

About the European Science Foundation 2007



Contents

COST Directory

Expert Committees and Boards	16
Standing Committees	12
Administration and Finance	10
This is the European Science Foundation	5

Exploratory Workshops	20
Forward Looks	25
Member Organisation Fora	28
Policy Briefings	30
Research Infrastrutures (RI)	33

Science Synergy		
ESF Research Conferences	35	
EUROCORES Programmes	41	
Research Networking Programmes	56	

Science Management	75
ERA-NET	75
European Young Investigator Awards (EURYI)	79
EuroBioFund	80
COST	81
ESF Member Organisations in 2007	83
Governing Council	89
ESF Office Directory	90

92

This is the European Science Foundation

The European Science Foundation (ESF) is an independent, nongovernmental organisation of national research organisations. Our strength lies in our ability to bring together the different strands of European science in order to meet the scientific challenges of the future.

ESF's activities reach beyond the EU-27 countries. Its membership currently includes 75 influential national funding agencies, research performing agencies and academies from 30 nations as its contributing members.

Since its establishment in 1974, the Strasbourg-headquartered organisation has managed to assemble a host of research organisations that span across all disciplines of science in Europe, to create a common platform for cross-border cooperation.

We are dedicated to supporting our members in promoting science, scientific research and policy across Europe.

Through our activities and instruments ESF has made major contributions to science in a global context. The ESF covers the following scientific domains:

- Humanities
- Life, Earth and Environmental Sciences
- Medical Sciences
- Physical and Engineering Sciences
- Social Sciences
- Marine Sciences
- Nuclear Physics
- Polar Sciences
- Radio Astronomy Frequencies
- Space Sciences

How we operate

Working on behalf of its principal stakeholders – ESF's Member Organisations and thereby Europe's scientific community – ESF considers hundreds of research proposals for projects and awards each year; publishes a wide range of position papers and briefings; and organises workshops and conferences to ensure that the European science agenda is being recognised.

ESF's activities encompass numerous levels of interaction to facilitate interdisciplinarity, and to create programmes cutting across traditional disciplinary boundaries. In other words, the ESF is committed to identifying, utilising, and capitalising upon European researchers, and to working in a cohesive manner to set new science agendas for Europe as well as working towards creating a better world.

Today, ESF is the only organisation in Europe that manages to bring together these types of distinct yet interrelated organisations from the full spectrum of scientific endeavours to debate, plan and implement pan-European scientific research initiatives.

ESF, which has more than 130 staff in France (Strasbourg) and Belgium (Brussels), has a direct budget of \in 43 million in 2006, including à la carte activities and external contracts. Under the scale and scope of the activities networked by ESF, the turnover stands at approximately \in 3 billion. As part of this total, the resources leveraged through the COST (European Cooperation in the field of Scientific and Technical Research) system, amount to an estimated \in 2 billion.

Ministerial Conference Committee of Senior Officials (CSO)	COST Office	COST DOMAIN COMMITTEES	Biomedicine and Molecular Biosciences	Oriertineury and worecular Sciences and Technologies Earth System Science and Environmental Management	Food and Agriculture Forests, their Products and Services Individual Contents	Individuals, society, curure and Heatth Information and Communication Technologies	 materias, truysics and Nanosciences Transport and Urban Development 	
	Communications	ESF RESEARCH CONFERENCES						
Assembly Governing Council	Human Resources	ESF EXPERT COMMITTEES AND BOARDS	Marine Board - ESF MB-ESF	European Polar Board EPB	European Space Sciences Committee ESSC	Committee on Radio Astronomy Frequencies CRAF	Nuclear Physics European Collaboration Committee NuPECC	
ce Advisory Board	Administration & Finance	ESF SCIENTIFIC STANDING COMMITTEES	Humanities SCH	Life, Earth and Environmental Sciences LESC	Medical Sciences EMRC	Physical and Engineering Sciences PESC	Social Sciences SCSS	

Strategies Ahead

Through its work over three decades, ESF has come to be known as an organisation which utilises member organisations' contributions to promote collaboration in a scientific community. But as the European Research Area grows larger and becomes more pressured by the U.S. and Asia, ESF sees the need to take charge and to transform itself into an organisation that can possess some clout over the Research Agenda in Europe.

In an attempt to provide a "one-stop shop" for the various European scientific activities and to pave the way for new initiatives across disciplinary and geographic boundaries, the ESF has published a comprehensive "Strategic Plan 2006-2010" with the objectives of developing new research priorities, promoting cross-disciplinary collaboration and administrating better management for European activities in science.

These priorities are being reflected by grouping various ESF's programmes and instruments under a three-pillar mechanism namely 1) Science Strategy, 2) Science Synergy and 3) Science Management. The essence of the plan lies in the collaborative spirit of ESF's activities, taking into account the distinct views and needs of the Member Organisations.

The rationale behind the Strategic Plan is to first provide our member organisations with instruments and programmes from the **Science Strategy** which will result in sound advice and foresight in science and, drawing on these new perspectives generated by activities such as Forward Looks (p. 25), Member Organisation Fora (p. 28), Exploratory Workshops (p. 20), a new agenda with a European perspective is then set.

With the establishment of the new agenda from the first area of activities, the next natural step would be to arm these new ideas to seek further development. As ESF is an avid supporter of cross-disciplinary collaboration it will use instruments such as the EUROCORES (p. 41), ESF Research Networking Programmes (p. 56) and ESF Research Conferences (p. 35) to bring together excellent scientists at all stages of their careers to collaborate and to advance the science agenda for Europe. These activities, which are grouped under the **Science Synergy**, aim to encourage and stimulate cooperation between researchers and Member Organisations for new directions in research, and to plan and implement European-level research. These instruments will bring together Member Organisations on an à la carte basis for the funding of those activities that fit their strategic priorities and interests.

With the new agenda and the setup of cross-disciplinary actions, the logical extension of the strategic plan is the provision of services to ESF Member Organisations in the form of programme management, which defines the third area of the strategic plan – Science Management.

Under this area of activities ESF is dedicated to serving its member organisations and thereby the scientific community in a more cost-effective manner. Activities under **Science Management** create synergies between funding sources and assist in the breaking down of barriers to cross-boundary co-operation. Current examples of the management of external programmes are the European Young Investigator Awards scheme (EURYI) (p. 79), EuroBioFund (p. 80), and the co-ordinating role in several EC-funded ERA-NET programmes (p. 75).

In addition to the three areas of activities ESF also accepts the management of third party programmes that are deemed to strengthen ESF's mission, and compatible to the expertise of ESF and are fully funded.

The ESF is currently acting as the legal entity to provide and manage the scientific and the administrative services for the office of COST (European Co-operation in the field of Scientific and Technical Research) System. (p. 81)

Closing in the distance with the Member Organisations

ESF is an organisation which prides itself on being flexible when it comes to adapting to the scientific landscape it operates in. It has therefore recently initiated a number of important changes regarding its internal governance. These amendments will help us better serve our member organisations in achieving the advancement and promotion of European science.

These changes, which were approved at the meeting of the ESF Assembly on 1 December, 2006, will secure a new strong position for the Governing Council as the high-level decision-making body of the ESF with an important role in influencing science and science policy agenda in Europe.

From 2007 onwards, the heads of organisations within the ESF membership will participate in the Governing Council. In order to simplify the governance, it had also decided to forego the Executive Board.

The Governing Council now consists of (i) the President of the Foundation, (ii) two Vice-Presidents, and (iii) a such a number of members to allow each National Group of Member Organisations to occupy one seat. Such members will be appointed by National Groups of Member Organisations and will be heads of organisations within the ESF membership.

Additionally, the creation of a Science Advisory Board, a highlevel advisory panel designed to cope with the demands of increasing interdisciplinarity within science, will also play a key role in overseeing the quality of ESF's scientific activities.

The Science Advisory Board will advise the Chief Executive in the following areas:

- Overseeing overall science quality control of ESF's activities, including peer review, and safeguarding interdisciplinarity of the instruments
- Overall scientific quality and relevance with regard to the key instruments such as Forward Looks, EUROCORES and Conferences
- High level scientific advice to the CEO: ideas for new science actions and instruments; analyses of the evolving European and global science and science policy context.

In an effort to strengthen its links with the different groups of possible Member Organisations the ESF adopted an inclusive policy with regards to membership from research funding organisations, research performing organisations and academies, both with research institutes and learned societies, operating nation wide or at the European level, with no differentiation in membership rights. This new policy will strengthen ESF's role as the European platform for policy debate and action by its members in investigator driven research.

Mission Statement

The European Science Foundation provides a common platform for its Member Organisations in order to:

- advance European research;
- explore new directions for research at the European level.

Through its activities, the ESF serves the needs of the European research community in a global context. It carries out an array of activities, ranging from organising exploratory scientific workshops to providing science policy advice.

Values

The European Science Foundation's mission is guided by shared values that characterise its specific organisational culture. These values are:

- Excellence: the gatekeeper criterion for all scientific activities; it will also drive the management philosophy and operating procedures;
- Openness: to all scientists and disciplines; no barriers between disciplines; open sharing of results; transparency to stakeholders and partners;
- Responsiveness: in its procedures and structure;
- Pan-European: rising above national interests to the benefit of science in the whole of Europe;
- Ethical awareness and human values: sensitive to societal and ethical considerations in all its activities; attention to gender aspects.

Administration and Finance

The ESF Administration and Finance manages Financial, Human and Infrastructure resources to support the achievement of the ESF mission and strategy.

ESF has experienced dramatic growth over the last four years. With an increase of the yearly budget from \in 17 million to \in 45 million, the ESF administration and finance team now deals with over 20,000 transactions per year. With two locations, external contracts and new activities, the team aims at providing professional service in a client-oriented way within this complex and changing environment.

Finance and Audit Committee: link to Governance

- Reports to ESF Governing Council
- Chaired by Dr Richard Dyer, ESF Vice President
- Composed of high level Finance and Science Managers nominated by Member Organisations

Team and Functions

Director of Administration and Finance (DAF)					
Accounting Focus on actual figures	Controlling Focus on projections	Financial Control Brussels	Project Management Focus on new Information System	ΙΤ	General Services

Budget Structure

Budget component	Related activities	Sources of funding
General Budget	 Basic activities that are essential for the proper implementation of the ESF mission Quality control Running of the Office and general infrastructure 	 Contributions from MOs Other internal income (Financial earnings) Overheads from external contracts
À la carte	 Specific activities such as programmes and Expert Boards 	• Contributions from MOs on an <i>à la carte</i> basis
Partnerships	Partnership activities such as Conferences	 Partners' contributions Contribution from General Budget Participation fees
Contracts with external parties	 Support for the coordination of programmes such as EUROCORES, EURYI, EuroBioFund and ERA-NETS Management of scientific secretariats for activities such as COST 	Grants from the European Commission

Key Figures 2006



Science activities funded by ESF General Budget 9% 4% Gov Communications rnance 14% 6% Quality Forward Looks Assurance 9% Networks 19% Exploratory Workshops 13% ESF Res earch Conferences 14% 5% 7% Interdisciplinary Standing Corporate nce Policy Committe New Initiativ Sci



Consolidated expenditure

Standing and Expert Committees

Standing Committees

ESF has five Scientific Standing Committees: European Medical Research Councils (EMRC); Humanities (SCH); Life, Earth and Environmental Sciences (LESC); Physical and Engineering Sciences (PESC); and Social Sciences (SCSS).

Composed of leading scientists nominated by the ESF's Member Organisations, the Scientific Standing Committees are responsible for identifying scientific priorities, formulating strategies, developing research agendas and conducting peer review.

Standing Committee for the European Medical Research Councils (EMRC)

Medical research is vital for improving human health as it brings about a better understanding of the cause and effect of complex diseases. Advancing knowledge in the field also generates enormous social benefits which in turn translate into economic growth.

European Medical Research Councils (EMRC) is the membership organisation for all the Medical Research Councils in Europe under the ESF. The mission of the EMRC is to promote innovative medical research and its clinical application towards improved human health. EMRC offers authoritative strategic advice for policy making, research management, ethics, and better health services. In its activities, EMRC serves as a voice of its Member Organisations and the European scientific community. EMRC disseminates knowledge and promotes the socio-economic value of medical research to the general public and the decision makers.

EMRC is composed of delegates with a high scientific profile who are nominated by the Member Organisations involved in biomedical sciences, together with observers from Israel, U.S., Canada, New Zealand, WHO-Europe, the European Commission, the ESF Standing Committee for Life, Earth and Environmental Sciences and COST related domains.

> More information: www.esf.org/emrc

Standing Committee for the Humanities (SCH)

Humanities explore the origins and products of the human capacity for creativity and communication. SCH encompass a broad spectrum of disciplines all pertaining to human consciousness, perception and interpretation of the world such as anthropology, archaeology, history, linguistics, literature, philosophy, musicology, religion and theology.

Besides utilising ESF's instruments categorised under the ESF's Strategic Plan to achieve its goals SCH also involves in the European Commission's backed ERA-NET project "Humanities in the European Research Area" (HERA) (ERAC-CT-2005-016179). The SCH is responsible for Work Package 9, the development and launching of Joint Research programmes.

In an effort to provide a tool for researchers and institutions alike to easily access and assess the scientific quality of Humanities research output, irrespective of disciplinary and linguistic boundaries, ESF and the ERA-NET's HERA project, which is under the Work Package 7 - Research Infrastructures, have made the establishment of the European Reference Index for the Humanities (ERIH) possible. Humanities research in Europe is rich in lively national linguistic and intellectual traditions. They all find their expression in scholarly publications.

> More information: www.esf.org/erih

SCH consists of representatives from research councils and academies, with subject specialists to complement ordinary membership. Observers attend from the COST Domain Committee Individuals, Society, Culture and Health, the European Commission, the U.S. National Endowment for the Humanities, the Canadian Social Sciences and Humanities Research Council and the Israel Academy of Sciences and Humanities.

> More information: www.esf.org/sch

Standing Committee for the Life, Earth and Environmental Sciences (LESC)

All the important issues relating to our surroundings are covered by the Life, Earth and Environmental Sciences. Biosciences will make a growing impact in the 21st century as it contributes greatly to the very much needed sustainable development of our world. In the meantime geosciences will continue to play a crucial role in the understanding of critical environmental issues that are facing mankind. There is a continuity of informational transfer from genome up through cell, community and environment and defining characteristics of life thus depends strongly on flux from the environment.

The committee aims at a better understanding of biological, environmental and Earth systems across time and space. LESC covers activities from molecular and systems biology over regional ecosystems to global change of the environment. Besides utilising ESF's instruments categorised under the ESF's Strategic Plan to achieve its goals, LESC also involves in the European Commission's backed ERA-NET project BiodivERsA (ERAC-CT-2005-517836) which include 19 major research funding agencies from 15 countries in Europe with significant research funding in the field of terrestrial, freshwater and marine biodiversity. (p. 76) In addition LESC partners in the Co-ordination Action for innovation in Life-Cycle Analysis for Sustainability (CALCAS - 037075) involving 12 organisations. It also involves in the Specific Support Actions (SSAs) such as the Towards a European Strategy for Synthetic Biology (TESSY - 043449) and Systems Biology for Medical Applications (SysBioMed - 037673).

LESC works closely with other Standing and Expert Committees, such as the Marine Board, the European Polar Board and the European Space Science Committee.

LESC is composed of leading scientists mandated to represent the ESF Member Organisations. Observers from other ESF Committees/Expert Groups or external organisations are also invited to attend committee meetings, as are guests from the COST Domain Committees.

> More information: www.esf.org/lesc

Standing Committee for the Physical and Engineering Sciences (PESC)

The goal of the ESF Standing Committee for Physical and Engineering Sciences (PESC) is to become the pan-European platform for innovative research and competitive new ideas while addressing societal issues in a more effective and sustainable manner. The Committee is a unique crossdisciplinary group, with networking activities comprising a good mix of experimental and theoretical approaches. It distinguishes itself by focusing on fundamental research and engineering. PESC covers a broad spectrum of fields ranging from mathematics, informatics and fundamental sciences to computer sciences, materials research, physics chemistry, applied sciences, new technologies and engineering.

Over 30 distinguished scientists, nominated by the Member Organisations active in the PESC remit, serve on the committee. Observers from the European Commission, the European Mathematical Society, the European Research Consortium for Informatics and Mathematics, the Israel Academy of Sciences, the U.S. National Science Foundations and the ESF Standing Committee for the Life, Earth and Environmental Sciences (LESC) are invited to committee meetings as are liaison members from the COST Domain Committees for Chemistry and Molecular Sciences and Technologies (CMST) and Information and Communication Technologies (ICT). A decision was made in October 2006 to invite the European Materials Forum (EMF) to nominate an observer to PESC. PESC also maintains a close working relationship with the ESF Expert Committees on radio astronomy frequencies (CRAF), space sciences (ESSC), and nuclear physics (NuPECC).

> More information: www.esf.org/pesc

Standing Committee for the Social Sciences (SCSS)

The social sciences are key to the understanding of many of Europe's societal issues such as the balance between economic growth and impact on the environment. In other words the social sciences examine what it means to be a social being, ranging from the minutiae of human behaviour and brain functions, to large-scale social movements, demographics, economics and politics.

SCSS aims to advance social sciences on a European level by supporting innovative research ideas and approaches driving from the scientific community. The committee encompasses a range of disciplines that examine and explain human functioning on a variety of interlocking levels, ranging from neural foundations to individual behaviour, group processes and the functioning of entire societies.

SCSS is in accord with ESF's objective to encourage crosseddisciplines actions. The committee is fully aware the insights gained through related disciplines such as the human, life and medical sciences as these areas of convergence allow for a fuller understanding of the diverse facets of the social science enterprise, ranging from literary, philosophical and historical inputs to biological and medical ones, including human biology. A second version of the report "Social Sciences in Europe" has recently been made available; it focuses on recent and current projects developed through the SCSS, and emphasises the importance of social sciences research, which addresses and provides answers to critical questions raised by today's society.

Another tool to promote social science field in Europe is with the European Social Survey (ESS), an academically-driven social survey designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations, is now in its third round, with 25 participating nations. The fieldwork has been funded through the European Commission, the ESF and national funding bodies. In addition the ESS is among the first social science projects to receive funding to support its infrastructure.

> More information: www.europeansocialsurvey.org

Some other highlights of the Committee's works:

- a Member Organisation Forum on the Central Eastern European Countries (MOCEE) – a series of workshops and conferences mapping the landscape of scientific institutions in Eastern European countries and fostering new exchange with Eastern European Member Organisations.
- ESF Forward Look at Higher Education in 2020 is to examine the role of Higher Education and the pressure on Higher Education systems.
- The Committee has also launched a Research Networking programme which gathers the biggest and most consistent set of data on European economy from 1850 to the present day. This will help to understand better the dynamics of globalisation.

The SCSS Committee is composed of members representing their national Member Organisation(s), and are leading figures within research councils or institutions within their countries. A number of observers, from leading European and transatlantic social science institutions, regularly attend bi-annual plenary SCSS meetings.

> More information: www.esf.org/social

Expert Committees

Expert Committees provide advice and initiate strategic developments in the areas of marine-, polar-, and space sciences, nuclear physics and radio astronomy.

Marine Board - ESF

The seas and oceans cover over 70 percent of the Earth's surface, and represent more than half of the European territory. This marine world is still relatively unexplored and its resource potential has yet to be realised.

In recognising that the oceans are of major strategic importance to the ecologic, economic and social development of Europe. the Marine Board, which was established by its Member Organisations with the support of the European Commission in 1995, works to promote and coordinate scientific activities within the main marine research institutions in Europe. Regarded as a driving force for marine sciences in Europe, the Marine Board operates by creating a forum for its members organisations, identifying strategic scientific issues, providing a voice for European marine science and promoting synergy in the management of both national programmes and research infrastructure facilities and investments. One of the Marine Board's assets is its capacity to be proactive in identifying research priorities through establishing and supporting Working Groups (WGs). These WGs are composed of highlevel European experts who elaborate on marine science and technology topics which need to be addressed. In principle, the expected output is a position paper, subsequently used at national or European levels to catalyse research programme priorities.

Some highlights are:

- The completion of the Climate Change WG's task with the publication Impacts of Climate Change on the European Marine and Coastal Environment (Marine Board position paper 9);
- The completion of the Ocean Fleets WG's task with the publication of European Ocean Research Fleet - Towards a Common Strategy and Enhanced (Marine Board position paper 10);
- The completion of the Remote Sensing WG's task with the publication of Remote Sensing of Shelf Seas Ecosystems (Marine Board Position paper 11);
- The publication of the Impacts of Acoustic Geo-surveying Techniques on Marine Mammals in association with the Sea Mammal Research Unit - University of Saint Andrews (U.K.);
- The establishment of a joint Marine Board ICES EFARO WG on Ecosystem-based-management of Ocean Resources (with particular reference to fisheries);
- The continuation of the Marine Board Communications Network activities.

In addition, the Marine Board is also the joint coordinator of MarinERA (an FP6 ERA-NET) (p. 78) in association with lfremer (French Institute for the Exploitation of the Sea). MarinERA aims to facilitate the coordination of national and regional marine RTD programmes in Europe; a possible pilot call could be launched in late 2007 (with a funding in 2008) to demonstrate partners' ability to cooperate. The Marine Board is also involved in AMPERA, an FP6 ERA-NET whose aim is to foster prevention of, and best response to, accidental marine pollution. Within the consortium the Marine Board is responsible for the coordination with other European Research Area related activities.

2007 will see the relocation of the Marine Board Secretariat from Strasbourg, France to the site of Flanders Marine Institute (VLIZ) in Ostend, Belgium, in association with the secretariats of EFARO (European Fisheries and Aquaculture Research Organisations) and the Intergovernmental Oceanographic Commission's Marine Data Management Training programmes.

> More information: www.esf.org/marineboard

European Polar Board (EPB)

To many the Polar Regions are of great mystery. The regions are actually more than just cold-weather, ice-covered landscape as they are actually a great source in providing us some answer on solving the serious global threat of climate change plus other environmental and social issues. Established in 1995, the European Polar Board, the ESF's expert committee on science policy in the Polar Regions, is acting as a voice and facilitator of cooperation between European National Funding Agencies, National Polar Institutes and research organisations and the European Commission.

EPB is taking a central role in the coordination at European level of the International Polar Year 2007-2008, a global event focusing on the importance of the polar regions for humankind. Major focus areas will be education, outreach and communication; enhancing political visibility. The European Polar Board has active liaison with the director of United States Polar Agency at the National Science Foundation and has been involved in discussions with other international agencies on international cooperation in the Polar regions.

EPB is a major managing partner in the European Polar Consortium (EUROPOLAR) composed of 25 ministries and funding agencies and national polar authorities from 19 countries including the Russian Federation and Greenland Home Rule Government, and supported under the European Commission Framework programme 6 ERA-NET priority (ERAC-CT-2005-517842).

> More information: www.esf.org/epb

European Space Sciences Committee (ESSC)

The European Space Sciences Committee, established in 1975, grew out of the need for a collaborative effort that would ensure European space scientists made their voices heard on the other side of the Atlantic, in an era when successive Apollo and space science missions had thrust the idea of space exploration into the collective conscious for the first time.

The ESSC remains just as relevant today as it acts as an interface with the European Space Agency (ESA), the European Commission, national space agencies, and ESF Member Organisations on space-related aspects. The mission of the ESSC is to provide an independent European voice on European space research and policy.

The ESSC is non-governmental and provides an independent forum for scientists to debate space sciences issues. The ESSC is represented ex officio in ESA's scientific advisory bodies, in ESA's Ministerial Councils, and in the EC's FP7 Space Advisory Group. At the international level, ESSC maintains strong relationships with the NRC's Space Studies Board in the U.S., and corresponding bodies in Japan and China.

In line with the ESSC review in November 2003, a Strategic Plan for the Period 2007-2010 has been published to enable the Committee to re-examine its position on the European space scene and the role it can play vis-à-vis the other space actors. Two main goals of this Strategic Plan are:

- To amplify and diversify the role of the Committee in order to set up a high-level independent body aimed at providing advice and expertise in the European space arena. In short, the ESSC aims at becoming the advisory body of the European Union on space sciences.
- To bring together in an informal setting European national programme managers and top-level scientists and engineers and provide them with the possibility to identify pan-European strategic challenges, interact on common problems, propose common positions and cooperation strategy.

In May 2007 the ESSC will have a new Chair, Prof. Jean-Pierre Swings, an astrophysicist from the University of Liège in Belgium. His main tasks over the next two years will be to materialise the Strategic Plan in a very concrete manner.

Among the activities that the ESSC will have in 2007 are:

- The definition of a science-driven European scenario for space exploration
- The assessment of potential European capacity for development of nuclear devices for space exploration
- The extension of our 2001 space science demography study to all space sciences areas
- > More information: www.esf.org/essc

Committee on Radio Astronomy Frequencies (CRAF)

Established in 1988, CRAF represents all the major radio astronomical observatories in Europe. Its mission is to coordinate activities to keep the frequency bands used by radio astronomers in Europe free from interference. This task will remain indispensable for astronomical science in the foreseeable future. The committee's pursuit of this task is becoming increasingly difficult, given the continued increase in global use of the electromagnetic spectrum for both terrestrial and space-borne communications.

At the European level, the committee plays a key role in defining, coordinating and representing the radio frequency needs of the radio astronomy community. At a worldwide level, CRAF is a Sector Member of the ITU (International Telecommunication Union).

> More information: www.esf.org/craf

Nuclear Physics European Collaboration Committee (NuPECC)

This Expert Committee's tasks are to strengthen European collaboration in nuclear physics and science; define a network of complementary facilities within Europe and encourage optimisation of their usage; provide a forum for the discussion of the provision of future facilities and instrumentation; and issue recommendations on the development, organisation, and support of European nuclear physics, and of particular projects.

NuPECC regularly publishes reports on relevant scientific issues of importance to the European nuclear physics community and publishes a Long-Range Plan (Forward Look) every 6 years delineating the perspectives for the field and giving the recommendations and priorities for the advancement of nuclear science in Europe.

NuPECC continues to pursue its joint initiative with the European Physical Society, PANS (Public Awareness of Nuclear Science), and pamphlets, books and CDs have been produced. NuPECC also continues to work closely with nuclear physics research networks supported via the Framework programmes of the European Commission.

Through its quarterly magazine, Nuclear Physics News International, NuPECC provides an important forum for discussing nuclear science.

> More information: www.esf.org/nupecc

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Exploratory Workshops

These small, interactive group sessions usually take 1-3 days and are aimed at opening up new directions in research and exploring emerging frontier research fields with potential impact on new developments in science. The workshops have a wide participation from across Europe and involve young, independent researchers and scholars with leadership potential.

Successful proposals, selected following an open call for proposals and an international peer review process, demonstrate the potential for initiating follow-up research activities and/or developing future collaborative actions. Interdisciplinary topics are greatly encouraged.

The ESF will fund a total of 54 Exploratory Workshops in 2007:

- **EMRC** ESF Standing Committee for the European Medical Research Councils
- SCH ESF Standing Committee for the Humanities
- LESC ESF Standing Committee for the Life, Environmental and Earth Sciences
- PESC ESF Standing Committee for the Physical and Engineering Sciences
- SCSS ESF Standing Committee for the Social Sciences

Februa	February				
SCSS	Transdisciplinary Review of a Proposed Agenda for Social Science Research Related to Long-Term Energy Options, 1 - 2 February 2007, Zurich, Switzerland				
EMRC	Targeting OBesity-driven Inflammation (TOBI), 22 - 23 February 2007, Vienna, Austria				
March					
LESC	Phenomics - Advancing High-Resolution				

PESC	Genome-Wide Phenotyping in Yeast, 2 - 4 March 2007, Göteborg, Sweden
SCSS	Historical Trajectories and Nested Identities: Content and Process in the Representation of History and its Dynamic Relationships with National, Supranational, and Ethnic Identities, 15 - 18 March 2007, Goldegg, Austria
SCSS	Changing housing and Leisure-Time Cultures: a Threat to Sustainable Development? Challenges for European Practices and Policies.

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21	-	23	iviarch.	2007,	iviiriorca,	Spain

April	
SCH	Burial in 'Other' Places in the European Past, 10 - 12 April 2007, Winchester, U.K.
SCSS	Model Organism Proteomics, 11 - 13 April 2007, Zurich, Switzerland
LESC	Earthtime: The European Contribution - Integration of High-Precision Geochronology and Astronomical Tuning for Calibration of the Cenozoic and Mesozoic Timescales, 22 - 24 April 2007, Amsterdam, Netherlands
PESC	Genesis and Applications of Active Metal-Organic Frameworks, 25 - 28 April 2007, Dourdan, France

May	
PESC	Random Matrix Theory: from Fundamental Physics to Application, 3 - 5 May 2007, Krakow, Poland
SCSS	Elite Formation, Modernisation and Nation Building, 3 - 6 May 2007, Budapest, Hungary
SCSS	Education and the Capability Approach – Towards a European Perspective for Welfare Service Research, 3 - 5 May 2007 Münster, Germany
LESC	Product Quality and Sustainability of Organic Sheep and Goat Production in Mediterranean Countries, 5 - 6 May 2007, Thessaloniki, Greece

- SCH Exploring New Methods for Prosopography in the Humanities and the Social Sciences, 10 - 11 May 2007, Uppsala, Sweden
- EMRCGene Environment Developmental Models of EmotionalLESCDisorders: Bridging Human and Animal Research,SCSS11 13 May 2007, Rome, Italy
- LESC Biomineralization: From Biology to Materials, PESC 11 - 14 May 2007, Århus, Denmark
- PESC Tracing Dust in Spiral Galaxies: Radiative Transfer Studies in the Dawn of a New Generation of Observing Facilities, 13 - 17 May 2007, Ghent, Belgium
- EMRC European Heart Modelling and Supporting Technology, 16 May 17 May 2007, Oxford, U.K.
- SCHTechnology in Counselling and Psychotherapy: MentalSCSSHealth Education and Service Delivery At University,
23 24 May 2007, Dublin, Ireland
- SCH Gift-Giving and Reciprocity in Modern Societies:
 SCSS New Directions in Theoretical Reflection and Empirical Analysis, 24 - 26 May 2007, Bremen-Delmenhorst, Germany
- **EMRC** Glycoscience Comes of Age, **LESC** 24 - 26 May 2007, Kolocep, Croatia
- SCSS Rethinking Added Value in the Creative Industries: Combining Theory and Empirical Data, 29 - 31 May 2007, Zurich, Switzerland

June	
LESC	Emerging Energies, Emerging Landscapes: Revisioning the Past, Constructing the Future, 4 - 6 June 2007, Paris, France
SCH	The Position of Religious Minorities in the Ottoman Empire and Early Modern Iran, 14 - 16 June 2007, Istanbul, Turkey
SCH	Shifting the Discourse: Climate Change as an Issue of Human Security, 21 - 23 June 2007, Oslo, Norway
SCSS	Improving the Quality of Qualitative Research, 26 - 29 June 2007, Kristiansand, Norway

July	
SCSS	Foggy Social Structures in European Welfare States: Irregular Migration and the Informal Economy, 13 - 15 July 2007, Osnabrück, Germany
SCH	Artists and Intellectuals and the Requests of Power, 27 - 28 July 2007, Merano, Italy

SCH Sextus Empiricus and Ancient Physics, 6 - 12 August 2007, Delphi, Greece

Septem	iber
SCH	Medieval Memories: Case Studies, Definitions, Contexts, 3 - 5 September 2007, Prague, Czech Republic
LESC	New Perspectives on Volcano Behaviour, Volcanic Hazards and Volcanism-Related Mineral Resources, 4 - 7 September 2007, Sovata, Romania
LESC	Econometric Time-Series Analysis Applied to Climate Research, 5 - 7 September 2007, Copenhagen, Denmark
LESC PESC	Biosupramolecular Chemistry, 5 - 7 September 2007 Bristol, U.K.
SCSS	Exploring Symbolic Value Creation in Organizations, 6 - 8 September 2007, Milano, Italy
SCSS	The Muslim World through the lens of European Textbooks, 11 - 14 September 2007, Braunschweig, Germany
LESC PESC	Correlative Microscopy for 3-D Cell Imaging, 12 - 13 September 2007, Motzen, Germany
SCH SCSS	Feminisms and Activism: Transversal Politics in Contemporary Europe and across the Globe, 12 - 16 September 2007, Nicosia, Cyprus
LESC	Valuing Biofilm Services: The Beauty and the Beast, 20 - 22 September 2007, Lunz Am See, Austria
SCH	Global Theory, Local Practices, and the Research into Visual Matters, 20 - 22 September 2007, Vilnius, Lithuania
SCSS	Sustainable Development and Transboundary Co-operation in Mountain Regions, 20 - 22 September 2007, Budapest, Hungary
SCH	European Perspectives on the Black Atlantic, 26 - 29 September 2007, Huelva, Spain
PESC	Microfluidic: Experiments and Numerics, 27 - 30 September 2007, Castel Gandolfo, Italy
SCSS	How to Measure Access: Definition, Measurement and Consequences of a Changed Set of Objectives in Transportation Designed to Meet the Needs of People, 27 - 28 September 2007, Dresden, Germany

October		
EMRC	Genetic Models of Disease Resistance in Livestock, 2 - 3 October 2007, Glasgow, U.K.	
PESC	Slow And Fast Light: Fundamental Issues And Applications, 8 - 9 October 2007, Venice, Italy	
SCSS	Multilingualism from an Interdisciplinary Perspective, 8 - 10 October 2007, London, U.K.	
PESC	Multivariate Interpolation - its Relation to Algebraic Statistics, Classical Algebraic Geometry and Computational Complexity Theory, 16 - 19 October 2007 Sestri Levante, Italy	
LESC PESC	Computational Approaches to the Role of Epigenetic Marks in Transcription Regulation, 17 - 19 October 2007, Basel, Switzerland	
EMRC	Clostridium Perfringens Induced Disease in Domestic Animals: Learning from Human Medical Science and Biotechnology for Understanding Animal Disease, 23 - 24 October 2007, Ghent, Belgium	

November

LESC PESC	Laser Scanning for Alpine Natural Hazard Management - Development of New Concepts, 15 - 17 November 2007, Obergurgl, Austria
SCSS	The Future of Representative Democracy, 22 - 24 November 2007, Berlin, Germany

December		
EMRC	From Standards to Concerted Programs of Collective Action: The Standardization Process of Medical Practices, 5 - 8 December 2007, Paris, France	
SCH	Reading and Censorship in Early Modern Europe, 10 - 12 December 2007, Barcelona, Spain	
SCSS	Cross-National and Multi-Level Analysis of Attitudes to Immigrants and Immigration in Contemporary Europe, 13 - 16 December 2007, Dublin, Ireland	

Forward Looks

ESF Forward Looks is an instrument which enables policy makers from ESF Member Organisations, in interaction with Europe's scientific community and other organisations, to develop medium to long-term views and analyses of future research developments with the aim of defining research agendas and priorities. The purpose of a Forward Look is to bring together, in a global context, scientific foresight and priority setting for research funding at the national and the European levels.

> More information: www.esf.org/flooks

Standing Committee of the European Medical Research Councils (EMRC)

European Food Systems in a Changing World • (2006-2007) LESC SCH SCSS See page 26

RNA World: a new frontier in biomedical research 2007-2008

The main objective of this foresight study is to explore the full potential of RNA-technology for medical application by foreseeing developments that are likely to take place during the next decade, by stimulating cooperation between the medical community and molecular biologists.

Research on RNA molecules has produced amazing results in recent years. Much progress has been made in basic science and its translation into clinical application. Not without reason was RNA voted "Molecule of the Year" or runner-up several times by Science magazine over the past few years. The 2006 Nobel Price in Medicine was awarded for their discovery of RNA interference - gene silencing by double-stranded RNA.

Gene silencing by RNA interference represents just one area of potential for RNA in medicine. Even though technical problems have to be overcome; the first clinical applications are being developed. The Forward Look RNA World that is being launched during spring 2007 uniquely integrates projects and networks of ongoing EC and ESF projects with the aim to build a common thrust for a comprehensive look at the future of this fascinating research area.

> More information: www.esf.org/rnaworld

Standing Committee for the Humanities (SCH)

European Food Systems in a Changing World • (2006-2007) Joint Activity with LESC SCH SCSS See page 26

Higher Education in Europe Beyond 2010: Resolving Conflicting Social and Economic Expectations • (2006-2007) Joint Activity with SCSS See page 27

Security – Advancing a Framework for Inquiry (SAFE) • (2007-2008)

Security research has proceeded far too long without adequate input from human and social sciences, focusing on crisis management and threat countering. This Forward Look will develop new perspectives for integrated research, to inform long-term understandings of models of security, of contingent cognitive, cultural, ideological and legal frameworks, and of relevant management issues.

The objective is to address scientifically complex issues such as critical thresholds and systemic imbalances. Through comparative studies, the FL will reflect the different approaches to the topic in the ESF constituencies.

A global science advisory board and partnerships in Europe and beyond will ensure a high level of knowledge transfer and a sustained science-and-policy dialogue (e.g. through EU, UN, NATO, CIS, etc.).

> More information: www.esf.org/safe

Standing Committee for the Life, Earth and Environmental Sciences (LESC)

European Food Systems in a Changing World • (2006-2007) Joint Activity with EMRC SCH SCSS

Food security is a primary societal goal in which food systems play a pivotal role. European food systems are changing, driven by complex technological and policy factors including Common Agricultural Policy (CAP) reform. These changes will affect the interactions between food availability, food access and food utilisation in uncertain ways. In addition to providing safe and healthy food, European food systems also contribute to an increasing number of goals including environmental functions, landscape and society objectives. This Forward Look, undertaken together with European Cooperation in Science and Technology (COST), will focus on how the changes in Europe's food systems drivers, in the context of balancing the varied goals, will affect these interactions.

> More information: www.esf.org/food

Standing Committee for Physical and Engineering Sciences (PESC)

European Computational Science Forum - The Lincei Initiative: from Computers to Scientific Excellence • (2006-2007) Joint Activity with LESC

The aim of this Forward Look is to develop a vision on how computational sciences will evolve in the coming 10 to 20 years. Over the last ten years research codes have grown from individual solutions to versatile yet complex tools. They are instrumental in over 2000 publications per year in international journals but they increasingly require new development and maintenance schemes. Based on a scenario of how this field and the needs of the scientific community will evolve, a strategy will be presented to structure support and development at the European level.

This Forward Look is initiated by the atomic-scale materials simulation community, but the outcome will be of interest to other Computational Science communities as well. Implementation of the recommendations of this Forward Look should lead to an advanced cyber-infrastructure that allows Europe to maintain its leading position in this field.

More information: www.esf.org/infrastructure

Standing Committee for the Social Sciences (SCSS)

European Food Systems in a Changing World • (2006-2007) Joint Activity with EMRC LESC SCH See page 26

Higher Education in Europe Beyond 2010: Resolving Conflicting Social and Economic Expectations • (2006-2007) Joint Activity with SCH

Higher education institutions are being subjected to a variety of pressures that seek, primarily, to enhance higher education's contribution to the successful creation of so-called 'knowledge societies', together with, and receiving only slightly less emphasis, the achievement of greater equity and social justice. This Forward Look will examine the relevant higher education research literature in terms of its underlying conceptual approaches and empirical findings across a number of selected subthemes in order to derive a future research agenda that will address scientific questions of long term strategic concern to the future of higher education.

> More information: www.esf.org/helf

Member Organisation Fora

Member Organisation Fora are a new ESF activity which has been developed in response to a clear demand from the member organisations expressed during the Strategic Plan consultations. MO Fora will be output-oriented, issuerelated venues for the member organisations, involving others as appropriate, to develop joint actions. Such actions should benefit membership organisations' strategy development and/or lead to the development of best practices, common procedures or cooperative activities. The Fora will be time-limited activities and will generally encompass one or more meetings of representatives of the member organisations plus others.

In fact, ESF has for some years organised activities which have brought together member organisations to discuss specific topics, but this has happened in an infrequent and ad-hoc way. In delivering the Membership Organisation Fora instrument ESF will establish a framework which will generate more topics and increase awareness for Member Organisations of the opportunities such a mechanism offers.

Member Organisation Fora address a range of both strategic and procedural issues which are of interest to a significant number of membership organisations. The first of the new Fora started in October 2006 in Prague, the Forum on Peer Review, with a conference 'Peer Review - Its Present and Future State' to identify the major issues to be addressed. The conference gathered over 150 participants representing ESF Member Organisations, EuroHORCs and institutions from all over the world.

Contributions, both from independent scientists and from representatives of national funding agencies, including the new European Research Council (ERC) and from the major scientific publications Nature and Science, concentrated around the following issues:

- Peer-review as a tool to identify excellence, innovativeness, interdisciplinary research;
- · Peer review of international networking activities;
- Impact of the electronic revolution and the internationalisation of peer review;
- Quality assurance, trust and scientific misconduct.

The need for harmonisation of procedures across national and disciplinary borders and for the establishment of common standards was raise. The conclusions of the conference will be addressed in the activities of the Forum which will continue into 2007.

Additional topics under preparation or discussion include the harmonisation of cooperation between national programmes; common approaches to the preparation of Strategic Plans, including the use of ESF's Forward Look instrument; research career development in Europe; open access to and the presentation of research data; and issues in mediumsized research infrastructure. The ESF has encouraged the development of the Member Organisation Fora instrument by inviting Membership Organisations to propose promising topics, from which the Governing Council will in mid-April 2007 select a first tranche for further development and launch in mid-2007.

> More information: www.esf.org/activities/mo-fora.html

Policy Briefings

ESF Science Policy Briefings (SPB) originated as a means for the ESF to issue position statements on a variety of science policy issues, such as the ethical use of animals in research or an ESF policy on human stem cells. Since its launch in 1997 more than two dozens of policy briefings have been published which deal with various issues concerning the European Research Area. Today, ESF Science Policy Briefings emerge either from initiatives of one or more ESF Standing Committee and/or Expert Committee, or are proposed by Member Organisations. If the Policy Briefing results from an initiative of Member Organisations, a working group or task force is assembled to prepare the Briefing to ensure quality control. Forward Looks are required to publish an ESF Science Policy Briefing as guickly as possible after the final conference, followed by a more substantial monograph which can also include reports and papers developed in the course of the Forward Look. Policy Briefings are only published after proper external peer review.

Standing Committee for the European Medical Research Councils (EMRC)

Already Published:

Rheumatic Diseases (SPB N°26, June 2006)

The task force, comprising Europe's leading researchers and clinicians, along with observers from a patients' representative group and the European Medicines Agency, EMEA, has looked across the field, considering all aspects of basic research and clinical practice, and distilled its findings into five key recommendations:

- To promote a pan-European research effort for a better understanding of the molecular and cellular basis of chronicity in rheumatic diseases for the development of curative and preventative strategies
- To promote coordinated European studies and trials in order to evaluate the incidence and outcome of rheumatic diseases and the development of prevention strategies
- To establish a pan-European network developing basic strategies for cell therapies of rheumatic diseases
- To promote a pan-European research effort towards a better understanding of the molecular and cellular pathology of osteoarthritis and osteoporosis
- To set up a Scientific Advisory Group (SAG) for rheumatic diseases at the European Medicines Agency (EMEA) with members from academia (i.e. basic, translational, clinical and epidemiological research) and patient organisations.

The aim is to provide coherent objectives for national and European funding bodies, and healthcare providers, and to ensure that rheumatic diseases are acknowledged as a major group of diseases within the European Commission Framework FP7.

> More information: www.esf.org/rheumaticdiseases

Structural Medicine: The Importance of Glycomics for Health and Disease (SPB N°27, July 2006)

This Policy Briefing is aimed to develop an area of research considered vital to European medicine; 'glycomics'. The briefing says that a multidisciplinary approach, to relate the structure of intrinsic glycans and glycoconjugates to their biological function, could aid the rapid development of treatments and diagnostics for a number of life threatening diseases.

The recommendations include:

- A strong coordinated interdisciplinary European research effort to enhance our insights into the structure of glycans and glycoconjugates in health and disease
- The development of high throughput diagnostic tools for the rapid analysis of glycans and improved infrastructures to provide the research community with better access to information
- Investment into European interdisciplinary educational programmes aimed at training scientists in glycoscience.

> More information: www.esf.org/glycomics

To be published:

Medical Imaging (2007)

It is anticipated that the role of medical imaging in the healthcare system will increase dramatically. Decisions have been made to develop recommendations for a European science policy with the aim to support research and development within medical imaging.

Several scientific topics were addressed in a workshop organised in Trondheim (NO) on 2-3 November 2006, including:

- The major roles of medical imaging in the future healthcare system
- The tension underlying the dual goal of improved patient outcome and cost-efficiency within the healthcare system
- The translation of new technology into new clinical practice
- The clinical potential of innovative new technologies in medical imaging
- The major challenges for medical imaging R&D in Europe

For each scientific topics the present status, future trends and major challenges will be analysed.

> More information: www.esf.org/medicalimaging

Population Surveys and Biobanking (2007)

A multitude of national biobanks are present in Europe, however, the exchange of data and materials within the national legal frameworks is difficult. ESF-EMRC wants to engage in a Science Policy Briefing on Population Survey and Biobanking. The workshop in Amsterdam (NL) on 7-8 December 2006 was aimed at analysing how to converge the European biobanking activities, address ethical issues and prevent fragmentation by reducing parallel activities in this field. The topic will be approached in a multidisciplinary fashion requiring the collaboration of various scientific domains. Special emphasis will be given to:

- Harmonisation procedures for collection, storage and data structure/access
- Status of existing versus new biobanks
- Data storage and database structure
- Phenotyping and technology
- Development of a more contemporary biobanking oriented view on informed consent (ethical and legal questions)
- Toning down expectation of economic valorisation and to generally de-hype expectation
- · Getting good connections to environmentalists
- Assessment of the usefulness of biobanks
- Role of the public and methods of involving the public
- Developing guidelines for data sharing
- Inventory of coordinating activities (meetings, participants)
- For each scientific topics the present status, future trends and major challenges will be analysed.
- > More information: www.esf.org/Surveysbiobanking

Structural Medicine: The Importance of Lipidomics for Health and Disease (2007)

The Standing Committee has decided to analyse the role of lipidomics in the diagnosis and treatment of disease and develop recommendations for a European Science policy with the aim to support research and development within the lipidomics domain.

A group of 25 experts in the field have been invited to participate in the workshop under the chairmanship of professors. Four major issues were identified as the major outcome of a strategic workshop organised on 12-13 December 2006 in Frankfurt:

- The general aspects of lipidomics and basic studies of lipids in living systems
- The development of innovative enabling technologies
- The clinical potential of lipidomics
- The major challenges for lipidomics R&D in Europe

For each issue the present status, future trends and major challenges will be analysed.

> More information: www.esf.org/lipidomics

Research Infrastructures (RI)

ESF regards the provision of high-quality research infrastructures within Europe as a key factor in the development of the European Research Area (ERA), helping to sustain a robust, up-to-date research environment which will attract the best brains from Europe and the rest of the world and achieve high quality results.

ESF's definition of Research Infrastructures includes:

- · Large research facilities with a unique capability
- Medium or small-scale research infrastructures which have a European-wide or regional impact (single-site or distributed) for their disciplines
- Data bases or collections (single-site or distributed) of substantial research value and European impact
- Underpinning infrastructure, such as broadband connectivity or GRIDS, for European research

ESF Strategy in RI

The second ESF Strategic Plan, covering the years 2002-2006, reflected the greatly increased profile and interest in RI. Interest and activity in RI has continued to grow greatly since 2001, especially in research domains where the concept of RI was previously weak. The landscape within Europe for debating and planning current, upgraded and future new RI, has also changed where the emergences of ESFRI, with its "Roadmap for future RI", and of RI-centric ERANets, are two examples.

In writing its third Strategic Plan, covering 2006-2010, ESF and its stakeholders reflected on how best ESF could contribute to debates and strategies in RI and how best to organise itself internally to fit the new Strategic Plan direction. To increase the engagement in RI issues of the scientific committees and boards, which represent or have contact with the majority of RI-user as well as some RI-provider communities, ESF has strengthened their responsibilities for coordinating scientific debates, reviews and strategies in their specific research domains. Overarching RI issues are dealt with at the corporate level by the CEO's Unit.

In addition to its traditional role in undertaking Reviews of planned or existing RI, ESF is now able to deploy instruments such as Member Organisation Fora and Forward Look to address the range of RI strategic issues.

Corporate Coordination in RI

The main corporate Research Infrastructure activity during 2006 and into 2007 is the EC - ESF - EuroHORCs collaboration on the 2nd European Survey of current research infrastructures at the European level. Initial conclusions will be available in March 2007 and a formal report of the Survey will be published in the Autumn of 2007. Other ongoing corporate RI activities include: collaboration with the European Life Sciences Forum in developing RI policy and strategy awareness in the life sciences; participation in ESFRI meetings; working with Member Organisations in coordinating approaches to Research Information Systems (CRIS systems); participation in initiatives related to open access to research data, as part of the EC's "Digital Libraries" initiative; and the permanent preservation of research data.

Science Synergy

The activities which are grouped under the Science Synergy pillar are aiming to encourage and stimulate cooperation between researchers and member organisations for new directions in research, and to plan and implement Europeanlevel research. These instruments will bring together member organisations on an à la carte basis for the funding of those activities that fit their strategic priorities and interests.

The ESF instruments to promote science synergy are ESF Research Conferences (p. 35), EUROCORES (p. 41) and ESF Research Networking programmes (p. 56). EUROCORES and Research Networking programmes bring together Member Organisations on an *à la carte* basis for the funding of those activities that fit their strategic priorities and interests.

ESF Research Conferences

The ESF Research Conferences Scheme provides the opportunity for leading scientists and young researchers to meet for discussions on the most recent developments in their fields of research, and acts as a catalyst for creating new synergistic contacts throughout Europe and the rest of the world. It develops principally through the establishment of long-term partnerships between ESF and national and international organisations, including universities.

ESF Research Conferences currently cover the following scientific areas: Physics, Biophysics and Environmental Sciences; Biology+: Biology at the Interface with Other Science Disciplines (Chemistry, Physics, Computing Science, Mathematics and Modelling, Space Science, Clinical Medicine, Engineering, Environmental Science, Humanities and Social Sciences); Animal and Human Sciences; Social Sciences and Humanities; Biomedicine; Global Health Economy; Global Environmental Change; Chemistry. Several initiatives in other scientific areas are under discussion.

ESF Research Conferences are open to scientists world-wide, whether from academia or industry. Conferences may be single events or series, usually with a biennial meeting focusing on specific aspects of the same general topic. They normally last for four or five days and up to 150 participants and invited speakers may attend. Chairs select participants from applications received as a result of publicising the Conferences. A conference fee is charged to participants.

The activities of the Conferences Unit also include World Conferences (eg ESF-JSPS Frontier Science Conferences for Young Researchers and Follow-up Workshops) as well as a series of Summer and Winter Schools that provide advanced scientific training in Physics.

The ESF Conferences Unit, which is located in Brussels with a liaison element in Strasbourg, also acts as service provider for conferences arising from other ESF instruments.

ESF Besearch Conferences

February

Trends in Optical Micromanipulation

ESF-FWF Conference in Partnership with LFUI, 4 - 9 February Obergurgl, (Ötz Valley, Universitätszentrum Obergurgl, near Innsbruck), Austria

Chairs: M.A. Ritsch-Marte (Innsbruck) & Stephan Bernet (Innsbruck)

March

The Origin of Galaxies: Exploring Galaxy Evolution with the New Generation of Infrared-Millimetre Facilities

ESF-FWF Conference in Partnership with LFUI, 24 - 29 March, Universitätszentrum Obergurgl, Obergurgl, (Ötz Valley, near Innsbruck), Austria

Chairs: E. Van Kampen (Innsbruck) & J.S. Dunlop (Edinburgh)

April

The Impact of the Environment on Innate Immunity: At the Defence Frontier - The Biology of Innate Immunity

ESF-FWF Conference in Partnership with LFUI, 22 - 27 April Universitätszentrum Obergurgl, Obergurgl, (Ötz Valley, near Innsbruck), Austria

Chairs: P. Schmid-Hempel (Zurich), S. Armitage (Copenhagen) & J. Kurtz (Münich)

May

Humanising Model Organisms to Understand the Pathogenesis of Human Disease

ESF-Wellcome Trust Conference, 1 - 4 May, Wellcome Trust Genome Campus, Hinxton (near Cambridge), UK

Chairs: R. Wolf (Dundee), S. Brown (Harvell), R. Fodde (Rotterdam), R. Balling (Braunschweig), N. Hastie (Edinburgh) & N. Rosenthal (Monterotondo Scalo)

The International Regulation of New Medical Technology: Health Technology Adoption in the European Union, North America, East Asia and in the Developing World

ESF-IFW Conference on The Global Health Economy, 7 - 10 May, Salzau Castle, Salzau (near Kiel), Germany Chairs: F.B. Kristensen (Copenhagen) & L. Rochaix (Saint Denis la

Plaine)

Literature for Europe: European Identities and European Literature in a Globalizing World

ESF-LiU Conference, 12 - 16 May, Vadstena Klosterhotel, Vadstena, Sweden Chair: T. D'haen (Leuven)

Ocean Controls in Abrupt Climate Change

ESF-FWF Conference in Partnership with LFUI, 19 - 24 May, Universitätszentrum Obergurgl, Obergurgl (Ötz Valley, near Innsbruck), Austria

Chairs: R. Zahn (Bellaterra) & I.R. Hall (Cardiff)

June

Animal Biotechnology and its Applications to Animal and Human Health

ESF-Wellcome Trust Conference, 14 - 16 June Wellcome Trust Genome Campus, Hinxton (near Cambridge), UK Chairs: H. Sang (Roslin), J. Kaufman (Compton) & M. Georges (Liège)

Pharmacogenetics and Pharmacogenomics

ESF-UB Conference in Biomedicine 15 - 20 June Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava), Spain Chairs: P. Beaune (Paris), M. Eichelbaum (Stuttgart) & M. Pastor Anglada (Barcelona)

July

Biological Surfaces and Interfaces

ESF-EMBO Symposium, 1 - 6 July, Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava), Spain

Chairs: M. Textor (Zurich), G. Marletta (Catania), J. Gold (Göteborg) & J.P. Spatz (Heidelberg)

September

Higher Education and Social Change at the Beginning of the Twenty-First Century

ESF-LiU Conference, 15 - 19 September, Vadstena Klosterhotel, Vadstena, Sweden

Chairs: J. Brennan (London) & M. Prenzel (Kiel)

Biomagnetism and Magnetic Biosystems Based on Molecular Recognition Processes

ESF-EMBO Symposium, 22 - 27 September, Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava), Spain

Chairs: J. Bland (Cambridge), K.R.A. Ziebeck (Loughborough) & T. Mitrelias (Cambridge)

October

The Global Organisation of Biomedical Innovation: Funding, Intellectual Property Rights, Incentives, and the Diffusion of New Technology

ESF-IfW Conference on The Global Health Economy, 3 - 8 October, Salzau Castle, Salzau (near Kiel) Germany Chair: to be announced

Three Dimensional Sensory and Motor Space: Perceptual Consequences of Motor Action

ESF-EMBO Symposium, 6 - 11 October Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava), Spain Chairs: J. Smeets (Amsterdam) & F. Bremmer (Marburg)

Rare Diseases: Transporters and Channelopathies

ESF-UB Conference in Biomedicine 13 - 18 October Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava), Spain Chairs: M. Palacin (Barcelona) & S. Ayme (Paris)

Comparative Genomics of Eukaryotic Microorganisms: Eukaryotic Genome Evolution

ESF-EMBO Symposium, 20 - 25 October, Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava), Spain Chairs: E.J. Louis (Nottingham) & T. Boekhout (Utrecht)
Pathways of Human Dignity: From Cultural Traditions to a New Paradigm

ESF-LiU Conference, 31 October - 4 November, Vadstena Klosterhotel, Vadstena, Sweden Chairs: G. Stroumsa (Jerusalem) & M. Düwell (Utrecht)

Global Environmental Change: The Role of the Arctic Region

ESF-VR-FORMAS Conferences on Global Change Research, October / November (exact dates to be announced), Utsikten Meetings, Nynäshamn, Sweden

Chairs: J. Thiede (Bremerhavn), D. Dahl-Jensen (Copenhagen) & S. Sörlin (Stockholm)

November

Probing Interactions between Nanoparticles, Biomaterials and Biological Systems - Alternative Approaches to Bio- and Nano-Toxicity

ESF-EMBO Symposium, 3 - 8 November, Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava), Spain Chairs: K.A. Dawson (Dublin) & Y. Lynch (Dublin)

Systems Biology

ESF-UB Conference in Biomedicine, 17 - 22 November, Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava), Spain Chairs: L. Serrano (Heidelberg), R. van Driel (Amsterdam) & R. Aebersold (Zürich)

Electronic Democracy

ESF-LiU Conference, 21 - 25 November, Vadstena Klosterhotel, Vadstena, Sweden Chair: H. Kubicek (Bremen)

Functional Genomics: Synthetic Biology

ESF-UB Conference in Biomedicine, 24 - 29 November Hotel Eden Roc, Sant Feliu de Guixols, Spain Chairs: V. de Lorenzo (Madrid), S. Panke (Zürich), N. Packard (Venezia) & A. Valencia (Madrid)

December

Water Interfaces in Physics, Chemistry and Biology: A Multi-Disciplinary Approach

ESF-FWF Conference in Partnership with LFUI, 8 - 13 December Universitätszentrum Obergurgl, Obergurgl (Ötz Valley, near Innsbruck), Austria

Chairs: M. Bellisent-Funel (Gif/Yvette) & J. Dore (Canterbury)

Summer & Winter Schools

The 24th Jerusalem Winter School in Theoretical Physics: The Lives of Low-Mass Stars and their Planetary Systems ESF-IAS Winter School in Physics, 27 December - 5 January Jerusalem, Israel Course Director: D. Gross (Jerusalem)

Extra-Solar Planets: The Detection, Formation, Evolution and Dynamics of Planetary Systems

ESF-PPARC-EPSRC Summer School in Physics & Astronomy (SUSSP), 28 May - 8 June, Sabhal Mor Ostaig, U.K. Course Director: B.A. Steves (Glasgow)

Nanomedicine

ESF-UB Summer School, 10-15 June, Cardiff, U.K. Course Director: R. Duncan (Cardiff)

String Theory and the Real World: From Particle Physics to Astrophysics

ESF School of Theoretical Physics, 2 - 27 July, Les Houches, France Course Director: L. Beaulieu (Paris)

ESF World Conferences

Research Integrity: Fostering Responsible Research 16-19 September Calouste Gulbenkian Foundation, Lisbon, Portugal Chairs: A. Mayer (ESF) & N. Steneck (ORI)

In 2000 ESF published a review of good scientific practice in research and scholarship (ESF Science Policy Briefing N° 10. This followed an extensive study of policies dealing with research integrity in the ESF member organisations and worldwide).

Following an approach from the U.S. Office of Research Integrity (ORI - part of the U.S. Department of Health and Human Services), ESF, together with the ORI, have promoted a World Conference to develop research integrity by focusing on fostering responsibility in research at all levels. This responds to the recent well-publicised cases of misconduct, fraud and questionable research practices and seeks to retain public confidence and establish clear best practice frameworks at an international level. The primary goal is to assemble an international group of researchers, research administrators from funding agencies, research organisations performing research, academies, publishers, and policy makers to improve, harmonise, publicise, and make operationally effective international policies for the responsible conduct of research.

The Conference will take place on 16-19 September in Lisbon as a European Commission event in the programme of the forthcoming Portuguese Presidency of the European Union through the Ministry for Science. Technology and Higher Education (MCTES) through Funadacio Cientifica Tecnologica (FCT) and the Gabinete de Relações V Internacionais da Ciência e do Ensino Superior (GRICES) and the Gulbenkian Foundation (Portugal). The event is also in partnership with the International Council for Science (ICSU) and NATO who have agreed to make provision for travel grants to assist participants from developing countries and NATO partners and Mediterranean Dialogue countries. ESF and ORI have also received help and support from EMBO, the Committee on Publication Ethics and the UK Research Integrity Office. In addition, representatives from the US National Science Foundation, US NIH, the Japan Society for the Promotion of Science, ALLEA, UK MRC, MPG, DFG, CNRS and the European Forum for Good Clinical Practice have been involved in the conference planning.

ESF intends to follow up the Conference with a MO Forum on Research Integrity, allowing MOs to develop ideas and approaches to bring the conclusions of the Conference forward.

EUROCORES Programmes

The European Collaborative Research (EUROCORES) scheme allows research funding organisations in Europe and beyond to support top-class research across all scientific areas, by matching the needs articulated by the scientific community with their strategic priorities. The scheme provides a flexible framework for researchers from Europe to address questions which are best addressed in larger-scale collaborative research programmes, it allows working "at the bench" in collaborative research projects by excellent researchers from different countries and when appropriate including colleagues from, for example, the U.S. The EUROCORES scheme is currently supported by the EC Sixth Framework programme under Contract no. ERAS-CT-2003-980409.

> More information: www.esf.org/eurocores

Standing Committee of European Medical Research Councils (EMRC)

Development of a Stem Cell Tool Box (EuroSTELLS)

Twenty-one research groups from 11 European countries participate in the EUROCORES programme on Development of a Stem Cell Tool Box (EuroSTELLS). The EuroSTELLS programme aims at generating fundamental knowledge on stem cell biology, setting up the bases for comparative analyses of stem cells of different origins, and their clinical application in the future. The ability to isolate, culture and manipulate stem cells *ex vivo* is a critical step towards elucidating their biological properties and developing their biotechnological and therapeutic potential.

EuroSTELLS promotes and supports networking activities, contributing to create a critical mass of expertise in the stem cell field in Europe. The conference on "General Biology of Stem Cell Systems" held in Venice on 19-21 March 2006 fostered innovative and multidisciplinary collaborations as well as synergy with other European and international stem cell initiatives.

Training activities, such as the workshop on "Exploring Chromatin in Stem Cells" held in Montpellier on 22-24 January 2007, allow harmonisation of research tools, definitions and protocols in stem cell biology and increase quality assurance.

Dissemination of EuroSTELLS activities, including a discussion of developments in the stem cell field and their impact on quality of life and public health, generated wide media impact and were covered by over twenty-eight international websites.

> More information: www.esf.org/eurostells

Pan-European Clinical Trials (ECT)

ECT is a unique programme that coordinates funding for pan-European non-commercial, investigator-driven clinical trials addressing questions that have a strong impact in the quality of life, morbidity and mortality of the European population. The ECT programme provides a framework for the implementation of pan-European clinical trials in compliance with current National legislation and European regulations. Two pan-European clinical trials aimed at rare diseases and the paediatric population are funded under this programme: EURAMOS (a randomised trial of the European and American Osteosarcoma Group to optimise treatment strategies for resectable osteosarcoma based on histological response to pre-operative chemotherapy that involves 150 clinical centres in 11 European countries, U.S. and Canada) and PROFIDYS (a trial aimed at reducing bone morbidity using an oral bi-phosphonate in fibrous dysplasia of bone that involves clinical centres in five European countries).

By promoting and supporting networking, the ECT programme fosters synergy with other European and international initiatives. Training activities have contributed to the development of the necessary expertise for the implementation and management of multi-centre, pan-European academic clinical trials, ensuring patient safety in compliance with Good Clinical Practice and current National and European legislation. Dissemination activities have brought together clinicians, ethicists, legal experts, policy makers, charities and funding bodies, representatives from regulatory agencies. professional associations and patient organisations to discuss current regulatory and ethical issues to ensure patient safety in the conduct of academic clinical trials. The impact of this conference is evidenced by the wide coverage in the media and specialised publications.

> More information: www.esf.org/ect

Science of Protein Production for Functional and Structural Analysis (EuroSCOPE)

Joint Activity with LESC

A better understanding of the function of a protein requires a detailed analysis of its structure. Such studies (e.g. carried out on crystallised protein) require substantial amounts of high quality protein. The difficulties of producing sufficient amounts of protein for structure-function analysis as well as for X-ray analysis (crystallisation) constituted thus far a major bottleneck for proteomics. Although this was and is well recognised by the scientific community, funding for a programme addressing this topic systematically has not been available since the beginning of the post-genomic phase that started proteomics.

The EUROCORES programme EuroSCOPE bridges this gap by bundling resources within Europe to accelerate research on protein production through scientific innovation and collaboration. The programme addresses the major stumbling blocks in the production of proteins for functional and structural analysis. With the focus on the basic understanding of the mechanisms underlying protein production, targeting, folding and stability, which eventually may result in the improvement of existing and the design of new expression systems. The detailed subfields of research include bottlenecks in gene expression; targeting the synthesised protein to a specific cellular location; and folding and stability of expressed proteins.

> More information: www.esf.org/euroscope

Stress and Mental Health (EuroSTRESS)

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.

The EUROCORES programme EuroSTRESS will focus on two theme priorities in an interdisciplinary fashion:

- 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?

A call for outline proposals has been published and will be open until 21 May 2007. (www.esf.org/activities/eurocores/ programmes/eurostress.html)

> More information: www.esf.org/eurostress

Standing Committee for the Humanities (SCH)

BOREAS: Histories from the North - Environments, Movements, Narratives

The circumpolar North is now widely accepted as a unique early warning system for changing relations between society and the environment.

This region, which includes the Arctic and the sub-Arctic, has moved to the centre of global debates on environmental change, human adaptation, new post-cold-war partnerships and issues of post-colonial governance and strategy. However, much Arctic research has been dominated by natural science agendas, looking at the region as a natural 'laboratory'.

Inhabitants of the Arctic are often seen as natural variables, while their understandings of the natural, cultural and spiritual processes that have shaped Arctic civilisations have not been adequately taken into account.

For political and other reasons, the circumpolar region has only recently re-emerged as "one" area, revealing past connections and current common problems and pointing to future challenges, such as the relationships between communities and the modern state (whether Soviet, post-Soviet or Welfare), NGOs and the global economy. The involvement of local populations as research partners is very advanced in the North, and BOREAS offers a unique opportunity for scholars to explore the intersections of Southern (or 'Western') ways of knowing the environment and their local counterparts. BOREAS can redefine the geography of knowledge in Northern Europe and relate it to circumpolar regions worldwide, by moving beyond South-North dichotomies and centre-periphery models, as well as by crossing disciplinary and national boundaries. BOREAS also invites the research community to reflect upon their own approaches to studying the North.

> More information: www.esf.org/boreas

Consciousness in a Natural and Cultural Context (CNCC)

Until recently, many scientists considered consciousness to be an unsuitable topic for scientific research. Prompted by technological developments (including brain imaging techniques) as well as conceptual changes, this attitude has shifted, and scientific interest in consciousness has greatly increased during the past decade. Currently, the explanation of consciousness is considered by many to be one of the major unsolved problems of modern science.

The CNCC programme aims to meet this need by fostering top-quality consciousness research in Europe. Given the wide variety of phenomena which fall under the heading of consciousness – perception, emotion, attention, selfawareness, sensation, intentionality, dreaming, wakefulness and others – progress will depend on the integration of available scientific resources from a variety of theoretical and empirical disciplines and methods. Empirical data can serve to challenge and validate theoretical analyses, while conceptual analysis can provide directions and tools for the empirical scientists.

The CNCC programme aims to support the emergence of an integrated and truly interdisciplinary science of consciousness, within the humanities and between the humanities and the social, natural, and biomedical sciences. The programme encourages research that explicitly addresses the natural and cultural dimension of consciousness.

> More information: www.esf.org/cncc

Inventing Europe: Technology and the Making of Europe, 1850 to the Present

This EUROCORES programme aims at establishing robust transnational research teams that develop novel perspectives on the mutual shaping of transnational technology developments and the process of European integration. Inventing Europe thus looks at the processes and perceptions of technological change as an important arena for constructing Europe on the material, institutional, and discursive levels. The programme places the history of European integration within a broader transnational histories of Europe. From this perspective, European integration began in the latter part of the 19th century and unfolded unevenly across the 20th century

through a range of multilayered and contested transnational processes in which technology was deeply implicated, alongside as much as within the political arena.

> More information: www.esf.org/inventingeurope

Modelling Intelligent Interaction - Logic in the Humanities, Social and Computational sciences (LogICCC)

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 analyzing 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 are invited to team up. Some of these researchers may be logicians, others may 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, the EUROCORES programme 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.

The Call for Outline Proposal was launched in mid-March 2007 and the deadline for submission of outline proposals is 11 May 2007.

> More information: www.esf.org/logic

The Evolution of Cooperation and Trading (TECT) Joint Activity with LESC SCSS

A number of disciplines have adopted a common theoretical framework for explaining biological and cultural evolution that emphasises the properties of interacting, goal-directed agents, e.g. behavioural economics, evolutionary game theory in political science and economics, evolutionary approaches in cognitive, social psychology and neuroscience, replicator chemistry, population dynamic accounts of cultural evolution within anthropology, and the continued importance of evolution in our understanding of cooperative relationships between all kinds of organisms.

Methodological advances provide crucial new information about the properties of agents and their interactions. Examples include new tools from molecular genetics for inferring evolutionary relationships, new experimental work in economics, the development of neuroimaging methods, the continuing development of methods in cognitive science, and the renaissance of quantitative cross-cultural and comparative research. The overall goal of TECT is to build a multidisciplinary research framework that encourages collaborative research into the evolution of cooperation and trading both within and between human, social, life and natural sciences.

> More information: www.esf.org/tect

The Origin of Man, Language and Languages (OMLL)

Language may be considered as one of the defining characteristics of the human species. The development of linguistic and cognitive skills in the prehistoric past can be studied nowadays with reasonable expectations of success thanks to new perspectives which have been developed through the collaboration of several disciplines, including genetics, linguistics, evolutionary and palaeo-anthropology, archaeology, neurophysiology, cognitive sciences and artificial intelligence studies.

Comparative maps of genetic and linguistic human families suggest interesting correlations between the distribution of genetic diversities and of linguistic groups. How the development of linguistic skills can be linked to the evolution of the brain and of its cognitive strategies – both in phylogenetic and ontogenetic perspectives – can now be explored by empirical studies and modelling tools alike. The OMLL programme supports collaborative research in this area.

> More information: www.esf.org/omll

Standing Committee for the Life, Earth and Environmental Sciences (LESC)

4-D Topography Evolution in Europe: Uplift, Subsidence and Sea Level Change (TOPO-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 worldclass issues of Earth-System sciences, TOPO-EUROPE has considerable societal relevance, since topography directly affects humanity as a result of secular landscape changes that have a direct bearing on environmental change and geohazards. 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 a 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 ESF EUROCORES initiative is a unique opportunity to establish a world-class program based on Europe's strengths in integrated Solid-Earth sciences. We would like to thank the funding organisations who agreed to provide their support for this initiative.

> For more information: www.esf.org/topoeurope

Challenges of Biodiversity Science (EuroDIVERSITY)

The aim of the EuroDIVERSITY programme is to support the emergence of an integrated biodiversity science based on an understanding of fundamental ecological and social processes that drive biodiversity changes and their impacts on ecosystem functioning and society. Ecological systems across the globe are being threatened or transformed at unprecedented rates from local to global scales due to the ever-increasing human domination of natural ecosystems. In particular, massive biodiversity changes are currently taking place, and this trend is expected to continue over the coming decades, driven by the increasing extension and globalisation of human affairs. The EuroDIVERSITY programme meets the research need triggered by the increasing human footprint worldwide with a focus on generalisations across particular systems and on the generation and validation of theory relevant to experimental and empirical data.

The programme was launched in April 2006 and includes 10 international, multidisciplinary collaborative research projects, which are expected to contribute to this goal by initiating or strengthening major collaborative research efforts. Some projects are dealing primarily with microbial diversity (COMIX, METHECO, MiCROSYSTEMS), others try to investigate the biogeochemistry in ecosystems (BEGIN, BioCycle), the landscape and community ecology of biodiversity changes (ASSEMBLE, AGRIPOPES, EcoTRADE), and others focus on the diversity in freshwater (BIOPOOL, MOLARCH). In 2007, the EuroDIVERSITY programme will integrate the different European research teams involved with collaborative field work campaigns over Europe, international workshops and conferences, as well as joint peerreview publications.

> More information: www.esf.org/eurodiversity

Challenges of Marine Coring Research (EuroMARC)

The EuroMARC (Challenges of Marine Coring Research) programme focuses on three major science themes: Earth's surface environmental change, processes and effects; the deep biosphere & sub-seafloor ocean: solid Earth cycles & geodynamics. Obtaining key cores from the sub-seafloor is crucial to progress in the Earth and environmental sciences because the oceans regulate climate, cover the sites of fundamental geodynamic, geochemical and biological processes and preserve high-resolution records of the Earth history. Over the past 30 years, European researchers have played a leading role in international marine coring that has been central to most of the important advances in global dynamics science with farreaching implications for the Earth and environmental sciences. They have contributed markedly to important scientific discoveries such as the operation of plate tectonics and the accretion of the oceanic lithosphere. Recent scientific advances in the field include the study of deep microbial communities, the discovery of frozen methane (gas hydrates) below the sea floor, the highresolution evidence of past extreme and rapid climate variations, the establishment of new models for passive margin evolution, the understanding and quantification of oceanic biogeochemical cycling, and the discovery of large igneous provinces associated with continental break-up at volcanic margins.

EuroMARC is an essential enabling tool to boost European leadership in the planning of marine drilling and coring expeditions and the execution of European proposals, hence ensuring the effective exploitation of research opportunities. EuroMARC is also an important contribution to the European participation in both the International Marine Past Global Change Study (IMAGES/PAGES), and the Integrated Ocean Drilling Program (IODP), in liaison with the European Consortium for Ocean Research Drilling (ECORD).

> More information: www.esf.org/euromarc

Climate Variability and the Carbon Cycle - Past, Present and Future (EuroCLIMATE)

The climate for the next century, and thereafter, is expected to be largely different from the present and the recent past. CO_2 concentration is expected to reach levels unequalled over the past millions of years. Temperature is also rising rapidly. The last 150 years of meteorological observations and the reconstruction over the last millennium display a quite uniform climate. Only the reconstruction of paleoclimates extending much further back in time can help build a database with a broader climatic diversity. Such a database will, in addition, offer the possibility to test the reliability and robustness of the models used for future climate system works.

EuroCLIMATE focuses both on reconstructing past climates using different well-dated and calibrated proxy records and on modelling climate and climate variations for a better understanding of the underlying physical, chemical and biological processes involved.

> More information: www.esf.org/euroclimate

Dynamic Nuclear Architecture and Chromatin Function (EuroDYNA)

One of the major challenges in biology is to understand how the genome orchestrates gene expression of the many thousand genes it encodes. To tackle this issue, the ESF together with national funding agencies from eight European countries have set the stage for 40 research groups to coordinate their efforts across Europe within the framework of the European Collaborative Research (EUROCORES) programme EuroDYNA.

EuroDYNA aims at advancing our knowledge of the control of gene expression in nuclear organisation. To do this the programme gathers and combines expertise in different fields such as dynamic chromatin structure and nuclear architecture, regulation of gene expression, RNA processing and transport as well as genome surveillance. Latest technologies in molecular biology and biochemistry are employed together with advanced microscopy, structural analysis and computational approaches in order to gain a deeper insight into how the nucleus operates. Detailed knowledge on the principles and mechanisms underlying the control of gene expression is vital for understanding the cause of many diseases and for developing rational procedures for genomic engineering, including gene therapy and stem cell engineering, and for many biotechnology applications.

There are nine Collaborative Research Projects (CRPs) under the umbrella of EuroDYNA which started their research in 2005. In addition to its multidisciplinary character, the programme offers a wide range of networking opportunities to the entire EuroDYNA community; providing training possibilities and establishing a platform to stimulate new research initiatives between scientists with related yet slightly different scientific interests, and to promote collaboration with other national and European initiatives.

> More information: www.esf.org/eurodyna

Ecosystem Functioning and Biodiversity in the Deep Sea (EuroDEEP)

The deep sea is the largest environment on the planet, the least well known and one of the least studied. It contains extremely large, continuous habitats such as the millions of km² of abyssal plains and the 65,000 km long mid-oceanic ridge system. At the same time, it encloses relatively small (hundreds of km² to only a few m²), localised geological features such as canyons, seamounts, deep-water coral reefs, hydrothermal vents and fluid seepages on mud volcanoes, pockmarks or faults, which support unique microbial and faunal communities. What little we know about deep-sea ecosystems supports the hypothesis that more species occur in the deep sea than anywhere else on Earth. As much as 90 per cent of species collected in a typical abyssal sediment sample are new to science.

The launch of this multidisciplinary EuroDEEP programme is foreseen in June 2007 aiming at the exploration and identification of the different deep-sea habitats, assessing both the abiotic and biotic processes that sustain and maintain deep-sea communities in order to interpret variations of biodiversity within and between deep-sea habitats and the interactions of the biota with the ecosystems in which they live. The resulting scientific data are a prerequisite for the sustainable use and the development of management and conservation options aiming at the sustainable use of marine resources that will benefit society as a whole.

EuroDEEP is a programme for deep-sea biology and ecology that strongly depends and requires collaboration between taxonomists, microbiologists, ecologists, physical and chemical oceanographers and geologists.

> More information: www.esf.org/eurodeep

European Mineral Sciences Initiative (EuroMinScI) Joint Activity with PESC

The chemistry of the crust/mantle/core depends on elements partitioning between minerals, and phenomena, such as superplasticity or super-elasticity in minerals, could have a direct impact on large scale geological processes. Major advances in the use of physics-based experimental techniques and atomistic computer simulation now make it possible to understand the relation between the structure of minerals and their physical properties. At the same time, measurements of many minerals properties in situ at extreme conditions of temperature and pressure corresponding to those existing in the earth's interior are now feasible. The EuroMinScI programme draws together different experimental techniques and computational activities into integrated research projects. Sometimes it calls for separate "computer experiments" while at other times computer simulation is needed even to interpret the experimental data uniquely. It also addresses the need for young researchers with an academic background in Earth sciences to be trained more in the physics-based techniques, where the methods are very different from traditional Earth sciences.

> More information: www.esf.org/eurominsci

Processes in the Passive Continental Margins (EUROMARGINS)

The nations of Europe share one of the world's longest passive margin systems and one of the most distinctive morphological features of the world's ocean basins. A remaining frontier for natural resources, passive margins mark the complex transition between continental and oceanic crust, with large sedimentary accumulations. In addition, passive continental margins, associated with unstable slopes, represent a major source of natural hazards, especially to the coastal communities of Europe.

The EUROMARGINS programme provides the international framework for promoting innovative, interdisciplinary work for the imaging, monitoring, reconstruction and modelling of the physical, chemical, and biological processes in the European passive continental margins. It encourages the development of new technologies and conceptual models aiming at the advancement of integrated research into the mechanisms responsible for continental break-up and the world ocean margin formation. The pooling of human resources, training of a new generation of interdisciplinary geoscientists, and optimal sharing of observational platforms or analytical and modelling facilities are considered important value-added ingredients of the EUROMARGINS programme.

> More information: www.esf.org/euromargins

Quality Control of Gene Expression – RNA Surveillance (RNAQuality)

This EUROCORES programme is intended to promote European collaborative research projects that aim to uncover processes that act as quality control checkpoints in gene expression and understand how these function at the molecular level. The programme will focus on basic mechanisms of RNA quality control that operate at different levels of RNA biogenesis. This will include studies on degradation of aberrant RNAs, the coupling between the mRNA synthesis and surveillance, and studies on quality control mechanisms in the biogenesis of rRNA, tRNA and other non-protein coding RNAs. These posttranscriptional processes appear to be conserved throughout evolution, and studies using important model organisms will therefore allow cross-species comparisons. These analyses will reveal the key, conserved components of these pathways, and will establish the basis for the reconstruction of posttranscriptional quality control networks in humans.

> More information: www.esf.org/rnaquality

Science of Protein Production for Functional and Structural Analysis (EuroSCOPE) Joint Activity with EMRC See page 42

The Evolution of Cooperation and Trading (TECT) Joint Activity with SCH and SCSS See page 45

Standing Committee for the Physical and Engineering Sciences (PESC)

Cold Quantum Matter (EuroQUAM)

Quantum Matter is a matter in which all the constituent atoms and molecules are in a single quantum state and behave coherently as a single quantum object. It typically exists at temperatures less than one millionth of a degree above absolute zero. In the long term, quantum matter is expected to have applications in diverse areas ranging from high-precision measurement to quantum information. The field of quantum matter is a complex one that draws on atomic and optical physics, chemical physics and physical chemistry, plasma physics, statistical physics, solidstate 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 EuroQUAM programme will provide vital opportunities for scientists from different disciplines and countries to collaborate, and in particular will stimulate collaborations between experiment and theory. Such collaboration is essential if Europe is to maintain its present status as an international leader in the field. Major advances are expected as a result of the research being conducted within EuroQUAM. Currently the programme is at the stage of Full Proposal selection and ranking. The call for Outline Proposals launched in March 2006 resulted in 24 Outline Proposals from which 17 were invited to proceed to the Full Proposal stage. The research work is expected to begin in April-May 2007. The focus of the programme is covered under four themes of: tomic quantum gases with controllable interactions; Formation of molecules in ultracold atomic gases; Cooling molecules; and Ultracold plasmas and Rydberg gases.

> More information: www.esf.org/euroquam

European Mineral Sciences Initiative (EuroMinScI) Joint Activity with LESC See page 49

Friction and Adhesion in Nanomechanical Systems (FANAS)

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 non-equilibrium processes occurring at the molecular level to determine what happens at the macroscopic level.

The fast development, over last decades, of micro- and nanomechanics brought up the need for a more basic understanding of the origins and behavior 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 this EUROCORES programme on FANAS is to get a better insight on 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.

The Call for Proposals was launched in March 2007 and the launch of this programme is expected in 2008.

> More information: www.esf.org/fanas

Fundamentals of Nanoelectronics (FoNE)

It is now widely accepted that the physics of hybrid nanostructures will underpin the microelectronics industry of the coming decades and that Europe must maintain a presence at the leading edge of this field. This EUROCORES programme recognises that a comprehensive understanding of the above phenomena is crucial to the future development of nanoscale electronics and it aims to accelerate the pace of European research by concentrating and networking the activities of world-leading, European research groups.

The primary focus of FoNE is on fundamental nanoscale phenomena affecting electron transport. These include: quantum transport, noise and correlations in quantum dots, wires and other novel structures; molecular-scale electronics and atomic contacts; nanoscale spindependent transport and control; proximity effects and hybrid nanostructures.

> More information: www.esf.org/fone

Quantum Standards and Metrology (EuroQUASAR)

Precision measurements are at the heart of testing our physical models, they provide a strong motivation in physics and applied sciences for developing new methods and have an important place in our modern technology based society, where techniques such as GPS guide many of our day-today activities. The foundation for a new area of precision was laid by the latest Nobel-prize awarded achievements such as laser cooling, Bose-Einstein Condensation and precision metrology (optical comb generators). European scientists have had a significant share of contributions in realising these achievements.

EuroQUASAR will build on European expertise to develop a new generation of quantum standards with unprecedented performance. The programme will form a cohesive platform for utilising the latest developments such as quantum metrology and novel techniques of quantum engineering. EuroQUASAR will help paving the way for the achievement of future optical clocks and inertial sensors of record precision as well as novel fundamental tests based on atomic and molecular quantum systems with well defined, unique and perpetual features.

The Call for Outline Proposal was launched in mid-March and the deadline for submission of outline proposals is 11 May 2007.

> More information: www.esf.org/euroquasar

Self-Organized NanoStructures (SONS) I (2002 Call)

Self-organization, or self-assembly, is a process in which a supramolecular organization is established in a complex system of interlocking components. The mechanism that produces the organization is determined by the competing interactions between the components. The hierarchy of interactions determines the hierarchy of levels in the final nanostructured material.

Thus self-organizing compounds allow a defined and wellcontrolled construction of ordered architectures on a nanometerscale.

The SONS programme concerns the utilization of supramolecular interactions for the synthesis and positioning of functional assemblies, macromolecules, dendrimers, liquid crystals, tailor-made polymers and inorganic nanoparticles.

Molecular self-assembled architectures may find applications in advanced technologies such as new chip technologies (DNA probes, lab-on-the-chip), sensors transistors, data storage, light-emitting diodes, communication technologies, magnetic information storage, photovoltaic cells, and molecular motors and machines.

> More information: www.esf.org/sons

Self-Organized NanoStructures (SONS) II (2005 Call)

For the scientific description see SONS I.

The second call for Proposals of SONS was launched in May 2005, and seven Collaborative Research Projects (CRPs) were selected for funding bringing together 51 research groups from 15 countries.

> More information: www.esf.org/sons2

Smart Structural Systems Technologies (S3T)

Major incidents due to failures in engineering infrastructure, modern transportation or other spheres of human activity are becoming less acceptable; zero-risk protection of citizens is now a long-term aspiration of governments. Whether it is civil infrastructure, industrial plant, or a fleet of trains or aircraft, operators and engineers are under pressure to make every possible effort to assure public safety, including the procurement of new technology, while at the same achieving substantial increases of operational efficiency and cost reduction. Consequently, there is less focus on the design of new structures and more on the long-term goal of extending indefinitely, through minimum intervention, the safe and economical operational lifetime of individual structural components and entire systems. A "smart structure" is a system that has the ability to learn about its environment, process the information in real time, reduce uncertainty, and generate and execute control actions in a safe and reliable manner to accomplish the desired objective. The EUROCORES S3T programme seeks to lay down theoretical and experimental bases for the integration of state-of-the-art sensors into systems to monitor and control major structures. Seven projects are being launched within the S3T programme; they bring together 45 teams from 9 countries. The topics deal with diverse areas of smart structures such as: Material algorithms, Finite Element methods and Experiments; Smart sensing in Structural Health Monitoring; Aircraft Morphing; Shape Memory Alloys in Civil Engineering; Measurement and Monitoring of Ageing Underground Infrastructures using Micro Electro Mechanical Systems; Vibration Control in Civil Engineering; and, shape control of membrane reflectors.

> More information: www.esf.org/s3t

Standing Committee for the Social Sciences (SCSS)

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

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 analyze how human values, attitudes and behaviour are affected by the characteristics of the multilevel systems or contexts in which they occur.

The HumVIB EUROCORES programme 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.

The Call for Outline Proposal was launched in Mid-March and the deadline for submission of outline proposals is 14 May 2007. More information is available at www.esf.org/humvib.

European Collaborative Research Projects 2007 Call - ECRP III

The ECRP programme is designed to advance high-quality responsive mode, researcher-led, collaborative international research within and across all fields of the social sciences, offering opportunities to test innovative ideas, pool multidisciplinary expertise and strengthen European research capacity.

In 2007, funding agencies of 19 countries are participating in the scheme, and the deadline for submitting proposals is 27 April. Proposals will be evaluated at the European level within a common peer review process, with common criteria and procedures, after which funding decisions will be taken at the national level by the agencies concerned. The process is coordinated by ESF. The ESF web pages include a set of Frequently Asked Questions and related documentation on this EUROCORES programme. In addition, lists of the Collaborative Research Projects awarded in the 2005 and 2006 competitions are available on the web.

> More information: www.esf.org/ecrp

The Evolution of Cooperation and Trading (TECT) Joint activity with SCH SCSS See page 45

Research Networking Programmes

These long-term Research Networking programmes (formerly known as Scientific programmes) are the platform for nationally funded research groups to address major scientific and research infrastructure issues with the goal to advance the frontiers of science.

A successful programme proposal, selected following an open call for proposals and an international peer review process, must deal with high-quality science and demonstrate the added value of being carried out at the European level.

ESF programmes are funded à *la carte* by ESF Member Organisations interested in funding such proposals recommended by ESF.

In 2007 ESF is supporting the following programmes:

> More information: www.esf.org/programmes

Standing Committee for the European Medical Research Councils (EMRC)

European Research Network for Investigating Human Sensorimotor Function in Health and Disease (ERNI-HSF) • (2007-2011)

The primary aim of this programme, which is expected to be launched in 2007, is to establish an interdisciplinary research forum that will drive forward our understanding of human sensorimotor function in health and disease. It will involve the foundation of a pan-European research network that will make possible collaborative work practices that could not be achieved by individual scientists working alone.

Key objectives for this programme will be to: organise a series of scientific meetings that address key scientific issues; develop mechanisms for sharing knowledge and expertise in scientific methods and techniques -- particularly neuroimaging techniques; promote and facilitate the training of young basic and clinical scientists across the EU; coordinate the establishment of a European-wide database of neuroimaging data and the construction of a European Human Brain Atlas based upon pooled structural MRI data.

Stroke is by far the most common cause of human disability in the European Union, and damage to the posterior parietal cortex (PPC) is a very common outcome of stroke which leads to disorders in the representation of space (e.g., hemispatial neglect) and to impairments in the planning and control of goal-directed movements (e.g., ideomotor limb apraxia and optic ataxia). Understanding the nature of the sensorimotor transformations carried out by human PPC is a fundamental problem for neuroscience and of considerable clinical importance in treating the consequences of stroke and other neurological disorders that affect this brain area. Hemispatial neglect affects 60-70 per cent of right hemisphere stroke patients acutely, and ideomotor apraxia affects approximately 50 per centof those admitted to hospital following a left hemisphere stroke. Furthermore, the presence of disorders such as neglect seriously hampers rehabilitation after stroke, and reduces an individual's ability to regain functional independence.

> More information: www.esf.org/erni-hsf

Frontiers of Functional Genomics (FFG) • (2006-2011) Joint Activity with LESC See page 59

Standing Committee for the Humanities (SCH)

Associated Regional Chronologies for the Ancient Near East and Eastern Mediterranean (ARCANE) • (2006-2010)

12 contributing organisations

Chronology underpins all archaeological and historical studies. To establish the proper sequence of events is a prerequisite for writing history.

The synchronisation of chronologies, and therefore of the histories, of the various areas of the Eastern Mediterranean and the Near East is an essential task without which the development of civilisations, their reciprocal influences, their convergence and divergence, cannot be described and understood. The ultimate goal of the ARCANE programme is to produce a reliable, relative and absolute chronology of the Near East and the Eastern Mediterranean, based on the synchronisation of regional chronologies for the third millennium BC.

> More information: www.esf.org/arcane

Early Agricultural Remnants and Technical Heritage (EARTH) • (2004-2009)

17 contributing organisations

The aim of the EARTH programme is to encourage collaboration and exchange on the dynamics of non-industrial agriculture. The central goal is to understand humans in action, investigating their knowledge, skills, perceptions and experiences, seeking patterns and tendencies from the Neolithic period to the beginning of industrial-scale agriculture. The scientists involved come from a wide variety of disciplines in the humanities, and often use methods from the life and earth sciences. The programme also aims to produce more effective means of interpreting, recording and communicating, particularly through highlighting the importance of the social and cultural context in explaining the processes of agricultural practice.

> More information: www.esf.org/earth

From Natural Philosophy to Science (NPHS) • (2003-2007)

13 contributing organisations

This programme addresses an important but difficult question, namely, what were the factors involved in transforming natural philosophy into physics as we know it today? For our understanding of the nature of modern science, it is essential that we know the history of its philosophical beginning. The programme focuses its research efforts on the period of the formation of European "natural philosophy", the cradle of modern scientific thought. The corner dates usually given for this period are 1200 and 1700.

> More information: www.esf.org/nphs

Representations of the Past: the Writing of National Histories in Europe (NHIST) • (2003-2008)

25 contributing organisations

The programme aims to bring together the histories of western and eastern Europe in a concerted attempt to bridge the historiographical divide which was cemented by the long cold war division of the continent.

Methodologically, the programme unites cultural transfer and comparative approaches, which are best suited to explore the complex relationship between national historiographies and national historical cultures in Europe.

> More information: www.esf.org/nhist

Standing Committee for the Life, Earth and Environmental Sciences (LESC)

Archean Environmental Studies: the Habitat of Early Life (ArchEnviron) • (2005-2010)

9 contributing organisations

The aim of the programme is to coordinate and promote research on the environment of the early Earth and on the manner in which life appeared and evolved. The main research topics are: the composition and temperature of Archean atmosphere and oceans; the nature of Archean landmasses; interaction between Archean surface waters and the oceanic and continental crust; the search for traces of early life. The main emphasis will be on the conditions at or near the surface of the Archean Earth. The approach will be based firmly on the Earth sciences and will thus be distinguished from other complementary programmes in which the emphasis is on molecular biology and genetics. By focussing on the first two billion years of Earth history, this programmes that focus mainly on life in modern extreme environments.

> More information: www.esf.org/archenviron

Behavioural Ecology of Insect Parasitoids - from Theoretical Approaches to Field Applications (BEPAR) • (2005-2009)

11 contributing organisations

This programme studies parasitoids, insects whose adult females lay their eggs in or on other insects and whose immature larvae develop by feeding on host bodies, resulting in the death of the host. A number of factors make parasitoids an ideal model for testing evolutionary hypotheses, usually through predictions derived from mathematical models and the experimental testing of such predictions. Since their reproduction process involves killing hosts, they can also be used on a large scale to control insect pests attacking a wide variety of crops, significantly reducing the use of toxic pesticides. This programme aims to expand and build on the theoretical and experimental developments achieved in this area to date, and carry out field tests of the theoretical predictions available.

> More information: www.esf.org/bepar

Body-size and Ecosystem Dynamics: Integrating Pure and Applied Approaches

From Aquatic and Terrestrial Ecology to Support an Ecosystem Approach (SIZEMIC) • (2007-2011)

11 contributing organisations

Body size and species identity both contribute to the complex webs of interaction that determine the structure and function of ecosystems. SIZEMIC will attempt a synthesis of size and species-based approaches for describing structure and energy flux in ecosystems and seek to understand how the properties of individuals lead to observed patterns of size structure and diversity. This synthesis, building on recent theoretical developments in aquatic and terrestrial ecology, will be used to develop and test size-based models that might be used to assess and monitor the impacts of human activities on ecosystems. The programme will provide a focus for collaboration between theoretical and applied ecologists working on terrestrial and aquatic ecosystems and provide opportunities for young European scientists to work across existing research boundaries.

> More information: www.esf.org/sizemic

Frontiers of Functional Genomics (FFG) • (2006-2011) Joint Activity with EMRC

23 contributing organisations

Functional genomics, the exploration of gene function on a global scale, is currently at the leading edge of progress in the life sciences and medicine.

The ESF programme 'Integrated Approaches to Functional Genomics', which ended in October 2005, facilitated communication and interactions among European researchers and succeeded in engaging a wide audience, gaining considerable international recognition. This new programme will connect the most promising developments in functional genomics technologies with the expanding concept of systems biology, focusing particularly on applications in biomedicine, as well as the environment and implications for society at large.

> More information: www.esf.org/ffg

Functional Dynamics in Complex Chemical and Biological Systems (FUNCDYN) • (2006-2011) Joint Activity with PESC

16 contributing organisations

The aim of this programme is to establish a competitive European research community in functional dynamics and to bring together researchers from the field of non-linear dynamics with researchers from biochemistry and biology. Living organisms are characterised by a plethora of chemical and structural details at numerous levels of complexity, making comprehensive understanding and modelling at every spatial and temporal scale an unattainable task. One aim of the FUNCDYN programme is the development of systematic methods for reduction of model complexity by restricting the modelling to relevant temporal and spatial scales without losing the quantitative predictive ability. Another aim is the development of equipment and experimental protocols for the efficient collection of relevant dynamic data. The programme will also include studies of non-biological systems, which are dynamically similar to living cells such as interacting oscillators operating far from thermodynamic equilibrium. These types of studies are an inspiration for similar approaches for bio-systems and essential for testing the feasibility of new analytic and experimental ideas.

> More information: www.esf.org/funcdyn

Integrating Population Genetics and Conservation Biology: merging theoretical, experimental and applied approaches (ConGen) • (2004-2009)

16 contributing organisations

During the last two decades the role of genetics in conservation biology, and ecology in general, has been greatly emphasised. The assessment of genetic diversity in (endangered) animal and plant populations, whether natural or captive, wild or domesticated, is now pervasive. Such a process, and progress, is driven by technical, conceptual and socioeconomical factors as well. The scope of this programme is to activate a multidisciplinary European network of scientists working on conservation genetics from different perspectives and at different levels: (i) experimental population genetics, and (iii) practical conservation genetics of captive and natural populations.

> More information: www.esf.org/congen

Interdisciplinary Tropospheric Research: from the laboratory to global change (INTROP) • (2004-2008)

21 contributing organisations

Climate change and air quality are key societal challenges. It has become clear over the last decade the development of our societies can no longer afford to be just wealthorientated but a sustainable development with an "environmentally friendly" approach is needed. However, such an approach is only possible if scientifically sound knowledge is made available to our societies. The aim of this programme is to respond to issues of strategic importance in European science policy and to strengthen collaborative research.

> More information: www.esf.org/introp

Mediterranean Climate Variability and Predictability (MedCLIVAR) • (2006-2011)

12 contributing organisations

MedCLIVAR aims to coordinate and promote research on the Mediterranean climate. The main goals include reconstruction of its past evolution, description of patterns and mechanisms characterising its space-time variability, and identification of the forcing parameters responsible for the observed changes. Emphasis will be put on the identification of trends present in observational records as well as on climate predictions under future emission scenarios. MedCLIVAR also covers the study of the occurrence of extreme events – closely related to climate variability and changes, and the impact of climate change.

> More information: www.esf.org/medclivar

Nitrogen in Europe: assessment of current problems and future solutions (NinE) • (2006-2011)

13 contributing organisations

Nitrogen is an important cross-cutting theme over most of the important environmental problems for Europe: climate change, biodiversity, ecosystem health, human health, ground water pollution, etc. The NinE programme addresses interacting problems affected by excess nitrogen in the environment. Fixed nitrogen cascades through many different forms and environmental compartments, generating a highly interdependent network. Solutions to each problem therefore cannot be developed in isolation. The NinE programme is building the European scientific network necessary to quantify these interactions and underpin the development of future solutions, focusing its efforts on delivering a fully integrated assessment of European nitrogen problems.

> More information: www.esf.org/nine

The Role of Soils in the Terrestrial Carbon Balance (RSTCB) • (2002-2007)

12 contributing organisations

Carbon stored in soils represents the largest terrestrial carbon pool. Knowledge of the dynamics of this pool is essential if we are to understand the terrestrial carbon balance as a whole. Without this knowledge we will not be able to understand the global carbon cycle, and we will have little hope on predicting what will be the impacts of climate change. Consequently, this programme aims to bring together soil carbon researchers to create a Europe-wide perspective on the role of soils in the terrestrial carbon balance.

> More information: www.esf.org/rstcb

Stable Isotopes in Biospheric-Atmospheric Exchange (SIBAE) • (2002-2007)

11 contributing organisations

This programme aims to study the role of terrestrial ecosystems in the global carbon budget. Specifically, it aims to study the CO_2 and H_2O gas exchange between terrestrial ecosystems and the

atmosphere using stable isotopes. This involves networking European scientists from various disciplines ranging from atmospheric physics to micrometeorology and from plant ecophysiology to biogeochemistry.

> More information: www.esf.org/sibae

Thermal Adaptation in Ectotherms: linking life history, physiology, behaviour and genetics (THERMADAPT) • (2006-2011)

16 contributing organisations

This programme will study thermal adaptation of ectothermic (coldblooded) organisms. The thermal environment is a factor crucially affecting ectotherm life history. Metabolism, thermal tolerance and resistance, as well as lower and upper temperature boundaries all differ between species and populations. This indicates the presence of specific adaptations but also constraints, the physiological and genetic basis of which is generally not well understood. Ultimately, such adaptation at the physiological level affects the dispersal, migration, diapause and distribution of species. As a result, prominent within-species temperaturesize effects (larger at cooler temperatures) and Bergmann clines (larger at higher latitudes) occur in all major animal taxa but remain largely unexplained.

The programme proposes to launch a cross-disciplinary, cross-taxonomic European effort to promote interactions between researchers working at different levels of biological organisation to integrate various approaches. The aim is to involve scientists working in molecular and cell biology to promote the use of new genetic and genomic techniques in this field in an attempt to link micro-evolutionary mechanisms to macro-evolutionary patterns. Broad use of these costly and know-how-intensive methods is best and most efficiently facilitated through a concerted effort at the European scale, involving training, exchange of specimens and sharing of facilities.

> More information: www.esf.org/thermadapt

Volatile Organic Compounds in the Biosphere-Atmosphere System (VOCBAS) • (2004-2009)

15 contributing organisations

The aim of this programme is to implement, support and coordinate a series of research activities involving atmospheric chemists, plant biologists, pathologists, entomologists, agronomists and foresters, to determine how biogenic volatile organic compound (VOC) emissions affect the relationship between the biosphere and the atmosphere. VOCBAS brings together this outstanding scientific community which carries out internationally recognised research into the production and emissions of VOCs by plants in the context of global change from a wide range of disciplines. It spans plant processes, genetics, and ecosystem functioning, environmental controls on VOC emission fluxes, flux measurements and modelling on the leaf, canopy, ecosystem and regional scales, and the emission of these compounds into the atmosphere.

> More information: www.esf.org/vocbas

Workshops on Marine Research Drilling (Magellan Workshop Series) • (2006-2011)

12 contributing organisations

Over the last decennia European researchers played a leading role in the international marine research drilling community which has made major contributions to important discoveries and scientific advances such as: the operation of plate tectonics and the accretion of the oceanic lithosphere, the existence of microbial communities (deep biosphere) and the presence of frozen methane (gas hydrates) below the sea floor, past extreme and rapid climate variations, high resolution climate perturbations, new models for passive margin evolution, the mechanisms for biogeochemical cycles, and the discovery of large igneous provinces associated with continental break-up at volcanic margins. Societal relevance has moved several of those themes into the spotlight. One of those, rapid climate change, has an important impact on global environments (for example, earthquakes, volcanic eruptions, tsunamis, biological changes). However, such processes are far away from reliable short- and long-term prediction.

The ESF Magellan Workshop Series programme is a mechanism to stimulate and nurture the process of developing new and innovative science proposals to support European leadership in the development and planning of marine drilling expeditions. It is an initiative by the European Consortium for Ocean Research Drilling (ECORD), the European partner of the International Ocean Drilling Program (IODP) and as a European contribution to the IMAGES-related science.

> More information: www.esf.org/magellan

Standing Committee for the Physical and Engineering Sciences (PESC)

Advanced Mathematical Methods for Finance (AMaMeF) • (2005-2010)

16 contributing organisations

This programme aims to work towards the development and application of advanced mathematical tools in finance. As a consequence of the great variety of techniques required for progress in the development of viable financial models and risk management tools, there is a serious need for a highly disciplinary approach to conduct research in this area, an approach requiring expertise from a number of complementary areas of mathematics.

> More information: www.esf.org/amamef

Arrays of Quantum Dots and Josephson Junctions (AQDJJ) • (2004-2009)

16 contributing organisations

The physics and the properties of materials at reduced dimensionality are among the main emerging issues of research in condensed matter physics. These aspects are combined in arrays of Josephson junctions (JJ), nanoparticles and quantum dots. Arrays of these systems and their hybrid structures may display not only novel fundamental physics but also serve as a basis for future technologies. The aim of this programme is therefore to establish a network to cover these novel areas of research. In particular, special attention will be given to novel photonic methods of optical and microwave characterisation of these arrays which are contactless, fast, informative and, consequently, most efficient and simple in use.

> More information: www.esf.org/aqdjj

Automata: from Mathematics to Applications (AutoMathA) • (2005-2010)

17 contributing organisations

Automata theory (AT) is one of the longest established areas in Computer Science. Standard applications of AT include pattern matching, syntax analysis and software verification. In recent years, novel applications of automata-theoretic concepts have emerged from biology, physics, cognitive sciences, neurosciences, control, tomography, linguistics, mathematics, and other fields, while developments in information technology have increased the need for formallybased design and verification methods to cope with such emerging technical needs as network security, mobile intelligent devices, and high performance computing.

This programme proposes a set of co-ordinated actions for advancing the theory of automata and for increasing its application to challenging scientific problems.

> More information: www.esf.org/automatha

Computational Astrophysics and Cosmology (ASTROSIM) • (2006-2011)

14 contributing organisations

This programme aims to bring together European computational astrophysicists working on a broad range of topics from the stability of the solar system to the formation of stars and galaxies. Understanding our origins and the formation of structure in the universe is a challenging multidisciplinary research activity that brings together observational, experimental and theoretical researchers with a broad range of expertise. The systems that we attempt to model are complex and involve a range of physical processes operating over enormous lengths and timescales. Computational techniques developed by researchers in Europe since the 1960s have played a central role in advancing this subject, developing theories for structure formation, testing cosmological models and solving the complex non-linear problems inherent to gravitational and hydro-dynamical astrophysical processes.

Understanding the strong interplay between different scales is essential for a complete theory and true comprehension of structure formation. Our aims are to strengthen the existing European activities in computational astrophysics, avoiding fragmentation as this field grows in strength and to exchange expertise through an active program of conferences, workshops, training schools and exchange visits. Our scientific objectives are to refine our computational techniques and multi-scale modelling in order to develop and test theories of structure formation in readiness for the grand challenge European projects planned by ESO and ESA over the coming decades.

> More information: www.esf.org/astrosim

Electron Induced Processing at the Molecular Level (EIPAM) • (2004-2009)

15 contributing organisations

The ability to understand, manipulate and control physicochemical processes at the molecular level is one of the great challenges of modern research and underpins the development of vibrant new technologies of the 21st century, for example the development of nanolithography. This programme brings European research teams together to perform systematic investigations of how electron-induced processes may be used to manipulate molecular formation and reactions as the transition is made from isolated particle behaviour in a low pressure gas to many body interactions in the condensed phase.

> More information: www.esf.org/eipam

Experimental and Theoretical Design of Stimuli-Responsive Polymeric Materials (STIPOMAT) • (2005-2009)

10 contributing organisations

The aim of this programme is to combine the complementary expertise of leading European research groups in the experimental and theoretical study of complex structures on the basis of stimuliresponsive polymers and copolymers with linear or complex topology, with a view to understanding how such structures are formed and examining the correlation between the behaviour of these polymer systems under the change of external conditions (temperature, pressure, electric or magnetic field, shear, ionic strength, pH and composition of solution) and the chemical structure of the constituents.

> More information: www.esf.org/stipomat

Functional Dynamics in Complex Chemical and Biological Systems (FUNCDYN) • (2006-2011) Joint Activity with LESC See page 59

Global and Geometrical Aspects of Nonlinear Partial Differential Equations (GLOBAL) • (2004-2009)

11 contributing organisations

The aim of this programme is to study the global and geometric properties of solutions of nonlinear partial differential equations (PDEs), from the view point of theory and applications. Many problems in physics, medicine, finance and industry can be described by nonlinear partial differential equation, and their investigation has become an independent field with many research directions. One of these, on which this programme is based, is the analysis of geometric and global aspects of their solutions.

> More information: www.esf.org/global

Harmonic and Complex Analysis and its Applications (HCAA) • (2007-2012)

11 contributing organisations

The main idea of this project is to establish a fruitful cooperation between two scientific communities: analysts with a broad background in Complex and Harmonic Analysis, and Mathematical Physics, and specialists in Physics and Applied Sciences. Harmonic and Complex Analysis is a well-established area in mathematics. Over the past few years, this area has not only developed in many different directions, but has also evolved in an exciting way at several levels: the exploration of new models in mechanics and mathematical physics and applications has at the same time stimulated a variety of deep mathematical theories.

It is a multidisciplinary programme at the crossroads of mathematics and mathematical physics, mechanics and applications, that proposes a set of co-ordinated actions for advancing in Harmonic and Complex Analysis and for increasing its application to challenging scientific problems. Particular topics which will be considered by this programme include Conformal and Quasiconformal Mappings, Potential Theory, Banach Spaces of Analytic Functions and their applications to the problems of Fluid Mechanics, Conformal Field Theory, Hamiltonian and Lagrangian Mechanics, and Signal Processing.

> More information: www.esf.org/hcaa

Highly Frustrated Magnetism (HFM) • (2005-2010)

12 contributing organisations

This programme is a joint effort between solid-state chemists, experimental and theoretical physicists to unveil novel quantum states and effects where frustration plays a leading role. Its main goal is to reach a broad understanding of the important physical parameters that drive these new ground states and sketch out the generic phase diagrams for a broad variety of degrees of freedom, which extend beyond the simple frustration of magnetic interactions to include lattice couplings, orbital degrees of freedom, dilution effects, electronic doping, and more.

> More information: www.esf.org/hfm

Interdisciplinary Statistical and Field Theory Approaches to Nanophysics and Low Dimensional Systems (INSTANS) • (2005-2010)

12 contributing organisations

This programme aims to set up a new theoretical framework to answer the fundamental questions encountered in the modern physics of nanoscopic and low-dimensional systems, bringing together expertise in condensed matter, quantum field theory and statistical physics. It covers electronic systems, such as nanotubes, quantum dots and quantum Hall effect devices, as well as specific devices featuring cold atoms.

> More information: www.esf.org/instans

Mapping the Detailed Composition of Surface-adsorbed Protein Layers on Biomaterials and Nanoparticles (EpitopeMap) • (2007-2012)

10 contributing organisations

Interactions between cells and biomaterials determine the level of success of medical implants. A new paradigm for thinking about cell-biomaterial interactions is emerging, where it is the effect that the biomaterial has on the proteins that adsorb to the material upon contact with physiological solution that is important, rather than the actual nature of the surface itself. The important parameter is thus the conformation and structure of the adsorbed protein layer, and in particular, the very outer protein layer, as this is what the cells actually see. In this program it is intended to bring together scientists working in the traditionally separate areas of biomaterials and nanoparticles, in order to develop and apply the most cutting-edge characterization techniques to understanding the nature of the surface-adsorbed protein layer on biomaterials and nanoparticles, and the effect of this on biocompatibility and nanoparticle toxicity. Envisaged highlights of the program include the exchange of ideas between the traditionally distinct research areas and the bringing together of a range of physical (characterisation and visualisation) techniques with biological and medical approaches to addressing the common goals, which will result in a great increase in the pace of understanding, a rational basis for risk assessment, and a reduction in the barriers to developing commercial applications of biomaterials and nanoparticles.

> More information: www.esf.org/epitopemap

Methods of Integrable Systems, Geometry, Applied Mathematics (MISGAM) • (2004-2009)

11 contributing organisations

The main goal of this programme is to establish and explore the bridge between the geometry of the theory of integrable systems and its asymptotic aspects; these results will have an impact on physics, applied mathematics and statistics. To this end, the plan is to investigate the relationships, discovered recently by mathematicians and physicists, between integrable differential equations, the topology of Deligne- Mumford moduli spaces and singularity theory.

> More information: www.esf.org/misgam

Middleware for Network Eccentric and Mobile Applications (MINEMA) • (2003-2008)

11 contributing organisations

During the last decade it has been possible to observe impressive scientific, technological and experimental advances in the area of ad hoc networks.

Although this technology is considered one of the main infrastructures for future applications, today there is a lack of appropriate middleware abstractions that adequately address the requirement of such a challenging environment. The aim of this programme is to bring together the main groups from different communities that are working on middleware for mobile environments and to foster the definition and implementation of widely recognised middleware abstractions for new and emerging mobile applications.

> More information: www.esf.org/minema

Molecular Simulations in Biosystems and Material Science (SimBioMa) • (2006-2011)

19 contributing organisations

The aim of the programme is to initiate a concerted European effort to develop those computational tools that can be used to obtain a better molecular understanding of the emergence of mesoscopic structure and dynamics in biological systems ("molecular systems biology") and in man-made nanostructured materials. In order to establish the link between molecular properties and mesoscopic materials properties, one must use an integrated approach that seamlessly integrates quantum calculations, molecular simulations and mesoscopic modelling techniques.

> More information: www.esf.org/simbioma

Multidisciplinary Frontiers of Magnetic Resonance (EMAR) • (2007-2012)

14 contributing organisations

Magnetic resonance techniques are among the most powerful and versatile spectroscopic tools with applications in many different fields. Their wide range of applications stimulates a great deal of cross-disciplinarity and the history of their continuous advances parallels that of their diverse fields of application. The agreement between different European Magnetic Resonance organizations to jointly run EUROMAR provides an opportunity to foster NMR and EPR in Europe to a leading international role and to transfer this strength along the complete scientific network that develop and uses these techniques. The proposal contains instruments to enhance interdisciplinarity and the discovery of new fields at the frontiers between different disciplines as well as training activities aiming at ensuring an optimal transfer of the knowledge down to the student level and across the national boundaries, through the participation of National Societies.

> More information: www.esf.org/emar

Nanoscience and Engineering in Superconductivity (NES) • (2007-2012)

16 contributing organisations

Confined condensate and flux in superconductors will be investigated at nanoscale by using various confinement patterns introduced artificially in the form of individual nanoplaquettes, their clusters and huge arrays. The dependence of the quantization effects on the confinement length scale and the geometry will be studied. The boundary conditions, defining the confinement potential, will be tuned by using the hybrid superconductor/normal and superconductor/magnet interfaces in superconducting nanosystems. The evolution of superconductivity at nanoscale will be revealed by determining the size dependence of the superconducting critical temperature and the gap in mass selected clusters and nanograins and also by studying superfluidity in different restricted geometries. Flux confinement by magnetic dipoles and other periodic pinning arrays in superconductors will be investigated.

By tailoring the confinement, physical properties of the confined condensates and flux can be designed starting from the fundamental Ginzburg-Landau equations (including their generalization to two component order parameter) and applying them to the real samples with the boundary conditions imposed at the physical sample's boundary. This research will reveal the fundamental relations between quantized confined states and the physical properties of the superconducting quantum coherent systems, which will be also of importance for other scientific fields (superconducting elements for quantum computing, nanoelectronics, hydrodynamics, liquid crystals, plasmas).

> More information: www.esf.org/nes

Nanotribology (NATRIBO) • (2002-2007)

15 contributing organisations

This programme aims to improve collaboration between experimentalists and theoreticians in the field of tribology on the nanometer scale.

Recently, experimental and modelling tools have become available for the study of small (nano) contacts under pressure in relative motion. The understanding of friction, adhesion, fracture and wear on the nanometer scale, atomic-scale stick slip on solid surfaces, confinement of liquids between surfaces, electrical and mechanical properties of quantum contacts are subjects of this research. Other questions which are being addressed by NATRIBO include: dissipation mechanism of contacts in relative motion; novel nanomaterials for tribology, tribochemistry, triboluminescence; and mechanical properties of quantum contacts.

> More information: www.esf.org/natribo

New Generation of Organic based Photovoltaic Devices (ORGANISOLAR) • (2006 - 2011)

13 contributing organisations

Solar energy conversion based on organic materials is an emerging research field with substantial future prospects. A broad range of distinct device technologies are currently being developed, including dye-sensitized nanocrystalline solar cells, polymer/fullerene blends, small molecule thin films and hybrid polymer/nanocrystal devices. Several European groups have already established themselves as world leaders in this field with for example world record efficiencies for both dye-sensitised and polymer/fullerene devices currently being held by research groups in Lausanne and Linz respectively. Major nationally based research programmes are under way with extensive European industrial investment.

> More information: www.esf.org/organisolar

Phase Transitions and Fluctuation Phenomena for Random Dynamics in Spatially Extended Systems (RDSES) • (2002-2007)

16 contributing organisations

The programme is focused on new themes in mathematical statistical physics. The main goal is to study random dynamics in spatially extended systems through the application of powerful probabilistic techniques - fluctuation theory and large deviation theory. Spatially extended systems consist of a large number of components that interact locally but that may nevertheless exhibit a long-range dependence, resulting in anomalous fluctuation phenomena and phase transitions.

> More information: www.esf.org/rdses

Quantum Degenerate Dilute Systems (QUDEDIS) • (2004-2008)

18 contributing organisations

The programme builds on the synergy which was achieved in the ESF PESC programme "BEC2000+ - Bose-Einstein Condensation and beyond". The programme adopts the current trends and developments of the field, which comprises degenerate Fermi gases, mixtures of Bose and Fermi systems, homo and heteronuclear molecular systems and even quantum phase transitions in the strongly interacting regime.

> More information: www.esf.org/qudedis

Quantum Geometry and Quantum Gravity (QG) • (2006 - 2011)

11 contributing organisations

The main objective of the programme is to stimulate the exchange of ideas between researchers pursuing different approaches to quantum geometry and apply the results to the study of quantum gravity. The research programme will study several approaches to quantum gravity, namely loop quantum gravity, spin foam models, dynamical triangulations and matrix

models. The common theme is the occurrence of quantum geometry in all these approaches. The research programme will study mathematical tools and techniques in non-commutative geometry and quantum groups and their applications to quantum gravity. The planned activities are workshops and conferences, schools and programmes of research visits. These are designed to increase the level of interaction between existing research groups and to give a broad education in all the approaches to a new generation of young researchers.

> More information: www.esf.org/qg

Spectral Theory and Partial Differential Equations (SPECT) • (2002-2007)

15 contributing organisations

This programme aims to stimulate the theoretical study of spectral properties of partial differential operators, a subject with many practical applications including problems appearing in solid state physics, superconductivity, and problems concerning stability of matter, telecommunications, and others. Stimulated by these and other applications, this area of mathematical physics contains many outstanding and difficult problems which mathematicians have been trying to solve for decades.

Recent progress in solving some of these problems is a major motivation for joining forces with different European research groups.

> More information: www.esf.org/spect

Stochastic Dynamics: Fundamentals and Applications (STOCHDYN) • (2003-2008)

14 contributing organisations

Stochastic tools have been used for both theoretical modelling of complex systems and the analysis of experimental data. They have proven to be a versatile interdisciplinary approach to tackle the nonlinear dynamics as encountered in statistical mechanics, solid-state physics, chemical physics, nanotechnology, biophysics and climatic dynamics. The goal of this programme is to address the foundations for the different levels of stochastic descriptions in nonlinear systems, to provide the further development of analytical and numerical tools, and the investigation of specific problems, as they arise in different areas of research, described by stochastic nonlinear theories.

> More information: www.esf.org/stochdyn

Thin Films For Novel Oxide Devices (THIOX) • (2003-2008)

12 contributing organisations

This programme, positioned at the intersection between condensed matter physics, chemistry, and materials science, is working on different aspects of thin oxide films and oxide hybrids (combinations of films with different functionalities) with possible use in devices. The potential of these materials is very high, but some of the key factors which control the physics, for instance the doping level and the structure, are also often difficult to control in films. Moreover, the compatibility of different oxides in terms of interface structure and electronic properties is a poorly understood issue; as are the effects of (substrate induced) strain. In all cases, structural and electronic properties depend on deposition method and growth conditions which have to be well understood and sensitively controlled. Advanced devices and fine tuning of the electronic properties of these materials require further research in these areas.

The large amount of parameters and the machinery required for fabrication and analysis make it impossible for any single group to get a firm grip on these questions, especially since they are strongly interdisciplinary in nature.

> More information: www.esf.org/thiox

Towards Atomistic Materials Design (PSI-K) • (2003-2007)

21 contributing organisations

This programme addresses the very rapidly developing field of computer simulation of materials, relevant to both science and technological developments. Simulations are carried out at the atomic level with ab initio quantum mechanical calculations that represent the bonding between atoms. New opportunities are being created for novel research on materials across physics, chemistry, materials science, nanotechnology and surface science, as well as earth sciences and biology, with already a small but growing number of applications to industry. The speed of advance is such that many current applications could not have been made three years ago and were hardly dreamt of five years ago.

> More information: www.esf.org/psik

Ultrafast Structural Dynamics in Physics, Chemistry, Biology and Material Science (DYNA) • (2005-2010)

15 contributing organisations

This programme aims to create a network of scientists to investigate ultrafast structural dynamics in Physics, Chemistry, Biology and Material Science, and of those who develop tools to enable such investigation.

The structural dynamics tools which are currently available in Europe include timeresolved IR and Raman techniques and X-ray diffraction; less-used and/or nascent structural techniques, which this programme aims to encourage, are multidimensional vibrational and electronic spectroscopies, X-ray absorption spectroscopy and electron diffraction.

> More information: www.esf.org/dyna

Standing Committee for the Social Sciences (SCSS)

European Social Cognition Network (ESCON) • (2003-2008)

20 contributing organisations

The objective of this programme is to enhance European scientific collaboration in the field of social cognition by calling upon the expertise and knowledge of active European researchers on the frontiers of social cognition. By helping to lay the foundations of an advanced European research training programme in social cognition, young scholars are given the opportunity to learn about cutting-edge developments that may be unavailable in their local institutions. This allows them to develop scientific networks early on in their careers.

> More information: www.esf.org/escon

Globalizing Europe Economic History Network (GLOBALEURONET) • (2006-2010)

14 contributing organisations

The main scientific objective of the programme is to investigate, on a systematic, Europe-wide and integrated (i.e., both quantitative and qualitative) basis, the economic, institutional and social specificities of Europe's participation in the globalisation waves that occurred during the last 150 years. Its strategic objective is to promote the convergence of quantitative research methods, the consolidation of existing and future research projects at national level into a European common research agenda, and the organisation of common education and training activities.

The programme will focus on the construction of an integrated, Europe-wide database for the period 1850-2000, based on a uniform, consistent methodology that will consolidate existing partial databases and enhance further collection of data, covering a wide range of quantitative indicators - both traditional and new - of market integration, social welfare, economic growth, as well as qualitative information on institutional development.

> More information: www.esf.org/globaleuronet

Public Goods, Public Projects, Externalities (PGPPE) • (2006-2010)

6 contributing organisations

The programme concentrates on the economic rather than political challenges that will help realise the decades-old dream of a political Europe. The idea of this study is that this will be achieved through the definition of European policies in the provision and financing of public goods and services, and defence of the environment.

Specific topics include pure public goods and public projects, impure public goods, public goods as production inputs, externalities and environment. The outcome of this programme will be the creation and development of an effective research network mixing theorists, specialists of political economy and of history of economic analysis and practitioners of public economics.

> More information: www.esf.org/pgppe

Qualitative Research in the Social Sciences in Europe (EUROQUAL) • (2006-2010)

14 contributing organisations

The proposal is for a research programme in qualitative methods, complementing the existing ESF programme in quantitative methods. It is based on the fact that while qualitative research is highly visible in many fields of socialscience research, it exists within many sub-specialisms, and reflects national as well as disciplinary boundaries. There is
a clear need for scholars throughout Europe to share, develop and promote high-level methodological expertise. There is an equally pressing need for capacity-building within the European social sciences. The programme addresses these needs through two closely linked activities: expert interdisciplinary and cross-national workshops and associated training events.

> More information: www.esf.org/euroqual

Quantitative Methods in the Social Sciences (QMSS) • (2003-2007)

22 contributing organisations

The aims of this programme are to advance knowledge in the methods of analysing increasingly complex social scientific data; to increase the human capacity to analyse such data; to engender analysis of the large pan-European data sets and thus to advance comparative quantitative social science. This is achieved through a series of integrated workshops and seminars which train junior social scientists in the latest methods of analysis of social scientific data and provide the opportunity for senior researchers to share their cutting-edge research analysis.

> More information: www.esf.org/qmss

TransEurope Research Network (TRANSEUROPE) • (2006-2011)

8 contributing organisations

Though the phenomena of Europeanisation and globalisation are increasingly dominating the public and political discourse, there remains a lack of research on how these processes affect and change the family and employment lives of European citizens. So far, little empirical research connects these transnational changes to inequality at the individual level in Europe. Furthermore, it is not yet established whether individual life courses in European countries are experiencing more convergence or divergence.

The TransEurope Research Network brings together leading European experts in Political Science, Demography, Economics, and Sociology from 7 countries to compare the impact of transnational shifts on life course inequality across Europe.

> More information: www.esf.org/transeurope

Science Management

With the new agenda and the setup of crossed-disciplinary actions the logical extension of the strategic plan is the provision of services to ESF Member Organisations in the form of programme management which defines the third pillar of the strategic plan - Science Management. Under this area of activities ESF is dedicated to serve the scientific community in strengthening the position of cutting-edge science in Europe in a more cost-effective manner by created synergies between funding sources and by assisting in the breaking down of barriers to cross-boundary co-operation. Current examples of the management of external programmes are the European Young Investigator Awards scheme (EURYI), EuroBioFund, and the co-ordinating role in several EC-funded ERA-NET programmes.

ERA-NET

ERA-NET is a scheme of the European Commission to promote the coordination and cooperation of national and regional programmes in order to overcome the traditional fragmentation of research efforts in the European Union (EU). It was introduced in the Sixth Framework programme for Research and Technological Development (FP6). The scheme is also open to consortia for co-ordinating national programmes in researcher-led science. The ERA-NET Scheme operates via an Open Call, welcoming proposals for coordination actions in any field of science and technology IN a bottom-up approach.

The Commission pays the additional costs for funding agencies related to the coordination. Many of the ESF's Member Organisations are active in ERA-NETs covering different topics and specific domains. In FP7, the ERA-NET instrument is proposed to be expanded to include funding contributions to co-operative research.

BiodivERsA ERA-NET

BiodivERsA is an ERA-NET (European Research Area) involving 19 major research funding agencies from 15 countries in Europe with research funding in the field of terrestrial, freshwater and marine biodiversity.

Most ERA-NET members are represented in other fora which discuss and recommend requirements for European biodiversity research: including the Convention for Biological Diversity (CBD-SBSTTA), Diversitas, the European Platform for Biodiversity Research Strategy (EPBRS) and the European Science Foundation (ESF). Recommendations from these fora are often made without a formal mechanism to ensure connection with the strategies, priorities and budgets of national research funding agencies.

The aim of BiodivERsA is to contribute to setting up such a mechanism, and its objective for the period 2004-2008 is to achieve an efficient trans-national research co-operation in the field of biodiversity research funding. With the aim of contributing to the implementation of the EU Biodiversity Strategy, BiodivERsA will allow the funding agencies to collate existing activities, compare future strategies and recommendations of consultative bodies, and systematically explore opportunities for future collaboration. BiodivERsA seeks best practice as a basis for cooperation in order to strengthen European biodiversity research and will also contribute to better coherence and increased synergies between the national programmes of cooperation with developing countries in the field of biodiversity research funding.

> More information: www.eurobiodiversa.org

The European Polar Consortium (EUROPOLAR ERA-NET)

EUROPOLAR ERA-NET (The European Polar Consortium) is composed of 25 ministries, funding agencies and national Polar RTD authorities from 19 European countries (including the Russian Federation and Greenland Home Rule Government) with the overall aim of strengthening and deepening European nations strategic cooperation in the Polar Regions and ensuring a strong driver for developing joint Europe programmes and contributions to environmental policy development in the European Union.

EUROPOLAR ERA-NET has been directly encouraging and supporting the closer relationship of national polar RTD programme managers between Europe and the Russian Federation, fostering cooperation and leading to joint programme activities.

It is the first time that Russian and European Union countries have cooperated so closely on the strategic aspects of Polar Research programmes leading to the development of a European Polar Consortium liaison office in St Petersburg within the Arctic and Antarctic Institute of the Roshydromet Agency. The strategic vision and long-term goal of the European Polar Consortium is the development of a "European Polar Entity" which will be established through dialogue at a political level. During the next 12-18 months the European Polar Consortium will seek agreement to put forward strategic recommendations from the funding agencies and ministries of EUROPOLAR on the development of cooperative research programmes areas of Frontier Polar Science including the fields of astronomy and astrophysics, polar genomics and life in extreme environments. ESF-EPB Unit is responsible for the strategic direction/ management of the project.

> More information: www.europolar.org

Humanities in the European Research Area (HERA)

HERA is an ERA-NET project involving 15 national funding agencies for the Humanities and the ESF, which in turn brings together 31 research councils, research performing agencies and academies that all support Humanities research, and which acts as a pan-European member in HERA.

The overall objectives of HERA are to stimulate trans-national research cooperation in the Humanities and to overcome fragmentation of research in the Humanities in Europe. Through advancing new and innovative collaborative research agendas HERA will enable the Humanities to play an appropriate and dynamic role in the ERA and within EU Framework programmes. It also aims at improving cooperation between a large number of research funding agencies in Europe as well as establishing best practices in science management in the Humanities and set up joint research programmes.

> More information: www.esf.org/hera or www.heranet.info

European Concerted Action to Foster Prevention and Best Response to Accidential Marine Pollution (AMPERA)

AMPERA, an ERA-NET project which is coordinated by the Spanish Ministry of Education and Science, aims to provide a platform on accidental marine pollution research. Within the AMPERA consortium which consists of 10 organisations from 8 European countries, Marine Board is responsible for establishing coordination with other European Research Area activities. Marine pollution, in general, and accidental marine pollution, in particular, are issues of major concern for health of the marine environment and their socio-economic uses. Driven by economic, ecological and security considerations, there is an increasing pressure upon the need for new or improved prevention mechanisms and emergency response systems to better protect the world's marine ecosystems. Therefore decisions based on sound scientific principles are indispensable for the effective prevention of accidents and efficient formulation of contingency plans.

> More information: www.ampera-net.info

MarinERA

MarinERA is an ERA-NET project jointly coordinated by Ifremer (Institut Français de Recherche pour l'Exploitation de la Mer) and the Marine Board (the Marine Board Executive Secretary being Deputy Co-ordinator). It aims to facilitate the coordination of national and regional marine RTD programmes in Europe. The MarinERA is a partnership of the leading marine RTD funding organisations from 13 European States. A range of Observers, including international research organisations and FP6 consortia are associated with MarinERA. The MarinERA process provides an operational and strategic platform, enabling marine sciences to move towards practical research management approaches (including reciprocal opening of national marine RTD programmes, joint calls and trans-national marine programmes). Through this cohesive and active network, MarinERA partners work to progress towards developing and securing the marine component within the European Research Area (ERA).

> More information: www.marinera.net/about/index.html

European Young Investigator Awards (EURYI)

The European Young Investigator Awards (EURYI) scheme is designed to attract outstanding young scientists in all research domains, including the humanities, from any country in the world to create their own research teams at European research centres.

The European Heads of Research Councils (EuroHORCs) and the European Science Foundation decided to collaborate to create the European Young Investigator Awards (EURYI) which was launched in 2003. In 2006, the scheme - to which 18 research councils from 16 EU Member States and candidate countries1 contributed - made awards worth at least 1 million Euros over five years to 25 outstanding young scientists from all over the world. Awards may be held in any of the countries participating in the scheme, which is designed to create a high-profile incentive for the best and brightest researchers to build careers in Europe.

EURYI works through a two stage selection process. The first step consists of application to and selection by the participating agency from the proposed host country. The second step is carried out by ESF using broadly-based international panels and results in the final selection of awardees.

The fourth call was launched in September 2006 with a deadline on 30 November to which 17 research councils from 16 countries contributed. More than 450 applications were received. Up to twenty-five grants will be awarded in July 2007 with a value of between 150 000 Euros and 250 000 Euros per year for five-year periods in any research discipline, including the humanities. The main selection criteria are scientific quality and originality of the proposal, quality of the host institution, potential of the applicant, who should have between two and 8 years of postdoctoral experience, an excellent track record, and the potential to become world class leaders in their chosen field of research.

Coordination of the the EURYI Award Scheme is currently supported by the EC Sixth Framework programme under Contract no. ERAC-CT-2003-510191.

With the launch of the European Research Council's Starting Investigators Research Grant Scheme, which shares many characteristics with EURYI, EuroHORCs and ESF are discussing the future of EURYI, including a fifth call.

> More information: www.esf.org/euryi

EuroBioFund

EuroBioFund is a strategic initiative to enable greater interaction between European life sciences funders and researchers. The life sciences are essential for driving the development of Europe's knowledge-based economy and improving its citizens' quality of life. However, in the postgenomic era, the life sciences have undergone a revolution in terms of research approaches, infrastructure needs, technology developments and costs. Addressing these challenges requires the involvement of those planning and funding research to provide the necessary critical mass of expertise and resources. Thereby, Europe will move towards realising the goal of a European Research Area and continue to remain competitive with the U.S. and Asia.

Today, research funding is fragmented among the funding bodies involved in the life sciences including public funding agencies, inter-governmental organisations, foundations, charities and industry, often resulting in a duplication of effort. To maximise these available resources and mobilise new potential sources of funding, new strategies are needed and so the European Science

Foundation has set up EuroBioFund, with financial support from the European Commission (Contract LSSG-CT-2005-019009). The new approach taken by EuroBioFund will centre on an annual conference, EuroBioForum, which will bring together funders and researchers from the life sciences. EuroBioForum's primary objective is to provide an arena to develop new partnerships between funding organisations from the public and private sector, and research consortia. EuroBioForum aims to create the conditions to initiate decision-making that could lead to transnational funding from multiple sources of European scale research projects.

The second EuroBioForum will take place in Lisbon, Portugal in November 2007. At EuroBioForum, teams of scientists will present their research ideas to a variety of funding bodies through posters and presentations. These will be selected by the Steering Committee, following a call for Expressions of Interest. These will include a scientific justification of the proposal's scope and scale as well as information on the possible financial and organisational structure of the project. In addition, funding bodies will have the opportunity to present their activities, programmes and policies. Finally, the conference will feature foresight and science policy lectures from high-level speakers.

> More information: www.esf.org/eurobiofund



The European Cooperation in the field of Scientific and Technical Research (COST), an intergovernmental initiative, exists to foster cooperation between nationally-funded research activities. The main objective of COST is to stimulate innovative and interdisciplinary scientific networks in Europe.

COST addresses the growing demand for cooperation across national borders and across research disciplines. It complements the European Union's Framework programme. COST has one of the largest frameworks for research cooperation in Europe, supporting more than 30,000 scientists.

Since 1971 COST has brought together research teams from different countries to work on specific topics. Although COST does not fund research projects themselves, it finances the networking of nationally funded activities in supporting meetings, conferences, short-term scientific exchanges and outreach activities.

COST, with 34 member states in Europe, has a membership which extends beyond the European Union, including Israel. On the basis of mutual benefit, COST also allows participation from institutions in non-COST Countries and from Non-Governmental Organisations (NGOs). There are no geographical restrictions on ad-hoc participation in COST's activities.

The COST Actions

COST's activities, known as Actions, are networks of national research projects in fields that are of interest to at least 5 COST Countries. COST Actions cover basic and pre-competitive research for peaceful purposes. They can also leverage research to address public needs, as part of the Lisbon objectives. Every COST Action has an objective, defined goals and clear deliverables.

The Action achieves results through workshops, short-term scientific missions, etc. Such activities build efficient networks, which often maintain their working relationships beyond the normal 4-year duration of a COST Action. Existing COST Actions operate across a wide spectrum of scientific fields, and can be multi-disciplinary in nature.

There are currently more than 200 Actions running in the following 9 Domains:

- Biomedicine and Molecular Biosciences
- Chemistry and Molecular Sciences and Technologies
- Earth System Science and Environmental Management
- Food and Agriculture
- Forests, their Products and Services
- Individuals, Society, Culture and Health
- Information and Communication Technologies
- Materials, Physics and Nanosciences
- Transport and Urban Development

The COST Funding

National research funding underpinning the many projects represented in COST Actions totals more than \in 1.5 billion annually. COST funding covers the coordination costs associated with organising and attending meetings, workshops and conferences. Short-term scientific missions, enabling researchers to collaborate in person with other laboratories, are also funded. COST also funds publications and other dissemination activities. The funds for COST are provided by the EU Framework programme.

COST Open Call

In an effort to attract the best proposals for new COST Actions, an Open Call was launched in 2006. Proposals will be assessed in a two-stage process. Preliminary proposals should provide a brief overview of the proposal and its impact. A pre-selection will rank the remaining preliminary proposals of which the best will be invited to submit a full proposal. The full proposal will be peer-reviewed. The top ranked will be proposed for approval as new Actions by the COST governance. The time between collection date and approval is not longer than 7 months.

> For more information please visit the COST website: www.cost.esf.org

The COST Principles

- "Bottom up": new COST Actions are proposed by the scientists themselves (from COST Countries or the European Commission)
- "A la carte" participation: COST countries join only those Actions they are interested in, thus Actions can differ greatly in membership
- Concerted "Action": COST Actions unite existing nationallyfunded research projects
- COST supports the coordination activities only (not actual research): Action workshops, meetings, short-term scientific missions, publications, etc. are funded.

> For more information please visit the COST website: www.cost.esf.org

ESF Member Organisations in 2007

75 Member Organisations in 30 countries

Austria

Fonds zur Förderung der wissenschaftlichen Forschung in Österreich (FWF) Austrian Science Research Fund

Österreichische Akademie der Wissenschaften (ÖAW) Austrian Academy of Sciences

Belgium

Fonds National de la Recherche Scientifique (FNRS) National Fund for Scientific Research

Fonds voor Wetenschappelijk Onderzoek-Vlaanderen (FWO) Fund for Scientific Research - Flanders

Bulgaria

Българска академия на науките (BAS) Bulgarian Academy of Sciences

Научни изследвания National Science Fund of Bulgaria

Croatia

Hrvatska akademija znanosti i umjetnosti (HAZU) Croatian Academy of Sciences and Arts

Cyprus

Ίδουμα Ποοώθησης Έρευνας (RPF) Cyprus Research Promotion Foundation

Czech Republic

Akademie věd České republiky (ASČR) Academy of Sciences of the Czech Republic Grantová agentura České republiky (GAČR) Czech Science Foundation

Denmark

Danmarks Grundforskningsfonden (DG) Danish National Research Foundation

Det Kongelige Danske Videnskabernes Selskab Royal Danish Academy of Sciences and Letters

Forskningsrådet for Kultur og Kommunikation (FKK) Humanities Research Council Forskningsrådet for Sundhet og Sygdom (FSS) Medical Science Research Council Forskningsrådet for Natur og Univers (FNU) Natural Science Research Council Forskningsrådet for Samfund og Erhverv (FSE) Social Science Research Council Forskningsrådet for Teknik og Produktion (FTP) Danish Research Council for Technolgy and Production The secretarial functions for all

The secretarial functions for all five Danish research councils are assumed by: Forsknings- og Innovationsstyrelsen (FIST) Danish Agency for Science, Technology and Innovation

Estonia

Eesti Teaduste Akadeemia Estonian Academy of Sciences

Eesti Teadusfond Estonian Science Foundation



75 ESF Member Organisations in 30 countries



85

Finland

Suomen Akatemia/Finlands Akademi Academy of Finland

Suomen Tiedeakatemiain Valtuuskunta/Delegationen för Vetenskapsakademierna i Finland Delegation of the Finnish Academies of Science and Letters

France

Centre National de la Recherche Scientifique (CNRS) National Centre for Scientific Research

Commissariat à l'Énergie Atomique/Direction des Sciences de la Matière (CEA/DSM) Materials Sciences Division of the Atomic Energy Commission

Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER) French Research Institute for Exploitation of the Sea

Institut National de la Recherche Agronomique (INRA) National Institute for Agricultural Research

Institut de Recherche pour le Développement (IRD) National Institute for Development

Germany

Deutsche Forschungsgemeinschaft (DFG) German Research Foundation

Helmholtz-

Gemeinschaft Deutscher Forschungszentren (HGF) Helmholtz Association of German Research Centres Max-Planck-Gesellschaft (MPG) Max Planck Society

Union der deutschen Akademien der Wissenschaften Union of the German Academies of Sciences and Humanities

Greece

EONIKO ΙΔΡΥΜΑ ΕΡΕΥΝΩΝ (NHRF) National Hellenic Research Foundation

Ίδουμα Τεχνολογίας και Έρευνας (FORTH) Foundation for Research and Technology – Hellas

Hungary

Magyar Tudományos Akadémia (MTA) Hungarian Academy of Sciences

Országos Tudományos Kutatási Alapprogramok (OTKA) Hungarian Scientific Research Fund

Iceland

RANNIS Icelandic Centre for Research

Ireland

Am Chomhairle um Thaighde sna Dána agus sna hEolaíochtaí Sóisialta (IRCHSS) Irish Research Council for the Humanities and Social Sciences

Enterprise Ireland

Health Research Board (HRB)

Irish Research Council for Sciences, Engineering and Technology (IRCSET)

Italy

Consiglio Nazionale delle Ricerche – Istituto Nazionale per la Fisica de la Materia (CNR-INFM) National Research Council

Istituto Nazionale di Fisica Nucleare (INFN) National Institute for Nuclear Physics

Lithuania

Lietuvos Valstybinis Mokslo Ir Studijų Fondas Lithuanian State Science and Studies Foundation

Luxembourg

Fonds National de la Recherche (FNR) National Research Fund

Netherlands

Koninklijke Nederlandse Akademie van Wetenschappen (KNAW) Royal Netherlands Academy of Arts and Sciences

Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO) Netherlands Organisation for Scientific Research

Norway

Det Norske Videnskaps-Akademi Norwegian Academy of Science and Letters

Norges Forskningsråd Research Council of Norway

Poland

Polska Akademia Nauk (PAN) Polish Academy of Sciences

Portugal

Academia das Ciências de Lisboa Lisbon Academy of Sciences

Fundação para a Ciência e a Tecnologia (FCT) Foundation for Science and Technology Gabinete de Relações Internacionais da Ciência e do Ensino Superior (GRICES) Portuguese International Relations Cabinet for Science and Higher Education

Romania

Consiliul National al Cercetarii Stiintifice din Invatamantul Superior (CNCSIS) National University Research Council

Slovak republic

Slovenská Akadémia Vied (SAV) Slovak Academy of Sciences

Agentúra na podporu výskumu a vývoja (APVV) Slovak Research and Development Agency

Slovenia

Slovenska Akademija Znanosti in Umetnosti (SAZU) Slovenian Academy of Sciences and Arts

Slovenska Znanstvena Fundacija (SZF) Slovenian Science Foundation

Spain

Consejo Superior de Investigaciones Científicas (CSIC) Council for Scientific Research

Comisión Interministerial de Ciencia y Tecnología (CICYT) Interministerial Committee on Science and Technology

Sweden

Forskningsrådet för arbetsliv och socialvetenskap (FAS) Swedish Council for Working Life and Social Research

Forskningsrådet för miljö, areella näringar och samhällsbyggande (FORMAS) Swedish Council for Environment, Agricultural Sciences and Spatial Planning

Kungliga

Vetenskapsakademien Royal Swedish Academy of Sciences

Kungliga Vitterhets Historie och Antikvitets Akademien Royal Academy of Letters, History and Antiquities

Vetenskapsrådet (VR) Swedish Research Council

Vinnova Swedish Agency for Innovation Systems

Switzerland

Rat der schweizerischen wissenschaftlichen Akademien (CASS) Council of the Swiss Scientific Academies

Schweizerischer Nationalfonds (SNF) Swiss National Science Foundation

Turkey

Türkiye Bilimsel ve Teknolojik Arastırma Kurumu (TÜBITAK) The Scientific and Technological Research Council of Turkey

United Kingdom

Arts and Humanities Research Council (AHRC)

Biotechnology and Biological Sciences Research Council (BBSRC)

The British Academy

Economic and Social Research Council (ESRC)

Engineering and Physical Sciences Research Council (EPSRC)

Medical Research Council (MRC)

Natural Environment Research Council (NERC)

Science and Technology Facilities Council (STFC)

Governing Council Membership as at 31 December 2006

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ALLEA EUA European Commission

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