria: TU (àrea de coneixement: Química Física).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|----------------------------|-----------|------------|
| Muñoz Izquierdo, Francisco | TU | Compartida |
| Donoso Pardo, Josefa | TU | Compartida |
| Frau Munar, Joan | TU | Compartida |
| Vilanova Canet, Bartomeu | TU int. | Compartida |
| Llinás Martí, Antoni | Aj. U. | Compartida |
| Coll Parets, Miquel | As. | Única |

Nombre total d'investigadors de la UIB: 6.

Keywords: beta-lactam antibiotics, beta-lactamases, elastases, HCMV proteases, serine enzymes, chemical kinetic, computational chemistry.

Summary

In the present investigation Project we wish to determine the inactivation mechanism of three different serine enzymes (beta-lactamases, elastases and HCMV proteases) by beta-lactam antibiotics, classic monobactams and the new bridged monobactams which recently have been proposed as strong beta-lactamase inhibitors.

The choice of these three enzymes is due to their therapeutic relevance. Beta-lactamases are the main cause of diseases such as emphysema, arteriosclerosis and rheumatoid arthritis. HCMV proteases is essential for mature of patients and organ transplant recipients.

By Stopped Flow, FTIR, HPLC, RMN and UV measurements we will study the enzymatic. Theoretical calculation will be done for the modeling of the active site. Later we will propose the inhibition mechanisms. These mechanisms must perfectly explain the experimental results.

Once established the mechanism we will be able to postulate new inhibition structures.

Referència: BQU2000-0214. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Estudio químico-físico de las reacciones de condensación de piridoxamina (piridorina) con cetoácidos y azúcares, su aplicación al estudio de enzimas PMP-dependientes y a la inhibición de la glicación no enzimática de proteínas.*

Classificació UNESCO: 2307.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigadora responsable: DONOSO PARDO, Josefa.

Categoria: TU (àrea de coneixement: Química Física).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|----------------------------|-----------|------------|
| Donoso Pardo, Josefa | TU | Compartida |
| Muñoz Izquierdo, Francisco | TU | Compartida |
| Frau Munar, Joan | TU | Compartida |
| Vilanova Canet, Bartomeu | TU int. | Compartida |
| Llinás Martí, Antoni | Aj. U. | Compartida |
| Salvà Salvà, Antoni | As. | Única |

Nombre total d'investigadors de la UIB: 6.

Keywords: pyridoxamine, pyridorine, vitamin B6, schiff bases, carbohydrates, PMP-dependent enzymes, advanced glycation process, amadorins.

Summary

Pyridoxamine and Pyridoxamine 5' phosphate are two forms of the Vitamin B6. Its function as coenzyme in Vitamin B6 dependent enzymes involves the formation of a Schiff base between its amino group and a carbonyl group and a carbonyl group of an alfa-ketoacid in the transamination processes and the formation of the Schiff base with the 4-keto group of a cyclic hexose in the catalytic process of formation of 3, 6-dideoxysugars. Pyridoxamine has been recently proposed as an inhibitor of the advanced glycation process of proteins due to its capability of formation of a Schiff base with the carbonyl group of glucose.

In this work we will study from a kinetic point of view the formation and later evolution of the Schiff bases between PMP and alfa-ketoacids, as well as with sugars (aldoses and other cyclic sugars). We will pay special attention to the reactions with aldoses and we will investigate the role of pyridoxamine as reactive of the post-Amadori products generated in the glycation of amino acids. We will study the influence of the medium, the reactive ionization state and the reactive nature in general on these reactions.

Referència: PPQ2001-0474. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de processos i productes químics.

Títol: *Desarrollo del análisis por inyección en flujo multijeringa. Aplicación a la determinación de parámetros ambientales.*

Acrònim: MSFIA.

Classificació UNESCO: 230199.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: CERDÀ MARTÍN, Víctor.

Categoria: CU (àrea de coneixement: Química Analítica).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|--------------------------------|-----------|-----------------|
| Cerdà Martín, Víctor | CU | 0.5 |
| Gómez Benito de Valle, Enrique | As. | 0.5 |
| Estela Ripoll, Josep Manuel | TU | 0.5 |
| Rumori, Paolo | B | 1 |
| Leal Quezada, Luz Olivia | B | 1 |
| Becerra Hernández, Eduardo | B | 1 |
| Miró Lladó, Manuel | B | 1 |

Investigadors d'altres entitats

| | |
|-----------------------|------------------------|
| Elsholz, Olaf | Fachhochschule Hamburg |
| F. C. Lima, José Luis | Universidade do Porto |
| Lapa, Rui | Universidade do Porto |
| Lario García, Javier | Crison Instruments, SA |
| Sitjà Rius, Pere | Crison Instruments, SA |

EDP del grup investigador de l'entitat sol·licitant: 5.5.

Summary

In a former project AMB97-0537 we proposed a new analytical technique which we entitled **MultiSyringe Flow Injection Analysis (MSFIA)**, having the advantages of other already existing flow techniques, like the high sample throughput of FIA, robustness and versatility of SIA, simplicity of MCFA, etc. The construction of the first prototype and its application to the development of analytical methods to the determination different environmental parameters allowed us to see some clear advantages of this new analytical technique. The aim of this project is to develop this methodology with the firm CRISON INSTRUMENTS, SA, which has already participated with us in former funded projects. In this way, the firm could take advantage of the project, both in the sense to increase the commercial interest of their product by widening their application fields, as well as introducing new analytical instrumentation with MSFIA methodology of interest to their customers.

Our purpose in this new project is to continue in the development of MSFIA, specially considering the following milestones: Development of a new prototype with better performances and which could be commercialized. To develop new kind of excitation sources and development of new analytical procedures, mainly for the determination of environmental parameters and specially for water quality control and monitoring.

Referència: PPQ2001-0347. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de processos i productes químics.

Títol: *Contribución a la valorización de productos resultantes de la incineración de residuos sólidos urbanos.*

Acrònim: VALRSU.

Classificació UNESCO: 230199.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: FORTEZA COLL, Rafael A.

Categoria: TU (àrea de coneixement: Química Analítica).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|--------------------------------|-----------|-----------------|
| Forteza Coll, Rafael A. | TU | 0.5 |
| Cerdà Martín, Víctor | CU | 0.5 |
| Mas Torres, Francesca | Aj. U | 0.5 |
| Gómez Benito de Valle, Enrique | As. | 0.5 |
| Far Sánchez, María Micaela | B | 1 |

Investigadors d'altres entitats

| | |
|-----------------------------------|-----------------------------|
| Theraulaz, Frederic | University of Provence |
| Coulomb, Bruno | University of Provence |
| Oms Mollà, Maria Teresa | Incineradora RSU Son Reus |
| Cerdà Lacaci, Amàlia | TIRME |
| Bauzà de Mirabó Darder, Francesca | Conselleria de Medi Ambient |

EDP del grup investigador de l'entitat sol·licitant: 3.

Keywords: incineration, municipal solid waste, ash, bottom ash, valorisation, leaching.

Summary

The aim of the project is to study several problems related with the activity of municipal solid waste incinerator (MSWI) plants with energy production. At first, and as continuation of previous studies, we want to evaluate physical, chemical and geotechnical characteristics of MSWI bottom ash for use in highway applications. One important point of view must be the environmental impact: for this reason we would study the leaching of trace inorganic elements and organic contaminants including polychlorinated dibenzo-p-dioxines (PCDDs), polychlorinated dibenzo-p-furans (PCDFs), as well as potential precursors for these compounds under certain reaction conditions. The potential precursors are chlorinated benzenes (CBs), chlorinated phenols (CPs) and polychlorinated biphenyls (PCBs). Also we would evaluate the efficiency of a stabilisation/solidification process of incinerator ashes with cement based on leaching results, using several leaching tests and as function of the proportion ash/cement/water. At last we would construct a quality monitor for water used in the plant of energy production (TIRME, Palma, Spain) to determine harmful specimen: pH, conductivity, acid conductivity, ammonium, hydrazine, heavy metals...).

Referència: BQU2001-0724-C02-02. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de processos i productes químics.

Títol: *Catalizadores enantioselectivos de base lantanida para síntesis orgánica.*

Acrònim: CASIOR.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: SAÁ RODRÍGUEZ, José Manuel.

Categoria: CU (àrea de coneixement: Química Orgànica).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------|-----------|-----------------|
| Saá Rodríguez, José Manuel | CU | 1 |
| Vega Reynés, Manuel | B | 1 |

EDP del grup investigador de l'entitat sol·licitant: 2.

Summary

The CLAN ROMA Project (enantioselective, lanthanide-based catalysts for organic reactions in aqueous medium) aims at obtaining chiral catalysts capable of promoting enantioselective synthesis in aqueous media. The point of departure to this objective is the use of lanthanide triflates as the core of the catalyst, around which we plan to build appropriately designed chiral units. Lanthanide triflates are known to catalyze achiral organic reactions in aqueous media. The following stages have been planned accordingly: 1a) designing and synthesis of chiral, robust complexes having the somewhat schizophrenic ability of being stable to water and, at the same time, capable of promoting enantioselective organic reactions; To this end a number of variables will be modified in order to achieve the best material: metal and its counterion, the ligand and its denticity, the stoichiometry and the ionic or nonionic nature of the complexes; 1b) the analysis of reactivity and enantioselectivity will be examined upon a well-known Henry reaction (the condensation of a nitroalkane with an aldehyde). Iteration of stages 1a and 1b are expected to drive us to the best lead; 2) next stage will be the application to a number of common organic reactions known to be catalyzed by acids, in search for enantioselective catalysis in aqueous media.

Referència: BQU2002-04651. Ministeri de Ciència i Tecnologia.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Estudios relativos a especies supramoleculares de interés como materiales nanoestructurados y quimiosensores.*

Acrònim: SUPRAMOL2002.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: COSTA TORRES, Antoni.

Categoria: CU (àrea de coneixement: Química Orgànica).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|----------------------------|-----------|-----------------|
| Costa Torres, Antoni | CU | 1 |
| Frontera Beccaria, Antonio | As. | 1 |
| Deyà Serra, Pere M. | CU | 1 |
| Morey Salvà, Jeroni | TU | 1 |
| Martorell Crespí, Gabriel | As. | 1 |
| Ballester Balaguer, Pau | TU | 1 |
| Garau Rosselló, Carolina | B | 1 |
| Piña Capó, Maria Neus | B | 1 |

Investigadors d'altres entitats

Suñer Sabater, Guillem

Direcció General d'Administració Educativa

EDP del grup investigador de l'entitat sol·licitant: 8.

Summary

Supramolecular chemistry has evolved from pure host-guest recognition to materials with functional properties. This research proposal is focused on three main topics that represent our own evolution from molecules to functional systems through a multidisciplinary approach. The first objective is focused on chemosensing in aqueous media using squaramide-based molecular receptors. Selectivity, solubility and signal amplification are practical problems that will be addressed. In this proposal we take advantage of a known entropy effect to develop a new line of modular self-assembled chemosensors for a variety of anions, incorporating fluorescence self-quenching squaramide units. The synthesis and characterization of nanosized supramolecular structures is a second objective. Among the different options, we selected metal-porphyrins combined with organic bases to self-assemble a variety of supramolecules with interesting properties as materials capable of electronic transfer. Self-assembly, will be characterized by a variety of spectrophotometric and calorimetric techniques. The comparison of experimental and theoretically calculated proton chemical shifts of free and complexed bases will be used to assess the stoichiometry of the complexes. High-level theoretical calculations are important tools when used at a predictive level. In a third objective we use «ab-initio» methods to characterize anion- interactions arising from perfluoroaromatics and anions. The resulting host-guest binding force will be applied to the design of a new generation of artificial receptors based on perfluoroaromatic compounds.

Referència: MAT2002-03603. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Nanoestructuras en sólidos porosos periódicos.*

Acrònim: NANOPER.

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: [OTERO AREÁN, Carlos.](#)

Categoria: CU (àrea de coneixement: Química Inorgànica).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-----------------------------------------------|-----------|-----------------|
| Otero Areán, Carlos | CU | 1 |
| Turnes Palomino, Gemma | TU | 1 |
| Santos Peña, Jesús | Aj. EU | 1 |
| Rodríguez Delgado, Montserrat | B | 1 |
| Cuart Pascual, Juan José | B | 1 |

EDP del grup investigador de l'entitat sol·licitant: 5.

Summary

Periodic porous solids, such as zeolites, MCM-type mesoporous silica and other zeotypes, possess a system of internal channels and cavities which are periodically arranged in the nanometer scale and which can be used as a host to synthesize periodic nanostructures. Quantum confinement of charge carriers and regular layout confers to the superstructures thus formed potential application in optical and electronic devices, as well as in chemical sensors. The first objective of this project is the preparation of nanostructures formed by conducting polymers, semiconductors and luminescent materials hosted inside the periodic porous system of several solids; inclusion of chemical species which can act as specific sensors is also envisaged. The following objectives would be characterization of the materials obtained by using appropriate instrumental techniques and the study of the relevant physico-chemical properties for the potential usage in technological devices.

Referència: PTR1995-0583-OP. Ministeri de Ciència i Tecnologia.

Modalitat: Projecte d'estímul a la transferència de resultats d'investigació (PETRI).

Títol: *Desarrollo de un sensor para la cuantificación de ácidos húmicos en aguas salobres destinadas al consumo humano*

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: [COSTA TORRES, Antoni](#).

Categoria: CU (àrea de coneixement: Química Orgànica).

Inici: 2002. **Fi:** 2004.

| Membres de l'equip | Categoria |
|-----------------------------------------|------------------|
| Costa Torres, Antoni | CU |
| Ballester Balaguer, Pau | TU |
| Pablo Cànaves, Josep | Tèc |

Nombre total d'investigadors de la UIB: 3

PARTICIPACIONES A ALTRES PROJECTES

Referència: AGL2001-2774-C05.

Títol: *Aplicación de ultrasonidos de potencia en procesos de deshidratación de alimentos. Modelización del proceso.*

Investigador responsable: [MULET PONS, Antoni](#).

Centre: Universitat Politècnica de València.

Investigador de la UIB: FEMENIA MARROIG, Antoni.

Categoria: TEU (àrea de coneixement: Enginyeria Química).

Inici: 2000. **Fi:** 2003.

**AJUDES DE LA COMISSIO INTERDEPARTAMENTAL DE CIENCIA I
TECNOLOGIA. CONSELLERIA D'INNOVACIO I ENERGIA.
GOVERN BALEAR**

Títol: *Incorporació de les noves tecnologies de la comunicació a l'ensenyament universitari de la química orgànica assistida amb tècniques multimèdia.*

Centre: Departament de Química. Edifici Mateu Orfila i Rotger.

Investigador responsable: BALLESTER BALAGUER, Pau.

Categoria: TU (àrea de coneixement: Química Orgànica).

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|---------------------------|------------------|----------------------------|
| Ballester Balaguer, Pau | TU | 32 |

Nombre total d'investigadors de la UIB: 1.

Total EJC/setmana: 0,8.

Keywords: information, communication, internet, multimedia, learning, organic chemistry, university, cal, web.

Summary

This is a project of technological development directed towards the production of interactive and multimedia education materials which could be used for the computer assisted teaching of Organic Chemistry. There are three clear objectives, educational materials which are interactive and are used for the resolution of Organic Chemistry exercises, animations of reactions mechanisms and short video clips of the basic technique used in an Organic Chemistry laboratory. All the educational material will be elaborated to be used in any computer hardware (PC, mac, Sgi, etc). Thus the educational materials should be accessible using any internet browser. All the material could be placed in an internet server or sold as a CD-ROM. The methodology generated during the development of the project could be used for producing other educational material just changing the contents and concepts.

**INSTITUT MEDITERRANI D'ESTUDIS AVANÇATS
(IMEDEA)
INSTITUT MIXT CSIC-UIB**

Referència: BFM2000-1108. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Cooperación y fenómenos no lineales en sistemas complejos extendidos.*

Acrònim: CONOCE.

Classificació UNESCO: 2299.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [SAN MIGUEL RUIBAL, Maximino](#).

Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació |
|-----------------------------------------------|------------------|------------------|
| San Miguel Ruibal, Maximino | CU | Compartida |
| Torral García, Raúl | CU | Compartida |
| Balle Monjo, Salvador | TU | Compartida |
| Hernández García, Emilio | TU | Compartida |
| Mirasso Santos, Claudio Rubén | TU | Compartida |
| Piro Perusin, Oreste | As. Estr. | Compartida |
| Salazar Tió, Rafael | Aj. U | Única |
| Colet Rafecas, Pere | | Compartida |
| Matias Muriel, Manuel A. | | Compartida |

Nombre total d'investigadors de la UIB: 7.

Keywords: nonlinear, cooperative phenomena, localized structures, excitability, chaos, spatio-temporal complexity, fluctuations, dynamical systems, feedback, biooscillators, advection, reaction-diffusion, nonlinear optics, semiconductor lasers, VCSELs.

Summary

CONOCE is a nonlinear and cooperative research effort in the general interdisciplinary context of the new directions of statistical and nonlinear physics, with special reference to the behavior of spatially extended systems with external forcing and or non-local couplings. On the one hand the project intends to contribute to the development of methods, concepts and description of generic behavior in nonlinear physics in 6 aspects: fronts, growth phenomena and localized structures. Prediction in spatiotemporal chaos. Systems with feedback. Cooperative phenomena in networks with nonlocal coupling, fluctuations, and synchronization phenomena. On the other hand, it addresses the use of these methods and concepts in 5 exploratory lines of strategic research: mixing, transport and localized structures in fluids. Patterns in nonlinear optics, cooperative phenomena, synchronization and feedback in semiconductor lasers, biological oscillators in excitable media and competition, coordination and cooperation of agents. General phenomena considered in the different research lines of the project include excitability emergence of localized structures, synchronization and coherent response to fluctuations.

Referència: MAR99-1060-C03-03. Programa nacional de ciència i tecnologia marines.

Títol: *Estudio multidisciplinar y de la dinámica de un cañón submarino, y sus repercusiones sobre ecología del margen continental del mediterráneo noroccidental.*

Classificació UNESCO: 251001.

Centre: Institut de Ciències del Mar.

Investigador responsable: [PALANQUES MONTEYS, Albert](#).

Investigador de l'IMEDEA: [TINTORÉ SUBIRANA, Joaquim](#).

Categoria: Professor d'investigació del CSIC.

Inici: 2000 **Fi:** 2002.

Membres de l'equip

Categoria

[Tintoré Subirana, Joaquim](#)

Professor d'investigació

[Gomis Bosch, Damià](#)

TU

[Montserrat Tomàs, Sebastià](#)

TU

[Duarte Quesada, Carlos](#)

Professor d'investigació

[Agustí Requena, Susana](#)

Científica titular del CSIC.

Keywords: biodiversity, fluxes of matter and energy, biological production, tridimensional circulation, shelf-slope transfer, particulated matter, sediment, carbon.

Summary

The northwestern mediterranean canyons are morphological structures with high hydrodynamics activity and transfer of matter. The circulation inside of the canyons is highly heterogenic and its variability is controlled by several forcing mechanisms. The catalan sea is an excellent candidate area to study such processes in detail due to its characteristics. Similarly, the transfer of matter and energy in the canyons is also very complex, and the balance among the vertical and lateral supplies from the shelf and the slope is not known very accurately. The preferent transport of matter from shallow to deep environments through canyons generates a high biomass and production, with a possible exportation of dissolved organic/inorganic matter, which indicates that the deep sea can be more productive than what is was known up to now. In addition the external supply creates bioaccumulation zones in the canyon floor and that they are important reservoirs of biodiversity. The canyons could be one of the environments with a higher diversity and production in the Mediterranean sea. The changes of the circulation induced by the canyons can produce slope water intrusions and canyon biomass towards the shelf. Both situations have important repercussions in the marine system. This project results from the necessity of knowing the dynamics of the canyons in detail, to understand the delivery and concentration processes of continental material and export of the products from the endemic fauna living in this habitat.

Referència: REN2000-1471-C02-01. Ministeri de Ciència i Tecnologia.

Modalitat: P2. Projecte d'investigació bàsica orientada.

Títol: *Flujo de carbono en la región canaria: determinación de balances locales y estructura trófica.*

Classificació UNESCO: 241001, 251002, 251007.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigadora responsable: [AGUSTÍ REQUENA, Susana](#).

Categoria: Científica titular del CSIC.

Inici: 2000. **Fi:** 2003.

Membres de l'equip

[Agustí Requena, Susana](#)

[Duarte Quesada, Carlos](#)

[Vaqué Vidal, Dolors](#)

[Latasa Arcalis, Mikel](#)

Summary

The increasing evidence that community respiration tends to exceed planktonic production at the oligotrophic areas of the ocean has important consequences for the global carbon budget, for it implies that the biota of the oligotrophic areas of the ocean are net sources of CO₂ to the atmosphere. The origin of the organic carbon needed to support the excess carbon consumed in the oligotrophic areas of the ocean is unclear, but probably is imported from coastal areas, specially from coastal upwelling areas where primary production exceeds carbon consumption. The COCA (Canary Organic Carbon Assessment) project is an interdisciplinary effort to test this hypothesis at the Atlantic Canary Region, located at the transition zone between the high productive NW African upwelling and the oligotrophic waters of the North Atlantic Subtropical Gyre. During COCA, we will determine the carbon balance of planktonic communities at the Canary Region, and the cause of their variation along the high productive coastal zone of the NW African upwelling, and the low productivity area of the NA subtropical, as well as the interchange of organic carbon between the two systems.

Referència: TIC99-0645-C05-02. Programa nacional de tecnologies de la informació i de les comunicacions.

Títol: *Diodos láser con selección modal.*

Classificació UNESCO: 330707.

Centre: Instituto de Física de Cantabria.

Investigador responsable: PESQUERA, Luis.

Investigador de l'IMEDEA: BALLE MONJO, Salvador.

Categoria: TU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 1999. **Fi:** 2002.

| Membres de l'equip | Categoria |
|-------------------------------|------------------|
| Balle Monjo, Salvador | TU |
| Mirasso Santos, Claudio Rubén | TU |
| Giudici, Massimo | |
| Tredicce, Jorge R. | |

Keywords: Laser Diodes, modal selection, modal perturbation, etched slots, postprocessing, optical fiber communications, nonguided communications, power lasers, pumping, VCSELs

Summary

The proposal aims to develop modal perturbation techniques in laser diodes in order to obtain better performances by means of relatively simple processes, that can be competitive. The proposal includes three groups of studies. Two of them include modelization, fabrication and experimental characterization of laser diodes with modal perturbation by etching slots parallel to the laser facets. On one hand Fabry-Perot lasers for optical fiber communications will be developed with high side mode suppression ratio. The performance of these lasers in transmission systems will be measured. On the other hand the proposal addresses the development of power lasers with wavelength close to 1 micron with lateral and longitudinal mode selection by means of angle slots. Applications to optical fiber amplifiers and nonguided optical communications are considered. The third part includes the theoretical and experimental study of transverse and polarization mode selection of vertical cavity surface emitting lasers (VCSELs).

Referència: BOS2000-0822. Ministeri de Ciència i Tecnologia.

Modalitat: P1. Projecte d'investigació bàsica no orientada.

Títol: *Aislamiento geográfico y exclusión competitiva en la filogenia, y la evolución de ciertos géneros de coleopteros.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [PETITPIERRE VALL, Eduard](#).

Categoria: CU (àrea de coneixement: Genètica).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|------------------------------------------|------------------|------------------|
| Petitpierre Vall, Eduard | CU | Compartida |
| Juan Clar, Carles | TU | Compartida |
| Sacarés Mas, Antoni | | Compartida |

Nombre total d'investigadors de la UIB: 2.

Keywords: DNA sequences, molecular phylogenies, chromosomes, endemics, allopatric, evolution, competitive exclusion, *Chrysomelidae coleopterans*.

Summary

The apterous leaf beetle *Cyrtonus* are a suitable model for the high number of endemics to assess the effects of geographic isolation in Iberian and Balearic mountain ranges, by DNA analysis, cytogenetic studies and morphometric measurements. Two mitochondrial gene fragments and another of nuclear ribosomal DNA will be amplified by PCR and then sequenced, to construct cladograms of phylogenetic interrelationships among populations and species of *Cyrtonus*, whose congruence with their karyotypes and geographic distributions would be also evaluated. Particular attention will be paid to the differences in the previous traits between species in allopatry and sympatry, to ascertain possible influences of character displacement and competitive exclusion. Moreover, in the large genus *Chrysolina*, the same two mitochondrial gene fragments plus karyotypes and host-plant affiliations will be examined in 10-15 further species, to obtain more supported cladograms than the previous ones based on 30 species, as well as giving a major emphasis on the complex taxonomy and evolutionary patterns displayed in the Central European subgenus *Colaphoptera sensu lato*. The species of *Colaphoptera sensu lato* feed as a whole on plants of three distinct families, *Lamiaceae*, *Asteraceae* and *Apiaceae*, and might be a right group to investigate the shifts in host-plant affiliations from genetic standpoints.

Referència: REN2000-1521/GLO. Ministeri de Ciència i Tecnologia.

Títol: *Flora micològica (hifomicetos) en ambientes naturales terrestres y acuáticos del área ibero-balear.*

Classificació UNESCO: 241706.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [DESCALS CALLISEN, Enric](#).

Categoria: Científic titular del CSIC.

Inici: 2000. **Fi:** 2002.

| Membres de l'equip | Categoria |
|-----------------------------------------|-------------------|
| Descals Callisen, Enric | Científic titular |
| Gené Díaz, Josepa | TEU |
| Mercado Sierra, Ángel | Investigador |

Keywords: natural sources, biodiversity, hyphomycetes, fungi, taxonomy, pure culture.

Summary

Two coordinated objectives, using a similar methodology, are proposed, with the aim of acquiring a deeper knowledge of the mycota of aquatic and terrestrial *Hypomycetes* in the ibero-balearic region. Both tasks are designed within the framework of the long term project 'Flora micològica balear'. The leader of the project will attempt to carry survey and pure culture description of aquatic (freshwater) Hyphomycetes in selected habitats, and to complete a checklist of such fungi. It is expected that the pertinent Flora will be at an advanced stage of completion by the end of the project. The rest of the team will attempt to carry out similar work on soil *Hyphomycetes* from terrestrial and aquatic habitats and on terrestrial plant litter *Hyphomycetes*, with the intention of eventually preparing a checklist, and at a later stage, a Flora on the pertinent organisms.

Referència: BOS2000-0569-C02-02. Ministeri de Ciència i Tecnologia.

Títol: *Investigaciones aplicadas al programa de conservación de la gaviota de Audouin: los efectos de los depredadores terrestres en la ecología y la dinámica de sus poblaciones.*

Classificació UNESCO: 240123.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [ORO DE RIVAS, Daniel](#).

Categoria: Científic titular del CSIC.

Inici: 2000. **Fi:** 2003.

Membres de l'equip

Categoria

[Oro de Rivas, Daniel](#)

Científic titular

[Jiménez Pérez, Juan](#)

Generalitat Valenciana

[Mínguez Díaz, Eduardo](#)

Generalitat Valenciana

Keywords: migration, predation, dispersal, wintering, fisheries discards, pollution, mercury, laying costs, protracted clutches, food supplementation, yolk characteristics, Ebro delta, Chafarinas, Columbretes.

Summary

The presence of terrestrial carnivores is analysed at the world's largest breeding colony of Audouin's gulls, a threatened species. This was used as a natural experiment to assess the effects of predation at the level of both population ecology (changes in demographic parameters, population growth rate, dispersal and immigration, coloniality and conspecific attraction, source-sink dynamics) and conservation biology (extinction probabilities, culling of predators).

Referència: PTR95-0461-OP. Projectes d'estímul a la transferència de resultats d'investigació.

Títol: *Métodos moleculares para la detección de fraudes en aditivos alimentarios.*

Classificació UNESCO: 330912, 330923.

Centre: Departament de Biologia-IMEDEA.

Investigador responsable: [BENEDÍ BENITO, Vicente Javier](#).

Categoria: TU (àrea de coneixement: Microbiologia).

Inici: 2000. **Final:** 2002.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|--------------------------------------------------|------------------|----------------------------|
| Benedí Benito, Vicente Javier | TU | 20 |
| Albertí Serrano, Sebastià | As. | 20 |
| Doménech Sánchez, Antonio | B | 40 |
| Rosselló Picornell, Josep Antoni | | 20 |

Nombre total d'investigadors de la UIB: 3.

Total EDP/semana: 2,5

Keywords: food additives, identification, molecular methods, DNA.

Summary

Current EU directives laying down specific purity criteria on food additives other than colours and sweeteners presents an important gap in the technical description of the methods to distinguish between food additives locust bean gum and guar gum (E 410 and E 412, respectively). This makes possible the accidental (unadverted) or intentional (fraudulent) addition of E 412 to E 410 by producers and/or blenders. The consequences are: (1) locust bean gum producers (European companies) are subjected to unfair competition by their Asian counterparts (guar gum producers), and (2) end user companies using these additives in their processed foods may be incorrectly labeling their products due to the undeclared presence of gums mixtures instead of the labeled pure gum.

Our group has recently developed a DNA-based methods to identify and distinguish both additives. The methods are described in detail in a patent application jointly filed by our group (inventors) and UIB, CSIC, Universitat de València and Carob S.A. as applicants. This projects aims to transfer the cited methods to Carob SA, a locust bean gum producer.

Referència: AGL2000-1397-C02-01. Programa nacional de recursos i tecnologies agroalimentàries.

Modalitat: P3. Projectes d'investigació aplicada.

Títol: *Detección molecular de los aditivos alimentarios E410, E412 y E417 en alimentos.*

Centre: Departament de Biologia-IMEDEA.

Investigador responsable: [BENEDÍ BENITO, Vicente Javier](#).

Categoria: TU (àrea de coneixement: Microbiologia).

Inici: 2000. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació (h/setm.) |
|-----------------------------------------------|-----------|---------------------|
| Benedí Benito, Vicente Javier | TU | 16 |
| Albertí Serrano, Sebastià | As. | 16 |
| Doménech Sánchez, Antoni | B | |

Nombre total d'investigadors de la UIB: 3.

Total EJC/setmana: 0,8.

Keywords: food additives, detection, differentiation, identification, molecular, DNA, PCR, E410, E412, E417.

Summary

For food additives E410 (locust bean gum) and E412 (guar gum), we have previously developed molecular methods for the extraction and PCR amplification of DNA of the plants from which they are extracted. This allowed the direct identification of these two additives on their commercial preparations (patent pending). These methods are based on the identified existence in the genomes of these and other plant species of highly repetitive sequences with a high degree of variation between species of the same genus. Following the same molecular strategy, we will here determine diagnostic DNA sequences for food additive E417 (tara gum) extracted from the plant *Caesalpinia spinosa*. They will be applied to the differentiation of this food additive from the other two in raw materials (i.e., commercial food additives and their mixtures) and to the identification in foods of additives E410, E412, and E417. These goals match with objectives 9.2 of the Programa Nacional de Recursos y Tecnologías del Plan Nacional of the Spanish Government and 6.2 of Methodologies for Measurements and Testing from competitive and sustainable growth programme of the European Commission. Both objectives aim to develop new molecular analytical tools to ensure the origin and authenticity of raw materials and food ingredients.

Referència: FIS01-0034-01. Fons d'Investigació Sanitària. Ministeri de Sanitat i Consum.
Títol: *Caracterización de mecanismos de resistencia a antibióticos en Klebsiella pneumoniae debido a alteraciones en la permeabilidad.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: [BENEDÍ BENITO, Vicente J.](#)
Categoria: TU (àrea de coneixement: Microbiologia).
Inici: 2001. **Fi:** 2003.

| Membres de l'equip | Categoria |
|-------------------------------------------------|-----------|
| Benedí Benito, Vicente J. | TU |
| Gil Sánchez, José | As. |
| Martínez Martínez, Luis | |
| Hernández Allés, Santiago | Tèc. |
| Doménech Sánchez, Antonio | B |
| Ballesteros Martínez, Francisca | B |

Nombre total d'investigadors de la UIB: 5.

Summary

K. pneumoniae is an important nosocomial pathogen and some mechanisms of resistance to antimicrobials have been described for this species. We have previously described the roles of some molecules (porins) in the influx of antimicrobials, their cooperations with other mechanisms (betalactamases), and the subsequent elevation in the resistance levels. In this project we will extend this knowledge by the characterization of mechanisms which affect the efflux of antimicrobials and by studying in further detail the roles of additional undescribed porins. These objectives will be approached by the following concurrent strategies. Efflux mechanisms will be identified by (1) cloning genes homologous to *acr* and *emr* described in *E. coli* as efflux components, (2) selective mutation of these genes by homologous recombination experiments, and (3) by identification of further efflux genes through random mutagenesis and selection of efflux-defective mutants. Further insights into the roles of porins in the influx of antimicrobials will be gained by (1) characterization of the OmpK35 porin of this bacterium and comparison of its pore functions with those of porins OmpK36 and OmpK37 previously described by us. We will also extend our current knowledge of the OmpK36 properties by studying the relationships between alterations in key residues of its tridimensional structure and altered antibiotic permeability. The role of these molecules in antimicrobial resistance will be evaluated *in vitro* by constructing strains with specific deficiencies in one or another of these molecules. In cooperation with the accompanying project, these strains will be used in an animal model of *pneumoniae* to evaluate *in vivo* the contribution of these mechanisms to antimicrobial resistance.

Referència: REN2001-0802-C02-01/MAR. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Procesos de transporte, campos de velocidades y análisis de estructuras oceánicas mediante imágenes de satélite.*

Acrònim: IMAGEN.

Classificació UNESCO: 2510.07.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [HERNÁNDEZ GARCÍA, Emilio](#).

Categoria: Professor d'investigació del CSIC.

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|------------------------------------------|--------------------------|------------------------|
| Hernández García, Emilio | Professor d'investigació | 0.5 |
| Colet Rafecas, Pere | Científic titular | 0.33 |
| Piro Perusín, Oreste | As. estr. | 0.33 |
| Fernández López, Vicente | B | 0.5 |

Investigadors d'altres entitats

[López Sánchez, Cristóbal](#) Universitat di Roma 'La Sapienza'

EDP del grup investigador de l'entitat sol·licitant: 2.

Keywords: mesoscale structures, transport processes, teledetection, SST-SSH, SeaWIFS.

Summary

The main objective of this proposal is the development of quantitative methods to analyse satellite images (colour, temperature and dynamic height) of the sea surface to allow the identification of the existing structures and the evaluation of velocity fields, and their use to quantify transport processes of water masses and substances of interest in marine ecosystems (nutrients, biomass, etc.). The methods will be based mainly in techniques of image multiresolution analysis, artificial intelligence (neural networks and genetic algorithms), dynamical systems theory, and computer models of ocean circulation which include ecosystem dynamics. The techniques will be applied in detail to the evaluation of fluxes in several zones of the Western Mediterranean and in the Canary Current area. The project, of multidisciplinary character, addresses aspects fully contained as priority objectives in the 'Marine Resources' item of the 'Programa Nacional de Recursos Naturales', namely the quantification of biogeochemical processes and fluxes in marine ecosystems, the development of predictive models, and the development of techniques to improve sea observation.

Referència: REN2001-0580/GLO. Ministeri de Ciència i Tecnologia.

Títol: *Biodiversidad marina en ambientes costeros extremos: prospección faunística de las cuevas anchialinas de las Baleares, Canarias, y Levante Ibérico.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [JAUME LLABRÉS, Damià](#).

Categoria: Investigador contractat CSIC.

Inici: 2001. **Fi:** 2004.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|--------------------------------------|-------------------------|------------------------|
| Jaume Llabrés, Damià | Investigador contractat | 1 |

EDP del grup investigador de l'entitat sol·licitant: 1.

Keywords: coastal biodiversity, extreme environments, fauna, conservation.

Summary

Anchialine habitats are flooded inland marine caves that lack any direct connection with the open sea. They are inhabited by remarkable animals, long term survivors of ancient lineages, which are threatened by changes in their fragile habitat. In recent years numerous new species, genera, families and even a new class of crustaceans have been described from anchialine caves, particularly on islands. This degree of novelty makes anchialine habitats iniquely important but it is the restricted distribution and isolation of such species often to a single cave system on a single island, which renders them so vulnerable. Unsustainable levels of development for tourism are threatening these coastal habitats. This proposal will collate and make available data on all Spanish anchialine sites and species. The information will be used 1): to answer topical scientific questions such as where did the ancestors of cave faunas live and how were their disjunct distribution patterns generated, 2): to increase our knowledge of the Spanish animal biodiversity, 3): to promote the inclusion of anchialine habitats in coastal management plans, by emphasizing to policy makers and conservationists the unique attributes of their endemic inhabitants.

Referència: REN2002-04035-C03-01. Ministeri de Ciència i Tecnologia.

Modalitat: Programes nacionals d'I+D orientada.

Títol: *Criterios de calidad microbiológica en reutilización de aguas y biosólidos.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: LALUCAT JO, Jordi.

Categoria: CU (àrea de coneixement: Microbiologia).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació (EDP) |
|-----------------------------|-----------|-----------------|
| Lalucat Jo, Jordi | CU | 0.5 |
| Bergueiro López, José Ramón | TU | 0.5 |
| Gomila Ribas, Margalida | B | 1 |
| Solis Sanchis, Javier J. | Tèc. | 1 |

EDP del grup investigador de l'entitat sol·licitant: 3.

Summary

Water reuse and the right use or disposal of biosolids produced in wastewater treatments requires the determination of pathogens and surrogate indicators in order to assess the risk of reuse and disposal as well for designing simple procedures to assess the performance of the different treatments. To advance in this knowledge in our geographical area, the following studies will be performed. Determine the efficiency of removal of pathogens and indicators in tertiary treatments. Determine the efficiency of removal of pathogens and indicators in treatment of biosolids. Define the best model organisms to assess the performance of treatments. Obtain data on occurrence and levels of pathogens and indicators in regenerated water and different biosolids obtained by sludge treatment and build a data basis to be used in future risk assessment studies. In order to ensure that we obtain reliable data, transfer of standardised methods will be done to the laboratories, which do not use them yet, and quality assurance schemes will be implemented. As well, the adaptation of some methodologies to this kind of samples will be done. Methods adapted will be: i) extraction of microorganisms from biosolids; ii) application of molecular methods for *Salmonella* ssp; iii) and determination of viability of *Cryptosporidium*.

Referència: EN2002-04044-C02-01. Ministeri de Ciència i Tecnologia.

Títol: *Relación entre procesos físicos y biogeoquímicos asociados a sistemas hidrodinámicos de mesoescala en el mar de Alborán.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: GOMIS BOSCH, Damià.

Categoria: TU (àrea de coneixement: Física de la Terra).

Inici: 2002. **Fi:** 2005.

| Membres de l'equip | Categoria | Dedicació |
|--------------------------------|--------------------------|------------|
| Gomis Bosch, Damià | TU | Compartida |
| Tintoré Subirana, Joaquim | Professor d'investigació | Compartida |
| Monserrat Tomàs, Sebastià | TU | Compartida |
| Ruiz Valero, Simón | | Compartida |
| Basterretxea Oyarzábal, Gotzon | | Compartida |
| Pascual Ascaso, Ananda | | Compartida |

Summary

The oceanic mesoscale (10-100 km) is the equivalent to the atmospheric storm scale. It is usually associated to frontal instabilities and generates highly energetic patterns of three-dimensional circulation. The central objective of this project is to extend our previous observations (Rodríguez et al., 2001) about the relation between the vertical velocity field and the size structure of the phytoplankton community. We predict that the validity of the empirical model can be extended up to cover the whole range of vertical velocity values which can be found in the region if the size range of analysed particles is extended to include cell aggregates and fecal pellets. On the other hand, the already demonstrated effect of the upward motion on large cells could be compensated by the downward intense transport along the isopycnals. The analysis of this phenomenon will be a core objective of the project. Finally, the knowledge of the vertical velocity fields and the size structure of phytoplankton associated to the northwestern Alborán front will permit us to carry out a first experimental balance about the effect of mesoscale vertical dynamics on the vertical flux of carbon in the ocean.

Referència: BFM2002-04474-C02-C01.

Modalitat: Programa nacional de promoció general del coneixement.

Títol: *Competición, coordinación y cooperación de agentes en redes complejas.*

Acrònim: NOLINET.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: MARTÍNEZ EGUÍLUZ, Víctor.

Categoria: Contractat postdoctoral.

Inici: 2002. **Fi:** 2003.

| Membres de l'equip | Categoria | Dedicació |
|---------------------------|-------------------------|------------------|
| Martínez Eguíluz, Víctor | Contractat postdoctoral | 1 |
| Klemm, Konstantin | Becari predoctoral | 1 |

EDP del grup investigador de l'entitat sol·licitant: 2.

Summary

We propose the study of socio-economical complex systems from the Statistical Mechanics and Nonlinear Physics point of view. These systems are formed by degrees of freedom («agents») whose interaction is given by a complex network. This project is intended to describe the dynamical evolution of such systems. Similarly to the standard problems in statistical mechanics, the topology, correlations and competition between agents are essential for a macroscopic description. Thus it seems appropriate to split the study in two parts. In the first part, we will study the topological properties of interaction networks of socio-economical systems from empirical data. We will use standard statistical tools (e.g. correlation matrix, percolation), and develop new ones whenever necessary. This study will help us to uncover the interaction networks, and their dynamics as well. In the second part, we will model the dynamics of the agents following the results obtained previously. In this part we will use extensive numerical simulations of the developed stochastic models. We aim for a macroscopic characterization and for a determination of which of the microscopic features are essential for the description of the aggregate behavior. We intend to identify the causes of the complex behavior of such systems and to be able to make predictions. The specific topics we will address are the emergence of social structure in a model of cooperation, phase transitions and scaling laws in a coordination model, and the formation of clusters in networks with transmission of information.

Referència: REN2001-1535/MAR. Ministeri de Ciència i Tecnologia.

Títol: *Biodiversidad y funcionamiento de ecosistemas bentónicos mediterráneos dominados por macroalgas.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: TERRADOS MUÑOZ, Jorge.

Categoria: Científic titular CSIC.

Inici: 2002. **Fi:** 2004.

Summary

The main goal of the project is to elucidate the role of algal diversity in the function of Mediterranean benthic communities dominated by macroalgae to evaluate the consequences of the loss of biodiversity that occurs in these ecosystems when affected by human activities. The experimental approach of the project involves in situ manipulation of the algal diversity of the Mediterranean community formed by infralitoral photophilic algae through the selective elimination of individual/groups of species. The project will evaluate the relative contribution of dominant and minor species of macroalgae and will identify key species for (1) the maintenance of algal diversity itself, (2) the primary productivity, (3) the biomass of the invertebrate fauna (epifauna) associated to the community, and (4) the maintenance of epifauna diversity. It is expected that project results will contribute significantly to the knowledge of the function of Mediterranean benthic ecosystems dominated by macroalgae through the elucidation of the role of macroalgal diversity in the maintenance of algal diversity and primary productivity, and the biomass and diversity of epifauna. Furthermore, the project will contribute to establish strong scientific criteria to evaluate the effects that human activities have on rocky-bottom Mediterranean benthic ecosystems and to support environmental policy and management plans that promote the sustainable use of these ecosystems by man.

Referència: REN2002-00701/MAR. Ministeri de Ciència i Tecnologia.

Títol: Expansión de *Caulerpa prolifera*, *C. taxifolia* y *C. racemosa* en el Mediterráneo: dinámica clonal, producción y destino de la producción.

Acrònim: CAULEXPAN.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigadora responsable: MARBÀ BORDALBA, Núria.

Inici: 2002. **Fi:** 2005.

Summary

The macroalgae of the genus *Caulerpa* are clonal plants with sifonal structure that develop extensive meadows on sandy and muddy littoral bottoms. *Caulerpales* have been shown to act as invasive species when introduced across biogeographic ranges. This is particularly prominent in the Mediterranean, where two exotic *Caulerpa* species, *C. taxifolia* and *C. racemosa* have spread into areas formerly occupied by seagrasses. The paucity of available information on *Caulerpa* spp meadow dynamics prevents to define and implement efficient management policies to control its expansion. The aims of the project proposed are (1) to develop predictive models of spatial and temporal expansion of *C. prolifera*, *C. taxifolia*, and *C. racemosa* meadows in the Mediterranean Sea, based on clonal plant growth at frond (cm), clon (m) and meadow (Ha), and the habitat requirements of the species; (2) to quantify meadow, autotrophic and heterotrophic, production; and (3) to investigate the fate of plant production, and the changes enhanced by *Caulerpa* spp on the trophic structure of the community. The results obtained with the project will provide the necessary tools to effectively manage the expansion of *Caulerpa* species across the Spanish Mediterranean.

Referència: REN2002-04535-CO2-02. Ministeri de Ciència i Tecnologia.

Títol: *Influencia de la estructura y dinámica oceanográfica sobre poblaciones demersales en aguas de las Islas Baleares.*

Acrònim: IDEA.

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigadora responsable: [MORALES NIN, Beatriz](#).

Categoria: Científica titular CSIC.

Inici: 2002. **Fi:** 2005.

Summary

The management of renewable marine resources based on the ecosystem is imposing a simplistic concept that relies on traditional population dynamics. This new focus establishes that the strategy of exploitation and conservation should take into account the functioning of the ecosystems, their natural variations and the factors that control these changes. The presented project is designed within this field and proposes to study the influence of abiotic (oceanographic structure and dynamics) and biotic (trophic resources) factors on the ecosystems and demersal resources, as well as the populational dynamics of two species subjected to exploitation on the shelf and slope of the western Mediterranean: the hake (*Merluccius merluccius*) and the red shrimp (*Aristeus antennatus*). The study will be developed off the island of Majorca, which is separated from the continental margins by large geographical, therefore it can be considered as an isolated demersal ecosystem, and shows large oceanographic spatio-temporal variability, both at the meso- and the macroscale level. Moreover, in this area, periodical movements of the local fishing fleet have been shown between two zones west and south of the Island, suggesting a seasonal variability for the resources, and databases on oceanographic and fisheries monitoring information are available from different research projects since the beginning of the 1990's. As a result, it is proposed: (i) to study, in these two zones with distinct oceanographic and environmental characteristics, the seasonal changes in the bottom communities and their exploited species, as well as their trophic resources; (ii) to study the interannual variability for the mortality and abundance of these resources. There are only a few previous studies in this line of research, which, moreover, have been limited in the two aspects that will be the basis of the current proposal: (i) a study of the seasonality, dealt with until now in a fragmentary way; (ii) the simultaneous sampling of the distinct compartments that form the marine ecosystems, from the water masses to the highest level of the trophic chain. Consequently, the project proposal deals with the first attempt at a multidisciplinary approach towards understanding the dynamics of the exploited demersal ecosystems in the Mediterranean Sea.

Referència: REN-2000-1471-C02/MAR. Ministeri de Ciència i Tecnologia.

Títol: *Flujo de carbono en la región Canaria: acoplamiento entre exportación costera y demanda oceánica.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigadora responsable: [AGUSTÍ REQUENA, Susana](#).

Categoria: Científica titular CSIC.

Inici: 2000. **Fi:** 2003.

Referència: REN-2001-5060E/MAR. Ministeri de Ciència i Tecnologia.

Títol: *Producción de carbono orgánico disuelto por el fitoplancton en la región Canaria del Atlántico.*

Investigadora responsable: [AGUSTÍ REQUENA, Susana](#).

Categoria: Científica titular CSIC.

Inici: 2001. **Fi:** 2003.

Referència: REN2002-04165-CO3-O2. Ministeri de Ciència i Tecnologia.

Títol: *Luz y nutrientes como recursos: respuestas del microplancton y génesis de la heterogeneidad espacial en el océano sur.*

Acrònim: ICEPOS.

Investigador responsable: [DUARTE QUESADA, Carlos](#).

Categoria: Professor d'investigació del CSIC.

Inici: 2000. **Fi:** 2005.

ACCIONS INTEGRADES

Referència: HB99-0042.

Acció: hispano-britànica.

Títol: *Utilización de porfirinas para la generación de ensamblajes moleculares multi-componente.*

Investigador responsable: BALLESTER BALAGUER, Pau.

Departament: Química.

Període: 2000-2002.

Referència: HP2000-0003.

Acció: hispano-portuguesa.

Títol: *Development of automatic flow methods of analysis applied to the determination of environmental and pharmaceutical samples.*

Investigador responsable: CERDÀ MARTÍN, Víctor.

Departament: Química.

Període: 2001-2002.

Referencia: HA2000-0012.

Acció: hispano-alemanya.

Títol: *Polarization patterns and fluctuations in nonlinear optical systems.*

Investigador responsable: SAN MIGUEL RUIBAL, Maximino.

Departament: IMEDEA.

Període: 2001-2002.

Referencia: HI2000-0027.

Acció: hispano-italiana.

Títol: *Estructuras localizadas en cavidades ópticas no lineales.*

Investigador responsable: SAN MIGUEL RUIBAL, Maximino.

Departament: IMEDEA.

Període: 2001-2002.

ACCIONS ESPECIALS

Referència: TIC2000-3220-CE.

Títol: *Minority Newspapers to New Media.*

Centre: Departament de Ciències Històriques i Teoria de les Arts. Edifici Ramon Llull.

Investigador responsable: [SERRA BUSQUETS, Sebastià.](#)

Categoria: TU (àrea de coneixement: Història Contemporània).

Inici: 2002. **Fi:** 2002.

Referència: REN2001-5175-E/CLI.

Títol: *Organizació de la 4th Plinius Conference on Mediterranean Storms.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [ROMERO MARCH, Romualdo.](#)

Categoria: TU (àrea de coneixement: Física de la Terra, Astronomia i Astrofísica).

Inici: 2002. **Fi:** 2003.

Referència: REN2002-10018-E/CLI.

Títol: *Red ibérica para la investigación y desarrollo de aplicaciones en base al modelo atmosférico MM5.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [ROMERO MARCH, Romualdo.](#)

Categoria: TU (àrea de coneixement: Física de la Terra, Astronomia i Astrofísica).

Inici: 2002. **Fi:** 2004.

Referència: SEC2001-5015-E.

Títol: *XII Congreso Nacional de ACEDE (Asociación Científica de Economía y Dirección de Empresa).*

Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.

Investigador responsable: [CRESPÍ CLADERA, Rafael.](#)

Categoria: CU (àrea de coneixement: Economia Financera i Comptabilitat).

Inici: 2002. **Fi:** 2002.

Referència: BSO2001-5027-E.

Títol: *XIX Jornadas Universitarias y Educación Especial: Educación , Diversidad y Calidad de Vida.*

Centre: Departament de Ciència de l'Educació. Edifici Guillem Cifre de Colonya.

Investigadora responsable: [FORTEZA FORTEZA, M. Dolors.](#)

Categoria: TU (àrea de coneixement: Didàctica i Organització Escolar).

Inici: 2002. **Fi:** 2002.

Referència: BTE2000-3337-E.

Títol: *Control de deformaciones verticales en el área de Torrevieja mediante la comparación de nivelaciones de precisión.*

Centre: Departament de Ciència de la Terra. Edifici Guillem Colom Casanovas.

Investigador responsable: [GIMÉNEZ GARCIA, Jordi](#).

Categoria: Aj. U (àrea de coneixement: Geodinàmica).

Inici: 2002. **Fi:** 2002.

Referència: TIC2001-5233-E.

Títol: *Second International Workshop on Articulated Motion and Deformable Models.*

Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.

Investigador responsable: [GONZÁLEZ HIDALGO, Manuel](#).

Categoria: TU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).

Inici: 2002. **Fi:** 2002.

Referència: TIC2001-3993-E.

Títol: *Complemento al proyecto europeo 'Autotracker'.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [CALVO IBÁÑEZ, Óscar Alberto](#).

Categoria: TEU int. (àrea de coneixement: Tecnologia Electrònica).

Inici: 2002. **Fi:** 2002.

Referència: TIC2001-4484-E.

Títol: *Optical chaos communication using laser-diodes transmitters.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [MIRASSO SANTOS, Claudio Rubén](#).

Categoria: TU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2002. **Fi:** 2004.

Referència: TIC2002-10115-E.

Títol: *Reuniones científicas de diseño y verificación de circuitos microelectrónicos CMOS.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [SEGURA FUSTER, Jaume Agapit](#).

Categoria: TU (àrea de coneixement: Tecnologia Electrònica).

Inici: 2002. **Fi:** 2002.

Referència: BSO2001-4442-E.
Títol: *I Jornadas de Teoría y Psicología. Representación y Significado: Una Aproximación Multidisciplinar.*
Centre: Departament de Psicologia. Edifici Guillem Cifre de Colonya.
Investigador responsable: [GOMILA BENEJAM, Antoni](#).
Categoria: TU (àrea de coneixement: Psicologia Bàsica).
Inici: 2002. **Fi:** 2003.

Referència: SAF2000-2633-E.
Títol: *III Congreso Nacional de la Sociedad Española de Nutrición Básica y Aplicada.*
Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.
Investigador responsable: [PALOU OLIVER, Andreu](#).
Categoria: CU (àrea de coneixement: Bioquímica i Biologia Molecular).
Inici: 2002. **Fi:** 2002.

Referència: SAF2001-4859-E.
Títol: *Lípidos en la dieta como factores de riesgo para la salud.*
Centre: Departament de Biologia Fonamental i Ciències de la Salut. Edifici Guillem Colom Casanovas.
Investigador responsable: [PALOU OLIVER, Andreu](#).
Categoria: CU (àrea de coneixement: Bioquímica i Biologia Molecular).
Inici: 2002. **Fi:** 2002.

Referència: BFM2001-4180-E.
Títol: *Quantum Images.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: [SAN MIGUEL RUIBAL, Maximino](#).
Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).
Inici: 2002. **Fi:** 2003.

Referència: Govern Balear.
Títol: *Dinàmica de sistemes òptics actius i passius modulats o forçats.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: [SAN MIGUEL RUIBAL, Maximino](#).
Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).
Inici: 2001. **Fi:** 2002.

Referència: MAR98-1839-CE. Programa nacional de ciència i tecnologia marines.
Títol: *Prediction of the resilience and recovery of disturbed coastal communities in the tropics.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: DUARTE QUESADA, Carlos.
Categoria: Professor d'investigació del CSIC.
Inici: 1999. **Fi:** 2002.

Referència: REN2000-2123-E.
Títol: *Cooperación hispano-australiana en la modelización de la colonización de praderas submarinas de Posidonia.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: DUARTE QUESADA, Carlos.
Categoria: Professor d'investigació del CSIC.
Inici: 2001. **Fi:** 2003.

Referència: REN2000-3091-CE/MAR.
Títol: *Management and monitoring of seagrass beds (M&MS).*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: DUARTE QUESADA, Carlos.
Categoria: Professor d'investigació del CSIC.
Inici: 2001. **Fi:** 2004.

Referència: REN2000-3116-CE/MAR.
Títol: *Nutrients cycling and the trophic status of coastal ecosystems (EUROTROPH).*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: DUARTE QUESADA, Carlos.
Categoria: Professor d'investigació del CSIC.
Inici: 2001. **Fi:** 2004.

Referència: AE00-0356.
Títol: *Consolidación del Grupo de Oceanografía Interdisciplinari.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: TINTORÉ SUBIRANA, Joaquim.
Categoria: Professor d'investigació del CSIC.
Inici: 2000. **Fi:** 2002.

Referència: BIO2000-2127-E.
Títol: *Ayuda para la continuación de la red temática sobre biología molecular de microorganismos de interés ambiental.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: LALUCAT JO, Jordi.
Categoria: CU (àrea de coneixement: Microbiologia).
Inici: 2001. **Fi:** 2002.

Referència: BIO2000-3114-E.
Títol: *Participació en el projecte 'Estudio internacional doble ciego para la identificación de las especies de Pseudomonas'.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: LALUCAT JO, Jordi.
Categoria: CU (àrea de coneixement: Microbiologia).
Inici: 2002. **Fi:** 2003.

Referència: REN2000-2987-E/ANT.
Títol: *Acción complementaria del proyecto ICEFISH.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigadora responsable: MORALES-NIN, Beatriz.
Categoria: Investigador científic CSIC.
Inici: 2001. **Fi:** 2002.

Referència: REN2000-2599-E.
Títol: *Desarrollo y distribución de herramientas paa el cálculo de variables hidrodinámicas a partir de datos de campañas oceanográficas.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: GOMIS BOSCH, Damià.
Categoria: TU (àrea de coneixement: Física de la Terra).
Inici: 2001. **Fi:** 2002.

Referència: REN2002-10606-E/MAR.
Títol: *Mortalidad de fitoplancton en el mediterraneo occidental: participacion en campaña pelagia 2003.*
Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).
Investigador responsable: AGUSTÍ REQUENA, Susana.
Categoria: Científica titular del CSIC.
Inici: 2002. **Fi:** 2004

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Bioinformàtica: projecte present, realitat futura.*
Centre: Departament de Biologia. Edifici Guillem Colom Casanovas.
Investigador responsable: CASTRO OCÓN, José Aurelio.
Categoria: TU (àrea de coneixement: Genètica).
Inici: 2002. **Fi:** 2003.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.
Títol: *Seminari sobre educació i patrimoni cultural.*
Centre: Departament de Ciències de l'Educació. Edifici Guillem Cifre de Colonya.
Investigador responsable: COLOM CAÑELLAS, Antoni J.
Categoria: CU (àrea de coneixement: Teoria i Història de l'Educació).
Inici: 2002. **Fi:** 2003.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.
Títol: *Seminari sobre la Interpretació del Patrimoni i Desenvolupament Cultural.*
Centre: Departament de Ciències de l'Educació. Edifici Guillem Cifre de Colonya.
Investigador responsable: SUREDA NEGRE, Jaume.
Categoria: CU (àrea de coneixement: Didàctica i Organització Escolar).
Inici: 2002. **Fi:** 2003.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.
Títol: *AMDO2002 Workshop Articulated Motion and Deformable Objects.*
Centre: Departament de Ciències Matemàtiques i Informàtica. Edifici Anselm Turmeda.
Investigador responsable: PERALES LÓPEZ, Francisco José.
Categoria: TU (àrea de coneixement: Ciències de la Computació i Intel·ligència Artificial).
Inici: 2002. **Fi:** 2002.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.
Títol: *XII Congrés Nacional d'ACEDE.*
Centre: Departament d'Economia i Empresa. Edifici Gaspar Melchor de Jovellanos.
Investigador responsable: CRESPI CLADERA, Rafael.
Categoria: CU (àrea de coneixement: Economia Financera i Comptabilitat).
Inici: 2002. **Fi:** 2002.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Red temática europea: aspectos sociales de la investigación en genética humana.*

Centre: Departament de Filosofia i Treball Social. Edifici Ramon Llull.

Investigadora responsable: [AMBROGI ÁLVAREZ, Adelaida](#).

Categoria: TU (àrea de coneixement: Lògica i Filosofia de la Ciència).

Inici: 2002. **Fi:** 2003.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Estudio de la organización de la actividad eléctrica auricular en la fibrilación auricular crónica.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [MIRASSO SANTOS, Claudio Rubén](#).

Categoria: TU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2002. **Fi:** 2003.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Vents nocturns locals a Mallorca: estudi per simulació numèrica.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [CUXART RODAMILANS, Joan](#).

Categoria: INVESTIGADOR CONTRACTAT.

Inici: 2002. **Fi:** 2003.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Prototipus d'un sistema autònom de navegació autoguiada en temps real per a entorns tancats.*

Centre: Departament de Física. Edifici Mateu Orfila i Rotger.

Investigador responsable: [SEGURA FUSTER, Jaume Agapit](#).

Categoria: TU (àrea de coneixement: Tecnologia Electrònica).

Inici: 2001. **Fi:** 2002.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Estimació de paràmetres demogràfics en poblacions de vertebrats.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [ORO DE RIVAS, Daniel](#).

Categoria: Científic titular CSIC.

Inici: 2002. **Fi:** 2003.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Colloquium on new challenges on nonlinear and statistical physics.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [SAN MIGUEL RUIBAL, Maximino.](#)

Categoria: CU (àrea de coneixement: Física de la Matèria Condensada).

Inici: 2002. **Fi:** 2003

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Organització de la XV Reunión de la Sociedad Española de Fisiología Vegetal i del VIII Congreso Hispano-Luso.*

Centre: Institut Mediterrani d'Estudis Avançats (IMEDEA).

Investigador responsable: [MEDRANO GIL, Hipólito.](#)

Categoria: CU (àrea de coneixement: Fisiologia Vegetal).

Inici: 2002. **Fi:** 2002.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Consolidació del Laboratorio de Sistemàtica Humana.*

Centre: Laboratori de Sistemàtica Humana.

Investigador responsable: [CELA CONDE, Camilo José.](#)

Categoria: CU (àrea de coneixement: Filosofia Moral).

Inici: 2002. **Fi:** 2002.

Referència: Accions especials de recerca i desenvolupament tecnològic del Govern Balear.

Títol: *Estudi de les propietats dietètiques del germen de garrofi i la seva utilització per el desenvolupament d'aliments funcionals.*

Centre: Química.

Investigador responsable: [GRASES FREIXEDAS, Felicià.](#)

Categoria: CU (àrea de coneixement: Química Analítica).

Inici: 2002. **Fi:** 2003.

**PROJECTES DE RECERCA APLICADA
I DESENVOLUPAMENT**

Títol: *Atlas de los hábitats naturales y seminaturales de España.*

Investigador responsable: LLORENS GARCIA, Leonard.

Departament: Biologia.

Empresa/Administració: TRAGSA.

Títol: *Caracterització de la varietat vitícola malvasia de Banyalbufar, el seu fruit i els seus vins, i el sanejament d'àpex caulinars mitjançant el seu cultiu in vitro.*

Investigador responsable: MEDRANO GIL, Hipólito.

Departament: Biologia.

Empresa/Administració: Conselleria d'Agricultura i Pesca.

Títol: *Vigilancia radiológica ambiental. Red densa de estaciones de muestreo (REM).*

Investigador responsable: CASAS AMETLLER, Montserrat.

Departament: Física.

Empresa/Administració: Consejo de Seguridad Nuclear.

Títol: *Obtenció d'un producte comercialitzable amb propietats antioxidants a partir del germen de garrofi.*

Investigadora responsable: LLOBERA BALLE, Antònia.

Departament: Química.

Empresa/Administració: Conselleria d'Agricultura i Pesca.

Títol: *The effect of hydrophobic peptides on the lipid phase behaviour on model membranes.*

Investigadora responsable: BARCELÓ MAIRATA, Francesca M.

Departament: Biologia Fonamental i Ciències de la Salut.

Empresa/Administració: Deutches Elektronen-Synchrotron DESY.

Títol: *Study of the stably stratified boundary layer through large-eddy simulations and high-resolution mesoscale modelling.*

Investigador responsable: CUXART RODAMILANS, Joan.

Departament: Física.

Empresa/Administració: Centre Europeu de Producció Metereològica a Mig Termini.

FUNDACIO UNIVERSITAT-EMPRESA

Títol: *Disseny per un parc de depuració a Santanyí.*

Investigador: MARTÍNEZ TABERNER, Antoni.

Departament: Biologia.

Títol: *Fitoplàncton.*

Investigador: MOYÀ NIELL, Gabriel.

Departament: Biologia.

Títol: *Utilització dels líquens com a bioindicadors.*

Investigador: MUS AMÉZQUITA, Maurici.

Departament: Biologia.

Títol: *Conversió dels sistema agrari.*

Investigador: VADELL ADROVER, Jaume.

Departament: Biologia.

Títol: *Aspectes nutricionals i d'alimentació.*

Investigador: PALOU OLIVER, Andreu.

Departament: Biologia Fonamental i Ciències de la Salut.

Títol: *Esteroles. Propiedades biológicas y funcionales.*

Investigador: PALOU OLIVER, Andreu; PICÓ SEGURA, Catalina.

Departament: Biologia Fonamental i Ciències de la Salut.

Títol: *Obesidad, lácteos y alimentos funcionales.*

Investigador: PALOU OLIVER, Andreu; BONET PIÑA, M. Lluïsa.

Departament: Biologia Fonamental i Ciències de la Salut.

Títol: *Estimació de la ingesta potencial d'un additiu.*

Investigador: PALOU OLIVER, Andreu.

Departament: Biologia Fonamental i Ciències de la Salut.

Títol: *Indicadors de sostenibilitat turística.*

Investigador: BLÁQUEZ SALOM, Macià.

Departament: Ciències de la Terra.

Títol: *Turisme nacional vingut en transport regular.*

Investigador: SEGUÍ LLINÀS, Miquel.

Departament: Ciències de la Terra.

Títol: *Estudi dels sectors de platja regenerada.*

Investigador: SERVERA NICOLAU, Jaume.

Departament: Ciències de la Terra.

Títol: *Estudi de les persones majors d'Artà.*

Investigador: BALLESTER BRAGE, Lluís.

Departament: Ciències de l'Educació.

Títol: *Estudi de la prostitució llatinoamericana a Palma.*

Investigador: BALLESTER BRAGE, Lluís.

Departament: Ciències de l'Educació.

Títol: *Can Reviu.*

Investigador: OLIVER TROBAT, Miquel F.

Departament: Ciències de l'Educació.

Títol: *Empleo Integra..*

Investigador: SALVÀ MUT, Francesca.

Departament: Ciències de l'Educació.

Títol: *Parc arqueològic de Sa Morisca.*

Investigador: CALVO TRIAS, Manuel A.

Departament: Ciències Històriques i Teoria de les Arts.

Títol: *Catalogació dels molins del municipi de Campos.*

Investigadora: CANTARELLAS CAMPS, Catalina.

Departament: Ciències Històriques i Teoria de les Arts.

Títol: *Protecció amb tarjeta intel·ligent d'ordinadors.*
Investigador: SERRA CIFRE, Bartomeu Jaume.
Departament: Ciències Matemàtiques i Informàtica.

Títol: *Creació viver idees a la pàgina web de la Banca March.*
Investigador: VALVERDE GARCIA, Llorenç.
Departament: Ciències Matemàtiques i Informàtica.

Títol: *Conveni de col·laboració amb el Parlament de les Illes Balears.*
Investigador: VALVERDE GARCIA, Llorenç.
Departament: Ciències Matemàtiques i Informàtica.

Títol: *E-Jure.net.*
Investigador: CAVANILLAS MÚGICA, Santiago José.
Departament: Dret Privat.

Títol: *Estudi dels termes comercials utilitzats a la contractació turística interempresarial.*
Investigadora: MARTÍNEZ NADAL, Apol·lònia.
Departament: Dret Privat.

Títol: *Federació d'Entitats Locals.*
Investigadora: RAMIS REBASSA, Lourdes.
Departament: Dret Públic.

Títol: *Anàlisi de motivacions i actituds del turisme de masses.*
Investigador: AGUILÓ PÉREZ, Eugeni.
Departament: Economia i Empresa.

Títol: *Arxiu i biblioteca COCIN.*
Investigador: MANERA ERBINA, Carles.
Departament: Economia i Empresa.

Títol: *Història econòmica del calçat a les Balears.*
Investigador: MANERA ERBINA, Carles.
Departament: Economia i Empresa.

Títol: *Centre de Recerca Econòmica.*
Investigador: RIERA FONT, Antoni.
Departament: Economia i Empresa.

Títol: *Estudi de desenvolupament socioeconòmic sostenible.*
Investigador: SASTRE ALBERTÍ, Antoni.
Departament: Economia i Empresa.

Títol: *Treball, sostenibilitat i cohesió social a les Illes Balears..*
Investigador: RIUTORT SERRA, Bernat.
Departament: Filosofia i Treball Social.

Títol: *Circuit design for low temperature CMOS integrated circuits.*
Investigador: SEGURA FUSTER, Jaume Agapit.
Departament: Física.

Títol: *Asistencia técnica para el plan de protección.*
Investigador: ALONSO OROZA, Sergio.
Departament: Física.

Títol: *Agència Estatal Europea.*
Investigador: GOMIS BOSCH, Damià.
Departament: Física.

Títol: *Prospección de la zona de préstamo de Cap Salines.*
Investigador: DUARTE QUESADA, Carlos.
Departament: IMEDEA.

Títol: *Series temporales del nivel del mar.*
Investigador: GOMIS BOSCH, Damià.
Departament: IMEDEA.

Títol: *Poblaciones ícticas en Cap Salines.*
Investigadora: MORALES NIN, Beatriz.
Departament: IMEDEA.

Títol: *Modelización numérica de circulación en las playas.*
Investigador: TINTORÉ SUBIRANA, Joaquim.
Departament: IMEDEA.

Títol: *Planta y perfiles de playa.*
Investigador: TINTORÉ SUBIRANA, Joaquim.
Departament: IMEDEA.

Títol: *Sistema d'informació territorial de la Serra de Tramuntana.*
Investigador: RUIZ PÉREZ, Maurici.
Departament: LSIG.

Títol: *Fundación Española para la Psiquiatría y la Salud.*
Investigador: ROCA BENNÀSAR, Miquel.
Departament: Psicologia.

Títol: *Discriminació auditiva.*
Investigador: ROSSELLÓ MIR, Jaume.
Departament: Psicologia.

Títol: *Control i altres estudis de lleixius i detergents.*
Investigador: FORTEZA COLL, Rafael A.
Departament: Química.

Títol: *Aprovechamiento de la pulpa de algarroba.*
Investigador: ROSSELLÓ MATAS, Carme.
Departament: Química.

Títol: *L'elaboració de la sobrassada. Estudi de les variables de procés en la deshidratació del pebre dolç.*
Investigador: FEMENIA MARROIG, Antoni.
Departament: Química.

Títol: *Programa educatiu de llengua catalana.*
Investigador: SERRA CIFRE, Bartomeu Jaume.
Departament: Centre de Tecnologies de la Informació.

Institut Mediterrani d'Estudis Avançats (IMEDEA)

Títol: *El seguimiento del efecto reserva sobre la pesca y el rendimiento pesquero en las reservas marinas de las islas Baleares.*

Investigadora: [MORALES NIN, Beatriz](#).

Empresa/Administració: Conselleria d'Agricultura i Pesca.

Títol: *Innovación en el sector turístico. Análisis prospectivo de tecnologías.*

Investigador: [TINTORÉ SUBIRANA, Joaquim](#).

Empresa/Administració: Fundación Cotec para la Innovación Tecnológica.

Títol: *Evaluación de algunos aspectos de la pesca recreativa en la isla de Mallorca.*

Investigadora: [MORALES NIN, Beatriz](#).

Empresa/Administració: Conselleria d'Agricultura i Pesca.

Títol: *Seguiment de la colonia de gavina corsa a la reserva natural de la Punta de la Banya, al Parc Natural de l'Ebre.*

Investigador: [ORO DE RIVAS, Daniel](#).

Empresa/Administració: Generalitat de Catalunya.

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ÍNDIX D'ABREVIACIONS

Aj. EU: Ajudant/a d'Escola Universitària
Aj. U: Ajudant/a d'Universitat
AGR: Programa nacional d'investigació i desenvolupament agrari
ALI: Programa nacional de tecnologia d'aliments
AMB: Programa nacional d'I+D en medi ambient
ANT: Programa nacional d'investigació a l'Antàrtida.
As.: Associat/da
B: Becari/ària
B (reinc.): Becari/ària postdoctoral de reincorporació
BIO: Programa nacional de biotecnologia
C: Col·laborador/a
CEU: Catedràtic/a d'Escola Universitària
CLI: Programa nacional d'I+D sobre el clima
CSIC: Consell Superior d'Investigacions Científiques
CU: Catedràtic/a d'Universitat
EDP: Equivalent de dedicació plena
EDP=1: dedicació única
EDP=0.5: compartida a dos projectes
EDP=0.33: compartida a tres projectes
EJC: Equivalent de jornada completa
FD: Fons FEDER
FIS: Fons d'Investigació Sanitària
HID: Programa nacional de recursos hídrics
IMPIVA: Institut per a la Modernització dels Processos Industrials de València
MAR: Programa nacional de ciència i tecnologia marines
MAST: Marine Sciences and Technologies
MAT: Programa nacional de materials
MEC: Ministeri d'Educació i Ciència
PB: Programa bàsic (Programa sectorial de promoció general del coneixement)
PETRI: Projecte d'Estímul a la Transferència de Resultats d'Investigació
PM: Programa de medicina
PS: Programa sectorial
P1: Projectes d'investigació bàsica no orientada
P2: Projectes d'investigació bàsica orientada
P3: Projectes d'investigació aplicada
P4: Projectes d'I+D en cooperació
RACE: Research and Technology Development in Advanced Communications
Technologies
SC: Programa sectorial d'I+D agrari i alimentari del MAPA
SM: Projecte simplificat d'investigació en biomedicina
Tèc.: Tècnic
TEL: Programa nacional d'aplicacions i serveis telemàtics
TEU: Titular d'Escola Universitària
TIC: Programa nacional de tecnologies de la informació i de les comunicacions
TU: Titular d'Universitat
UE: Unió Europea
UNESCO: United Nations Educational Scientific and Cultural Organization

