

EUROCORES Insight



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Dear reader,

I wish you a very warm welcome to the new EUROCORES INSIGHT No. 4.

This is a time with many major developments for the EUROCORES Scheme, such as the transition of the funding system from the EC contract to the funding system carried by the participating Funding Organisations as well as the implementation of the Open Funding System. At the same time, it is encouraging to see that the activities not only of the EUROCORES Programmes, but also of the Scheme continue and even increase.

The Call for EUROCORES themes attracted the number of 38 theme proposals, indicating a stable, if not even increasing interest of the science community in new EUROCORES Programmes.

From last year's Call for themes, the three selected EUROCORES Programmes (EuroBABEL, EuroHESC and EuroMEMBRANE) and ERCP IV are now in the their project selection phase. The response to the programme call was very promising – nearly 500 scientists submitted 94 proposals. For these three EUROCORES Programmes, a pilot application of the 'Quality Assurance Form for the project selection' is currently implemented. This should assure not only National Funding Organisations but also the scientific community of the high quality standards in the project selection process in EUROCORES Programmes.

Moreover, seven new programmes addressing a broad range of interdisciplinary scientific areas have been finalising their peer review and funding process and are starting their programme implementation with networking and dissemination activities. More details on the response to the calls and the launch of the new programmes can be obtained in this issue of EUROCORES INSIGHT.

Next to informing about general developments of the EUROCORES Scheme, this issue of EUROCORES INSIGHT continues to focus on scientific activities in several EUROCORES Programmes. We can read, inter alia, about how EuroSTELLS contributes to tackling Parkinson's disease as well as about the legacy of the EuroDYNA Programme, which unravelled many mysteries of the cell's control centre. Ocean acidification, a newly emerging issue related to global climate change, is also featured. In the "Past Events and Conferences" section, a number of programmes from diverse scientific fields are reporting on their networking activities. In addition, an overview of the scientific and outreach activities of EUROCORES and the ESF at this year's European Science Open Forum (ESOF) in Barcelona will be given.

I hope you will enjoy this new issue of EUROCORES INSIGHT.

Svenje Mehlert, Senior Science Officer, EUROCORES Scheme Coordination,
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EUROCORES Insight

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Launch of New EUROCORES Programmes

From the Open Call for Theme Proposals in 2006 and the EUROCORES Programme Call in 2007, following programmes have been selected and are currently being launched. They address a broad range of interdisciplinary scientific areas, reaching from nanotechnology via quantum mechanics and topography all the way to intelligence and politics:

LogICCC - Modelling Intelligent Interaction - Logic in the Humanities, Social and Computational Sciences



One of the most crucial and striking features of humans and their societies is the phenomenon of intelligent interaction. Many disciplines from the humanities to the

physical sciences hold separate pieces of the puzzle posed by this pervasive but also elusive phenomenon. The EUROCORES programme "LogICCC - Modelling Intelligent Interaction" aims at a deeper understanding of intelligent interaction by letting logic in its modern guise act as a catalyst and a "match maker" between these different disciplines. This will lead to a general framework for analysing intelligent interaction - and the key notions which it naturally brings with it, namely, communication, cognition and computation. To achieve this goal, researchers from a wide variety of disciplines have been invited to team up. Some of these researchers are logicians, others are not. But what all participants in LogICCC projects have in common is their interest in understanding interaction, pursued with the common language and models provided by logic in its modern, pluriform, and outward-looking guise. In this way, new ideas will flow symmetrically between many disciplines, enriching logic itself in the process. In addition, LogICCC is looking for a balance between fundamental theoretical advances and innovative applications of logical models in the thematic areas of interaction, communication, computation, and cognition.

Collaborative Research Projects (CRPs):

- * LINT Logic for Interaction
- * DiFoS Dialogical Foundations of Semantics
- * LcpR The Logic of Causal and Probabilistic Reasoning in Uncertain Environments
- * LoMoReVi Logical Models of Reasoning with Vague Information
- * GASICS Games for Analysis and Synthesis of Interactive Computational Systems
- * VAAG Vagueness, Approximation, and Granularity
- * CFSC Computational Foundations of Social Choice
- * SSEAC Social Software for Elections, the Allocation of Tenders and Coalition/Alliance Formation

Upcoming networking activity:
5-7 October 2008
LogICCC Launch Conference,
Prague, Czech Republic

Contact:
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More information:
www.esf.org/logic



HumVIB - Cross-national and Multi-level Analysis of Human Values, Institutions and Behaviour



The EUROCORES programme HumVIB seeks to systematically analyse the now available ESS and other cross-national survey data in an innovative and comparative way on a European scale. It is the overarching objective to realise the concept of Europe as a natural laboratory for the social sciences in which the diversity of institutions, practices, histories, and resources enable researchers to analyse how human values, attitudes and behaviour are affected by the characteristics of the multi-level systems or contexts in which they occur. HumVIB is designed to combine the unprecedented individual-level data resources now available in Europe and typified by the European Social Survey (ESS), the comprehensive system-level and contextual data, appropriate new methods of multi-level analysis as well as the testing of carefully elaborated theories of the effects of institutions and structures or, more generally, contextual factors on individual attitudes and behaviour.

Collaborative Research Projects (CRPs):

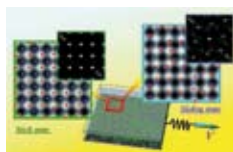
- * EQUALITY Gender Equality in a Comparative Perspective
- * WAE Welfare Attitudes in a Changing Europe
- * VTAC Voter Turnout and Abstention in Context: a multi-level analysis of the factors affecting voter turnout and abstention in systems of multi-level governance
- * REPCONG Representation in Europe: policy congruence between citizens and elites
- * LIFETIMING The Timing of Life: understanding cross-national differences in the organisation of the life course in Europe
- * HAPPINESS (HAPpiness, Political Institutions, Natural Environment and Space) A comparative analysis of the influence of environmental conditions, environmental regimes and political context on subjective well-being

Upcoming networking activity:
2-3 October 2008
HumVIB Kick-Off Meeting, Dublin, Ireland

Contact: Frank Kuhn at humvib@esf.org
More information: www.esf.org/humvib



FANAS - Friction and Adhesion in Nanomechanical Systems



Everyday operations on a broad range of scales, from nanometer and up, depend upon the smooth and satisfactory functioning of countless tribological

systems. Friction is intimately related to both adhesion and wear, and all three require an understanding of highly nonequilibrium processes occurring at the molecular level to determine what happens at the macroscopic level. The fast development, over the last decades, of micro- and nano-mechanics brought up the need for a more basic understanding of the origins and behaviour of friction. Standard lubrication techniques used for large objects are expected to be less effective or even not applicable in the nano-world. Novel methods for control of friction and manipulation of nanoscale objects are therefore needed. A better understanding of triboprocesses has also a major impact for the protection of the environment (reduction of lubricant and energy consumption). The aim of FANAS is to gain a better insight into the origins of friction and adhesion and to learn how to control them. In particular: understanding the relationship between adhesion and friction at the nano- and microscales and the mechanisms of energy dissipation in tribological systems, bridging the gap between the nano, micro and macro scales in friction, lubrication and adhesion, control and modification of frictional properties, nanomanipulations at interfaces, studies of biomimetic tribological systems and tribochemistry.

Collaborative Research Projects (CRPs):

- * EBioAdl An Integrated Framework for Engineering Bio-Mimetic Adhesive Interface
- * NOMCIS Nanomanipulation of Metallic Clusters on Insulating Substrates
- * AFRI Atomic Friction
- * ACOF Active Control of Friction
- * AQUALUBE Water-based Lubricants: theory and experiment
- * NANOPARMA Nanoparticle manipulation with atomic force microscopy techniques
- * FUNDTRIBO Fundamentals of Tribology – Correlation between Wear Characteristics and Material Properties of Polymers Ranged from Sub-Micro to Macro Scale

Upcoming networking activity:
28 July 2008

FANAS Scientific Committee Meeting,
Strasbourg, France

Contact:

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EuroQUASAR – Quantum Standards and Metrology

© Markus Arndt



Three Nobel Prizes in quantum and atom optics (1997, 2001 and 2005) have paved the way and motivated EuroQUASAR. These achievements have contributed to the development of methods to cool and trap atoms with laser light; achievement of Bose-

Einstein condensation in dilute gases of alkali atoms; and, development of laser-based precision spectroscopy, including optical frequency comb technique. "Quantum standard" stands for future optical clocks, inertial sensors of unprecedented precision and novel fundamental tests based on atomic, molecular or mesoscopic quantum systems with well defined, unique and eternal features.

Collaborative Research Projects (CRPs):

- * QuDeGPM Quantum-Degeneration Gases for Precision Measurements
- * IQS Inertial Atomic and Photonic Quantum Sensors: ultimate performance and application
- * MIME Molecule Interferometry and Metrology

Upcoming networking activity:
25 July 2008

EuroQUASAR Extended Scientific
Committee Meeting,
Strasbourg, France

Contact:

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EuroSTRESS – Stress and Mental Health



Repetitive and uncontrollable stress is known to be a powerful risk factor for mental disorders. Whether an individual will respond adaptively or maladaptively to a stressor is defined by his/her genetics, developmental history and the environment in adulthood. In particular traumatic experiences in early life, notably neglect or abuse during childhood, could considerably add to the risk of subsequent psychiatric illnesses including major depression, psychosis and post traumatic stress disorder. The societal and economic burden of these stress-related illnesses is enormous. Hence it is of great importance to come to a better understanding of these influences of stress on mental health. EuroSTRESS will focus on two important questions through an interdisciplinary approach:

- How can early life experience and genetic background in concert evoke lasting changes in signalling pathways within the brain, resulting in altered behaviour and increased vulnerability to negative effects of stress in adulthood?
- How can periods of repetitive stress or traumatic events in adulthood (against a background of life history and genetic vulnerability) disrupt brain function such that the chances on precipitation of specific psychiatric disorders are increased?

Collaborative Research Projects (CRPs):

- ✦ BALANCE Vulnerable Phenotypes for Stress-related Mental Disorders: focus on glucocorticoids
- ✦ PELS The effect of Prenatal Stress Exposure on Child HPA-axis Function and Neurodevelopment: a gene-environment interaction study
- ✦ DOME Developmental origins of Stress and Mental Health

Stress during adolescence and depression

Behavioral Flexibility, Neuronal Plasticity and Depression: influence of stress during adolescence

Upcoming networking activity:

To be announced

Contact:

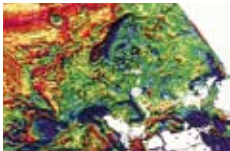
Thomas Bruhn at euorstress@esf.org

More information:

www.esf.org/euorstress



Topo-EUROPE - 4-D Topography Evolution in Europe: Uplift, Subsidence and Sea Level Change



The topography of Europe is at the interface of processes taking place at depth in the Earth, at the surface and in the atmosphere. During the last 20 million years, plate tectonic and

other geodynamic processes in the Earth's interior have caused many changes in the surface topography of Europe. The TOPO-EUROPE programme is concerned with the geoscience of coupled deep Earth and surface processes and their effects on the evolution of the topography of continents and their margins. In addition to addressing world-class issues of Earth-System sciences, TOPO-EUROPE has considerable societal relevance. Indeed, topography affects society not only via landscape changes but also through its impact on geo-hazards and the environment. When sea-, lake- or ground water levels rise, or land subsides, flooding risks increase, directly affecting the sustainability of

local ecosystems and human habitats. On the other hand, declining water levels and uplifting land may lead to higher risks of erosion and desertification. TOPO-EUROPE intends to investigate the 4-D topography evolution of the European continent, its margins, and adjacent parts of North Africa, Asia and the Middle East. This requires an interdisciplinary approach that integrates research in the subdisciplines of geomorphology, geochronology, geology, tectonics, geochemistry, petrology, geophysics, hydrology, geodesy, remote sensing and various branches of geotechnology. This EUROCORES initiative is a unique opportunity to establish a high-quality programme based on Europe's strengths in integrated Solid-Earth sciences.

Upcoming networking activity:

5-9 October 2008

TOPO-EUROPE International Conference, Madrid, Spain

Contact: Kai Rankenburg at

topo-europe@esf.org

More information: www.esf.org/topoeurope



European Collaborative Research Projects 2007 Call - ECRP III



The EUROCORES Programme for European Collaborative Research Projects (ECRP) is a response to the continuing demand from the scientific community in the countries of the SCSS's Member Organisations for funding to support responsive-mode, investigator-driven Collaborative Research Projects within all fields

of social science in Europe. The ECRP Programme is designed to promote research of the highest quality, offering opportunities to test innovative ideas, pool

expertise and strengthen research capacity in line with the objectives of the European Research Area.

Please note that the ECRP Scheme does not follow exactly the same format as other EUROCORES Programmes.

Awarded projects:

The Politics of Attention: West European Politics in Times of Change
Citizenship after the Nation-State

Contact:

Frank Kuhn at ecrp@esf.org

More information: www.esf.org/ecrp



On the Way to a Common-pot Funding in EUROCORES



Top-ranked Collaborative Research Projects not to be carried out because of funding problems? The newly agreed on **open funding system** addresses this issue, which has occurred in the past due to financial limitations of National Funding Organisations. The introduction of the open funding system marks a significant step towards ensuring full funding of all highly ranked Collaborative Research Projects. The system was elaborated following the recommendation of the EUROCORES Scheme Review Panel to

establish a 25 percent-common pot. After a thorough analysis of test runs made the results revealed that the 25 percent-common pot offered no benefits, and therefore the open funding system was selected to be the more promising alternative to guarantee complete funding within a Programme.

In the open funding system, the funding organisations participating in a EUROCORES Programme will have to show some financial flexibility by willing to be prepared to fund **at least one more individual project** (project at national level) than they had originally committed. Thus, not only full funding of as many Collaborative Research Projects as possible is hoped to be reached, but a limitation on the financial risk of the National Funding Organisations has also been implemented in the open funding system.

The open funding system, which will be applied this year as a pilot case for the EuroMEMBRANE Programme, represents an additional financial back-up, allowing excellent research to be conducted in national Individual Projects within the pan-European network of EUROCORES Collaborative Research Projects.

**For further information, please contact
Svenje Mehlert (eurocores@esf.org)
at the ESF office**



Nearly 900 Scientists Respond to 2008 EUROCORES Calls

This impressive figure reflects the continuing strong belief in both the EUROCORES Scheme and the EUROCORES Programmes. Many members of the science community submitted their own ideas by proposing themes, as well as participate in collaborative research by responding to the calls of the selected programmes

The **2008 Call for EUROCORES themes** received a large amount of proposals: 410 proposers submitted 38 proposals on a broad range of subjects: eight interdisciplinary proposals, nine in Life, Earth and Environmental Sciences, seven in Physical and Engineering Sciences, four in Medical Sciences, two in Social Sciences and eight in the Humanities. The proposals are currently undergoing a theme selection process including a peer review.

Nearly 500 scientists, both Principal Investigators and Associated Partners, submitted 94 proposals to the **Call for Proposals of the three new EUROCORES Programmes**, with EuroBABEL ranked at the top in regard of numbers:

EuroBABEL (*Better Analyses Based on Endangered Languages*) has attracted 37 Outline Proposals comprising 144 individual projects and 59 projects with associated status from 203 scientists. 20 funding organisations in 19 countries are participating in EuroBABEL.

EuroMEMBRANE (*Membrane Architecture and Dynamics*) received 35 Outline Proposals, which are made up of 126 individual projects and 38 associated projects from 164 proposers. Currently, 25 countries are involved in EuroMEMBRANE.

EuroHESC (*Higher Education and Social Change*) totaled 22 Outline Proposals encompassing 120 projects (109 individual projects and 11 associated projects) from 110 scientists across 18 countries.

Update on PROFIDYS - Pan-European Clinical Trials (ECT)

One of the two pan-European clinical trials supported under ECT is PROFIDYS; which investigates the therapeutic benefit of a drug treatment (oral biphosphosphonate) for treating a rare inherited bone disease (fibrous dysplasia). Here are the highlights of the past three months:

- The annual meeting of the ASSYMCAL Association, supporting patients with fibrous dysplasia and related syndromes, took place in Paris on the 18-19 April 2008. The project leader of PROFIDYS, Professor Philippe Orcel (Hôpital Lariboisière, Paris) presented the trial to meeting participants, including patients with fibrous dysplasia.
- Once certain healthcare guidelines are adhered to, patients located outside the five countries participating in the trial (BE, DE, FR, NL and UK) can be included, so they have been encouraged to contact their closest clinical centre.
- The most recent Steering Committee meeting took place in Neuilly, France on 13 June 2008.

**For more information, see www.esf.org/ect or contact Carole-Moquin-Pathey at ect@esf.org
ECT Programme Coordinator
Head of EMRC Unit**



Fig. 1: Number of open centres for patient recruitment

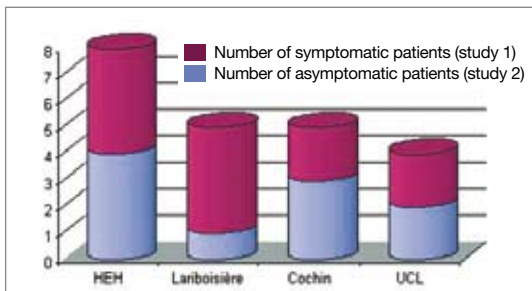


Fig. 2: HEH (Hôpital Edouard Herriot, Lyon, FR); Lariboisière (Hôpital Lariboisière, Paris, FR); Cochin (Hôpital Cochin, Paris, FR); UCL (Université Catholique, Louvain, BE)

Mapping the Road to the Clinical Translation of Stem Cells



EuroSTELLS, a three year programme to generate fundamental knowledge on stem cells, has provided support for an internationally important task force to prepare professional guidelines relating to the clinical translation of stem cell research. Initiated by the International Society for Stem Cell Research (ISSCR)¹ in response to a lack of clear reference materials to assist patients and patient organisations, the final output of the ISSCR Task Force will be a comprehensive and influential document defining the key scientific, clinical, ethical and societal issues that must be addressed to ensure that basic stem cell research is translated into suitable clinical applications for treating patients.

The Task Force, headed by Professor Olle Lindvall of the University of Lund in Sweden, comprises top stem cell researchers, clinicians, bioethicists and regulatory leaders from 13 countries, including France, Italy, Spain, Sweden and the United Kingdom². Convened for the first time in November

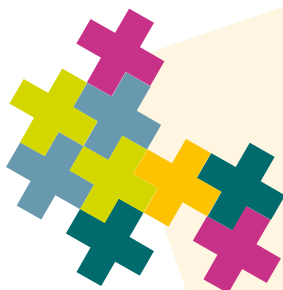
2007, they presented the draft guidelines at the 6th ISSCR Annual Meeting in Philadelphia, June 11-14 2008, which will be released for public comment to prepare the final draft by the end of 2008.

Previously the ISSCR prepared Guidelines for the Conduct of Human Embryonic Stem Cell Research³⁻⁴.

For more information, see www.esf.org/eurostells or contact Fiona Kernan at eurostells@esf.org EuroSTELLS Programme Coordinator



- ¹⁻ www.isscr.org
- ²⁻ www.isscr.org/clinical_trans/members.html
- ³⁻ Ethics. The ISSCR Guidelines for Human Embryonic Stem Cell Research. Science. 2007 Feb 2;315(5812):603-4.
- ⁴⁻ www.isscr.org/guidelines/ISSCRhESCguidelines2006.pdf



EUROCORES at ESOF



The EUROCORES programmes CNCC, EuroSTELLS, EuroQUAM and EuroMinSci will be presenting their activities by organising sessions at this year's Euroscience Open Forum (ESOF), to be held in Barcelona, Spain, from 18-22 July 2008. In addition, there will be several opportunities to meet the scientists at the ESF booth (#111) and there will also be a lunch time reception with ESF Chief Executive Professor Marja Makarow.

The mission of ESOF is to provide both the European and the international science communities with an open platform for debate and communication. It presents and profiles Europe's leading research trends in the sciences, humanities and social sciences. It is an opportunity to discuss and influence the future of research and innovation in Europe.

An overview of EUROCORES sessions and other sessions hosted by the ESF

SATURDAY 19 JULY

EuroSTELLS:

Stem Cells - From Bench to Bedside

8.30-10.00: Scientific session

11.00-12.00: Meet the Scientist at the ESF booth

Stem cells have the remarkable potential to develop into any of the more than 200 types of cell the adult human body holds. This potential may be harnessed to induce the stem cells to differentiate into specific cell types required to repair damaged or destroyed cell populations or tissues; otherwise known as regenerative medicine. Diseases that could be treated in this manner include Parkinson's and Alzheimer's diseases, spinal cord injury, stroke and diabetes.

In this session Professor Keith Campbell (Head of Animal Physiology, University of Nottingham, UK), Mr. Carlos de Sola (Secretary of the Steering Committee on Bioethics, The Council of Europe, FR) and Mr. Alastair Kent (Director, Genetic Interest Group, UK) will address current applications of stem cells, the bioethical issues involved, and the patient's perspective on the use of stem cells.

Programme

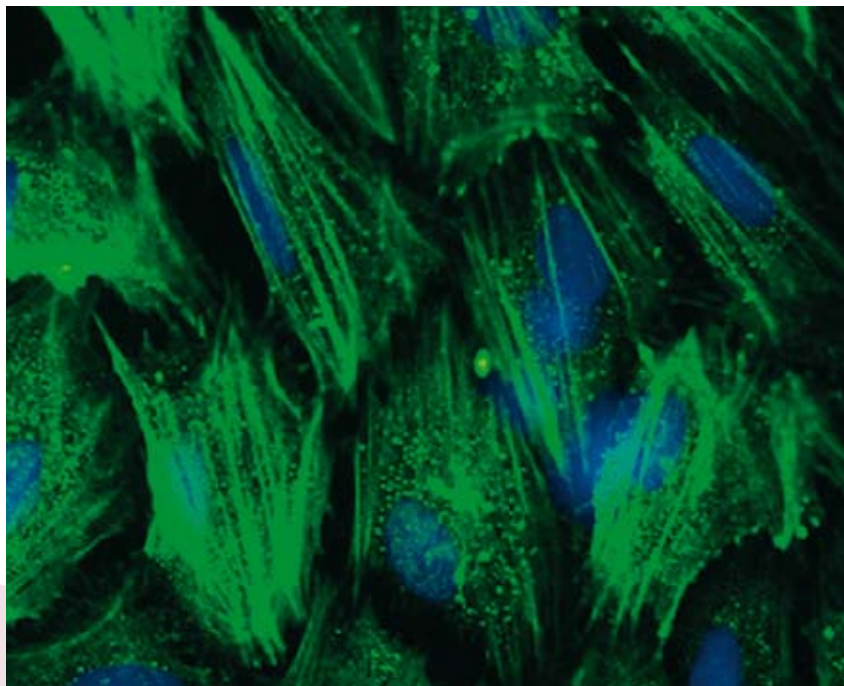
Organiser:

Fiona Kernan, European Science Foundation

The Science and Future of Stem Cell Research, Professor Keith Campbell, University of Nottingham, United Kingdom

Patients' Perspective on Stem Cell Research; Mr. Alastair Kent, Director, Genetic Interest Group, London, United Kingdom

A European Perspective of the Ethical Issues of Embryo Research; Mr. Carlos de Sola, Bioethics Division, Council of Europe, Strasbourg, France



Lazzari et al. Stem Cells 2006 Nov; 24(11):2514-21.Epub 2006 Aug 24

SUNDAY 20 JULY

CNCC: Consciousness in Context

8.30-12.00: Scientific session

17.00-18.00: Meet the Scientist at the ESF booth

Consciousness; according to Science magazine the second most important question facing science over the next quarter-century. However, even though we know more than ever about the function and anatomy of neural systems underlying human experience, nothing close to an explanation has been proposed for the phenomenon of consciousness. The source of this impasse may be a too narrow focus on the neural basis of consciousness. Consciousness depends on the brain, without doubt. But perhaps the brain enables consciousness only given a broader embedding. Perhaps consciousness only arises in context? The recently launched EUROCORES programme “Consciousness in a Natural and Cultural Context” targets precisely this question. In this scientific session, two of the multi-national, multi-disciplinary research projects within this programme present their latest results. The audience is invited to participate in a plenary discussion about the promise and success of the “Consciousness in Context” approach.

Programme

Organiser: Eva Hoogland, European Science Foundation

8.30 - 10.00 *Thinking about Thinking*

Joelle Proust, Institut Jean-Nicod, EHESS, Paris, France

David J. Smith, University of Buffalo, United States

Josep Call, Max, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

Discussion

10.30 - 11.30 *From Social Mind-Reading to Self-Consciousness*

Nivedita Gangopadhyay, University of Bristol, United Kingdom

Julian Kiverstein, University of Edinburgh, United Kingdom

Discussion

11.30 - 12.00 General discussion



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ESF Lunch Time Reception, at ESF booth

13.00 Presentation, buffet lunch and networking opportunity

ESF Chief Executive Marja Makarow will give attendees an insight into how ESF will continue to serve the needs of the European research community.

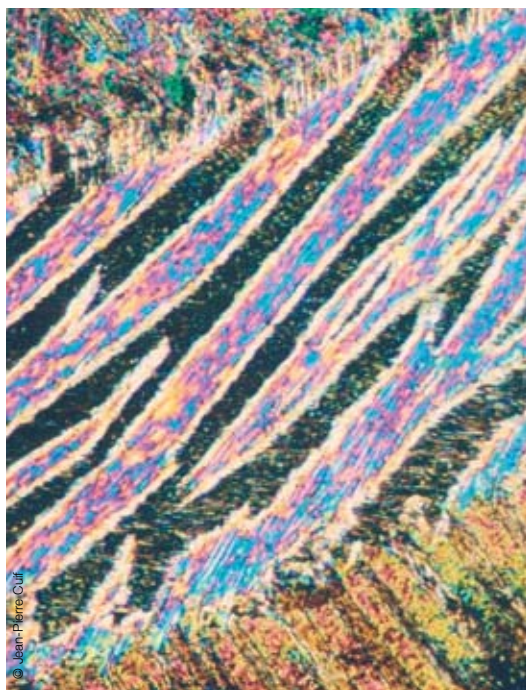


MONDAY, 21 JULY 2008

EuroMinSci: Science at the Centre of the Earth: Matter at Extreme Pressure and Temperature

8.30-10.00: Scientific session

Recent developments in the field of condensed matter research at extreme conditions, i.e. at pressures in the Mbar range and simultaneously at temperatures of a few thousand K, mainly performed at synchrotron radiation facilities, in conjunction with state-of-the-art modelling, now allow to deepen our understanding of the interior of the Earth by studying the properties of minerals at geologically relevant conditions.



Crossed-lammellar structure of aragonite in a gastropod shell (polarised light) – field view 50 µm.

Programme

Organisers: Björn Winkler, Frankfurt University, and Leonid Dubrovinsky, University of Bayreuth, Germany

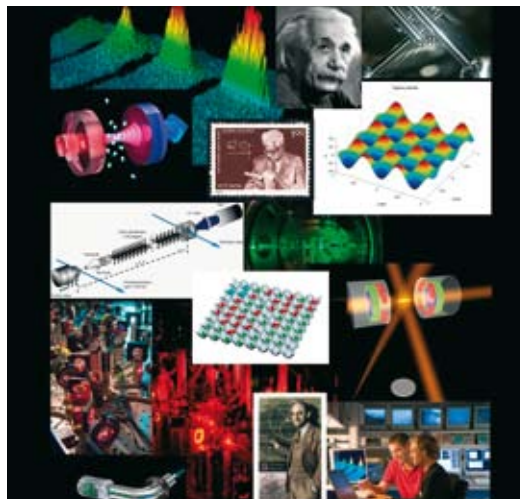
Opportunities for 'Extreme Conditions'-Research at the ESRF and Other Large Scale Facilities, Wilson Crichton, European Synchrotron Radiation Facility (ESRF), France

In Situ Observations of Materials at Earth Mantle and Core Conditions, Leonid Dubrovinsky, University of Bayreuth, Germany

Coordinated Mineral Physics Research in Europe, Björn Winkler, Johann Wolfgang, Frankfurt University

EuroQUAM: The Amazing Quantum World of Ultra Cold Matter

**11.00-12.00: Meet the Scientist at the ESF booth
16.30-18.00: Scientific session**



Many of us have been fascinated by the concept of absolute zero, the temperature at which everything comes to a complete stop. But physics tells us otherwise: absolute zero cannot be reached but only approached, and the closer you get, the more interesting phenomena you find! Nowadays, temperatures of less than a millionth of a degree above absolute zero can be produced in the laboratories. Quantum mechanics rules at such temperatures and predicts, for example, that particles may combine into a new state of matter called Bose-Einstein condensate or BEC. Since the first production in 1995 of the BEC, there have been enormous advances in producing and manipulating quantum matter, and exciting applications have been proposed in diverse areas ranging from ultra-high precision metrology to quantum information technology.

Programme

Organiser: Jürgen Eschner, Institute of Photonic Sciences (ICFO), Spain

Moderator: Eduard Punset

Cold Atoms Keeping (and Revealing) Quantum Secrets, Christopher Foot, Clarendon Laboratory, University of Oxford, United Kingdom

Cold Atom Clocks and Quantum Rulers, Christophe Salomon, Laboratoire Kastler Brossel, Ecole Normale Supérieure, France

Do we understand absolute zero? Maciej Lewenstein, Institute for Photonic Sciences (ICFO), Barcelona, Spain

Revealing Europe's Hidden Map

**12.30-13.30: Meet the Scientist at the ESF booth
14.30-18.00: Scientific session**

Albert Gerdes (organiser), Yvonne Robberstad, John Joyce, Kim Marshall-Brown, Slawomir Sagan

TUESDAY, 22 JULY 2008

Reaching for the Future of European Science

**10.30-12.00: Scientific session
12.30-13.30: Meet the Scientist at the booth**

Nina Kancewicz-Hoffman (organiser), John Marks, Luke Geroghiou, Elsa Fornero, Rudy Rabbinge

Stem Cell Research Aims to Tackle Parkinson's Disease

New ways to grow brain cells in the laboratory could eventually provide a way to treat Parkinson's disease



Scientists in Sweden are developing new ways to grow brain cells in the laboratory that could one day be used to treat patients with Parkinson's disease, an international conference of biologists organised by the European Science Foundation (ESF) was told.

Stockholm presented his research to the EuroSTELLS "Stem Cell Niches" conference in Barcelona on January 11. Stem cell therapy hold the promise of treating disease by growing new tissues and organs from stem cells – 'blank' cells that have the potential to develop into fully mature or 'differentiated' cells. The EuroSTELLS is an ESF EUROCORES programme, managed by the European Medical Research Councils (EMRC), that aims to develop a stem cell 'toolbox' by generating fundamental knowledge on stem cell biology.

Parkinson's disease affects around three in a hundred of people aged over 65. The condition can cause muscles to become rigid and limbs to tremble uncontrollably. Parkinson's disease results from the loss of a particular type of brain cell called dopaminergic (DA) neurons in the part of the brain called the substantia nigra.

Among the various approaches that are currently being discussed from an ethical perspective, is the possible approach of taking stem cells, growing them into new brain cells and transplanting these into the patient. "The idea is to start with stem cells and induce them to become neurons," said Professor Arenas, whose research is carried out as part of a EuroSTELLS collaboration. "These could then be transplanted into the brain of the patient. Also, such cells could be ideal for developing and testing new drugs to treat brain disease."

However, to create such cells that function efficiently and safely is a major challenge. Early efforts at growing DA neurons from embryonic stem cells produced cells which, when transplanted into animal models, had a tendency to form tumours or clumps, or die without an obvious reason.

Professor Arenas's team studied the development of DA neurons in animals to determine the important biological molecules in the brain that were necessary for the cells to grow and function efficiently. The scientists identified one particular molecule that seemed to be key, a protein called Wnt5a. They showed that when this molecule, together with a second protein called noggin, was included in cultures of stem cells, far more DA neurons were produced than when these ingredients were not present.

The team then carried out a series of molecular, chemical and electrophysiological tests on the newly grown neurons to check their proficiency, which was shown to be good.

Crucially the team also moved away from embryonic stem cells – which can be induced to grow into a wide variety of different cells. Instead they used neural stem cells – which are programmed to develop only into nerve cells.

When the researchers transplanted the cells into laboratory animals whose substantia nigra region of the brain was damaged, the results were promising. "We reversed almost completely the behavioural abnormalities, and neurons differentiated, survived and re-innervated the relevant part of the brain better" Professor Arenas said. "Furthermore we do not see the kind of proliferation of the cells that has occurred in the past and we get very little clustering when the cells are treated with Wnt5a. The cells are safer than embryonic stem cells and more efficient than fetal tissue."

Verification of this approach with human cells is ongoing and if the study is successful, it may lead to a clinical trial. Experts in the field have recently identified this approach as the next step in cell replacement therapy for Parkinson's disease and the hope is that this may, ultimately, lead to cells suitable for transplant into human patients.

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Ocean Acidification – Another Undesired Side Effect of Fossil Fuel-burning



Up to now, the oceans have buffered climate change considerably by absorbing almost one third of the worldwide emitted carbon dioxide. The oceans represent a significant carbon sink, but the uptake of excess CO₂ stemming from man's burning of fossil fuels comes at a high cost: ocean acidification.

Research on ocean acidification is a newly emerging field and was one of the major topics at this year's European Geosciences Union (EGU) General Assembly held in Vienna in April. The European Science Foundation EUROCORES (European Collaborative Research) programme EuroCLIMATE programme, which addresses in particular global carbon cycle dynamics, organized and co-sponsored several sessions on ocean acidification.

The chemistry is very straight-forward: ocean acidification is linearly related to the amount of CO₂ we produce. CO₂ dissolves in the ocean, reacts with seawater and decreases the pH. Since the industrial revolution, the oceans have become 30 percent more acidic (from 8.2 pH to 8.1 pH). "Under a "business as usual scenario", predictions for the end of the century are that we will lower the surface ocean pH by 0.4 pH units, which means that the surface oceans will become 150 percent more acidic – and this is a 'hell of a lot' ", said Jelle Bijma, chair of the EuroCLIMATE programme Scientific Committee and a biogeochemist at the Alfred-Wegener-Institute Bremerhaven. "Ocean acidification is more rapid than ever in the history of the earth and if you look at the pCO₂ (partial pressure of carbon dioxide) levels we have reached now, you have to go back 35 million years in time to find the equivalents" continued Bijma. A maximum allowed change in pH, where the system is still controllable, needs to be found. This is a major challenge considering the multifaceted unknowns that still are to be clarified. This so-called "tipping point" is currently estimated to allow a drop of about 0.2 pH units, a value that could be reached in as near as 30 years. More research and further modeling needs to be undertaken to verify the predictions.

The expected biological impact of ocean acidification remains still uncertain. Most calcifying organisms such as corals, mussels, algae and plankton investigated so far, respond negatively to the more acidic ocean waters. Because of the increased acidity, less carbonate ions are available, which means the calcification rates of the organisms are decreasing and thus their shells and skeletons thinning. However, a recent study suggested that a specific form of single-celled algae called coccolithophores actually gets stimulated by elevated pCO₂ levels in the oceans, creating even bigger uncertainties when it comes to the biological response. "There are thousands of calcifying organisms on earth and we have investigated only six to ten of them, we need to have a much better understanding of the physiological mechanisms" demanded Jean-Pierre Gattuso, a speaker from Laboratoire d'Océanographie Villefranche invited by EuroCLIMATE. In addition, higher marine life forms are likely to be affected by the rapidly acidifying oceans and entire food webs might be changing.



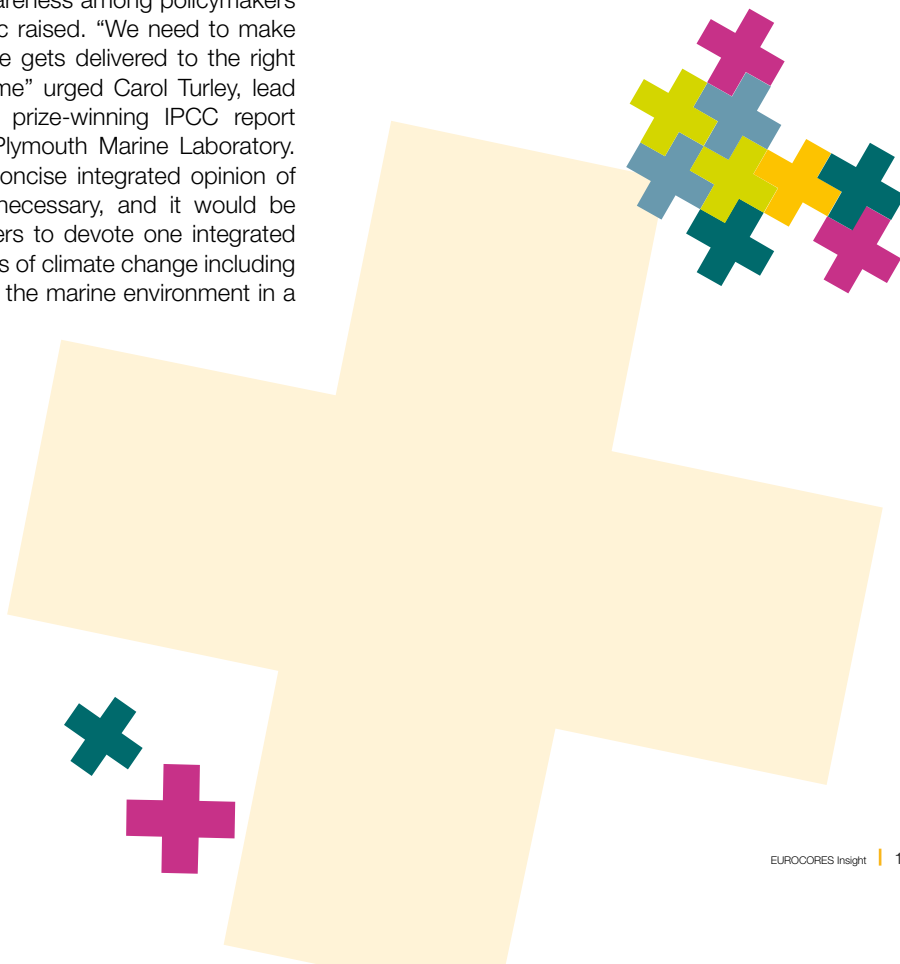
Calcidiscus leptoporus (coccolithophores) images, illustrating the effects of artificially elevated CO₂ on calcification. The specimen is about 18 µm in diameter.

So far, hardly any economic impact assessments of ocean acidification exist, but with the fragile marine ecosystems under threat, it can be assumed that fisheries and many coastal economies will be severely affected. Many of these societies depend on the sea as their main source of food and the loss of species is highly detrimental to them; coral reefs serve as highly valuable tourist destinations and as natural protections against natural hazards such as tsunamis. Together with climate change, ocean acidification poses a major challenge to the oceans as a human habitat.

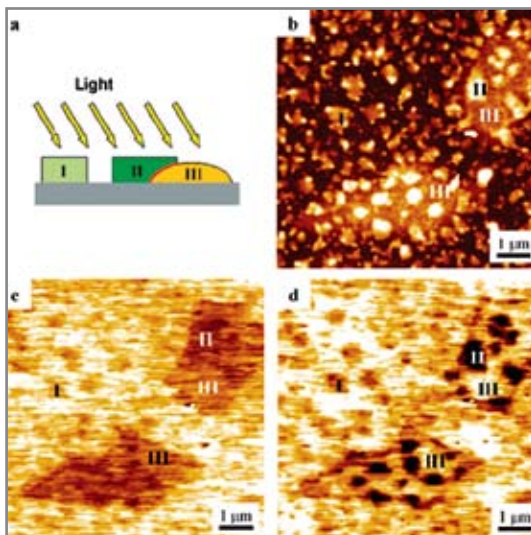
“Ocean acidification is happening today and it’s happening on top of global warming, so we are in double trouble” stated Bijma. Only a serious cut of CO₂ emission can reduce ocean acidification. Therefore, knowledge on ocean acidification is being disseminated and awareness among policymakers and the general public raised. “We need to make sure that the message gets delivered to the right people at the right time” urged Carol Turley, lead author of the Nobel prize-winning IPCC report and scientist at the Plymouth Marine Laboratory. According to her, a concise integrated opinion of leading scientists is necessary, and it would be useful for policy makers to devote one integrated chapter on the impacts of climate change including ocean acidification on the marine environment in a future IPCC report.

European science has taken the initiative to act and gain more urgently needed insight on this phenomenon of global change; an EU project on ocean acidification will be launched next month. The European Geosciences Union (EGU), an influential interdisciplinary organization, is also being proactive: “EGU is in the process of putting together a position statement on ocean acidification” said Gerald Ganssen, President of the EGU. As a result attained at a strategic workshop held in January, the ESF is currently producing a ‘Science Policy Briefing’ which is to be targeted at the major stakeholders and actors in the field. In addition it was felt that the issue of ocean acidification needs to be addressed in a pan-European effort and that more intensive European collaboration is required, which could be achieved through one of the ESF Science Synergy tools such as EUROCORES.

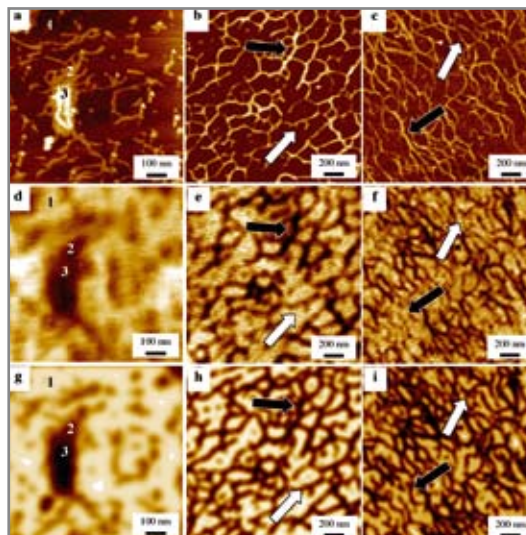
**For more information,
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A Better Image for Plastic Solar Cells - SONS 2 makes it happen



The figure shows a blend of donor-acceptor organic assemblies. The KPFM images recorded (c) in dark and (d) under illumination map the potential variation at the surface to the sample due to the light. (a) Cartoon of illuminated sample showing both P3HT:PDI (III: II, respectively) aggregates and isolated PDI assemblies (I). (b) Topographical image of P3HT:PDI agglomerates, and corresponding KPFM images recorded (c) in dark and (d) under illumination. Z-scales: (b) 20 nm, (c,d) 60 mV



Topographic and corresponding KPFM images of P3HT deposited on (a,d) HOPG, (b,e) mica and (c,f) SiOx. P3HT aggregates forming a network of nanofibers. On HOPG, fibers can be (1) isolated or can aggregate in (2) islands and in (3) a further second layer. When deposited on mica and SiOx, P3HT nanofibers take two different sizes: (white arrow) small and (black arrow) large. The measured SP of the nanofibers results negative respect to the substrate one. The three measured KPFM images are simulated (g,h,i) using a 2D convolving procedure which remove the experimental artefacts due to the broadening effects of the tip. From: "Probing local surface potential of quasi-one-dimensional systems: a KPFM study of P3HT"; A. Liscio, V. Palermo, P. Samori; *Advanced Functional Materials*, Volume 18, 907 (2008)

New research that could help technologists develop efficient and inexpensive plastic electronic devices, such as plastic solar cells and a new type of transistor was reported by SONS 2 physicist Andrea Liscio. Liscio, a researcher at the Istituto per la Sintesi Organica e la Fotoreattività - Consiglio Nazionale delle Ricerche (CNR) in Bologna, Italy is working in the SUPRAMATES Collaborative Research Project and is using a powerful analytical technique based on a powerful type of microscopy, to analyse materials and map their electrical properties with nanoscopic detail.

At the EMRS (European Materials Research Society) Spring Meeting held in Strasbourg in the end of May, Liscio explained how he and his colleagues are using Kelvin Probe Force Microscopy (KPFM), which is an extension of atomic force microscopy, and is 1000 times more powerful than an optical microscope.

He presented details of a systematic study of KPFM measurements of nanostructures. "We studied an extensive range of samples and structures with sizes spanning from several micrometres down to a few nanometres," explained Liscio, "Our results indicated that by operating the KPFM at high frequencies it is possible to visualise different electrical behaviour in nanostructured samples."

A standard AFM has a very sharp probe (just a few atoms across) that scans across a surface the tip bobs up and down following the atomic detail of the surface as forces between the probe and the surface change. The probe's movement is recorded by a highly focused laser linked to a computer. KPFM extends this approach by applying an electric potential to the probe, which allows the electronic properties and composition of the surface to be measured as well as its topography. One property revealed is the work function of the surface, which is linked to a material's catalytic activity, corrosion resistance, and its electronic properties.

“KPFM is a highly versatile tool,” explained Liscio, “useful for studying both conducting and semiconducting samples, as well as thin oxide layers, in a non-invasive way.”

One group of materials on which the researchers have focused is conjugated nanomaterials. These materials have been widely adopted as the active components of a variety of optoelectronic devices, including organic light-emitting diodes (OLEDs), thin film transistors, solar energy conversion materials.

Optimising such devices depends on being able to fine-tune the movement of electrons at the interface between the electrode and the organic material as well as how they travel through the material. Mapping quantitatively the electronic properties of the surface with a high degree of precision is crucial to this endeavour.

To measure electrostatic interactions, the KPFM probe must be vibrating. As the probe bobs up and down the force required to keep it oscillating at a steady rate changes measurably, which tells the scientists about the nature of the scanned surface. By using different vibration frequencies, it is possible to obtain nanoscale measurements on materials. Liscio and co-workers and others have shown that vibrating the probe above its natural resonant frequency, they could make the device more sensitive.

Liscio explains that within the frame of SUPRAMATES, the collaborative effort is addressing the question of how nanoscale architecture and function are linked. He and his colleagues have a strong interaction with the research groups of Klaus Müllen (MPIP Mainz) and Alan Rowan (Radboud University Nijmegen), which means they can develop new functional nanostructures for testing in organic electronics.

Within these collaborations, the researchers at the CNR Bologna node have used KPFM to investigate organic semiconductors that can undergo self-assembly on a surface to form sophisticated nanoscopic structures and nanofibres of other organic semiconductors, both of which might one day find application in molecular electronics.

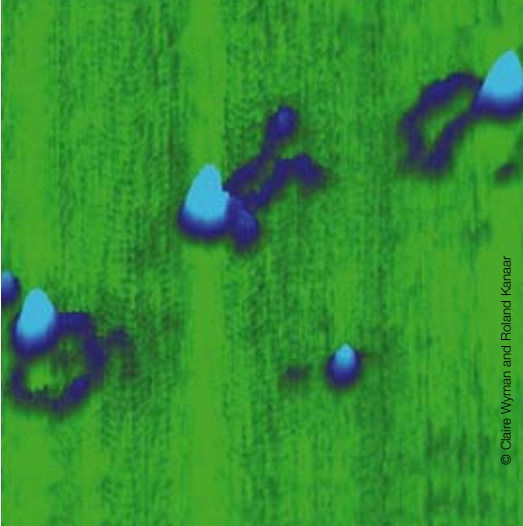
The CNR Bologna team has also applied the technique to studies of organic photovoltaic materials, plastic solar cells in other words, which could significantly cut the costs of renewable solar energy and make it commercially viable. They are testing structurally well-defined plastics known as polyisocyanopeptide polymers as scaffolds on which they can arrange thousands of electron-accepting molecules, among them a group of organic molecules known as the perylene-bis (dicarboximides). The result is that they can produce hundreds of nanometre-long light-absorbing wires.

They then used KPFM measurements to visualize directly the photovoltaic activity of the nano wires, which offered new insights into how plastic solar cells might be made. Within SUPRAMATES, the performance of devices based on these systems will be explored in the groups of Richard Friend at the University of Cambridge and Franco Cacialli of University College London and the London Centre for Nanotechnology.

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EuroDYNA Leaves Healthy Genomic Research Ecosystem as Legacy



© Claire Wynan and Roland Kanaar

Scanning (Atomic) Force microscopy image of the SMC-like protein complex RAD50/MRE11/NBS1, involved in the early cellular response to DNA double-strand breaks. The complex consists of a globular DNA binding domain and two protruding coiled-coil arms (50 nm in length) that are required to tether broken DNA molecules.

Europe's position as a major player in genome research has been boosted by the European Science Foundation's three-year EUROCORES programme EuroDYNA. As it draws to a close, EuroDYNA (Dynamic Nuclear Architecture and Chromatin Function) is leaving behind a healthy European ecosystem of interacting multidisciplinary research projects focused on the structure of the cellular nucleus and mechanisms governing gene expression.

The greatest benefit of EuroDYNA has been in stimulating interaction among the various Collaborative Research Projects (CRPs) that had already been established, according to Graham Tebb, a scientific administrator for genetics, microbiology, biotechnology and cell biology at the FWF (Fonds zur Förderung der Wissenschaftlichen Forschung), the Austrian agency for funding basic research. "I was pleased to see the links between the CRPs," said Tebb. "That's the real added value."

The success of EuroDYNA in creating European momentum behind research into chromatin structure and gene regulation was widely acknowledged at the programme's third and final meeting, held at the Wellcome Trust Conference Centre near Cambridge, UK, late May 2008. "The ESF grant had a galvanising effect on our project, increasing credibility on a local, national and international level," said Colin Logie from Nijmegen University in the Netherlands, head of one of the EuroDYNA projects, "Chromatin Higher Order Dynamics: A single molecule approach". Logie pointed out that research into the dynamic structure of chromatin, the nuclear complex of proteins and DNA where 99.99% of all genes reside in higher organisms, requires increasing interaction between biologists

and physicists, which has been accomplished within his project, leading to new insights into chromatin structure.

Logie and other project leaders also highlighted an issue common to most if not all projects relating to genomic structure, which is the high cost of meeting the growing genome-wide profiling challenge. Rene Ketting from the Hubrecht Institute for Developmental Biology in Utrecht, in the Netherlands, and David Shore from the University of Geneva's Department of Molecular Biology, suggested there should in future be separate provision for the cost of protein chromosomal location by ChIP-seq, genome-wide RNA profiling and the concomitant bioinformatics analyses, which otherwise could easily consume budgets and reduce the resources available for dedicated laboratory experiments. Alternatively at least some aspects of genomic profiling could be provided as a service by major funding agencies or research councils. The role of EuroDYNA not just in fostering collaboration between disciplines and countries, but also in highlighting such future funding issues, was acknowledged by many of the project leaders and scientists present at the final conference.

The best measure of EuroDYNA's success though lies in the cross fertilisation between different multi-disciplinary CRPs, some of which were sparked by unexpected breakthroughs. A good example is the serendipitous discovery of the close and important relationship between two proteins, cohesin and CTCF, in regulating the expression and transcription of genes. This subsequently brought two separate groups within EuroDYNA together, one from the Institute of Molecular Pathology (IMP) in Vienna on the control of the chromosome structure by Cohesin, and the other from Erasmus Medical Centre in Rotterdam working on the role of the zinc finger CTCF proteins in the cell cycle and differentiation processes. The discovery that cohesin and CTCF are intimately linked was made by the group of Jan-Michael Peters at the IMP. Subtle deficiencies in this relationship might lead to a group of diseases known as "cohesinopathies" that are more common than once thought because they are frequently misdiagnosed. One such disease is Cornelia de Lange syndrome, causing various developmental abnormalities such as low birth weight, delayed growth, and small head size.

EuroDYNA, and indeed the ESF in general, has made a major contribution to the development of multinational, multidisciplinary funding models that reduce the bureaucratic and logistical hurdles that scientists need to overcome both in complex and smaller scale projects, whenever European collaboration is required.

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EuroQUAM Conference Gives Cold Quantum Matter a European Twist

**EuroQUAM Inauguration Conference
Barcelona • 7-9 April 2008**

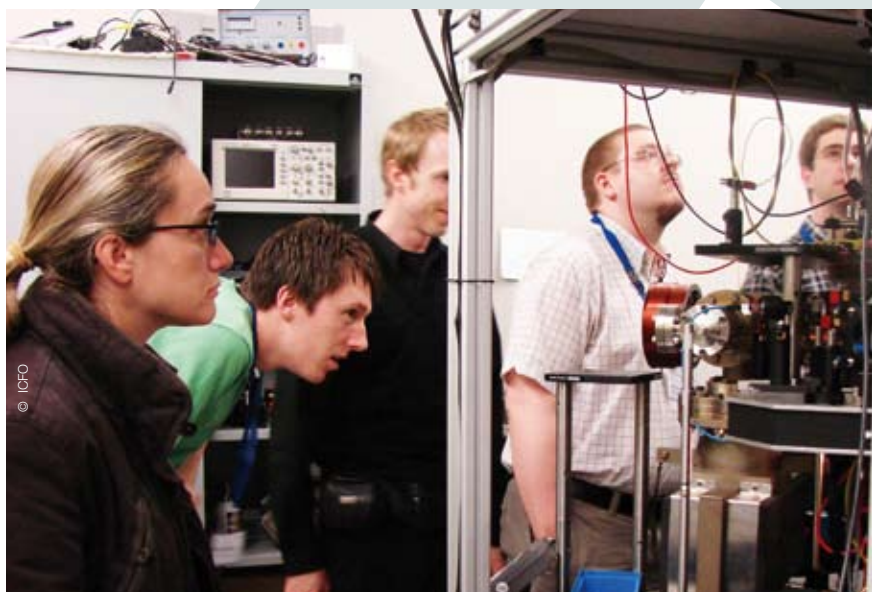
Quantum matter has long fascinated the science community as many completely new physical phenomena have emerged from this field. Cold quantum matter can be used for applications such as high-precision clocks, which may run only one second behind per three million years! The interest in quantum matter is now spreading to other areas, and new phases of matter are emerging in molecular systems and plasmas.

This was the topic of the recent EuroQUAM inauguration conference, held in Barcelona from the 7 - 9 April 2008, which was the first major scientific event of the EuroQUAM ("Cold Quantum Matter") programme. Members of all six EuroQUAM consortia representing ten European countries as well as invited speakers from Australia, Canada and the US gathered to discuss their newest results and further the field of cold quantum matter.

Quantum matter is composed of atoms or molecules in a single quantum state that behave coherently as a single quantum object. It typically exists at temperatures less than one millionth of a degree above absolute zero, with absolute zero being -273.15 on the Celsius scale. A prominent form of quantum matter, Bose-Einstein condensation (BEC), was predicted by Bose and Einstein in 1924 and created in an atomic gas in 1995. In the years since then, there have been enormous advances in the ability to produce and manipulate quantum matter, which were recognised by the awarding of several Nobel Prizes in physics.

"The conference had a representative participation of the leading European groups in the field, plus highly distinguished overseas visitors", said Professor Jürgen Eschner of ICFO (Institute of Photonic Sciences, Barcelona), the main organiser of the meeting. "We enjoyed very high quality presentations of cutting-edge results. Thanks to efficient and generous support from the ESF, the conference was a great success" continued Eschner.

In the long term, quantum matter is expected to have applications in diverse areas ranging from high-precision measurement to quantum information. This field is complex and draws on atomic and optical physics, chemical physics and



Conference participants visiting ICFO

physical chemistry, plasma physics, statistical physics, solid-state physics and quantum chemistry. Although the field is driven by fast advances in experimental capabilities, theoretical work is essential to guide experiments and explain their results.

The aim of the EuroQUAM programme is to provide a platform for scientific exchange between scientists from different disciplines and countries and in particular to stimulate collaborations between experiment and theory. "The conference provided an excellent blend between senior and junior researchers, all of them full of enthusiasm and joy of presenting hot and "shining" scientific results of the highest level", summarised Professor Maciej Lewenstein, ICFO group leader and member of the local organizing committee. "This all shows the high quality of research in this area of physics in Europe and its great perspectives for the future".

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Young Mineral Scientists Rock!

**2nd EuroMinSci Conference, Giens, France
31 March – 2 April 2008**

What's going on in the earth's core, why are there magnetic anomalies in rocks, how is water incorporated in minerals, and how do pearls grow? These and many other important questions the mineral sciences engage in, were the topics of the 2nd EuroMinSci (European Mineral Sciences Initiative) Conference held in Giens, France, last April. The conference is a major annual event of the EuroMinSci Community, providing a venue for the participants to present their latest findings and key achievements within the programme and seeing what is cutting edge in the field.

EuroMinSci draws together different experimental techniques and computational activities into interdisciplinary integrated research projects addressing various aspects of mineralogy. Advanced atomistic computer simulations make it possible to predict mineral properties and behaviour. At the same time, these predictions are tested by in situ measurements of many mineral properties at extreme temperatures and pressures corresponding to those existing in the Earth's deep interior.

Hence, one aim of the EuroMinSci programme is to provide young researchers with an academic background in Earth sciences with training in the physics-based simulation techniques, where the methods differ considerably from traditional Earth sciences. Therefore, the "Outstanding Young Scientists Awards" marked a highlight at the 2nd EuroMinSci conference, acknowledging and rewarding the efforts of the young scientists involved in the programme.

All of the work presented by the young scientists attending the conference was of immensely high quality, and the committee comprising of Professor Björn Winkler (University of Frankfurt), Professor Ulf Hålenius (Stockholm University), Dr. Kai Rankenburg and Dr. Michiko Hama (both ESF), was impressed by the intriguing findings of both the experimentalists and the theoretical modeling researchers.

The award winners of the conference were two experimentalists: Olga Narygina for the best oral presentation and Verity Borthwick for the best poster presentation. "These experiments are



The prize winners and the committee

outstanding in a sense that they really allow us to understand observations which were hitherto not easily accessible" said Björn Winkler, chair of the scientific committee of the EuroMinSci Programme. Both of the award winners received a generous travel grant, which they can use for attending a meeting, or visiting another project team involved in the EuroMinSci Programme.

24-year old Olga Narygina is a member of EuroMinSci's MCEC (Mineralogy and Chemistry of Earth's Core) project and works with iron-nickel alloy, the supposed main component of the Earth's core. She investigates its properties in a diamond anvil apparatus under high pressure and temperature in order to constrain the influence of carbon on the phase relations in the iron-nickel system. Olga Narygina is currently a PhD student at the University of Bayreuth, having received her M.Sc. in Physics at Ural State University, Ekaterinburg, Russia, in 2006. She was astonished to have won the prize and is still debating on what to do with her travel grant. "I might use it to attend the AGU Fall Meeting in San Francisco" said Narygina.

Past Events and Conferences

Verity Borthwick is a 25-year old PhD student from Stockholm University and a graduate of the University of Sydney. She was delighted to have been selected as an awardee, and will use the grant to participate in the Gordon Research Conference on 'rock deformation – real-time rheology' in New Hampshire, USA, this August. "This is a really relevant conference for my project and it will also be a great chance to convey what we have learnt to people outside the European mineral sciences community" said Borthwick. Working in the MINSUBSTRDYN (Subgrain Structure Development in Rocks and Metals) group, she is looking at substructural dynamics, the understanding of which being a prerequisite to comprehend what's happening on a larger scale like mountain building; her analogue study with in situ experiments in the scanning electron microscope on the annealing of deformed rocksalt led to winning the award.

A concentrated meeting like the 2nd EuroMinSci conference is especially important for the networking of young and also more senior scientists, opening up opportunities for their future careers and collaborations. 11 internationally recognised external experts were attending the conference as invited speakers. Professor Ross Angel from Virginia Tech, who gave one of the keynote lectures, noted the breadth of the research groups reaching from atomic modelers to structural geologists and stated: "I think EuroMinSci is a unique picture of this kind of collaboration between these traditionally very different fields of expertise". Dr. David Stonner, Head of the Europe Office of the National Science Foundation (NSF), took part in the conference as an observer and enjoyed the multidisciplinary of the participants. "I was impressed by the quality of the presentations and the quality of the interaction between the participants" commented Stonner. He sees multiple potential linkages between American groups in the mineral sciences and EuroMinSci.

The European added value of the EUROCORES programme could be clearly felt at the conference and the benefits are multi-faceted. The European mineral physics community has through EuroMinSci

for the first time a common venue. "We have found a common marketplace to exchange ideas and EuroMinSci is a highly successful enterprise" said Winkler and hopes to continue the collaborative work in a similar manner in the future. David Stonner concludes: "My understanding of the Scheme and the changing research landscape in Europe is that EUROCORES will play an increasingly large role in collaborative activities in Europe, and I think quite possibly throughout the world, as scientists look for opportunities to cross geographical boundaries and work together".



Conference excursion

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Porto Workshop Focuses on Common TECT Themes

TECT Workshop on “Trust, Reputation, Defectors, and Sustaining Social Norms: studying spatially complex cooperative relationships”
Porto, Portugal • 26-29 March 2008

In March 2008, the University of Porto hosted a workshop of the EUROCORES Programme “The Evolution of Cooperation and Trading” (TECT) that was dedicated to important aspects of cooperation research: trust, reputation, defectors, and sustaining social norms. This networking activity advanced the study of spatially complex cooperative relationships in ways that would connect various TECT projects. Professor Dr. Amélia Polónia da Silva (University of Porto) and Professor Dr. J. B. “Jack” Owens (Idaho State University, USA) organised the event. Both are principal investigators (PIs) of TECT’s DynCoopNet (“Dynamic Complexity of Cooperation-Based Self-Organizing Commercial Networks of the First Global Age”) Project.

The trading networks of the first global age, 1400-1800, during which the first world economy developed, depended heavily on cooperation among merchants and others. Because this period constituted a complex, dynamic, non-linear system quite different from the system that followed in the nineteenth century, the first global age offers researchers the possibility of studying the evolution of cooperation and commercial interactions within a complex context of institutions, practices, and cultural perspectives.

Workshop participants examined from various disciplinary perspectives the trust on which such cooperative relationships were based and the ways how reputation emerges from dynamic interactions among agents and information communication processes. Historians considered the ways that concepts drawn from ecology might be useful in developing empirical generalisations based on their data and in providing a theoretical explanation of merchant behavior. Other TECT projects and approaches present at the workshop were SENSE (“Sustaining eco-economic norms for a sustainable environment”); Project Leaders Simon Levin / Dan Rubinstein, Princeton) and SOCCOP (“The Social and Mental Dynamics of Cooperation”, Project Leader: Herbert Gintis, Budapest/Santa Fe).

DynCoopNet assumes that the history of any geographic location can only be understood through an examination of the way that it was connected to other places and of the changing patterns of these connecting networks. To organise, analyse, and visualise these relationships, DynCoopNet employs geographic information systems (GIS) as a tool. However, current GIS is static while reality is dynamic, filled with movement and change. Therefore, the workshop investigated ways to develop a temporal

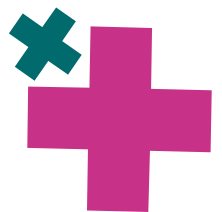


Historians of maritime commerce in the first global age were intrigued to find in the port of Vila do Conde a reconstruction of a sixteenth-century Portuguese commercial vessel, as well as a replica of the customs house from the same period (not shown).

GIS adequate for exploring spatial-temporal dynamics in historic systems. Because computers are nourished by numbers, there was considerable discussion of mathematical expressions of non-linear dynamics, of mathematical modeling, and of creating an ontology of historical processes needed for programming an open-source temporal GIS and for agent-based modeling and simulations.

On the basis of these discussions, workshop participants began work on multi-disciplinary, jointly authored papers on network analysis, on modeling on the basis of incomplete, imprecise, and subjective historic data, on the impact of cheaters and defectors on cooperative relationships among merchants, and on group augmentation and partner choice. Moreover, a framework was developed for future funding proposals to increase support for developing GIS tools capable of capturing spatial-temporal dynamics.

For more information, see www.esf.org/tect or contact Doubravka Olsakova at tect@esf.org TECT Programme Coordinator



BOREAS Symposium “Heading North, Heading South: arctic humanities and social science research in a global dialogue”

Halle/Saale, Germany • 6 - 9 March 2008

The BOREAS symposium “Heading North, Heading South: Arctic Humanities and Social Science research in a global dialogue”, organised by J.-O. Habeck and Piers Vitebsky at the Max Planck Institute for Social Anthropology (Halle/S., Germany) from 6 to 9 March 2008 provided a unique opportunity for exchanges between researchers with a “Northern” interest and scholars whose focus is the “South” (notably, India, Sudan, South Africa, Caribbean, and South America).

The interest of the worldwide scholarly and general public in the Arctic has been changing profoundly over the last two decades. The circumpolar North has moved from a cold-war discursive periphery to the centre of global debates on environmental change, human adaptation, new multinational partnerships, and postcolonial variations of governance. One aim of the BOREAS programme is to make Humanities and Social Science scholarship in the circumpolar North relevant for global debates in comparative and collaborative research settings.

Research agendas for the Arctic tend to concentrate on issues relevant to the centres of political power in the temperate zone of the Northern hemisphere. The underlying notions of North (and, by the same token, global South) derive much of their meaning from a colonial context. Populations of the European part of the temperate zone colonised the Arctic and the Tropics simultaneously in opposite directions. This is one reason why political parallels between the Arctic and the Tropics are surprisingly close, yet often unexplored, as Piers Vitebsky pointed out in the workshop’s introduction.

Among the major themes discussed in Halle was “studying the impact of natural resource distribution on social network formation, maintenance and fragmentation”, as one participant summarised. As mineral resources extraction, flows of goods and environmental pollution have attained global dimensions, the boundaries between the Arctic and the “rest” have become blurred.

Workshop participants strove to re-assess the explanatory value of the “North-South” dichotomy. As one of the junior participants remarked, we ought to “look at the context in which these [North/South] oppositions become relevant”, and situations wherein people think this difference does matter. These cardinal directions stand for certain tropes, perspectives and, as keynote speaker Tim Ingold suggested, different histories and historiographies.

Workshop participants are now evaluating the transcripts of the workshop discussions. Part of them are working on publication strategies, hoping to better communicate the role of Humanities and Social Science scholarship on the North, and from the North, to a worldwide audience.



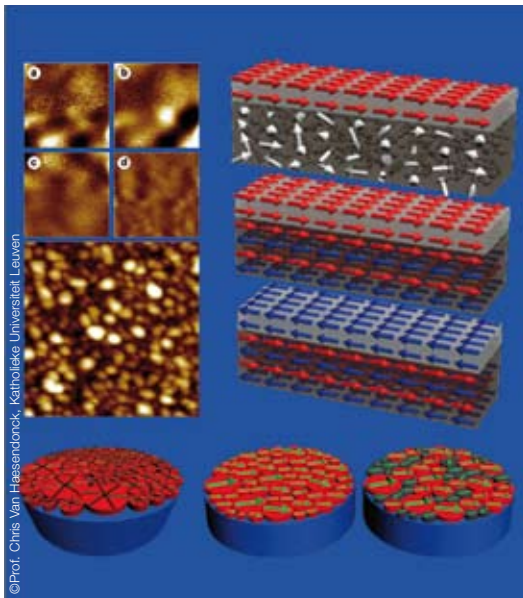
A Nenets herder by an oil installation. Oil and gas works cut across reindeer migration routes and pollute them, but recent research shows that herders also use them as a source of materials and services.

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FoNE Spring School on Transport in Nanostructures

Anacapri, Italy • 30 March - 6 April 2008



The **4th Capri Spring School on Transport in Nanostructures** was organised at the Centre for Scientific Culture of Naples University 'Federico II' based at Villa Orlandi in the Island of Capri, from 30 March to 6 April 2008. This school was organised by Arturo Tagliacozzo (Naples, Italy, SPINTRA Project) and Chris Marrows (Leeds, UK, SPINCURRENT Project), in the frame of the EUROCORES FoNE (Fundamentals of NanoElectronics) Programme Networking activities. Other co-organisers were Alessandro De Martino (Düsseldorf, Germany), Reinhold Egger (Düsseldorf, Germany), Hermann Grabert (Freiburg, Germany).

"Electronic nanostructures and transport", the topic of the spring school, is an emerging field of condensed matter physics and chemistry with rapidly growing research activities, in particular, in the US, Japan and Europe. The 2008 School also focused on recent achievements in carbon based materials and in particular graphene, which was first produced in Europe. These research areas are now heading towards new frontiers, and training of talented young scientists is needed to maintain the forefront position of the community research.

Scientists from the areas of semiconductor physics, low temperature metal physics, and theoretical physics have discussed advanced experimental techniques and recent theoretical insights. They

provided several two- to five-hour lectures by leading experts on transport in nanostructures with a special focus on quantum features of carbon-based materials. The speakers have given graduate level presentations introducing state-of-the-art methods and techniques used to describe transport phenomena in low dimensional electronic devices.

Among the subjects covered during the spring school was the following: Adrian Bachtold (Barcelona), Takis Kontos (Paris) talked about "Transport in Carbon Nanotubes", whereas Klaus Ensslin (Zürich, SpiCo) discussed "Transport in Graphene". On the theoretical side, Carlo Beenakker (Leiden) introduced, among others, the "Ballistic Transport in Graphene", highlighting the connection to early interference experiments on mesoscopic physics which can now be cleanly reproduced in this test material.

The School was attended by 35 young researchers who got an opportunity to learn about the exciting new developments related to these novel physical systems and to obtain training in basic theoretical and experimental methods employed in the field. "It was a very nice opportunity for networking and I had many interesting talks with other researchers. I got many new ideas and interesting input for my work" said PhD student Johannes Güttinger (ETH Zurich), from the SpiCo Project. Regarding the topic of the School he also remarked that it is very important for the future to invest in the research of nanoelectronics in Europe and that the support of the interaction between researchers helps to speed up the progress.

Next to enabling a knowledge transfer, the spring school also established further links within the European research network in nanostructures, and thus enhanced the chances to achieve European leadership in this technologically important area of research.

The material from the lectures can be downloaded from the FoNE Spring School website, <http://tfp1.physik.uni-freiburg.de/Capri08/>

**For more information,
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FoNE Programme Coordinator**



'Inventing Europe' Workshop on "Technology and the Making of 20th Century Europe: Southeast European perspectives"

Plovdiv, Bulgaria • 28 February – 1 March 2008



Bulgarian merchant selling yoghurt, 1880.

The ancient Bulgarian town of Plovdiv hosted an inspiring workshop *Technology and the Making of Europe: Southeast European Perspectives*. The workshop was organised by the Paissiy Hilendarski University of Plovdiv in collaboration with the Institute of Balkan Studies and the Bulgarian Academy of Sciences and funded as part of the scientific networking under the EUROCORES Programme "Inventing Europe".

While the 44 researchers assembled also included colleagues from across Europe and the USA, the majority were early career scholars from Central and Southeastern Europe who have successfully begun to complete research on the European history of technology with the parallelisms and specificities between developments in Eastern and Western Europe during the last century. The active participation of colleagues from Bulgaria, the Czech Republic, Macedonia, Poland, Romania and Serbia signaled the gradual establishment of "new history of technology" as a research field in the social sciences and humanities in these parts of Europe.

The *Inventing Europe* research agenda proved to be a fruitful background that facilitated and structured the discussions. The workshop was launched with a provocative public lecture by Paul Josephson (Colby College, Waterville, Maine) on the totalitarian style of governing large technological projects in the former Eastern Bloc countries. When discussing ongoing research in projects related to *Inventing Europe* themes, two of which rely on cooperation with scholars from the region, innovative work on consumption and infrastructures was presented by young scholars from Bulgaria, the Czech Republic and Greece.

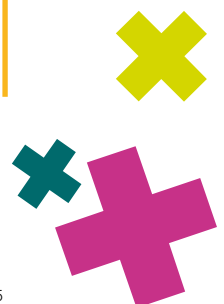
It emerged that collaborative doctoral programmes (e.g.: Eindhoven-Plovdiv; Germany-Czech Republic) have helped make Western European scholars aware of the wealth of innovative comparative research questions that have remained hitherto unexplored, e.g.: ("Bulgarian Yoghurt: Manufacturing and Exporting Authenticity"; "Mediating Consumption East-West: International Truck Drivers during the Cold War Era, 1959-1989"; and "Representation of Town Plannig between "Future Euphoria" and "Utopia's Loss" in Yugoslavia and Czechoslovakia, 1945 – 1965").

The last part of the workshop was therefore devoted to discussions of further opportunities for transnational historical research and possible ways of exploring them together with scholars in the region.

In order to further intensify collaborative research and exchange between researchers in Eastern and Western Europe, a conference to be co-convened by the EUROCORES Programme *Inventing Europe* and the *Tensions of Europe* network will be held in Sofia, Bulgaria, in 2009.

For more information,
see www.esf.org/inventingeurope
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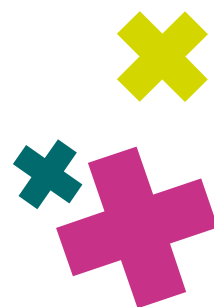
'Inventing Europe' Programme Coordinator



Upcoming Events

July	3-6	'Inventing Europe' Workshop "A Transnational History of European Integration" , Florence, Italy.
	7-13	CNCC Summer School "Social Cognition and Social Narrative" , San Marino, Italy.
	18-22	EuroScience Open Forum 2008 , Barcelona, Spain. EuroMinSci session: Explaining the Dynamics of the Inner Earth by Studying Matter at Extreme Pressure, Temperature Conditions. EuroQUAM session: Amazing Quantum World of Ultra-Cold Matter. CNCC session: Consciousness in Context. ECT session: Stem Cells - From Bench to Bedside.
August	22-26	BOREAS Contributions to Human Studies in the International Polar Year Era and Beyond, at the Sixth International Congress of Arctic Social Sciences (ICASS 6) , Nuuk, Greenland, Denmark.
	30-6 Sept.	TECT Summer School "Tools of the Trade in Cooperation Research" , Obernai, France.
September	8-9	EUROCORES Scheme Workshop VI , Brussels, Belgium.
	15-17	1st EuroMARC Conference , La Colle-sur-Loup, France.
	15-18	SONS 2 Workshop on Self-Organised Nano-Structures in Liquid Crystals , Cetraro, Italy.
	15-19	4 EuroDIVERSITY sessions at EURECO – 11th European Ecological Conference of the European Ecological Federation jointly with the GFOE 38th Annual Conference of the Ecological Society of Germany, Austria and Switzerland , Leipzig, Germany.
	24-28	EuroSCOPE session (Folding, assembly and secretion of complex protein entities) at the 5th European Federation of Biotechnology (EFB) Meeting on Recombinant Protein Production , Alghero, Italy.
	28-1 October	SONS 2 Workshop on Magnetism at Surfaces , Baden-Baden, Germany.
	29-30	EuroCLIMATE Final Conference , Giens, France.
October	2-3	HumVIB Kick-Off Meeting , Dublin, Ireland.
	5-7	LogICCC Launch Conference , Prague, Czech Republic.
	5-9	TOPO-EUROPE International Conference , Madrid, Spain.
	6-9	EuroMinSci Workshop "Mineral Spectroscopy by Theory and Experiment" , Lausanne, Switzerland.

November	10-14	FANAS session at INF Nanosikkim III: Mechanics and Function at the Nanoscale , Sikkim, India.
	11-15	EuroDEEP session at World Conference on Marine Biodiversity , Valencia, Spain.
December	1-5	SONS 2 session at MRS Fall Meeting , Boston, USA.
	11-13	ECRP Conference " The Integration of the European Second Generation" , Amsterdam, The Netherlands.
	15-18	FoNE Workshop , Palermo, Italy.





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