EUROPEAN SCIENCE FOUNDATION

SETTING SCIENCE AGENDAS FOR EUROPE

About the European Science Foundation 2009

www.esf.org

Contents

Foreword

The landscape of research in Europe is changing. Universities are being pushed to renovate their governance, to build on their research strengths, and even into mergers. Some have begun to have their quality evaluated by research assessment exercises. Several countries have developed excellence initiatives and established structured doctoral training programmes. Research performing organisations are undergoing reforms as well. In some countries part of their traditional earmarked funding could potentially be replaced by competitive project funding. Universities are establishing novel types of horizontal research institutions that extend across boundaries of departments and faculties, partnering with research performing organisations and the private sector. And the young principal investigators are finally finding themselves centre stage. The European Young Investigator Programme (EURYI) of ESF financed by the European Heads of Research Councils (EUROHORCs), and recently, the Starting Grants Programme of the European Research Council, are catalysing research organisations to restructure themselves to provide attractive career pathways for young principal investigators.

Fundamental research is the cornerstone of innovation and therefore of knowledge-based economies. Thus, governments expect returns from their investments in research in the form of benefits to society, and want those benefits to be measured by impact assessments. Countries in Central and Eastern Europe, especially, are rapidly developing their science policy and research management practices, wishing to learn by benchmarking the lessons of others. Councils for national science and technology policy are being set up to advise governments on R&D investments.

It is in this environment that ESF seeks to fulfil its mission to promote fundamental research Europe-wide. The owners of ESF are its Member Organisations. They are many and they are heterogenous: all in all 80 research funding and performing organisations, academies and learned societies in 30 countries. They have varying priorities and decision making processes consolidated in national strategies and legislations. The challenge but also the strength of ESF lies in this diversity, as long as a common will can be crystallised and its implementation realised.

The ambition of ESF is to build together with its Member Organisations, the EUROHORCs, the European Commission and other stakeholders, a European Research Area characterised by intelligent science policy, quality-based adequate funding, free mobility of researchers, students and resources, and state-of-the-art infrastructure, which will impact Europe in the form of societal, economic and cultural development. The political will to create such an ERA appears to have emerged, but we are still on the way towards concrete actions.

This booklet guides you through the different activities of ESF.

Professor Marja Makarow, Chief Executive

This is the European Science Foundation

The European Science Foundation (ESF) is an independent, non-governmental organisation with 80 of the main research organisations in Europe as members. Through us, European researchers have an opportunity to work together across disciplinary and geographic boundaries. With science being a truly international activity, this collaboration is crucial for both science and society in Europe.

The ESF Member Organisations are research performing and research funding organisations and academies in 30 European countries. Together they represent an annual funding of about 25 billion Euros of excellent research and part of this sum is spent through or influenced by the European Science Foundation.

We cover all disciplines. Our instruments orientated towards the scientific community include Exploratory Workshops and Research Conferences. To support our Member Organisations we have developed tools such as Forward Looks, aimed at developing medium to long-term views and analyses of future research developments.

Established in 1974, the ESF has seen the drivers for cooperation between national organisations become stronger and stronger. The scale and complexity of scientific questions have increased together with the cost of research and facilities. Large scale societal change both explains and underscores the importance of cooperation in Europe.

The ESF is a unique entity independent of governments in its strategies and advice. As a result of that, we can have an independent voice on science and on the strategic issues identified by our Member Organisations. We are a key part of making European research competitive in a global arena.

In short, the European Science Foundation is setting science agendas for Europe.

How ESF operates

The ESF is committed to identifying the best European research and researchers. Working on behalf of our principal stakeholders – ESF's Member Organisations and thereby Europe's scientific community – we publish position papers and Science Policy Briefings on a wide range of issues. We organise workshops and conferences to develop and spread the European science agenda. ESF also considers hundreds of research proposals for projects and awards each year.

Over three decades of operations, the ESF has changed. We were an organisation using contributions from Member Organisations to promote scientific networking in Europe. Today we have moved towards being a platform for our Member Organisations to develop joint strategies. We aim to provide them with the means to address challenges ahead, to promote excellence and to cooperate in joint programmes. In this way ESF assists the national research institutions to influence a much wider research agenda for the benefit of the scientific community.

ESF activities are within the fields of Science Strategy, Science Synergy and Science Management.

• Science Strategy

Provides high level and high quality foresight and advice on science, research infrastructure and science policy issues. Specific activities include Forward Looks, Member Organisation Fora and Exploratory Workshops.

• Science Synergy

Brings together excellent scientists at all stages of their careers to advance the frontiers of research. Activities include EUROCORES, ESF Research Networking Programmes and ESF Research Conferences.

• Science Management

ESF, which has more than 130 staff in France (Strasbourg) and Belgium (Brussels and Ostend), managed a direct budget of 52 million Euros in 2008, including *à la carte* activities and external contracts.

The ESF takes a coordinating role in projects funded by the European Commission and is also currently the legal entity to provide and manage the scientific, administrative and technical secretariat for COST (European Cooperation in Science and Technology). The COST governance is in the hands of the Committee of Senior Officials, representing governments of 35 countries.

The disciplines ESF covers

The ESF committees cover the following domains:

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

Management at the heart of science

The Governing Council is the top-level decision-making body of the ESF. It is a body for strategic debate at the highest level.

The Governing Council consists of the President of the Foundation, two Vice-Presidents and representatives of the national groups of Member Organisations. These representatives are all heads of organisations within the ESF membership.

To ensure that its scientific activities are of the highest quality, ESF's Science Advisory Board forms a high-level advisory panel which guides the ESF in quality assurance and the demands of interdisciplinarity in research.

The Science Advisory Board's responsibilities include:

- Providing high-level scientific advice to the Chief Executive – such as ideas for new science actions and instruments and analyses of the evolving European and global science and science policy context.
- 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.

ESF engages in partnerships at both the European level – with for example the European Heads of Research Councils (EUROHORCs), the All European Academies (ALLEA), the European Commission – and globally. We have ongoing cooperation with organisations such as the National Science Foundation and the National Institutes of Health in the US, the Japan Society for the Promotion of Science, the Organisation for Economic Co-operation and Development and the International Council for Science.

Mission Statement

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

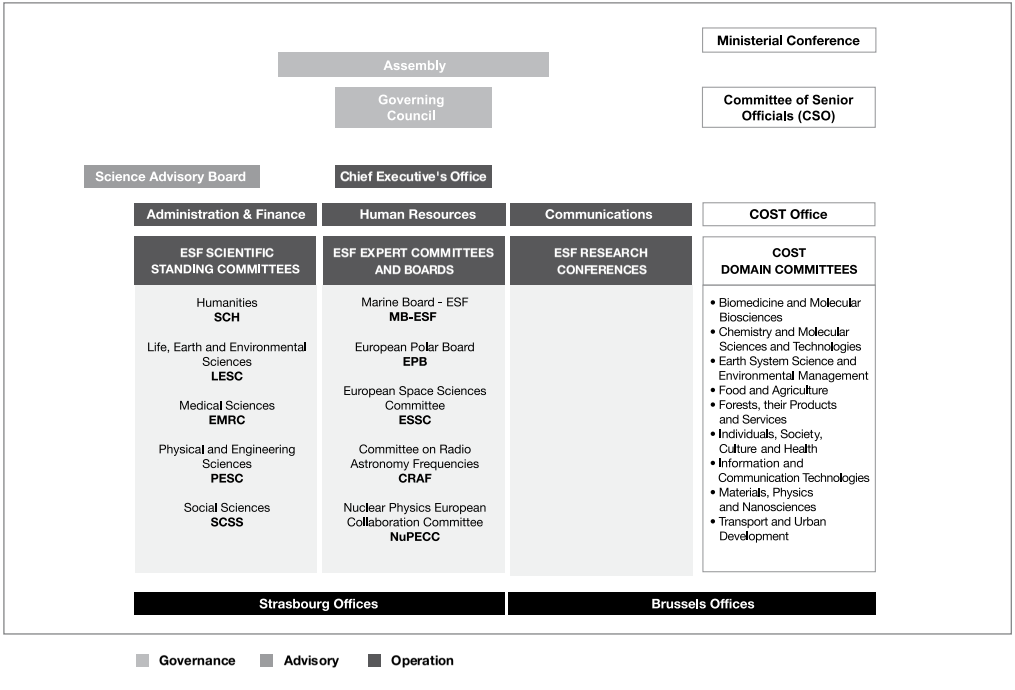
- advance European research;
- explore new directions for research at the European level.

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 scientific Exploratory 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 aspect.


Ministerial Conference
Assembly
Governing Council
Committee of Senior Officials (CSO)
Science Advisory Board
Chief Executive's Office
Administration & Finance
Human Resources
Communications
COST Office
ESF SCIENTIFIC STANDING COMMITTEES
Humanities
SCH
Life, Earth and Environmental Sciences
LESC
Medical Sciences
EMRC
Physical and Engineering Sciences
PESC
Social Sciences
SCSS
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
ESF RESEARCH CONFERENCES
COST DOMAIN COMMITTEES
• 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
Strasbourg Offices
Brussels Offices
Governance
Advisory
Operation

ESF's Science Structure

The motor of ESF's science activities are its 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); its five Expert Boards and Committees: Marine Board–ESF, European Polar Board (EPB), European Space Sciences Committee (ESSC), Committee on Radio Astronomy Frequencies (CRAF) and Nuclear Physics European Collaboration Committee (NuPECC); and the overarching Science Advisory Board.

They operate under the strategic guidance of the Member Organisations. These bodies, composed of high-ranking scientists nominated by the ESF's Member Organisations, deal with strategic scientific questions for their domains and are responsible for the selection of proposals.

Growing interdisciplinarity is reflected in mutual observership and in an increasing number of activities involving cooperation between committees. Scientific partners from Europe and beyond take part as observers.

Overall quality assurance of ESF's operation, advice on new strategic scientific direction and interdisciplinarity is provided by the Science Advisory Board.

Standing Committees

Standing Committee for the European Medical Research Councils (EMRC)

Globalisation has brought rapid changes to our society – changes such as emerging and rapidly spreading infectious diseases, changed disease patterns with treatment-resistant tuberculosis, rapid and dramatic climate changes and, in Europe, a changed demography with an ageing population. Medical research is essential to cope with these challenges. Furthermore, new knowledge in the field of medical science is important to facilitate greater success for the European medical industry.

The European Medical Research Councils' 2007 white paper "Present Status and Future Strategy for Medical Research in Europe" aims to strengthen and improve European medical research, which in turn will result in better healthcare and improved human welfare.

The white paper was endorsed by all members of the EMRC at the EMRC plenary meeting in October 2007 and launched on 6 December 2007 by Professor Liselotte Højgaard, chair of EMRC, and Mr. Janez Potočnik, Commissioner for Science and Research.

The EMRC recommendations for strengthening medical research in Europe were presented to a large audience in a conference held on 30 January 2008 in Frankfurt and are the following:

- Implementation of "best practice" for funding and performing medical research.

- Collaboration via EMRC and its Member Organisations and EC, ERC, COST, the scientific societies, the medical journals and the university and academic medical centres to enhance collaboration and sharing of research and results.
- Revision of relevant EC Directives to facilitate medical research.
- Endorsement of the EMRC statement on equal opportunities for performing research: "The EMRC advocates equal opportunities in all aspects of medical research – regardless of age, gender, origin, profession, race, religion or sexual orientation."
- A doubling of public funding of medical research in Europe within the next 10 years – to a minimum level of 0.25 % of GDP and the necessity for sustaining a steady growth above inflation in the years to come after the doubling.

The 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. The EMRC offers authoritative strategic advice for policy making, research management, ethics and better health services. In its activities, the EMRC serves as the voice of its Member Organisations and the European scientific community through its science policy. The EMRC has an important role in the future development of medical research in Europe and it invites the European Commission, the European Research Council, learned societies, universities and academic medical centres for debate and action to bring its recommendations to fruition.

> More information: www.esf.org/emrc

EMRC Chair:

Professor
Liselotte Højgaard
University of Copenhagen and Technical University Denmark, Copenhagen, Denmark

Members:

Professor Håkan Billig*
Swedish Research Council - Medicine, Stockholm, Sweden

Dr. Anne Bisagni-Faure*
Institut National de la Santé et de la Recherche Médicale (Inserm), Paris, France

Professor
Jacques Boniver
Université de Liège, Liège 1, Belgium

Professor Roger Bouillon*
Katholieke Universiteit Leuven, Leuven, Belgium

Professor Arturo Brunetti*
University of Naples "Federico II", Naples, Italy

Professor
Carsten Carlberg
University of Luxembourg, Luxembourg, Luxembourg

Professor
Anna Członkowska
Institute of Psychiatry and Neurology, Warsaw, Poland

Professor
Constantinos Deltas
University of Cyprus, Nicosia, Cyprus

Professor
Wolfgang Fleischhacker
Medical University Innsbruck, Innsbruck, Austria

Dr. Jona Freysdottir
Landspitali University Hospital, Reykjavik, Iceland

Professor Albert Gjedde
Aarhus University, Arhus C, Denmark

Professor Catherine Godson
University College Dublin, Dublin, Ireland

Professor Zita Ausrele Kučinskiené
University of Vilnius, Vilnius, Lithuania

Professor Hans Lassmann
Vienna University Medical School, Vienna, Austria

Professor Andrew Margioris
University of Crete, Heraklion, Greece

Dr. Mark Palmer*
Medical Research Council, London, United Kingdom

Professor Kresimir Pavelic
University of Zagreb, Zagreb, Croatia

Professor Bogdan Petrunov
National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria

Dr. Miguel Angel Piris Pinilla
Fundacion Centro Nacional Investig. Oncologicas Carlos III, Madrid, Spain

Dr. Katarína Poláková
Cancer Research Institute, Bratislava, Slovak Republic

Dr. János Réthelyi
Semmelweis University, Budapest, Hungary

Professor Joaquim Ribeiro
University of Lisbon, Lisbon, Portugal

Professor Martin Röllinghoff*
Erlangen-Nuremberg Universität, Erlangen, Germany

Professor Daniel Scheidegger
University of Basel, Basel, Switzerland

Professor Stig Slørdahl
Norwegian University of Science and Technology, Trondheim, Norway

Professor Josef Syka
Academy of Sciences, Charles University, Prague, Czech Republic

Professor Haluk Topaloglu
Hacettepe Children's Hospital, Ankara, Turkey

Professor Kalervo Väänänen
University of Turku, Turku, Finland

Professor Isabel Varela-Nieto
Instituto Investigaciones Biomedicas "Alberto Sols", Universidad Autonoma, Madrid, Spain

Professor Eero Vasar*
University of Tartu, Tartu, Estonia

Dr. Emmanuelle Wollman
CNRS, Paris, France

Representatives from:
- National University Research Council (NURC), Romania
- Slovenian Academy of Sciences and Arts (SAZU), Slovenia
- Koninklijke Nederlandse Akademie van Wetenschappen (KNAW), Nederlandse organisatie voor gezondheidsonderzoek en zorginnovatie (ZonMw) and Netherlands Organisation for Scientific Research (NWO), The Netherlands

are in the process of being nominated.

* The delegate is also a Core Group member.

Observers:

ESF Standing Committee for Life, Earth and Environmental Sciences (LESC)
Dr. Maria Pilar Perez

COST - Domain Committee Biomedicine and Molecular Biosciences (BMBS)
Dr. Hans Stodkilde-Jorgensen

European Commission, DG Research
Dr. Manuel Hallen

Nederlandse organisatie voor wetenschappelijk onderzoek (NWO), The Netherlands
Dr. Edvard Beem

The Wellcome Trust, United Kingdom
Dr. Nicola Perrin

Canadian Institutes of Health Research (CIHR), Canada
Dr. Alain Beaudet

Fogarty International Center, National Institutes of Health, Maryland, United States
Dr. Roger Glass

The Israel Academy of Sciences and Humanities, Israel
Professor Arnon Nagler

Health Research Council of New Zealand, New Zealand
Dr. Robin Olds

World Health Organisation
pending

Standing Committee for the Humanities (SCH)

The humanities explore the origins and products of the human capacity for creativity and communication. SCH encompasses a broad spectrum of disciplines all pertaining to human consciousness, perception and interpretation of the world such as anthropology, archaeology, area studies, gender studies, history, linguistics, literature, media studies, musicology, philosophy, psychology, religion and theology.

The first young scholars' forum "Humanities Spring" 2007 articulated the vision of early career scholars for the future of the field in the "Humanities Manifesto". In 2009, two such events will explore "New Perspectives for Asian Studies" [in collaboration with the Chiang Ching-kwo Foundation (CCK-F)] and the framework for a "European Young Academy" [in collaboration with the All European Academies (ALLEA)].

Since 2007, SCH has engaged in foresight studies in fields such as "Security: advancing a framework for enquiry (SAFE)" and "Religion and belief systems". New theme to start in 2009 is "Media Studies: new media and new literacies".

SCH strategic activities in 2008 explored better harnessing of research potential in the humanities in Central and Eastern Europe, and studies into the impact of humanities research. Disciplinary-specific activities in 2008 included a workshop exploring challenges to (and from) literary and cultural studies; 2009 will see a similar exercise in the fields of music and musicology.

SCH is coordinating, together with the secretariat for the COST Domain Committee Individuals, Societies, Culture and Health, the ESF-COST Network of Networks on new perspectives for landscape studies, which aims to create a platform for interdisciplinary landscape research.

SCH has been leading a number of work-packages in the ERA-Net project "Humanities in the European Research Area" (HERA)

(ERAC CT 2005 - 016179). ESF will be the handling agency for the resulting two joint research programmes on "Cultural Dynamics: inheritance and identity" and on "Humanities as a Source of Creativity and Innovation".

In an effort to provide a tool for researchers and institutions alike to more effectively access and assess humanities research output, irrespectively of disciplinary and linguistic boundaries, ESF has launched the European Reference Index for the Humanities (ERIH), *see www.esf.org/erih.*

This is part of SCH's commitment to strengthen our understanding of the impact of humanities research; 2009 will see a major symposium on changing publication cultures in the humanities.

SCH consists of representatives from research councils, research performing organisations and academies, with subject specialists to complement ordinary membership. Observers attend from the COST Domain Committee Individuals, Societies, Cultures and Health (ISCH), the European Commission, the US 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/human

Chair:

Professor Milena Žic-Fuchs
Faculty of Philosophy, University of Zagreb, Zagreb, Croatia

Members:

Professor Maria Ågren
Dept. of History, Uppsala University, Uppsala, Sweden

Professor Arnout Balis
Dept. of Art History, Vrije Universiteit, Brussels, Belgium

Professor Dilek Barlas
Dept. of History, Koç University, Istanbul, Turkey

Professor Andrea Bozzi*
Institute of Computational Linguistics, CNR, Pisa, Italy

Professor Rajko Bratoz
Faculty of Philosophy, University of Ljubljana, Ljubljana, Slovenia

Professor Raymond Brulet
Faculty of Philosophy and Letters, Université Catholique de Louvain, Louvain-La-Neuve, Belgium

Professor Helena Buescu
Faculty of Letters, Dept. of Roman Literature, University of Lisbon, Portugal

Professor Ewa Dahlig-Turek
Institute of Art, Polish Academy of Sciences, Warsaw, Poland

Professor Péter Dávidházi*
Institute of Literary Studies, Hungarian Academy of Sciences, Budapest, Hungary

Professor Leonidas Donskis
Political Science and Diplomacy School, Vytautas Magnus University, Kaunas, Lithuania

Professor Kirsten Drotner
Centre of Media Studies, University of Southern Denmark, Odense, Denmark

Professor Jacques Dubucs*
Institut d'Histoire et de Philosophie des Sciences et des Techniques, Université Paris I, Paris, France

Professor Peter Funke*
Institute für Epigraphik, Westfälische Wilhelms-Universität, Münster, Germany

Professor Kostas Gouliamos
Cyprus School of Business, European University, Nicosia, Cyprus

Professor Eila Helander
Dept. of Practical Theology, University of Helsinki, Helsinki, Finland

Professor Margaret Kelleher
An Foras Feasa, National University of Ireland, Maynooth, Ireland

Professor Kristin Kuutma
Faculty of Philosophy, Tartu, University of Tartu, Estonia

Professor Ulrike Landfester
Kulturwissenschaftliche Abteilung, Universität St. Gallen, St. Gallen, Switzerland

Professor Louisa-Irene Loukopoulou
Institute for Greek and Roman Antiquity, National Hellenic Research Foundation, Athens, Greece

Professor Bohuslav Mánek
Pedagogical Faculty, University of Hradec Králové, Hradec Králové, Czech Republic

Professor Kari Melby*
Dept. of Interdisciplinary Studies of Culture, Norwegian University of Science and Technology, Trondheim, Norway

Professor Slavomir Michálek
Institute of History, Slovak Academy of Sciences, Bratislava, Slovakia

Professor Claudine Moulin
Universität Trier, Germanistik Trier, Germany (representative for Luxembourg)

Professor Jón Ólafsson
Bifrost University, Borgarnes, Iceland

Professor Bernhard Palme
Institut für Alte Geschichte und Altertumskunde, Universität Wien, Vienna, Austria

Professor Ilie Parvu
Faculty of Philosophy, University of Bucharest, Bucharest, Romania

Professor Carmen Picallo Soler*
Faculty of Letters, Universidad Autónoma de Barcelona, Barcelona, Spain

Professor Naomi Segal*
Institute of Germanic & Romance Studies, University of London, London, United Kingdom

Professor Martin Stokhof
Faculty of Humanities, Universiteit van Amsterdam, Amsterdam, The Netherlands

Professor Svetlina Nikolova Todorova
Cyrillo-Methodian Research Centre, Bulgarian Academy of Scienes, Sofia, Bulgaria

* The delegate is also a Core Group member

Subject Representative:

Professor Gísli Pálsson
Anthropology, Dept. of Anthropology and Folkloristics, University of Iceland, Reykjavik, Iceland

Advisory Expert for the European Reference Index (ERIH):

Professor Alain Peyraube
CNRS, Paris, France

Observers:

COST – Domain Committee Individuals, Societies, Cultures and Health (ISCH)
Dr. Marc Caball

Social Sciences and Humanities Research Council of Canada, Ottawa, Canada
Dr. Carmen Charette

National Endowment for the Humanities, Washington, United States
Professor Bruce Cole

Directorate L "Science, Economy and Society", Unit L4 "Scientific Culture and Gender Issues", European Commission, Brussels, Belgium
Dr. Pascal Dissard

Israel Academy of Sciences and Humanities, Jerusalem, Israel
Professor Benjamin Isaac

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 they contribute 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. Defining characteristics of life thus depends strongly on flux from the environment.

The LESC Standing 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. LESC is preparing several strategic documents such as its own position paper (PP) on "FACEing the Future: planning the next generation of elevated CO_2 experiments on crops and ecosystems" and Science Policy Briefings (SPBs) on "Ocean Acidification" and "European Food Systems in a Changing World". Besides utilising ESF's instruments categorised under ESF's Strategic Plan to achieve its goals, LESC is also involved in the European Commission-backed ERA-NET project BiodivERsA which includes 19 major research funding agencies from 15 countries in Europe with significant research funding in the field of terrestrial, freshwater and marine biodiversity (p. 104). In addition LESC is a partner in the Co-ordination Action for Innovation in Life-Cycle Analysis for Sustainability (CALCAS) involving 12 organisations. It is also involved in Specific Support Actions (SSAs) such as Towards a European Strategy for Synthetic Biology (TESSY) (p. 108).

LESC works closely with other ESF Standing and Expert Committees, such as the Marine Board, the European Polar Board and the European Space Sciences 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

Chair:

Professor Reinhart Ceulemans*
Department of Biology, University of Antwerpen, Belgium

Members:

Professor Isabel Ambar
Instituto de Oceanografia, Universidade de Lisboa, Portugal

Dr. Hans Brix
Institute of Biological Sciences, University of Aarhus, Denmark

Professor Constantin Doukas
Department of Historical Geology and Palaeontology, University of Athens, Greece

Professor Arnold Driessen
Department of Microbiology, University of Groningen, The Netherlands

Dr. Angelos Efstathiou
Department of Chemistry, University of Cyprus, Cyprus

Professor Olivier Francis*
University of Luxembourg, Luxembourg

Professor Mike Gale
John Innes Centre, United Kingdom

Professor Josef Glössl*
Institute of Applied Genetics and Cell Biology, University of Natural Resources and Applied Life Sciences, Vienna, Austria

Dr. Jean-Henry Hecq
Département des Sciences et Gestion de l'Environnement, Université de Liège, Belgium

Dr. Philippe Jean-Baptiste
Laboratoire des Sciences du Climat et de l'Environnement, CEA Saclay, Gif-sur-Yvette, France

Dr. Kerstin Johannesson
Tjärnö Marine Biological Laboratory, Department of Marine Ecology, Göteborg University, Sweden

Professor Alan G. Jones
Dublin Institute for Advanced Studies, School of Cosmic Physics, Dublin, Ireland

Dr. Hefin Jones*
Cardiff School of Biosciences, University of Cardiff, United Kingdom

Dr. Aslihan Kerç
Faculty of Engineering, Marmara University, Turkey

Dr. Ján Kraic
Research Institute of Plant Production, Piest'any, Slovak Republic

Professor Juozas Kulys
Institute of Chemistry and Bioengineering, Vilnius Gediminas Technical University, Lithuania

Dr. Sonja Lojen*
Department of Environmental Sciences, J. Stefan Institute, Slovenia

Professor Georgi Markov
Institute of Zoology, Bulgarian Academy of Sciences, Bulgaria

Professor Volker Mosbrugger
Institute of Geoscience, Universität Tübingen, Germany

Professor Jan Motlik
Institute of Animal Physiology and Genetics, Academy of Sciences of the Czech Republic, Libechov, Czech Republic

Dr. Tiina Nõges
Võrtsjärv Limnological Station, Rannu, Estonia

Professor Paavo Pelkonen
University of Joensuu, Finland

Dr. Pilar Perez*
Instituto de Microbiologia Bioquimica, Universidad de Salamanca, Spain

Professor Czeława Rosik-Dulewska
Institute of Environmental Engineering, Polish Academy of Sciences, Zabrze, Poland

Professor Michel Salzet
Laboratoire de Neuro-immunologie des Annéides, Université des Sciences et Technologies de Lille, Villeneuve d'Ascq, France

Professor Guiseppe Scarascia-Mugnozza*
Instituto di Biologia Agro-ambientale e Forestale, Italy

Dr. Olgeir Sigmarsson*
Science Institute, University of Iceland and Laboratoire Magmas et Volcans, CNRS, Clermont-Ferrand, France

Professor Mark Stitt*
Max Planck Institute for Molecular Plant Physiology, Golm, Germany

Professor Andreas Strasser
Department of Geosciences, University of Fribourg, Switzerland

Professor Mette Svenning
Department of Biology, University of Tromsø, Norway

Dr. Jan Tavernier
Cytokine Receptor Laboratory, Flanders Institute for Biotechnology, Ghent University, Ghent, Belgium

Professor Zoltán Varga
Department of Zoology and Evolution, Debrecen University, Hungary

Representatives from Belgium, Croatia, France, Poland and Romania are in the process of being nominated.

* The delegate is also a Core Group member

Observers:

ESF Standing Committee for Physical and Engineering Sciences (PESC)
Professor Isabel Moura

Marine Board – ESF (Chair)
Mr. Lars Horn

Marine Board – ESF (Vice-Chair)
Dr. Jan Mees

European Polar Board (Chair)
Professor Carlo Alberto Ricci

European Space Sciences Committee (Chair)
Professor Jean-Pierre Swings

COST – Domain Committee Biomedicine and Molecular Biosciences (BMBS)
Professor Roland Pochet

COST – Domain Committee Chemistry and Molecular Sciences and Technologies (CMST)
Professor Ladislav Petrus

COST – Domain Committee Earth System Science and Environmental Management (ESSEM)
Professor Sylvain Joffre

COST – Domain Committee Food and Agriculture (FA)
Professor Peter Raspor

COST – Domain Committee Forests, their Products and Services (FPS)
Dr. Kalliopi Radoglou

Israel Academy of Science, Israel
Professor Giora Simchen

Standing Committee for the Physical and Engineering Sciences (PESC)

The strategy of the ESF Standing Committee for Physical and Engineering Sciences (PESC) is to develop and disseminate a pan-European vision on how to network research and innovation and to address the related societal issues in a more effective and sustainable manner. The committee is a unique cross-disciplinary group which focuses on fundamental research and innovative 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. Networking activities supported by the committee cover a wide range of experimental and theoretical approaches.

Over 30 distinguished scientists, nominated by the Member Organisations active in the PESC remit, serve on the committee. It works together with the PESC-related expert committees on Radio Astronomy Frequencies (CRAF), Space Sciences (ESSC) and Nuclear Physics (NUPECC) on strategies and foresights. Observers from the European Commission, the European Mathematical Society, the European Research Consortium for Informatics and Mathematics, the European Materials Forum (EMF), the Israel Academy of Sciences, the US National Science Foundation 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 Biomedicine and Molecular Biosciences (BMBS), Chemistry and Molecular Sciences and Technologies (CMST), Information and Communication Technologies (ICT) and Materials, Physical and Nanosciences (MPNS).

> More information: www.esf.org/pesc

Chair:

Professor Mats Gyllenberg
University of Helsinki, Finland

Members:

Professor Jean-Marie André
Laboratoire de Chimie Théorique Appliquée, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium

Dr. Salim Belouettar
Laboratoire de Technologies Industrielles, Centre de Recherche Paul Henri Tudor, Luxembourg

Professor Venko N. Beschkov
Institute of Chemical Engineering, Bulgarian Academy of Sciences, Sofia, Bulgaria

Professor René de Borst
Department of Mechanical Engineering, Eindhoven University of Technology, The Netherlands

Professor Yvonne Brandt Andersson
Department of Materials Chemistry, Uppsala University, Sweden

Dr. Charalambos D. Charalambous
Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus

Professor Pascal Chossat
Centre International de Rencontres Mathématiques (CIRM), Marseille, France

Professor Kenneth Dawson
Department of Chemistry, University College Dublin, Ireland

Professor Wolfgang Ertmer
Institute of Quantum Optics, University of Hannover, Germany

Professor Stavros C. Farantos
University of Crete and Institute of Electronic Structure and Laser, FORTH, Iraklion, Crete, Greece

Professor Walter Gear
School of Physics and Astronomy, University of Wales, Cardiff, United Kingdom

Professor Ivan Hubac
Department of Chemical Physics, Comenius University, Bratislava, Slovak Republic

Dr. Fjola Jonsdottir
Department of Mechanical and Industrial Engineering, University of Iceland, Reykjavik, Iceland

Professor Zsolt Kajcsos
Research Institute for Particle and Nuclear Physics, Budapest, Hungary

Professor Maria Kaminska*
Institute of Experimental Physics, University of Warsaw, Poland

Professor S. Engin Kilic
Department of Mechanical Engineering, Middle East Technical University, Ankara, Turkey

Professor Ulrich Langer
Institute of Computational Mathematics, Johannes Kepler University, Linz, Austria

Professor Manuel de León*
Instituto de Matemática Aplicada y Física Fundamental, CSIC, Madrid, Spain

Professor Bozidar Liscic
Faculty of Mech. Engineering and Naval Architecture, University of Zagreb, Croatia

Dr. Pasquale Lubrano*
INFN - Perugia, Italy

Professor Elaine B. Martin
Chemical Engineering and Advanced Materials, University of Newcastle upon Tyne, United Kingdom

Professor Enn Mellikov
Department of Materials Science, Tallinn University of Technology, Estonia

Professor Isabel Moura
Departamento de Quimica, Universidade Nova de Lisboa, Portugal

Professor Ole John Nielsen
Department of Chemistry, University of Copenhagen, Denmark

Professor Marc Parlange
Environmental Fluid Mechanics Laboratory, EPFL ENAC ISTE EFLUM, Lausanne, Switzerland

Professor Radovan Stanislav Pejovnik
Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia

Professor Valdemaras Razumas
Institute of Biochemistry, Vilnius, Lithuania

Professor Kenneth Ruud
Department of Chemistry, University of Tromso, Norway

Professor Kaisa Sere*
Department of Computer Sciences, Åbo Academi University, Finland

Professor Sauro Succi
Institute for Applied Mathematics, CNR, Rome, Italy

Professor Romeo Susan-Resiga
Department of Hydraulic Machinery, Politehnica University of Timisoara, Romania

Professor Milan Tichy
Department of Surface and Plasma Science, Charles University Prague, Czech Republic

Mrs. Malgorzata Tkatchenko
CEA, Saclay, Gif sur Yvette, France

Professor Dorothea Wagner*
Faculty of Informatics, University of Karlsruhe, Germany

Professor Michel Waroquier
University Gent, Belgium

* The delegate is also a Core Group member

Observers and Liaisons:

Standing Committee for Life, Earth and Environmental Sciences (LESC)
Dr. Angelos Efstathiou
Department of Chemistry, University of Cyprus, Nicosia, Cyprus

Committee on Radio Astronomy Frequencies (CRAF)
Dr. Axel Jessner
Max-Planck-Institut für Radioastronomie, Germany

Nuclear Physics European Collaboration Committee (NuPECC)
Professor Günther Rosner
Department of Physics and Astronomy, University of Glasgow, United Kingdom

European Space Sciences Commitee (ESSC)
Nomination pending

COST - Domain Committee Biomedicine and Molecular Biosciences (BMBS) – liason:
Professor Mihail Pascu
National Institute for Laser, Plasma and Radiation Physics, Romania

COST - Domain Committee Chemistry and Molecular Sciences and Technologies (CMST) – liason:
Professor Venceslav Kaucic
National Institute of Chemistry, Ljubljana, Slovenia

COST - Domain Committee Information and Communication Technologies (ICT) – liason:
Professor Michael Ansorge
University of Applied Sciences, Fribourg, Switzerland

European Commission
Dr. Renzo Tomellini
Materials Unit, Directorate-General for Research, European Commission, Brussels, Belgium

European Materials Research Society (EMRS)/European Materials Forum (EMF)
Professor Gabriel Crean
Commissariat à l'Energie Atomique (CEA), France

European Mathematical Society
Professor Ari Laptev
Imperial College London, United Kingdom

European Research Consortium for Informatics and Mathematics - ERCIM
Nomination pending

Israel Academy of Sciences and Humanities
Professor Joseph Klafter
School of Chemistry, Tel Aviv University, Ramat Aviv, Israel

National Science Foundation
Dr. Morris Aizenman
Directorate for Mathematical & Physical Sciences, National Science Foundation, Arlington, USA

Standing Committee for the Social Sciences (SCSS)

The social sciences study the possibilities and constraints that surround human activity, the ones that open spaces and erect limits around human creativity. Therefore they examine and explain human beings on different levels, from neural foundations to individual behaviour, group processes and the functioning of entire societies. Consequently, the social sciences employ a wide variety of methods tailored to be scientifically rigorous and to ensure that reliable knowledge is secured.

Against this background, the SCSS funds and develops initiatives in the fields of psychology and the cognitive sciences, pedagogic and education research, social anthropology, sociology, gender studies, economics, business and administrative sciences, geography, demography, environmental sciences, law, political sciences, communication sciences, international relations, social statistics and informatics.

Naturally, the social sciences benefit from the insights gained through related disciplines such as the human, life and medical sciences. These areas of convergence allow for a fuller understanding of the diverse facets of the social science enterprise, and range from literary, philosophical and historical inputs on the one hand, to biological and medical ones, including human biology, on the other. At the same time, almost all (medical, life and human) scientific problems have aspects that require the participation of social sciences in their thorough examination.

In 2008 and 2009, the most important activity in the SCSS is a position paper. The work started with the definition of the most serious European social and societal problems that social sciences have given help in solving, e.g., migration, ageing, climate change, innovation and inequalities. Experts in and outside the committee have been working on the short pieces that map the contribution of the social sciences to the solution to these problems. The position paper will also compare the situation of social sciences in and outside Europe, and, more importantly, will map the gaps in provisions that may be the main reasons why Europe has been lagging behind other continents in a number of fields of social sciences.

The members of the Standing Committee for the Social Sciences represent their national Member Organisation(s), and are leading figures within research councils or institutions within their countries. A number of observers, from important European and transatlantic social science institutions, regularly attend the bi-annual plenary SCSS meetings.

> More information: www.esf.org/scss

Chair:

Professor Sir Roderick Floud
Provost of Gresham College, London, United Kingdom

Members:

Professor Tommy Bengtsson
Lund University, Sweden

Professor Éric Brian
National Centre for Scientific Research (CNRS), France

Professor Maria Rosaria Carli*
Istituto di Studi sulle Società de Mediterranneo (ISSM-CNR), Italy

Professor Ian Diamond/ Mr. Glyndwr Davies*
Economic and Social Research Council, United Kingdom

Dr. Javier Esparcia Pérez
University of Valencia, Spain

Professor Emmanuël Gerard
Catholic University Leuven, Belgium

Professor Galin Gornev
Bulgarian Academy of Sciences, Bulgaria

Professor Akile Gürsoy
Yeditepe University,Turkey

Professor Pieter Hooimeijer
Utrecht University, The Netherlands

Professor Thorlakur Karlsson
Reykjavik University, Iceland

Professor Rainer Kattel
Tallinn University of Technology, Estonia

Professor Lisbeth B. Knudsen
University of Aalborg, Denmark

Professor Anne Kovalainen*
Turku School of Economics, Finland

Dr. Sabine Krolak-Schwerdt
University of Luxembourg, Luxembourg

Dr. Algis Krupavicius
Kaunas University of Technology, Lithuania

Professor Volkmar Lauber
University of Salzburg, Austria

Professor Luisa Lima
ISCTE - Instituto Superior de Ciências do Trabalho e da Empresa, Portugal

Professor Bogdan Mach*
Polish Academy of Sciences, Poland

Dr. Zdenka Mansfeldová
Academy of Sciences of the Czech Republic, Czech Republic

Dr. Silvia Miháliková
Comenius University, Slovak Republic

Professor
Firouzeh Nahavandi
Université Libre de Bruxelles, Belgium

Professor
Ilona Pálné Kovács
Hungarian Academy of Sciences, Hungary

Professor Pasqualina Perrig-Chiello*
Universität Bern, Switzerland

Professor Manfred Prenzel*
Leibniz-Institut für die Pädagogik der Naturwissenschaften (IPN), Germany

Dr. Savvas Savvides*
European University Cyprus, Cyprus

Professor Slavko Splichal
University of Ljubljana, Slovenia

Professor
Patrick Paul Walsh
University College Dublin, Ireland

Professor
John Yfantopoulos*
National Centre for Social Research, Greece

Representatives from Croatia, Norway and Romania are in the process of being nominated.

* The delegate is also a Core Group member

Observers:

COST - Domain Committee Individuals, Societies, Cultures and Health (ISCH)
Dr. Laura Alipranti

European Commission, DG Research
Dr. Dimitri Corpakis

International Social Science Council
Dr. Heide Hackmann

Israel Academy of Sciences and Humanities
Professor Asher Koriat

National Science Foundation, United States
Dr. David Lightfoot

Social Sciences and Humanities Research Council, Canada
Ms. Sylvie Paquette

Advisory Expert:

Norwegian Social Science Data Services
Mr. Bjørn Henrichsen

Expert Boards and Committees

Expert Boards and Committees provide advice and initiate strategic developments at the European and national levels in the areas of marine, polar and space sciences, nuclear physics and radio astronomy frequencies.

■ Marine Board - ESF

The increasing interdependence of marine research policies and programmes at national and at European levels, as well as the rapidly changing environment of European marine sciences, call for a new approach to the development of European research strategies. The Marine Board was established in 1995 by its Member Organisations to facilitate enhanced coordination between the directors of European marine science organisations (research institutes, funding agencies and research councils) and the development of strategies for marine science in Europe. In 2009, the Marine Board includes 30 Member Organisations from 20 European countries.

As an independent non-governmental advisory body, the Marine Board is motivated by, and dedicated to the unique opportunity of building collaboration in marine research. The Marine Board develops insight, recognising opportunities and trends, presenting compelling and persuasive arguments that shape the future of marine research in Europe.

The Marine Board provides the essential components for transferring knowledge for leadership in marine research in Europe. Adopting a strategic role, the Marine Board serves its Member Organisations by providing a forum within which policy advice to national agencies and to the European Commission is developed, with the objective of providing comparable research strategies at the European level.

The Marine Board operates via four principal approaches:

- Forum: Bringing together its Member Organisations to share information, to identify common challenges and, as appropriate, find solutions, to develop common positions, and to cooperate;
- Synergy: Fostering European added value to component national programmes, facilitating access and shared use of national marine research facilities, and promoting synergy with international programmes and organisations;
- Strategy: Identifying and prioritising emergent disciplinary and interdisciplinary marine scientific issues of strategic European importance, initiating analysis and studies (where relevant, in close association with the European Commission) in order to develop a European strategy for marine research;
- Voice: Expressing a collective vision of the future for European marine science in relation to developments in Europe and world-wide.

In accordance with and support towards its principal approaches, the Marine Board carries on its strategic role with the help of different instruments. The Marine Board periodically organises high level science policy conferences to carry the voice of the marine science community.

Marine Board instruments:

• Marine Board Working Groups

The Marine Board is proactive in identifying marine research priorities through establishing and supporting working groups (WGs). These WGs are composed of high-level European experts who elaborate on specific marine science and technology topics. The output from a WG is a position paper. The Marine Board position papers identify and prioritise emergent (inter-) disciplinary marine scientific issues of strategic European importance, initiating analysis and studies in order to: (i) develop a strategy for marine research, and (ii) impact at national and European levels. (*see also p. 51-52)*

• Marine Board Panels

Marine Board panels are collaborative operational networks whose members benefit from mutual interactions and from interactions with the Marine Board.

• Marine Board Forum

Through its forum, the Marine Board fosters updates and interactions among the marine science community, bringing together representatives from marine- and maritime-related groups and networks as well as Marine Board sister organisations to address common themes.

• Marine Board EC Framework Programme activities

Marine Board is engaged in a number of Framework Programme activities: MarinERA (FP6 ERA-NET) *(see p. 107)*, AMPERA (FP6 ERA-NET) *(see p. 104)* and EMAR²RES (FP7 Support Action).

> More information: www.esf.org/marineboard

Marine Board Executive Committee (as of November 2008)

Chair:

Mr. Lars Horn
Norges Forskningsrådet (RCN), Norway

Vice-Chairs:

Mr. Antoine Dosdat
Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER), France

Professor Edward Hill
National Oceanography Centre, Southampton, United Kingdom

Professor Jan Mees
Fonds voor Wetenschappelijk Onderzoek Vlaanderen (FWO), Belgium

Dr. Kostas Nittis
Hellenic Centre for Marine Research (HCMR), Greece

Professor Jan Willem de Leeuw
Koninklijke Nederlandse Akademie van Wetenschappen (KNAW), The Netherlands

Mr. Geoffrey O'Sullivan
Marine Institute, Ireland

Marine Board Executive Scientific Secretary :
Dr. Niamh Connolly

The Marine Board Secretariat is located at the InovOcean site in Ostend, Belgium.

Address:
Marine Board
Wandellarkaai 7
8400 Ostend, Belgium
Tel: +32 59 34 01 63
Fax: +32 59 34 01 65
Email: marineboard@esf.org

European Polar Board (EPB)

The European Polar Board is Europe's strategic advisory body on science policy in the polar regions. It acts as a voice and high-level facilitator of cooperation between European national funding agencies, national polar institutes and research organisations. It is concerned with major strategic priorities in the Arctic and Antarctic and has members from national operators and research institutes in 20 countries.

EPB is taking a central role in the coordination at European level of the International Polar Year 2007-2009, a global event focusing on the importance of the polar regions for humankind. Major focus areas are on education, outreach and communication, and enhancing political visibility.

The European Polar Board has active liaison with the director of the 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 also 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).

The ESF, through the European Polar Board unit, is the official coordinator of the ERICON AURORA BOREALIS (European Research Ice Breaker Consortium), a project supported under EC FP7 as part of the implementation of the European Strategy Forum on Research Infrastructures (ESFRI) roadmap projects. This 4.5 million Euros project will focus on the strategic, management, legal and financial aspects of implementing this large scale research facility and involves 15 partners from 10 countries over four years.

> More information: www.esf.org/epb

EPB Executive Committee

Chair:

Professor Carlo Alberto Ricci, President of the Italian National Scientific Committee for Antarctic Research, Italy

Vice-Chairs:

Professor Alexander Guterch, Institute of Geophysics, Polish Academy of Sciences, Poland
Dr. Gérard Jugie, IPEV Director, France
Professor Anders Karlqvist,
Swedish Polar Research Secretariat Director, Sweden
Dr. Hanne K. Petersen, Danish Polar Center Director, Denmark

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.

Almost 35 years later the ESSC has become even more relevant as it acts as ESF's point of entry on space-related matters to the European Space Agency (ESA), the European Commission, national space agencies and ESF Member Organisations. 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 High-level Science Policy Advisory Committee advising its Director General, in the EC's FP7 Space Advisory Group, and it holds an observer status in ESA's Ministerial Councils since 1999. At the international level, ESSC maintains strong relationships with the Nuclear Regulatory Commission (NRC)'s Space Studies Board in the US, and corresponding bodies in Japan and China.

In line with the ESSC review in November 2003, a Strategic Plan for the period 2007-2010 was published to enable the committee to re-examine its position in 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, with the goal of 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 and interact on common problems.

New terms of reference were also approved by the committee in June 2008 and a set of guidelines has been agreed upon, describing in detail the committee's *modus operandi*, the tasks of the office and chair, the responsibilities of the members and the relations with funding organisations.

The ESSC has a new chair since May 2007. Professor Jean-Pierre Swings is an astrophysicist from the University of Liège in Belgium. His main tasks over the next years will be to materialise the strategic plan in a very concrete manner.

Among the activities that the ESSC will have in 2009 are:

- management of peer-review for ESA's programme in life and physical sciences, and for international partners of ESA in the area of space life sciences
- development of two Forward Look proposals in the areas of (i) innovative technology and (ii) humanities aspects of human space exploration

- management of the second year of the EC-funded CAREX programme on life in extreme environments *(see p. 104)*

> *More information: www.esf.org/essc*

Chair:

Professor Jean-Pierre Swings
Institut d'Astrophysique et Géophysique, Liège, Belgium

Members:

Professor Doris Breuer
DLR, Institute of Planetary Research, Berlin, Germany

Professor Jørgen Christensen-Dalsgaard
Aarhus University, Denmark

Dr. Gilles Clement
CERCO CNRS, Toulouse, France

Professor Luigi Colangeli
INAF - Osservatorio Astronomico di Capodimonte, Italy

Dr. Ian Crawford
Birbeck College, London, United Kingdom

Professor Hans Jörg Fecht
Ulm University, Germany

Professor Olivier Francis
University of Luxembourg, Luxembourg

Professor Eigil Friis-Christensen
Danish National Space Center, Copenhagen, Denmark

Professor Matt Griffin
Cardiff University, United Kingdom

Professor Hanns-Christian Gunga
Charité – Universitätsmedizin Berlin, Germany

Dr. Michael Lebert
Friedrich-Alexander-Universität, Erlanger, Germany

Professor Pieternel Levelt
Royal Netherlands Meteorological Institute, De Bilt, The Netherlands

Professor Per Barth Lilje
University of Oslo, Norway

Dr. José Miguel Mas Hesse
Centro de Astrobiologia (CSIC-INTA), Madrid, Spain

Professor Gregor Eugen Morfill
Max-Planck-Institut für Extraterrestrische Physik, Garching, Germany

Professor Jouni Pulliainen
Finnish Meteorological Institute, Sodankylä, Finland

Professor Christiane Schmullius
Friedrich-Schiller-Universität Jena, Germany

Professor Sami Solanki
Max-Planck-Institut für Sonnensystemforschung, Katlenburg-Lindau, Germany

Dr. Jordi Torra
Universitat de Barcelona, Spain

Professor David Vaughan
British Antarctic Survey, NERC, Cambridge, United Kingdom

Professor Manuel G. Velarde
Universidad Complutense de Madrid, Spain

Professor
Frans von der Dunk
University of Nebraska,
Lincoln and Leiden,
The Netherlands

Professor Karel F. Wakker
Mijnsheerenland,
The Netherlands

Dr. Frances Westall
CBM-CNRS, Orléans, France

Committee on Radio Astronomy Frequencies (CRAF)

Established in 1988, CRAF represents all the major radio astronomical observatories in Europe. Its mission is to coordinate the protection of the frequency bands used by radio astronomers in Europe i.e. to keep them 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 steady increase in global use of the electromagnetic spectrum for both terrestrial and space-borne communications e.g. mobile telephones.

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

> More information: www.esf.org/craf

Chair:

Dr. Axel Jessner
Max-Planck Institut für Radio Astronomie, Bonn, Germany

Members:

Professor Roberto Ambrosini
Istituto di Radioastronomia INAF, Bologna, Italy

Dr. Rafael Bachiller
Observatorio Astronomico Nacional IGN, Madrid, Spain

Dr. Vladislavs Bezrukovs
Ventspils International Radio Astronomy Center, Ventpils, Latvia

Dr. Gilles Butin
Institut de RadioAstronomie Millimétrique, Saint Martin d'Heres, France

Dr. Frederic Clette
Département de Physique Solaire, Observatoire Royal de Belgique, Bruxelles, Belgium

Professor Luis Manuel dos Santos Rocha Cupido
Centro de Físicados Plasmas, Instituto Superior Técnico, Lisbon, Portugal

Dr. André Deschamps
Observatoire de Paris, LERMA, Paris, France

Dr. Wim van Driel
Observatoire de Paris, GEPI, Meudon, France

Dr. Istvan Fejes
FOMI SatelliteGeodetic Observatory, Budapest, Hungary

Dr. K. Jiricka
Astronomical Observatory, Ondrejov, Czech Republic

Dr. A. A. Konovalenko
Department of Decameter Radio Astronomy, National Academy of Sciences, Kharkov, Ukraine

Nuclear Physics European Collaboration Committee (NuPECC)

This ESF Expert Committee's tasks are to strengthen European collaboration in nuclear physics and science. NuPECC defines a network of complementary facilities within Europe and encourages optimisation of their use. The committee provides a forum to discuss the exploitation of future facilities and instrumentation; and to issue recommendations on the development, organisation and support of European nuclear physics, and of particular projects.

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

NuPECC continues to pursue its joint initiative with the European Physical Society and PANS (Public Awareness of Nuclear Science), and produces pamphlets, books and CDs. 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 accurate and timely updates on the status of nuclear science.

> More information: www.esf.org/nupecc

Chair:

Professor Guenther Rosne
Department of Physics & Astronomy, University of Glasgow, United Kingdom

Members:

Professor Claude Amsler
CERN, Genève, Switzerland

Dr. Angela Bracco
INFN and University of Milano, Milan, Italy

Professor Tullio Bressani
Dept. of Experimental Physics, Istituto Nazionale Fisica Nucleare, Turin, Italy

Dr. Roman Caplar
University of Zagreb, Zagreb, Croatia

Dr. Jan Dobes
Nuclear Physics Institute, Academy of Sciences of the Czech Republic, Rez (Prague), Czech Republic

Professor Ana Maria Eiró
Centro de Física Nuclear da Universidade de Lisboa, Portugal

Professor Brian Fulton
Department of Physics, Univerity of York, United Kingdom

Dr. Jens Jørgen Gaardhøje
Copenhagen, Denmark

Dr. Dominique Goutte
Ganil, Caen, France

Dr. Dominique Guillemaud-Mueller
Groupe Physique Nucléaire Ions Lourds, Institut de Physique Nucléaire d'Orsay, France

Professor
Hans-Ake Gustafsson
Department of Physics, Lund University, Sweden

Dr. Bernard Haas
Centre d'Etudes Nucléaire de Bordeaux Gradignan, France

Professor Muhsin Harakeh
Kernfysisch Versneller Instituut, Rijksuniversiteit, Groningen, The Netherlands

Dr. Sotirios Harissopulos
National Centre for Scientific Research "Demokritos", Athens, Greece

Professor Paul-Henri Heenen
Université Libre de Bruxelles, Belgium

Dr. Rauno Julin
Dept. of Physics, University of Jyväskylä, Finland

Dr. Attila Krasznahorkay
Institute of Nuclear Research, Hungarian Academy of Sciences, Debrecen, Hungary

Dr. Thomas Peitzmann
Buys Ballot Laboratorium, Utrecht, The Netherlands

Professor Alfredo Poves
Departamento de Física Teórica, Universidad Autónoma de Madrid, Spain

Professor Achim Richter
European Center for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy

Dr. Dieter Röhric
Institutt for fysik og teknologi, University of Bergen, Norway

Professor Horst Stöcker
Gesellschaft für Schwerionenforschung (GSI), Darmstadt, Germany

Professor Hans Ströher
Institut für Kernphysik, Forschungszentrum Jülich, Germany

Professor Jan Styczen
The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences, Cracow, Poland

Professor Jochen Wambach
Institute for Nuclear Physics, Technische Hochschule, Darmstadt, Germany

Professor
Eberhard Widmann
Stefan Meyer Institute for Subatomic Physics, University of Vienna, Austria

Dr. Nicolae-Victor Zamfir
Heavy Ion Department, Poenaru National Institute of Physics and Nuclear Engineering, Bucharest, Romania

ESF Science Advisory Board

The Science Advisory Board (SAB) advises the Chief Executive on strategic science issues and scientific advice with regard to ESF's key instruments (including EUROCORES, Forward Looks, ESF Research Conferences). It also provides overall science quality control of the ESF, such as overseeing the complete peer review system, the composition and operation of ESF panels and committees (including review panels, Forward Look management, European Latsis Prize, ESF Standing Committees and Expert Committees), safeguarding of the interdisciplinarity of ESF instruments and keeping an oversight on ESF procedures.

The SAB is composed of high level researchers with a broad disciplinary balance, covering the whole research spectrum, plus the chairs of the five ESF Standing Committees. Members are chosen from nominations by ESF Member Organisations and are appointed by the Governing Council for a maximum period of three years, renewable once.

Independent Members:

Professor Raimo Väyrynen Chair
(Political Sciences)
Finnish Institute of International Affairs, Finland

Professor Jean-Pierre Bourguignon
(Mathematics)
Institut des Hautes Etudes Scientifiques, France

Professor Judith Howard
(Structural Chemistry)
Department of Chemistry, University of Durham, United Kingdom

Professor Amélie Mummendey
(Social Psychology)
Institut für Psychologie, Friedrich-Schiller-Universität Jena, Germany

Professor Giuseppe Novelli
(Genetics)
Dipartimento di biopatologia e diagnostica per Immagini, Università di Roma – Tor Vergata, Italy

Professor Kai Simons
(Molecular Cell Biology)
Max-Planck-Institute of Molecular Cell Biology and Genetics, Germany

Professor Louise Vet
(Ecology)
Netherlands Institute of Ecology (NIOO), The Netherlands

Standing Committee Chairs:

Professor Reinhart Ceulemans
(Botany)
Life, Earth and Environmental Sciences (LESC)
Department of Biology, University of Antwerpen, Belgium

Professor Mats Gyllenberg
(Mathematics/Statistics)
Physical and Engineering Sciences (PESC)
University of Helsinki, Finland

Professor Sir Roderick Floud
(Economic History)
Social Sciences (SCSS)
School of Advanced Study, University of London, London, United Kingdom

Professor Liselotte Højgaard
(Clinical Physiology)
European Medical Research Councils (EMRC)
Department of Clinical Physiology, Nuclear Medicine & PET Rigshospitalet, University of Copenhagen and Technical University of Denmark (DTU), Denmark

Professor Milena Zic-Fuchs
(Linguistics)
Humanities (SCH)
Croatian Academy of Arts and Sciences, Croatia

Science Strategy

The rationale of the ESF Strategic Plan is first to provide our Member Organisations with instruments and programmes within the Science Strategy activity which aim to give sound advice and foresight in science and, drawing on the new perspectives generated by activities such as Forward Looks (*see below*), Member Organisation Fora (*p. 41*), and Exploratory Workshops (*p. 43*), set a new agenda with a European focus.

Forward Looks

ESF Forward Looks are foresight instruments enabling 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 in Europe in a global context. The purpose of a Forward Look is to assist organisations with developing common science agenda and priority setting for research and research infrastructure funding at the national and the European levels.

A new process of selecting Forward Look topics introduced in 2007 offers the leading role to ESF Member Organisations and at the same time allows ESF Standing Committees, and via them the European scientific community, to play an active role in their initiation.

This concept for the Forward Look instrument was discussed in a report by Barend van der Meulen "Looking Beyond the Endless Frontier. ESF Forward Looks Scheme: analysis and recommendations" which positions the ESF Forward Look instrument in the wider foresight landscape and sets up a framework for its future development.

> *More information: www.esf.org/flooks*

Standing Committee for the European Medical Research Councils (EMRC)

Ageing, Health and Pensions in Europe • (2008-2009)

Joint Activity with SCSS

see p. 39

Implementation of Medical Research into Clinical Practice – a growing challenge • (2008-2010)

A preliminary report relating to the gap between scientific medical research results and the every-day practice in hospitals and primary care in the European health care system was assembled under the format of a Forward Look (FL) proposal and submitted under the name of “Evidence-Based Medicine” to the Science Advisory Board (SAB) held on 5-6 March 2008 in Paris. Following the recommendations made by the SAB, the proposal was amended. The amended version was approved for funding at the April 2008 Governing Council. A decision was made to rename the FL into "Implementation of Medical Research into Practice – a growing challenge" for more clarity and to set up a task force to help in the preparation of the FL to:

1. brainstorm on preparation of the FL by refocusing its aim and objectives;

2. identify the participants;

3. prepare a dictionary with keywords.

Professor Håkan Billig representing the Nordic Medical Research Councils at the EMRC Standing Committee agreed to chair the Forward Look that will develop over 2009 and should lead to a consensus conference at the beginning of 2010.

> More information: www.esf.org/imrcp

Investigator-Driven Clinical Trials • (2007-2009)

Investigator-driven clinical trials (IDCT) are clinical trials that are instigated by academic researchers and are aimed at improving patient care. Typically such trials might compare one treatment regime with another, or investigate new combinations of drugs and surgery, for example. They do not usually have a direct commercial motive, unlike trials carried out by drugs companies.

IDCTs form a key part of patient-oriented clinical research, the basis for continually improving patient care. Such research is under strain in Europe for a multiplicity of reasons, and because of this the European Medical Research Councils (EMRC) of the ESF has undertaken this Forward Look exercise on IDCT to analyse the problems and recommend solutions to meeting the challenges identified.

This Forward Look represents what is probably the most comprehensive examination of IDCT in Europe in recent years. A thorough analysis of the problems faced by academic investigators conducting IDCT was carried out through a series of five workshops covering different themes and attended by active and acknowledged experts in the field. These workshops identified specific issues that need to be addressed and recommended a range of possible solutions,

i.e.: categories and design of IDCT; regulatory, legal issues, intellectual property rights and data sharing; management of IDCT; education, careers, training and authorship; funding and models of partnership.

A total of 26 recommendations were challenged and ranked at a consensus conference attended by around 90 high level experts in September 2008. The top five recommendations as ranked by the consensus conference were as follows:

1. To improve the education, training and career structure for scientists involved in patient-oriented clinical research.
2. To increase levels of funding for IDCT.
3. To adopt a "risk-based" approach to the regulation of IDCT.
4. To streamline procedures for obtaining authorisation for IDCT.
5. To ensure that IDCT are carried out with an appropriate number of patients to produce statistically reliable results – that the trials are "correctly powered".

A panel of experts was subsequently convened to develop a strategy for the sustainable implementation of the recommendations. The implementation plan is presented in this Forward Look.

In addition, a separate meeting was held to consider particular problems faced by IDCT in countries of Central and Eastern Europe. It was concluded that these countries face broadly similar problems to those of Western Europe, but that the problems tend to be more acute and extreme.

> More information: www.esf.org/emrc/idct

RNA World: a new frontier in biomedical research • (2007-2009)
Joint Activity with LESC

The main objective of this 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 Prize in medicine was awarded for the 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" which was launched on 25 May 2007 uniquely integrates projects and networks of ongoing EC and ESF projects with the aim of taking a comprehensive look at the future of this fascinating research area. The first workshop (December 2007) entitled "Methodologies for RNA discovery" addressed questions as

to how to identify new RNAs and how to localise RNAs and their expression and what the primary sequence of a RNA would tell us. Two other workshops (April and November 2008) focused on the issues of molecular interactions of RNAs with their protein partners and RNA therapeutics, respectively. A consensus conference in February 2009 will give rise to a report whose publication is foreseen mid-2009.

> More information: www.esf.org/rnaworld

Standing Committee for the Humanities (SCH)

Media Studies: new media and new literacies • (2009-2010)
Joint Activity with SCSS

The Forward Look will focus on media literacy. As media are constitutive of key financial, social and cultural processes of contemporary life, to study media is therefore an important pathway into understanding fundamental processes in society.

Issues related to media literacy illuminate some of the fundamental problems that media studies have tackled over the years but refracted through the lens of media coverage and its underlying currents of digitisation, globalisation and commodification. These issues are to do with political engagement and citizenship across boundaries of time and space; with social divides that are also digital divides within and between countries and regions; with ownership and property rights to cultural products and processes; and with inter-cultural interaction and identity formation in personal as well as collective terms. The Forward Look will address the key research topics for the study of new media in Europe:

1. Political engagement in an age of mediatisation: enablers and constraints for transborder democratic developments;

2. Creative economy or creative culture?

3. Shaping and sharing of media content as a specifically economic or as a wider social resource;

4. Digital divides and their inflections of class, age, gender, ethnicity and region;

5. Intercultural identity-formation: from Facebook networks to institutional forms of cultural heritage.

Based on surveys and expert meetings, this Forward Look will produce a position paper outlining a future joint research programme in the area of new media and new media literacy.

Security – advancing a framework for inquiry (SAFE) • (2007-2009)
Joint Activity with SCSS

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 develops 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 scientific imbalances. Through comparative studies, the Forward Look will reflect the different approaches to the topic in the ESF constituencies.

The final conference of this Forward Look is scheduled for spring 2009. 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 Computational Science - the Lincei Initiative: from computers to scientific excellence • (2006-2009)
Joint Activity with PESC
see below

RNA World: a new frontier in biomedical research • (2007-2009)
Joint Activity with EMRC
see p. 37

Standing Committee for the Physical and Engineering Sciences (PESC)

European Computation Science – the Lincei Initiative: from computers to scientific excellence • (2006-2009)
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 10 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/lincei

Standing Committee for the Social Sciences (SCSS)

Ageing, Health and Pensions in Europe • (2008-2009)
Joint Activity with EMRC

The project will look at labour market issues, income security of an ageing population and well-being of the elderly, issues which are of increasing concern for the whole of Europe, with the growing life expectancy of its population. The Forward Look will identify research themes to be addressed in order to be

able to influence policy decisions and ensure that old age is not equated with bad health and poor living conditions. The project is expected to come up with research policy guidelines for setting priorities for data collection in the next decade, and for building an infrastructure that makes it possible for researchers to get access to the data, with appropriate restrictions concerning data privacy and sensitivity.

> More information: www.esf.org/ageing

Media Studies: new media and new literacies • (2009-2010)
Joint Activity with SCH
see p. 38

Security – advancing a framework for inquiry (SAFE) • (2007-2009)
Joint Activity with SCH
see p. 38

Member Organisation Fora

Member Organisation Fora are ESF activities that were developed in response to a clear demand from the Member Organisations expressed during the ESF Strategic Plan consultations. MO Fora are output-oriented, issue-related 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 as well as others.

The ESF encourages the development of Member Organisation Fora by inviting Member Organisations to propose promising topics.

The existing fora and potential new topics fill high priority needs identified in the joint ESF-EUROHORCS Action Plan.

> More information: www.esf.org/mofora

Active MO Fora Topics

• Evaluation of Funding Schemes and Research Programmes
41 Organisations

The focus of this forum lies on the "post-grant" evaluation process, i.e. whether the funding schemes or the research programmes achieve their stated aims. The forum provides a platform in which experiences with current practices in the different national organisations are exchanged and documented. The forum aims to facilitate the networking of science officers engaged in evaluation in research funding agencies, research performing organisations and learned societies and will help them to share practical information in an informal way. Another objective of the forum is to explore the needs and possibilities for collaboration in future evaluation exercises.

• Peer Review
11 Organisations

For ESF Member Organisations, peer review and grant awarding procedures are key to the quality of their performance and to the credibility of the service they provide within the scientific community. Ever-increasing global demands on high-quality peer review have given rise to changes in the organisation and management of research funding. Some of these changes can have major impacts on the future of peer review practices and standards.

The main objective of this forum is to create a dedicated platform where peer review processes, experiences and standards are

shared and discussed among the representatives of the ESF Member Organisations. Through its activities, the forum will contribute to the development and promotion of common standards and good practices across Europe and beyond.

The forum started with the international conference "Peer Review – its present and future state" in October 2006. In March 2008 the forum held a workshop open to all ESF Member Organisations with an aim to share innovative ideas and to agree on common actions. An action plan has been drafted and discussed at the forum's latest working group meeting in Vienna on 7 and 8 October 2008.

• Research Careers
37 Organisations

The work of the forum has evolved into three working groups, on "Research Careers Structure and Development", which will be looking at an ideal vision for the 10-15 year timeframe, on "Gender Issues and Research Careers", which is addressing "level playing field" and career-life balance, and "Transferable Skills" which is looking at the broader human resources development issues of careers. The groups presented their mapping studies at the assembly of the forum in November 2008 and will spend their second year working on strategic and policy recommendations for ESF Member Organisations. The forum is heavily engaged with other stakeholders, notably the EC and the European Universities Association (EUA).

• Research Infrastructures

Approved in 2008, this forum will be launched in early 2009. Its aim will be to provide Member Organisations with a mechanism to compare provision and practices with existing "medium" and "small" departments at the national and international levels, which they access or operate, and develop priorities and strategies for cooperation on existing and new insfrastructures. The work of the forum will be complementary to that of European Strategy Forum on Research Infrastructures (ESFI).

Exploratory Workshops

These small, interactive group sessions usually last one to three 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 high-level scientists as well as 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.

> More information: www.esf.org/workshops

The ESF is funding a total of 58 Exploratory Workshops in 2009:

EMRC ESF Standing Committee for the European Medical Research Councils

LESC ESF Standing Committee for the Life, Earth and Environmental Sciences

PESC ESF Standing Committee for the Physical and Engineering Sciences

SCH ESF Standing Committee for the Humanities

SCSS ESF Standing Committee for the Social Sciences

March

SCH	Textile Terminology in the Ancient Near East and the Mediterranean Area in the 3rd and 2nd Millennia BC 4 - 8 March 2009, Copenhagen, Denmark
SCH	Redefining the Sacred: religious identity, ritual practice and sacred architecture in the Near East and Egypt, 1000 BC - AD 300 19 - 21 March 2009, Oxford, United Kingdom
EMRC /LESC	Indoor Contamination with Persistent Organic Compounds: an important exposure pathway for people? 23 - 25 March 2009, Stockholm, Sweden
PESC	Curves, Coding Theory and Cryptography 26 - 28 March 2009, Marseille, France
SCH	Applying Semantic Web Technologies to Medieval Manuscript Research 30 March - 1 April 2009, Birmingham, United Kingdom

April

LESC /PESC	Modularity for Versatile Motor Learning: from neuroscience to robotics and back 8 - 11 April 2009, Certaldo, Italy
LESC	Improving Ecological Forecasts by Integrating Feedback Mechanisms 15 - 17 April 2009, Potsdam, Germany

May

LESC	Synoptic-scale Climate Dynamics over the Last Millennium: a case study for the MCA -LIA transition 17 - 20 May 2009, Kippel, Switzerland
SCH	West Reads East – interdependent hermeneutics of European and Middle Eastern literatures 23 - 24 May 2009, Berlin, Germany
SCSS	Social, Cognitive and Affective Dimensions of Collaborative Learning Interactions: towards an integrated analysis 25 - 27 May 2009, Paris, France
EMRC	The Dreaming Mind-Brain, Consciousness and Psychosis: bridging the gap from the phenomenology of mentation to neurones 25 - 28 May 2009, Brusson (AO), Italy
LESC/ PESC	Frontiers in European Research on Liquid Crystalline Soft Matter 26 - 30 May 2009, Bandol, France
SCH/ SCSS	Exploring Creative Cities: the cultural and economic values of cultural industries clusters 28 - 29 May 2009, Rotterdam, The Netherlands

June

SCSS	Microfinance and Entrepreneurship in Developing Countries: evaluation, constraints and opportunities 1 - 2 June 2009, Oxford, United Kingdom
LESC	Defining the Lithosphere-Asthenosphere Boundary beneath Continents (DefLAB) 2 - 6 June 2009, Dublin, Ireland
SCH	Eurobus 11 - 13 June 2009, Helmond, The Netherlands
SCH	Intermedialities: theory, history, practice 12 - 14 June 2009, Amsterdam, The Netherlands
LESC	Ways to Reduce Carbon Footprint of Portland Cement Production and Cementitious Products 22 - 23 June 2009, Coventry, United Kingdom
LESC/ PESC	Biosignatures on Exoplanets: the identity of life 22 - 26 June 2009, Mulhouse, France
LESC/ PESC	Exploring the Interactions between Carbon and Organic Chemical Cycling In Terrestrial Ecosystems 24 - 26 June 2009, Lancaster, United Kingdom

July

SCH	Occupations in World War One. Sources and Analyses 1 - 4 July 2009, Munich, Germany
SCH/ SCSS	Music and the Brain: new perspectives for stimulating cognitive and sensory processes 3 - 5 July 2009, Gdansk, Poland

August

EMRC/ PESC/ LESC	Bionanotechnology: development and application of principles of nano- and bio-sciences to sensing, diagnostics and therapy 31 August - 2 September 2009, Sintra, Portugal

September

SCH	European Cultures of the Cold War 3 - 6 September 2009, Sheffield, United Kingdom
SCH	The Ecology of Crusading: the environmental impact of conquest and colonisation in the medieval baltic 4 - 6 September 2009, Malbork, Poland
SCSS	Trust and the Human Resource Management (HRM) Cycle 7 - 9 September 2009, Milton Keynes, United Kingdom
LESC/ SCH	Interdisciplinary Water Management in European Agricultural Landscapes 8 - 10 September 2009, Birmingham, United Kingdom
SCH/ SCSS	European Feminism's Engagement with its Own Past: the utility of historical narratives in constructing gender-based identities 8 - 11 September 2009, Lincoln, United Kingdom
PESC	Applications of the AdS/CFT Duality to QCD 8 - 12 September 2009, Porto, Portugal
SCSS	European Contract Law and the Welfare State 10 - 11 September 2009, Amsterdam, The Netherlands
EMRC	Understanding the Genetic, Physiological and Psychological Mechanisms Underlying Disabling Medically Unexplained Symptoms and Somatisation 10 - 12 September 2009, Munich, Germany
SCH	Religious Migrants and European Identities, 1400-2009 10 - 12 September 2009, Hamburg, Germany
LESC	Improved Quantitative Fire Description with Multi-Species Inversions of Observed Plumes 14 - 16 September 2009, Farnham, United Kingdom
LESC	Diurnal- to Century-Scale Controls on Soil Respiratory Fluxes. Towards a New Generation of Integrated Experimental and Modelling Approaches 20 - 23 September 2009, Innsbruck, Austria
SCSS	Evidence-based Environmental Design for Older People: from initiation to dissemination, enhancing the paradigm of design research 21 - 23 September 2009, Portsmouth, United Kingdom
EMRC	The Adolescent Brain. New Insights from Clinical and Animal Models 22 - 25 October 2009, Roma, Italy
EMRC/ SCSS	Can Complexity Improve European Health Policy? 23 - 25 September 2009, Lancaster, United Kingdom
SCH	Neuroesthetics: when art and the brain collide 24 - 25 September 2009, Milan, Italy

October

SCSS	Beyond Mainstream: understanding sexuality in Europe 1 - 3 October 2009, Turin, Italy
SCSS	Rights, Legal Mobilisation and Political Participation in Europe 8 - 11 October 2009, Athens, Greece
SCH	Words in Action: interdisciplinary approaches to understanding word processing and storage 11 - 14 October 2009, Pisa, Italy
SCH/ SCSS	Technology and Religion: structural affinities and cultural challenges 14 - 16 October 2009, Glasgow, United Kingdom
SCSS	Immigration and Education in Southern Europe 15 - 16 October 2009, Barcelona, Spain
EMRC/ SCH	Multidisciplinary Workshop on Suffering 15 - 17 October 2009, Luxembourg, Luxembourg
PESC	How to Constrain the High Density Symmetry Energy 16 - 18 October 2009, Zagreb, Croatia
LESC/ PESC	Observation, Characterisation and Evolution of Habitable Exoplanets and their Host Stars 18 - 20 October 2009, Bairisch Kölldorf, Austria
EMRC	Neuropsychiatric Disorders Associated with Streptococcal Infection in Europe 22 - 24 October 2009, London, United Kingdom
SCSS	The Human Costs of Border Control in the Context of EU Maritime Migration Systems 25 - 27 October 2009, Amsterdam, The Netherlands
SCSS	The Effects of Super-Diversity in Europe 26 - 28 October 2009, Tilburg, The Netherlands

November

SCSS	Qualities in Perception Science 2 - 6 November 2009, Rovereto, Italy
SCH	The Communication of Deaf-Blind People as a Model for Exploring Language Modality, Social Communication and Neural Plasticity 5 - 7 November 2009, London, United Kingdom
SCH	When East Meets West: Turkey, Islam, human rights and secular values 6 - 8 November 2009, Istanbul, Turkey
SCH/ SCSS	A Caring Europe? Care, Migration and Gender 12 - 13 November 2009, Milton Keynes, United Kingdom
SCH	Historical Trajectories Of Contemporary Societies. The Development of Civil Society in Europe from the Middle Ages till Today 12 - 14 November 2009, Antwerp, Belgium
LESC	GPCR Signalling Systems: a new avenue for drug discovery? 24 - 25 November 2009, Paris, France
EMRC	Exploring New Directions for the Assessment of Dietary Intake and Physical Activity Levels in Population Studies that Aim to Tackle the Obesity Epidemic across Europe 25 - 27 November 2009, Stockton-on-Tees, United Kingdom

December

LESC	Diversity and Function in Ectomycorrhizal Communities 6 - 9 December 2009, Nancy, France
SCSS	Post Conflict Politics: building on political legitimacy 10 - 11 December 2009, Paris, France

Science Policy Briefings

ESF Science Policy Briefings (SPBs) originated as a means for the ESF to issue position statements on various science policy issues, such as the ethical use of animals in research or the issue of human stem cells. Since their launch in 1997, more than two dozen policy briefings have been published to deal with various issues within the European Research Area. ESF Science Policy Briefings emerge generally from initiatives of one or more ESF Standing Committees and/or Expert Committees or from Forward Looks exercises.

Science position papers, on the other hand, are published under the responsibility of one or more ESF Standing Committees or Expert Boards. As such they represent a considered and peer reviewed opinion of the community represented by the Standing Committee(s)/Export Board(s) involved. Position papers, however, do not necessarily represent the position of the European Science Foundation as a whole.

Science Policy Briefings:

SPB33: The EUROHORCs and ESF Vision on a Globally Competitive ERA and their Road Map for Actions to Help Build it

Science Policy Briefing 33 details essential requirements that need to be fulfilled in order to build a globally competitive European Research Area (ERA) within the next 5-10 years. The SPB presents a vision and road map (with proposed actions to achieve the vision) prepared by a task force established by EUROHORCs and ESF, chaired by DFG President Professor Matthias Kleiner. 10 essential criteria (vision points) that need to be met in building a successful ERA are listed: 1.) An effective European research policy, capitalising on cultural, geographic and scientific diversity 2.) A stimulating education system 3.) A single European labour market for researchers 4.) Adequate funding for top quality curiosity-driven research 5.) Cross-national funding, benchmarking of quality and shared scientific priorities for strategic research and bottom up researcher-driven programmes 6.) Excellent research institutions 7.) World-class research infrastructures 8.) Open access to the output of publicly funded research and permanent access to primary quality-assured research data 9.) Effective and trusted bridges between science, society and the private sector 10.) Openness to the world.

> More information: www.esf.org/spb33

SPB34: Harnessing Solar Energy for the Production of Clean Fuel

This Science Policy Briefing describes steps to a European action plan for harnessing solar energy for the production of clean fuel. The report aims to contribute to a better understanding of challenges related to the clean fuel research and to initiate a debate among the relevant actors at national and European level on how to shape Europe's leadership in this domain.

The document recommends the prioritised development of novel biosynthetic solar-to-fuel and biomimetic photosynthetic technologies for a sustainable energy economy if Europe is to become the leader in the field. The document has undergone external international peer review and has been approved by the ESF Standing Committees for Physical and Engineering Sciences (PESC), for Life, Earth and Environmental Sciences (LESC) and for Social Sciences (SCSS).

> More information: www.esf.org/spb34

SPB35: Advancing Systems Biology for Medical Applications

Systems biology is the systematic study of complex interactions in biological systems. Among its anticipated benefits in the biomedical domain are contributions towards improving early diagnosis, designing patient-specific interventions and accelerating the discovery of novel therapies for the benefit of patients.

SPB 35 selects and summarises some of the conclusions and recommendations generated during ten workshops organised as part of the SysBioMed Specific Support Action (SSA), funded through the sixth EC Framework Programme. The workshops were set to consider the challenges, hurdles and opportunities for systems biology in medical applications. The SPB highlights the necessary steps, identified by participating scientists, to promote the creation of pivotal biomedical systems biology tools and to facilitate their translation into crucial therapeutic advances.

> More information: www.esf.org/spb35

SPB36: European Food Systems in a Changing World

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 societal objectives.

A 2006-2008 Forward Look (FL) focused on how the changes in Europe's food systems drivers, in the context of balancing the varied goals, will affect the above described interactions. A final report and the Science Policy Briefing 36 are being developed as follow ups to the FL and will be published in 2009.

> More information: www.esf.org/food

SPB: Investigator-Driven Clinical Trials

available in March 2009

> More information: see Forward Look, p.36

Position Papers

> More information: www.esf.org/position-papers

ESF-EMRC Position on the Proposed Directive on the Protection of Animals Used for Experimental and Other Scientific Purposes (86/609/EEC)

The aim of the paper issued by the ESF-EMRC in September 2008 is to provide an input into the discussions on the revision of the EC Directive 86/609/EEC on the protection of animals used for experimental and other scientific purposes.

This paper summarises the current scientific and technical positions of those medical research councils in Europe that are ESF Member Organisations (MOs) on four elements of the proposed revision of the Directive, i.e.: administrative burden and triple licensing scheme; use and breeding of non-human primates (including great apes); technical procedures; alternatives to animal testing and the 3Rs (reduction, refinement and replacement).

It builds on previous work of the ESF and draws on documents produced by ESF MOs at the various stages of the consultation process for the revision of this Directive.

A second edition highlighting those amendments that are of concern will be prepared to meet with the agenda of the 2009 consultation process. A Science Policy Briefing will review the use of animals in biomedical research in a broader context. As a science policy document, its aim will be to provide a state of the art analysis of the use of animals in biomedical research, including: why are they necessary; for which specific areas; what are the alternatives. This SPB will be published in May/June 2009.

>More information: www.esf.org/animal-use

Humans in Outer Space

Human space exploration is a topic that can start to be addressed in a cross-disciplinary manner. Exploration is inherent to humans and against this background, addressing the broader issue of humans in (outer) space with a focus on the human element, and not only on technology (i.e. robots only) is inevitable. This SCH-ESSC position paper looks at such cross-cutting issues.

Marine Board - EuroGOOS Vision Document on EMODNET

Vision Document on EMODNET is a result of a joint Marine Board - EuroGOOS expert panel, which was set in 2008 to profile EMODNET as “an end-to-end, integrated and inter-operable network of systems of European marine observations and data communications, management and delivery systems, supported by a comprehensive user oriented toolkit to enable implementation of the integrated maritime policy for Europe”. The Vision Document was launched at a dedicated session organised by the Marine Board Secretariat with Commissioner Borg during the French Presidency event Biomarine 2008 (24 October 2008, Marseille).

> More information: www.esf.org/publications/marine-board

Marine Board Position Paper 12: Remote Sensing of Shelf Sea Ecosystems

Position paper 12 profiles an overview of the research and infrastructure needs and future scientific challenges associated with remote sensing of shelf sea ecosystems. The report is the output of the working group on remote sensing, initiated and coordinated by the Marine Board. It highlights the increasingly urgent requirement for regular monitoring of shelf sea ecosystems in order to meet international treaty obligations for protecting the health status of European coastal waters.

Marine Board Position Paper 13: The Effects of Anthropogenic Sound on Marine Mammals

Position paper 13 is based on the activities and proceedings of a working group, coordinated by the Marine Board, on anthropogenic sound and marine mammals convened at the joint Marine Board- ESF and National Science Foundation (US) workshop (4-8 October 2005, Oxford), with logistical and financial support from the Marine Board. The main recommendation put forward in this report is to use a four-step analytical risk framework process adapted to the issue of marine mammals and anthropogenic sound to assess and identify priority research topics for reducing uncertainty.

Science-driven Scenario for Space Exploration

In this ESSC position paper the relevant scientific community examines the science aspects of Europe's technology-driven exploration programme, and proposes a scientific rationale, set of goals and roadmap based on the robotic and human exploration of Mars, the Moon and the asteroids.

Scientific Evaluation and Future Priorities of ESA's ELIPS Programme

This ESSC-ESF report presents the results of a scientific consultation of the users' community to evaluate the achievements and to define the future strategic and scientific priorities of ESA's programme in life and physical sciences in space (ELIPS). This exercise constituted the follow-up of similar assessment studies done by the ESF and ESSC in 2000 and 2004 to structure and assess the value of ELIPS.

Research Infrastructures (RI)

ESF regards the provision of high-quality research infrastructures as a key factor in the development of the European Research Area (ERA), helping to sustain a robust, up-to-date research environment that 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,
- databases or collections (single-site or distributed) of substantial research value and European impact,
- underpinning infrastructure, such as broadband connectivity or GRIDS, for European research.

> *More details: www.esf.org/research-infrastructure*

ESF Strategy in RI

The landscape within Europe for debating and planning current, upgraded and future new RI has changed significantly in recent years with the emergence of the European Strategy Forum on Research Infrastructures (ESFRI) (Roadmaps for future RI) of RI development priorities in FP7, and of RI-centric ERA-NETS, as examples. ESF's Expert Committees and Boards have traditionally had a strong focus on RI and attention to RI issues is now also strengthening in the Standing Committees.

In writing its Strategic Plan 2006-2010, ESF 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 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 Chief Executive's Unit.

Particular activities during the last year have built on ESF's strong scientific quality assurance role in the EC-EUROHORCs survey of RI at the European level. The survey has formed the basis for an online database for European RI launched in mid 2008, which will be continuously upgraded and available to researchers and policy makers, hosted by the EC and with ESF acting as scientific quality gatekeeper (*see www.riportal.eu*). In the wider RI context, ESF has observer status at ESFRI and has taken initiatives in support of its MOs and the scientific community in the Open Access debate, through the PEER project, and in the long-term preservation of research data, via the Alliance for Permanent Access.

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 Looks to address the range of RI strategic issues.

Science Synergy

The activities which are grouped under Science Synergy aim to encourage and stimulate dialogue and cooperation between researchers for new directions in research, and to plan and implement European-level research. Some of these instruments 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 (*see below*), EUROCORES (*see p. 59*) and ESF Research Networking Programmes (*see p. 79*).

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. Each partnership funds a series of conferences which focuses on the same topical area and takes place at a recurring venue.

Individual conference topics are either selected by ESF and its partners, taking into account their strategic interests, or are generated through an open call for proposals announced at the beginning of each year.

ESF Research Conferences currently cover the following scientific areas:

physics, biophysics and environmental sciences; “biology+”: molecular 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); social sciences and humanities; biomedicine; global change research; chemistry; mathematics; interdisciplinary sciences.

A Europe-Africa Frontier Research Conference Series in basic science profiling African excellence encourages dialogue and cooperation between European and African researchers.

ESF Research Conferences are open to scientists worldwide, whether from academia or industry. They normally last for four or five days and up to 150 participants and invited speakers may be accepted to attend. The chair, assisted by the conference organising committee, selects participants on the basis of applications (to be submitted online usually no less than three months before the conference).

A conference fee is charged to participants. A limited number of grants are available for young researchers, to cover their attendance and contribute towards their travel.

The activities of the Conferences Unit also include world conferences (eg. ESF-JSPS Frontier Science Conferences for Young Researchers) 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 officer in Strasbourg, also acts as service provider for conferences that arise from other ESF instruments.

> More information www.esf.org/conferences

ESF Research Conferences 2009 Events Calendar

For the latest information, visit ***www.esf.org/conferences/2009***

ESF WORLD CONFERENCES

ESF-JSPS Frontier Science Conference for Young Researchers

SOCIAL COGNITIVE NEUROSCIENCE

Acquafredda di Maratea, Italy, 27 February-4 March 2009

ESF RESEARCH CONFERENCES

ESF-FWF Conference in Partnership with LFUI

GRAPHENE WEEK 2009

Obergurgl, Austria, 2-7 March 2009

ESF-UB Conference in Biomedicine

EUROPEAN CONFERENCE ON SYNTHETIC BIOLOGY (ECSB) II

Sant Feliu de Guixols, Spain, 29 March-3 April 2009

Europe-Africa Frontier Research Conference

INFECTIOUS DISEASES: FROM BASIC TO TRANSLATIONAL RESEARCH

Cape Town, South Africa, 4-9 April 2009

ESF-LiU Conference

POST-CRISIS STATES TRANSFORMATION: RETHINKING THE FOUNDATIONS OF THE STATE

Linköping, Sweden, 1-5 May 2009

ESF-FWF Conference in Partnership with LFUI

THE IMPACT OF THE ENVIRONMENT ON INNATE IMMUNITY: THE THREAT OF DISEASES

Obergurgl, Austria, 4-9 May 2009

ESF-EMBO Symposium

SPATIO-TEMPORAL RADIATION BIOLOGY: TRANSDISCIPLINARY ADVANCES FOR BIOMEDICAL APPLICATIONS

Sant Feliu de Guixols, Spain, 16-21 May 2009

ESF-EMBO Symposium

CELL POLARITY AND MEMBRANE TRAFFIC

Sant Feliu de Guixols, Spain, 23-28 May 2009

ESF-ZiF-Bielefeld Conference

SCIENCE AND VALUES: THE POLITICISATION OF SCIENCE

Bielefeld, Germany, 25-30 May 2009

ESF-FWF Conference in Partnership with LFUI

MECHANISMS OF QUATERNARY CLIMATE CHANGE: STABILITY OF WARM PHASES IN THE PAST AND IN THE FUTURE

Obergurgl, Austria, 6-11 June 2009

ESF Mathematics Conference in Partnership with EMS and ERCOM

HARMONIC ANALYSIS, GEOMETRIC MEASURE THEORY AND QUASICONFORMAL MAPPINGS

Bellaterra, Spain, 15-19 June 2009

ESF-FWF Conference in Partnership with LFUI

SELF-ASSEMBLY OF GUANOSINE DERIVATIVES: FROM BIOLOGICAL SYSTEMS TO NANOTECHNOLOGICAL APPLICATIONS

Obergurgl, Austria, 20-25 June 2009

ESF-EMBO Symposium

BIOLOGICAL SURFACES AND INTERFACES

Sant Feliu de Guixols, Spain, 27 June-2 July 2009

ESF Mathematics Conference in Partnership with EMS and ERCOM

SECOND EUROPEAN SET THEORY MEETING: IN HONOUR OF RONALD JENSEN

Bedlewo, Poland, 5-10 July 2009

ESF Mathematics Conference in Partnership with EMS and ERCOM

BANACH ALGEBRAS AND RELATED TOPICS

Bedlewo, Poland, 14-24 July 2009

ESF Mathematics Conference in Partnership with EMS and ERCOM

MODEL THEORY

Bedlewo, Poland, 9-14 August 2009

ESF Conference

NANOCARBONS: FROM PHYSICOCHEMICAL AND BIOLOGICAL PROPERTIES TO BIOMEDICAL AND ENVIRONMENTAL EFFECTS

Sant Feliu de Guixols, Spain, 8-13 September 2009

ESF-COST High-Level Research Conference

COMPLEX SYSTEMS AND CHANGES: DARWIN AND EVOLUTION - THE PAST, THE PRESENT AND THE FUTURE

Sant Feliu de Guixols, Spain, 15-20 September 2009

ESF Conference

GENE EXPRESSION TO NEUROBIOLOGY AND BEHAVIOUR: HUMAN BRAIN DEVELOPMENT AND DEVELOPMENTAL DISORDERS

Sant Feliu de Guixols, Spain, 20-25 September 2009

ESF-LiU Conference

PHILOSOPHY FOR SCIENCE IN USE

Linköping, Sweden, 28 September-2 October 2009

ESF-VR-FORMAS Conference

GLOBAL CHANGE CHALLENGES : TRANSFORMING ENERGY SYSTEMS

Nynäshamn, Sweden, 3-7 October 2009

ESF-LiU Conference

THE CHANGING USE AND MISUSE OF CATHA EDULIS (KHAT) IN A CHANGING WORLD: TRADITION, TRADE AND TRAGEDY

Linköping, Sweden, 5-9 October 2009

ESF-LiU Conference

THE PERFECT BODY: BETWEEN NORMATIVITY AND CONSUMERISM

Linköping, Sweden, 9-13 October 2009

ESF-UB Conference in Biomedicine

RARE DISEASES II: HEARING AND SIGHT LOSS

Sant Feliu de Guixols, Spain, 25-30 October 2009

ESF-COST High-Level Research Conference

LAW AND NEUROSCIENCE: OUR GROWING UNDERSTANDING OF THE HUMAN BRAIN AND ITS IMPACT ON OUR LEGAL SYSTEM

Acquafredda di Maratea, Italy, 26-31 October 2009

ESF-UB Conference in Biomedicine

BIOBANKS II

Sant Feliu de Guixols, Spain, 7-12 November 2009

ESF-FWF Conference in Partnership with LFUI

CO2 GEOLOGICAL STORAGE: LATEST PROGRESS

Obergurgl, Austria, 22-27 November 2009

ESF-FWF Conference in Partnership with LFUI

THE ORIGIN OF GALAXIES: LESSONS FROM THE DISTANT UNIVERSE

Obergurgl, Austria, 12-17 December 2009

ESF-UB Conference in Biomedicine

GLOBAL CHANGES AND HEALTH

Sant Feliu de Guixols, Spain, Autumn 2009 *(exact date to be confirmed)*

ESF-COST High-Level Research Conference

NATURAL PRODUCTS CHEMISTRY, BIOLOGY AND MEDICINE II

Acquafredda di Maratea, Italy, Autumn 2009 *(exact date to be confirmed)*

ESF SUMMER-WINTER SCHOOLS

ESF-UB Summer School

NANOMEDICINE II

Lisbon, Portugal, 14-19 June 2009

ESF-EPSRC-STFC Summer School in Physics and Astronomy

65th SCOTTISH UNIVERSITIES SUMMER SCHOOL IN PHYSICS: LHC PHYSICS

St. Andrews, United Kindom, 16-29 August 2009

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 offers a flexible framework for researchers from Europe to tackle questions which are best addressed in larger-scale collaborative research programmes. It allows excellent researchers from different European countries and, when appropriate, from outside of Europe to work "at the bench" on collaborative research projects.

As of January 2009, the EUROCORES scheme is fully owned by the participating national funding organisations which are now financing both the research and networking activities.

The EUROCORES scheme currently has 33 fully operating programmes, which involve more than 65 different funding agencies from over 30 countries. 23 of these programmes are currently in their research and networking phase, bringing together more than 110 million Euros of national research funding. The programmes have so far generated more than 600 peer reviewed publications.

> More information: www.esf.org/eurocores

Standing Committee for the European Medical Research Councils (EMRC)

Development of a Stem Cell Tool Box (EuroSTELLS)

"Development of a Stem Cell Tool Box" (EuroSTELLS) was a three year programme (2005-2008), launched to generate fundamental knowledge on stem cell biology, set up the bases for comparative analyses of stem cells of different origins, and explore their future clinical application. With 21 research groups from 11 European countries, EuroSTELLS was a successful programme, which generated important scientific results in this field with publications in journals including The EMBO Journal, Nature Biotechnology and Stem Cells. One example related to the field of epigenetics (is information heritable during cell division other than the DNA sequence itself) was the demonstration that paternally imprinted genes carry different histone modifications compared to other regions in the genome[1]. A publication on the highlights of the programme is available from the ESF website with more information on the outcome of the programme.

[1] Delaval, K et al., Differential histone modifications mark mouse imprinting control regions during spermatogenesis. EMBO Journal, 26, 720-729, 2007.

During the three years EuroSTELLS promoted and supported networking activities, contributing to the creation of 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. The last workshop, "Stem Cell Niches", on the 10-12 January 2008, brought together over 130 participants from across the three collaborative research projects (CRPs) and the wider stem cell community from Europe, Israel and the United States. International world leaders in various stem cell niche fields gave cutting edge, high quality talks, allowing participants, including young students, to interact, exchange ideas and establish new collaborations.

One of the important impacts of this programme was the support of an international task force of the International Society for the Translation of Stem Cell Research (ISSCR) to prepare guidelines to define the scientific, clinical, regulatory, ethical and societal issues that must be addressed to ensure that basic stem cell research is responsibly transitioned into appropriate clinical applications for treating patients. EuroSTELLS was the only European based source of funding for the guidelines, which was also being supported by the Alzheimer's Research Foundation, The Ellison Medical Foundation, and the Juvenile Diabetes Research Foundation Beta Cell Replacement Advisory Committee (*more information: www.isscr.org/clinical_trans/index.cfm).*

Dissemination of EuroSTELLS activities, including a discussion of developments in the stem cell field and their impact on quality of life and public health, and the ISSCR Task Force has generated wide media impact, including coverage on numerous international websites.

> More information: www.esf.org/eurostells

European Collaborative Research on Cooling in Acute Ischemic Stroke (EuroCOOLS)

Stroke is the second cause of long-term disability in high-income countries and the second cause of death world-wide. Currently, the very large majority of the stroke patients have no access to any effective therapy, and thus approximately two thirds of patients remain disabled or die following a stroke. As stroke incidence rates rise exponentially with age, the social and economic burden of stroke will increase further with the ageing societies – unless an effective, novel treatment strategy is identified and validated in the near future. Accordingly, there is great need for an efficacious, cost-effective therapy that can be implemented in a broad section of the health care system, across all European Member States as well as world-wide.

The EuroCOOLS research hypothesis is that hypothermia renders significant benefits also in human stroke and not only in experimental models. Accordingly, the key objective of the EuroCOOLS programme is to specify and validate a break-through clinical therapy for patients with acute ischemic stroke. The specific objectives of this highly competitive collaborative research effort are related to:

- the confirmation of the multiple modes of protective action of

hypothermia in stroke; and

- the exploration of the risk-benefit ratio of different modes and depths of hypothermia - including time to intervention, duration, the exact temperature and localisation of cooling - in patient sub-groups defined by age, sex, and stroke type and severity.

In addition - due to the scarce data available related to hypothermia technologies, imaging and vessel patency monitoring solutions in stroke - the research programme aims at generating large data sets about the safety, effectiveness and efficiency of these technologies, including novel solutions.

The call for outline proposals was launched in January 2009 and the start of research and networking activities is expected in 2010.

> More information: www.esf.org/eurocools

Pan-European Clinical Trials (ECT)

Pan-European Clinical Trials is a unique programme that coordinates funding for pan-European non-commercial, investigator-driven clinical trials addressing questions that have a strong impact on 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 populations are funded under this programme.

The EURAMOS clinical trial, which involves collaboration across 11 European countries, as well as the USA and Canada, is recruiting some 1,400 patients over the next few years to improve treatment for osteosarcoma, the most common bone cancer in children. The trial has already recruited 1300 patients which is more than any other osteosarcoma trial ever performed.

The second trial being undertaken, PROFIDYS, is designed to assess the safety, tolerability and efficacy of a class of drug called bisphosphonates in the reduction of bone pain and osteolytic lesions in patients with fibrous dysplasia of the bone, a rare congenital bone disease characterised by replacement of normal bone by fibrous-like, disorganised and fragile tissue. Five countries across Europe are involved. As this disease is so rare, approximately 160 patients are being recruited for this trial. Once certain healthcare guidelines are adhered to, patients located outside the five countries participating in the trial (Belgium, Germany, France, The Netherlands and the United Kingdom) can be included, so they have been encouraged to contact their closest clinical centre.

2009 is the year of the mid-term evaluation of the programme: it coincides with the release of the outcome of the recommendations of the Forward Look “Investigator-Driven Clinical Trials” (*see p.36*).

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 these activities is evidenced by the wide coverage in the media and specialised publications as well as by the high social expectation.

> More information: www.esf.org/ect

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

Joint Activity with LESC
see p. 71

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 important questions through an interdisciplinary approach:

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

EuroSTRESS was launched at the occasion of its first scientific committee meeting on 23 September 2008 in Brussels, where the four collaborative research projects were presented.

On 9-12 September 2009 in Rhodes (Greece) a summer school will be organised on "Neurodevelopmental Programming and Phenotypic Plasticity: implications for healthy aging and longevity".

> More information: www.esf.org/eurostress

Standing Committee for the Humanities (SCH)

Better Analyses Based on Endangered Languages (EuroBABEL)

The main purpose of the EuroBABEL programme is to promote empirical research on under-described endangered languages, both spoken and signed, that aims at changing and refining our ideas about linguistic structure in general and about language in relation to cognition, social and cultural organisation and related issues in a trans-/multidisciplinary perspective.

The diversity of the world's languages is on the verge of becoming dramatically reduced in the decades to come. Partly due to the attention that has been drawn to this problem, the field of linguistics has been moving towards taking the diversity of languages more fully into account. The dramatic change in the amount and the nature of primary data that is being collected and analysed has proven to have, and will continue to have, a profound influence on our insights into the human language faculty. EuroBABEL will solidify this development and strengthen the impact of European research on linguistics as a whole. By conducting the research in close cooperation with researchers in the countries where endangered languages are spoken, the process of linguistic description, documentation and analysis of under-described languages will be accelerated.

The EuroBABEL programme is crucially different from – and complements – existing documentation initiatives in that our emphasis lies on bringing the newly gathered data to bear on the development of linguistic theory and all areas concerned with the study of language.

> More information: www.esf.org/eurobabel

BOREAS: histories from the North - environments, movements, narratives

The circumpolar North is widely seen as an observatory for changing relations between human societies and the environments. 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, 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)

At the beginning of the 21st century, we know more than ever about the function and anatomy of the neural systems underlying human experience. However, nothing close to an explanation has been proposed for the phenomenon of consciousness. In fact, Science magazine (July 2005) ranked the issue of consciousness second on its top 25 of big questions facing science over the next quarter-century.

The source of this impasse may be a too narrow focus on the neural basis of consciousness. Consciousness depends on the brain, without doubt. But perhaps the brain enables consciousness only given a broader embedding. Perhaps consciousness only arises in context?

Considering a broader context – the body, the environment, social structures, etc. - opens perspectives made available by humanities and social sciences. One of the important challenges is then to integrate these philosophical clarifications and conceptualisations with cleverly designed experiments and modern technology.

The EUROCORES programme "Consciousness in a Natural and Cultural Context (CNCC)" aims to contribute to this challenge. The programme - with a budget of over five million Euros supported by nine national funding organisations - offers a valuable framework for researchers from the humanities, social and natural sciences to build joint research projects. In these projects, empirical data can serve to challenge and validate theoretical analyses, while conceptual analyses can provide directions and tools for the empirical scientists.

> More information: www.esf.org/cncc

European Comparisons in Regional Cohesion, Dynamics and Expressions (EuroCORECODE)

In a changing European world, the political, social and cultural expressions of cohesion at a (relatively) small geographical scale are gaining significance. This development attributes a renewed importance to the concept and the reality of regions and regionalism. The nation-states, as a historical phase in the dynamics of Europe, developed out of an almost countless number of regions through a process of clustering, in which dynastic and political motives had the upper hand. During this process, elements of regional identity and cohesion were suppressed, sometimes even destroyed. Yet, many regions preserved a strong – mainly social and cultural – cohesion, often supported by a cherishing of regional history and tradition.

Understanding regional dynamics in Europe calls for a comparative and interdisciplinary approach to historical developments (from their very origins throughout historical times) and to the constituent elements of regional cohesion (dialect and language, religion, historical geography, ethnogenesis, invented tradition, material culture etc.). Starting from a historical basis, this programme offers a challenge to a wide range of disciplines in the humanities to start exploring the functional dynamics of different aspects of regional development and its modern perspectives.

> More information: www.esf.org/eurocorecode

Inventing Europe: technology and the making of Europe, 1850 to the present

This EUROCORES programme aims at establishing strong 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 history of Europe, and seeks to transcend the range of national 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.

Integral part of the programme are the development of a virtual exhibit in collaboration with the major European museums of science and technology and the preparation of an innovatively designed, collaborative book series.

> More information: www.esf.org/inventingeurope

Modelling Intelligent Interaction – logic in the humanities, social and computational sciences (LogICCC)

Joint Activity with SCSS

Recent decades have seen major changes in the field of logic. Moving far beyond the traditional emphasis on philosophical argument, formal grammar or mathematical proof, modern logic has become a much richer inter-discipline which transcends the usual borderlines between academic cultures.

Within the framework of logic, ideas from one discipline can effectively cross into another. e.g. it has been suggested that conversation can be modelled as computation, thus taking a paradigm from the physical sciences into the humanities. But by the same token, modern computation can be understood as conversation between different processors, in which case ideas from the humanities enter the computational sciences. At the same time there is a more societal dimension to all this fundamental theory: enhancing rational communication is of eminent practical value in the world today, both in education and in the development of effective and human-oriented information technology.

A full analysis of these issues requires a common language and a framework which makes major structures visible across the humanities, social, computational and cognitive sciences and integrates them into comprehensive systems. Logic has played this role in the past for the foundations of the sciences, computation, and the semantics of natural languages. The EUROCORES programme LogICCC is based on the firm conviction that present-day logic will continue to play this role in the much broader setting described here.

The programme – with a budget of 6.5 million Euros supported by 13 national funding organisations – has invited researchers from a

wide variety of disciplines to team up. Some of these researchers are logicians, others are not. But what all participants in LogICCC projects have in common is their interest in understanding interaction, pursued with the common language and models provided by logic in its modern, pluriform and outward-looking guise.

> More information: www.esf.org/logic

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

TECT explores new research perspectives on the evolution of cooperation and trading, through empirical, theoretical and modelling methods, on an array of organisms, ranging from micro-organisms to human societies.

The TECT programme is based on the working assumption of an evolutionary continuity of cooperation, both genetic and cultural, an assumption which was thought to be in need of a study in its own right. The TECT research agenda draws on recent advances in life, natural, human and social sciences. Across all these areas, a common theoretical framework for explaining biological and cultural evolution has emerged, which emphasises the properties of interactive, goal-directed agents. 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.

TECT comprises multinational and multidisciplinary research teams covering anthropology, artificial intelligence research, biology, chemistry, cognitive sciences, economics, history, linguistics, mathematics, neurosciences, philosophy of science, political sciences, psychology and sociology.

> 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 topography of Europe is at the interface of processes taking place deep in the Earth, at the surface and in the atmosphere. During the last 20 million years, plate tectonic and other geodynamic processes in the Earth's interior have caused many changes in the surface topography of Europe.

The TOPO-EUROPE programme is concerned with the geoscience of coupled deep Earth and surface processes and their effects on the evolution of the topography of continents and their margins. In addition to addressing world-class issues of Earth-System sciences, TOPO-EUROPE has considerable societal relevance. Indeed, topography affects society not only via landscape changes but also through its impact on geo-hazards and the environment. When sea-, lake- or ground water levels rise, or land subsides, flooding risks increase, directly affecting the sustainability of local ecosystems and human habitats. On the other hand, declining water levels and uplifting land may lead to higher risks of erosion and desertification. TOPO-EUROPE intends to investigate the 4-D topography evolution of the European continent, its margins, and adjacent parts of North Africa, Asia and the Middle East. This requires an interdisciplinary approach that integrates research in the subdisciplines of geomorphology, geochronology, geology, tectonics, geochemistry, petrology, geophysics, hydrology, geodesy, remote sensing and various branches of geotechnology.

This ESF EUROCORES initiative is a unique opportunity to establish a world-class programme based on Europe's strengths in integrated Solid-Earth sciences.

> 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 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 2009, the EuroDIVERSITY programme will further integrate the different European research teams involved with thematic workshops, EuroDIVERSITY sessions in international conferences, as well as joint peer-review publications.

> More information: www.esf.org/eurodiversity

Ecological and Evolutionary Functional Genomics (EuroEEFG)

The aim of the EuroEEFG programme is to bring together European laboratories that are inspired by the same fundamental question: how is evolutionary change interlinked with genome structure and function? By joining forces in technological issues and by focusing on a limited number of model systems, a significant advance can be made in the mechanistic understanding of how organisms respond, adapt and function with respect to the environment.

The programme will employ high-throughput tools for analysing gene expression, gene detection and gene function as related to function and performance of organisms under natural conditions. There will be special attention for polymorphisms in functionally important genes and analyses of the differential fitness of such genetic variants. The programme will aim at resolving variation in a genome-wide sense using e.g. microarrays or high-throughput qPCR.

EuroEEFG is forseen for launch in autumn 2009 and will include international, multidisciplinary collaborative research projects, which contribute to this goal by initiating or strengthening major collaborative research efforts.

> More information: www.esf.org/euroeefg

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 square kilometres of abyssal plains and the 65,000 km long mid-oceanic ridge system. At the same time, it encloses relatively small (hundreds of square kilometres to only a few square metres), 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 Programme was launched in June 2007 and includes four international, multidisciplinary collaborative research projects. It aims at the exploration and identification of the different deepsea

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. In 2009, the programme level activities will include thematic workshops, participation in international conferences, short-term visit grants for young scientists, cross-EUROCORES activities, and further linkage to other major marine and biodiversity programmes at a European and international level.

> More information: www.esf.org/eurodeep

European Collaboration for Implementation of Marine Research on Cores (EuroMARC)

Scientific marine drilling and coring from the sub-seafloor is crucial to progress in the Earth and environmental sciences because 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 far-reaching 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 high-resolution 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 aims at supporting all coring activities in marine areas and at enhancing the benefit from already established funding groups and research communities like, for example, the International Marine Global Change Study (IMAGES) and the European Consortium for Ocean Research Drilling (ECORD), which is a contributing member of the Integrated Ocean Drilling Programme (IODP). EuroMARC is an essential enabling tool to boost European leadership in the planning of international marine coring expeditions and the preparation of European proposals, hence ensuring the effective exploitation of research opportunities. Support of a properly resourced pre- and post-cruise science enabling programme will ensure that the nine participating countries will obtain the maximum benefit from marine coring investment, meet their mission requirements to maintain world-class environmental science communities, conduct excellent, innovative and relevant science and maintain international science leadership.

> More information: www.esf.org/euromarc

European Mineral Sciences Initiative (EuroMinSci)
Joint Activity with PESC

The chemistry of the Earth's crust/mantle/core which depends on elements partitioning between minerals, and phenomena, such as super-plasticity or super-elasticity in minerals, could have a direct impact on large-scale geophysical and geochemical processes. Major advances in the use of physics-based experimental techniques and atomistic computer simulations now make it possible to better understand the relations between the structure of minerals and their physical properties. At the same time, *in situ* measurements of many minerals properties 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 collaborative 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 geosciences.

> *More information: www.esf.org/eurominsci*

Membrane Architecture and Dynamics (EuroMEMBRANE)

It never ceases to amaze how a layer of oil 5 nanometres thin makes the difference between life and death. The physical laws that govern the behaviour of cellular membranes and their component lipids and proteins are often counterintuitive, especially when coupled with the often bewildering variety of lipids and proteins found in any particular membrane. Recent technical developments in lipidomics, proteomics and membrane protein structure determination have, however, sparked a new wave of interest in this field.

The aim of the EUROCORES programme EuroMEMBRANE is to answer long-standing questions in membrane biology using cutting-edge technologies. These will address functional problems in a quantitative manner bringing together experimental tools with theoretical approaches. There will be a special emphasis on lipid-lipid and (glyco)lipid-protein interactions in the plane of the membrane in health and disease. Using various model organisms would allow cross-species comparison and bring an evolutionary perspective to biomembrane studies. This type of research requires a strong interdisciplinary collaboration that covers biological, chemical, physical and computational aspects of membranology over a broad dynamic range of time and length.

> *More information: www.esf.org/euromembrane*

Quality Control of Gene Expression – RNA surveillance (RNAQuality)

RNA quality control has only recently emerged as a new field of RNA research and is now one of the most exciting areas of molecular biology. ESF promotes research on this cutting-edge topic through the EUROCORES programme RNAQuality.

16 research groups from nine European countries participate in RNAQuality. Their projects aim at uncovering processes that act as quality control checkpoints in gene expression and understand how these function at a molecular level. Multidisciplinary approaches, ranging from molecular and cellular biology to structural analysis and high-throughput and computational approaches will be employed in diverse model systems.

In addition to its research component, the programme offers a wide range of networking possibilities, providing training opportunities and establishing a platform for European researchers. To this end, RNAQuality has joined forces with the EUROCORES EuroDYNA for a mini-symposium organised in 2007 and a RNAQuality PhD workshop in 2008.

> *More information:* www.esf.org/rnaquality

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

Joint Activity with EMRC

Proteins are amongst the main components of living organisms. For functional and structural analysis of proteins, one needs to produce sufficient amounts.

The EuroSCOPE programme addresses the major stumbling blocks in the production of proteins. It aims at elucidating the mechanisms underlying protein production, targeting within cell, folding and stability. Once these mechanisms are better understood, existing expression systems may eventually be improved and new systems may be designed.

> *More information: www.esf.org/euroscope*

Synthetic Biology: engineering complex biological systems (EuroSYNBIO)

Joint Activity with PESC

The EuroSYNBIO programme aims to address core strategic challenges of synthetic biology, thereby providing a solid scientific and technological basis for the development of this strongly transformative field. These challenges include:

- the rational assembly of systems in a context of Darwinian evolution,
- the development of computational design tools for biosystems design,
- the biosystems design laboratory, and
- the potential societal and ethical impact of successfully overcoming these challenges.

EuroSYNBIO is foreseen for launch in autumn 2009 and will include international, multidisciplinary collaborative research projects, which will contribute to this goal by initiating or strengthening major collaborative research efforts.

> *More information: www.esf.org/eurosynbio*

The Evolution of Cooperation and Trading (TECT)

Joint Activity with SCH and SCSS

see p. 66

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 encompasses atomic and optical physics, chemical physics and physical chemistry, plasma physics, statistical physics, solid-state physics and quantum chemistry.

Although the progress is driven by fast advances in experimental capabilities, theoretical work is essential to guide experiments and explain their results. The EuroQUAM programme provides vital opportunities for scientists from different disciplines and countries to collaborate, and in particular stimulates collaborations between experiment and theory. Such collaboration is essential for Europe to further strengthen its present status as a major contributor to the field. Major advances are expected as a result of the research being conducted within EuroQUAM. The focus of the programme spans four themes of research: atomic quantum gases with controllable interactions; formation of molecules in ultracold atomic gases; cooling molecules; and ultracold plasmas and Rydberg gases. The programme was launched in July 2007. The six funded collaborative research projects are currently in the research and networking phase.

> More information: www.esf.org/euroquam

European Mineral Sciences Initiative (EuroMinSci)

Joint Activity with LESC
see p. 70

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 nano-mechanics brought up the need for a more basic understanding of the origins and behaviour of friction. Standard lubrication techniques used for large objects are expected to be less effective or even not applicable in the nano-world. Novel methods for control of friction and manipulation of nanoscale objects are therefore needed. A better understanding of triboprocesses has also a major impact for the protection of the environment (reduction of lubricant and energy consumption).
The aim of the EUROCORES programme 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 FANAS programme consists of seven collaborative research projects (CRPs) and was launched in June 2008. During 2008 a scientific committee meeting and an invited session at the Nanosikkim conference took place. In 2009 two events have been planned: a mini-symposium and a FANAS conference. The programme will run until June 2011.

> More information: www.esf.org/fanas

Fundamentals of Nanoelectronics (FoNE)

The scientific goal of the "Fundamentals of NanoElectronics" (FoNE) programme is the development of new concepts necessary to master the operation of nano-scale devices. To realise the potential of nano-scale electronics, it is necessary to understand quantum phenomena in semiconductor wires and dots, and control size, interface and proximity effects in a wide variety of hybrid nanostructures. FoNE is a four year programme which recognises that understanding the above phenomena is crucial to the development of nanoscale electronics and, thus, advances European research by concentrating and networking the activities of world-leading research groups.

The research in FoNE addresses many areas of nanoelectronics and will create the necessary knowledge for a society in which microelectronics is gradually replaced by nanoelectronics.

FoNE focuses on: nano-spintronics and hybrid devices with integrated superconduction, semiconducting and magnetic functionalities; electron-dependent transport in single-molecules and carbon nanotubes (CNTs); quantum transport, noise and related phenomena in quantum dots, wires and other novel structures.

The FoNE programme consists of five collaborative research projects (CRPs). The first FoNE conference was held in July 2008 in Taormina, Italy. The second SpiCo-SPINTRA-SPINCURRENT workshop took place in December 2008. In 2009 a school on spintronics will be held in Krakow, Poland. The final FoNE conference will take place in Madrid (Spain) in September 2009. The FoNE programme will be concluded in November 2009.

> More information: www.esf.org/fone

Maximising the Impact of Graphene Research in Science and Innovation (EuroGRAPHENE)

The term graphene stands for a single atomic layer (monolayer graphene) or bilayer of graphite. In graphene, the trend to reduce the dimensions of the conducting elements of electronics has, unexpectedly, led one into a new world of peculiar physical properties, not encountered in standard electronic materials. Despite being only one-atom thick, graphene is chemically and thermally stable, so that graphene-based devices, such as field-effect transistors, have already been manufactured and withstand ambient conditions. It has been understood theoretically, and confirmed experimentally, that both monolayer

and bilayer graphene are gapless semiconductors, with peculiar properties of charge carriers. Whereas the interest in graphene as a qualitatively new two-dimensional electronic system boosts the rapid development of the physics of graphene and graphene-based nanostructures, so far chemical, mechanical, magnetic and other properties of this new material remain an unexplored territory.

EuroGRAPHENE is a four year programme, which recognises that there is a clear need for European-wide cooperation to tackle the challenges of deepening understanding of the physical properties of graphene; expanding research into new areas of chemical modifications of the material and searching for methods to design its electronic properties; investigating its mechanical and electro-mechanical properties, broadly studying kinetic processes in graphene aiming to understand optoelectronic effects; and modelling graphene-based devices for any functional applications.

EuroGRAPHENE will provide the framework to bring together the complementary expertise of technologists, experimentalists and theorists within small and medium-size consortia of world-leading European research groups, in order to accelerate the pace of European research in graphene and its applications by concentrating and networking the activities.

The call for outline proposals was launched in December 2008 and supported by 20 funding agencies from 19 countries. The expected start of research and networking activities is in 2010.

> More information: www.esf.org/eurographene

Origin of the Elements and Nuclear History of the Universe (EuroGENESIS)

A comprehensive approach is needed to understand how matter became complex in the history of the Universe. To cover the concepts from Big Bang nucleosynthesis, element genesis in stars and by cosmic rays, their dispersion and ingestion into new stars and planets, the chemistry of the interstellar medium, the melting and differentiation of planetary materials, a coordinated, multidisciplinary approach is certainly needed.

EuroGENESIS will provide the required interdisciplinarity and trans-national opportunities for developing collaborative efforts at a suitable level of integration. EuroGENESIS will be launched as a four year programme aimed at unifying hitherto isolated efforts into a new coordinated action, combining the work of theoreticians, with that of observers who determine chemical and isotopic abundances using space-borne and ground-based facilities, and laboratory measurements of meteoritic grains, of chemists who study how matter is associated in space to form solids and possibly planets suitable for life, as well as of nuclear physicists, who provide information on nuclear transmutations based on theoretical and experimental grounds. Such a coordinated action should lead to a rather coherent description of the nuclear history of the Universe and possibly shed some light on our own nuclear roots.

The call for outline proposals was launched in January 2009 and the start of research and networking activities is expected in 2010.

> More information: www.esf.org/eurogenesis

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-to-day 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 aims to build on European expertise to develop a new generation of quantum standards with unprecedented performance. The programme forms a cohesive platform for utilising the latest developments such as quantum metrology and novel techniques of quantum engineering. It will help pave 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.

After the international review process, three of the five full proposals received were awarded funding. The programme held its first scientific steering committee meeting in July 2008, officially launching the beginning of its research and networking activities.

> More information: www.esf.org/euroquasar

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

Self-organisation, or self-assembly, is a process in which a supramolecular organisation is established in a complex system of interlocking components. The mechanism that produces the organisation 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-organising compounds allow a defined and well-controlled construction of ordered architectures on a nanometer-scale.

The SONS programme concerns the utilisation 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), sensor transistors, data storage, light-emitting diodes, communication technologies, magnetic information storage, photovoltaic cells, and molecular motors and machines.

The programme consists of seven collaborative research projects (CRPs). During 2008 several networking activities took place: a symposium at the EMRS spring meeting, two workshops and an invited session at the MRS fall meeting. In 2009 a SONS 2 final conference has been planned in Prague (Czech Republic). The SONS programme will end in December 2009.

> *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, an 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 were launched within the S3T programme with the programme's first scientific committee meeting held in September 2006; these collaborative projects bring together 45 teams from nine 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. Several networking, dissemination and training activities have been organised by the S3T community including joint events and initiatives with the NSF.

> *More information: www.esf.org/s3t*

Synthetic Biology: engineering complex biological systems (EuroSYNBIO)

Joint Activity with LESC

see p. 71

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 cross-national survey data in an innovative and comparative way and on a European scale. Its underlying principle is to realise the concept of Europe as a natural laboratory for the social sciences, in which the diversity of institutions, practices, histories and resources enables researchers to analyse how human values, attitudes and behaviour are affected by the characteristics of the multi-level systems or contexts in which they occur.

The HumVIB programme is designed to combine the unprecedented individual-level data resources now available in Europe and typified by the European Social Survey (ESS) with comprehensive system-level and contextual data and appropriate new methods of multi-level analysis. HumVIB will allow for the testing of carefully elaborated theories of the effects of contextual factors on individual attitudes and behaviour. The project selection phase of the HumVIB programme concluded in late 2007 and collaborative research projects began their activities in late 2008.

> More information: www.esf.org/humvib

European Collaborative Research Projects

The European Collaborative Research Projects (ECRP) scheme is designed to support responsive-mode, international collaborative research across all fields of social science in Europe, offering opportunities to test innovative ideas, pool expertise and strengthen European research capacity.

The ECRP scheme attracts a diverse range of interdisciplinary proposals in the social sciences each year. The 2007 call for proposals resulted in the launch of two collaborative research projects in the fields of socio-political sciences and international studies, namely “The Politics of Attention” and “Citizenship after the Nation-State”. A number of projects from the 2006 competition are also concerned with aspects of citizenship and political communication and participation, while a cluster of migration-related projects from ECRP I (2005) have engaged in cross-CRP networking activities in 2007 and 2008 and will continue in 2009. Details of all funded ECRP projects are available on the scheme web page.

The 2008 call for proposals (ECRP IV) was supported by 18 countries. The results of the selection process are published on the ECRP website each spring. The 2009 call for proposals was launched in mid-January 2009 with an application deadline of mid-March.

> More information: www.esf.org/ecrp

Higher Education and Social Change (EuroHESC)

The aim of the EUROCORES programme on “Higher Education and Social Change” is to develop and implement a programme

of interdisciplinary comparative research into the relationships between higher education and society. This will involve the development of theories and hypotheses about this relationship and the factors which influence it, and will also address methodological issues of comparative research in the field (e.g. data comparability, combination of quantitative and qualitative research, and different levels of analysis).

Furthermore, EuroHESC will explore ways of utilising other social science datasets (e.g. the European Social Survey and Eurostudent) in order to situate the study of higher education more firmly within its social and cultural setting. EuroHESC is expected to make a significant contribution to research capacity in the field of higher education and to facilitate better integration with related scientific fields.

The call for outline proposals for EuroHESC was launched on 13 March 2008 with the support of 18 countries and the results of the selection process will be published by spring 2009. The research and networking phase will begin in mid-2009.

> *More information: www.esf.org/eurohesc*

Research Networking Programmes

These long-term Research Networking 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.

> More information: www.esf.org/programmes

The following new programmes were approved in the beginning of 2009 and will be launched before summer:

- **Standing Committee for the European Medical Research Councils (EMRC)**

  European Network for the Study of Adrenal Tumors • (ENSAT) (2009-2013)
  10 contributing organisations
  pending final approval for launch

  The EuroGlycosciences Forum (Euroglycoscience) • (2009-2013)
  Joint activity with LESC

  The Identification of Novel Genes and Biomarkers for Systemic Lupus Erythematosus (BIOLUPUS) • (2009-2013)
  11 contributing organisations

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

  Tall Tower and Surface Research Network for Verification of Climate Relevant Emissions of Human Origin in Europe (TTORCH) • (2009-2013)
  9 contributing organisations

  The EuroGlycosciences Forum (Euroglycoscience) • (2009-2013)
  Joint activity with EMRC
  20 contributing organisations

  The Functionality of Iron Minerals in Environmental Processes (FIMIN) • (2009-2012)
  11 contributing organisations

- **Standing Committee for the Humanities (SCH)**

  Comparative Oriental Manuscript Studies (COMSt) • (2009-2013)
  9 contributing organisations

Experimental Pragmatics in Europe (EURO-XPRAG) • (2009-2012)
12 contributing organisations

New Frontiers of Infinity: mathematical, philosophical and computational prospects (INFTY) • (2009-2013)
Joint activity with PESC
11 contributing organisations

■ **Standing Committee for the Physical and Engineering Sciences (PESC)**

Exploring the Physics of Small Devices (EPSD) • (2009-2013)
12 contributing organisations

Interactions of Low-Dimensional Topology and Geometry with Mathematical Physics (ITGP) • (2009-2013)
14 contributing organisations

New Frontiers of Infinity: mathematical, philosophical and computational prospects (INFTY) • (2009-2013)
Joint activity with SCH

Quantum Spin Coherence and Electronics (QSpiCE) • (2009-2013)
10 contributing organisations

Super-Intense Laser-Matter Interactions (SILMI) • (2009-2013)
14 contributing organisations

■ **Standing Committee for the Social Sciences (SCSS)**

Academic Patenting in Europe: database sharing, applications and extensions (APE) • (2009-2012)
11 contributing organisations

African Borderlands Research Network (ABORNE) • (2009-2013)
9 contributing organisations

European Social Cognition Network 2 (ESCON 2) • (2009-2013)
17 contributing organisations

In 2009, ESF also continues to support the following 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)
11 contributing organisations

The primary aim of this Research Networking Programme (RNP) is to establish an interdisciplinary research forum that will drive forward our understanding of human sensorimotor function in health and disease (stroke). Stroke is by far the most common cause of human disability in the EU, and damage to cortical brain regions is a very common outcome of stroke.

The launch of the "European Research Network for Investigating Human Sensorimotor Function in Health and Disease" took place at its first steering committee meeting in Strasbourg on 28 May 2007. Two technical workshops took place in 2008. In 2009 a workshop on "Computational Approaches to Understanding Sensimotor Function" is taking place on 13-15 September in Irsee, Germany. The budget for 5 years is 457 000 Euros.

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

Frontiers of Functional Genomics (FFG) • (2006-2011)
Joint Activity with LESC
see p. 86

Functional Genomics in Aspergillus Fumigatus and New Strategies to Fight against the First Fungal Pathogen in Europe (FUMINOMICS) • (2008-2011)
Joint Activity with LESC
7 contributing organisations

Aspergillus fumigatus represents the most common invasive mould infection in Europe causing lifethreatening pulmonary disease in immune-compromised individuals. FUMINOMICS is aimed at a multidisciplinary and fully integrated functional genomics analysis of basic mechanisms of the opportunistic traits that this pathogen develops when infecting host cells. A first workshop entitled "Transcriptomics and Molecular Tools" took place in Giens, France on 18-21 September 2008. The next scientific event (*title tbc*) is scheduled for October 2009 in Romania.

> *More information: www.esf.org/fuminomics*

Regenerative Medicine (REMEDIC) • (2008-2013)
16 contributing organisations

As our knowledge advances, the frontiers of regenerative medicine are rapidly expanding. Regenerative medicine provides new insights in areas including cellular proliferation, effects of humoral and matrix signalling on cells, angiogenesis, tissue remodelling, naïve and adaptive immunity and other basic processes in cell biology. Still, regenerative medicine is in its infancy and to advance progress in this important field, national funding agencies from 16 European countries have joined forces to launch a cross-disciplinary Research Networking Programme, REMEDIC, to identify where the frontiers and future needs are in this complex multidisciplinary high-technology field, by networking researchers and clinicians across Europe. A workshop on "Stem Cells for Bone Regeneration" will take place on 8-10 October 2009 in Bertinoro, Italy.

> *More information: www.esf.org/remedic*

Standard Drugs and Drug Standards. A comparative historical study of pharmaceuticals in the 20th century (DRUGS) • (2008-2012)
Joint Activity with SCH
see next page

The European Children Cohorts Network (EUCCONET) • (2008-2012)
Joint Activity with SCSS
13 contributing organisations

The aim of EUCCONET is to identify cohort expertise in Europe by bringing together leaders of national and regional major children's cohorts to compare practices, share questionnaires and other tools, exchange experiences, and to encourage comparative analyses. The first workshop took place on 17-18 February 2009 in Paris, France and focused on "Consent for Children Cohorts".

> More information: www.esf.org/eucconet

Standing Committee for the Humanities (SCH)

Associated Regional Chronologies for the Ancient Near East and Eastern Mediterranean (ARCANE) • (2006-2010)
11 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

Standard Drugs and Drug Standards. A comparative historical study of pharmaceuticals in the 20th century (DRUGS) • (2008-2012)
Joint Activity with EMRC
9 contributing organisations

Using the theme of standardisation, applied to both objects and practices, this programme proposes to explore the development of 20th century medicine by looking at the production, distribution, prescription and consumption of major classes of therapeutic agents, such as sulfa-drugs, hormones and psycho-active drugs. The aim is to assess the contribution of industrial, administrative and clinical standardisation to the "therapeutic revolution" (1920-1990) which changed the face of Western medicine.

This programme examines the evolution of industrial standards and drug trials, along with prescription and clinical practices from a historical perspective. As standardisation is a theme common to a number of disciplines, the proposed approach will open up interdisciplinary discussion allowing fruitful exchange among researchers.

> More information: www.esf.org/drugs

The Philosophy of Science in a European Perspective (PSE) • (2008-2012)
21 contributing organisations

A long-lasting tradition of investigations on the nature of scientific knowledge took shape in Europe at the beginning of the last century. Such a tradition started within a wide range of different disciplines, and in a number of different European countries.

This scientific movement, involving central logical empiricism in Vienna, Berlin and Prague, was strongly interdisciplinary and cross-disciplinary. It produced an extended and stimulating literature and prepared the ground for a wide array of reflections on the structure of science, its aim and limits. Investigating the methods and the foundations of science from a European perspective is scientifically justified as European culture entered into the discourse on science from its very beginning.

Even though Europe is no longer alone in setting the parameters for discourse in and about science, during the last few decades a renewed and increasing interest in foundational and methodological issues has again been shown by scholars all over Europe.

This research networking programme focuses on the philosophy and foundations of the natural and social sciences and aims at enhancing European tradition in the philosophy of science. Its ultimate goal is to promote exchanges between scholars from all over Europe, in order to build up a network of strong and durable relations to broaden and deepen the current debate on the topic.

> More information: www.esf.org/pse

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

Archean Environmental Studies: the habitat of early life (ArchEnviron) • (2005-2010)
10 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 is on the conditions at or near the surface of the Archean Earth. The approach is firmly based on the Earth sciences and thus to 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 programme will also be distinguished from current exobiology 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)
10 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, is 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 provides a focus for collaboration between theoretical and applied ecologists working on terrestrial

and aquatic ecosystems and also provides opportunities for young European scientists to work across existing research boundaries.

> More information: www.esf.org/sizemic

Climatic Change - manipulation experiments in terrestrial ecosystems (CLIMMANI) • (2008-2012)
19 contributing organisations

CLIMMANI was launched for four years in June 2008. The overall aim of CLIMMANI is to provide an umbrella for coordinated activities to bring together researchers, data and knowledge from past and ongoing European research projects in order to synthesise the knowledge and improve ecosystem models.

The specific objectives of the programme are to:

- establish a comprehensive network of global change scientists in order to promote better communication and integration between researchers, to assure and improve the benefit of the research activities for the society within global environmental problems,
- organise a series of workshops and working groups to present and discuss key ecosystem processes and the impacts and interactions of climate change factors and other important drivers, and to supply better grounds for integrated work between experimentalists and modellers,
- generate a database of data from ecosystem manipulation studies for better comparisons, syntheses and modelling efforts,
- synthesise and assess the impact of climate change factors on key ecosystem processes and the interactions between the different climate change factors with other drivers,
- provide a possibility for ecosystem researchers and modellers to work together in order to improve our mutual understanding of ecosystem processes and impacts of climate change drivers, to improve ecosystem models and to publish synthesis and review papers,
- facilitate European networking and coordination of research activities among Europe and US,
- identify important gaps in knowledge, research priorities and future research needs related to whole-ecosystem responses to key global change factors.

The programme CLIMMANI provides a framework for networking past and current terrestrial ecosystem research by bringing together key researchers within the field, building coherent interdisciplinary databases, and by coordinating research activities globally. This is necessary in order to formulate future research needs and to guide political and managerial activities to combat or minimise negative effects on natural ecosystems and promote sustainable development.

> More information: www.esf.org/climmani

European Networking Summer School (Plant Genomics and Bioinformatics) (ENSS) • (2007-2012)
10 contributing organisations

Plant genome research has developed into one of the most dynamic disciplines of molecular life sciences. Plants are recognised as the basis of a bio-based economy and play a fundamental role to sustain our environment. European countries concentrate their efforts in the field through national and regional research programmes. While some of those have already developed sustainable co-operations with joint research projects, many of these activities are currently limited to Western Europe. The fundamental idea of this programme is to support research networks all over Europe, by training young investigators and by the exchange of knowledge and technological insides. The aim is to overcome existing deficits in the access to technologies, resources but also to skills and know-how. ENSS will organise a yearly summer course pursuing the training aspect, the exchange of ideas and the creation of an active and living network between European scientists, research organisations and research programmes.

> More information: www.esf.org/enss

Evolution of Social Cognition: comparisons and integration across a wide range of human and non-human animal species (CompCog) • (2008-2012)
Joint Activity with SCSS
see p. 100

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 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

Frontiers of Speciation Research (FroSpects) • (2008-2012)
18 contributing organisations

Following Darwin’s seminal work “On the Origin of Species” (1859), biologists have long agreed that Darwinian selection is the principal explanation of long-term evolutionary change. Yet, to date, no similar agreement has emerged on how genetic, geographical, ecological, evolutionary and environmental factors interact to create, e.g. two species out of one. Classical theories of speciation emphasise geographical isolation and often relegate ecological factors to the background, whereas

modern theories tend to emphasise ecological interactions and sexual conflict. Many other issues, concerning the roles of spatial structure, natural and sexual selection, hybridisation, genetic drift, pleiotropy-based constraints, mate choice, and environmental change are also still unresolved. FroSpects aims at integrating empirical and theoretical approaches and promoting cross-fertilisation between evolutionary and theoretical ecology, molecular biology, population genetics, systematics and biogeography. FroSpects will aid the conservation of biodiversity and contribute to the management of pathogens, parasites and pests in agriculture and medicine.

> More information: www.esf.org/frospects

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 oscillator 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

Functional Genomics in Aspergillus Fumigatus and New Strategies to Fight Against the First Fungal Pathogen in Europe (Fuminomics) • (2008-2011)
Joint Activity with EMRC
see p. 81

Integrating Population Genetics and Conservation Biology: and 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 socioeconomic 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, (ii) theoretical and computational 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) • (2004-2009)
20 contributing organisations

Climate change and air quality represent key societal challenges. It has become clear over the last decade that the development of our societies can no longer afford to be just wealth-orientated 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. Understanding the multiphase chemical transformations of trade species in the troposphere requires a multidisciplinary approach which must involve groups of researchers with highly complementary skills.The aim of this programme is to respond to issues of strategic importance in European science policy and to strengthen interdisciplinary tropospheric research in Europe.

> *More information: www.esf.org/introp*

Mediterranean Climate Variability and Predictability (MedCLIVAR) • (2006-2011)
13 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 is placed 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*

Natural Molecular Structures as Drivers and Tracers of Terrestrial C Fluxes (MOLTER) • (2008-2012)
13 contributing organisations

A new paradigm for the origin and fate of complex organic compounds in the environments (e.g. organic matter in plants, litter, soils and water) is currently emerging from advanced techniques in identification, quantification, and origin tracing of specific organic compounds and individual molecules. Worldwide, applications of these techniques to terrestrial environments are prominently pioneered by European laboratories. MOLTER aims at better understanding how the chemical structural characterisation of organic matter could help to understand the ecological functioning and biogeochemical processes in soils. By cross-linking different disciplines (e.g. chemistry, molecular biology,

microbial ecology) in a comprehensive approach, MOLTER benefits from the recent technological advances and focuses on the formation, stabilisation and decomposition of complex organic compounds in terrestrial environments. 13 contributing organisations in 11 countries have agreed to support the programme.

> More information: www.esf.org/molter

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

Nitrogen is an important cross-cutting theme in 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. This generates 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

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

This programme studies 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, whose physiological and genetic basis 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 temperature-size 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 decade 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 was initiated through the European Consortium for Ocean Research Drilling (ECORD), the European partner of the International Ocean Drilling Program (IODP), and is part of the European contribution to the International Marine Global Change Studies (IMAGES) programme.

> 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-theory 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 formally-based 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)
15 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 multi-disciplinary 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 programme 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 physico-chemical 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 stimuli-responsive 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 p. 87

Games for Design and Verification (GAMES) • (2008-2013)
12 contributing organisations

As computing systems become larger, more complex, and increasingly distributed and interactive, there is a pressing need for formal methods that guarantee their reliability, correctness, and efficiency. This network proposes a research and training programme for the design and verification of computing systems, using a methodological framework that is based on the interplay of finite and infinite games, mathematical logic and automata theory.

> More information: www.esf.org/games

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)
12 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.

HCAA 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)
13 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 Approaches to Functional Electronic and Biological Materials (INTELBIOMAT) • (2008-2013)
13 contributing organisations

This programme of workshops, schools, and exchange visits is targeted at the understanding, modelling and design of functional materials. Materials functionality is often based on phenomena that are poorly understood at a predictive level either because of inherently strong interactions (e.g. magnetism, ferroelectricity, superconductivity) or complex structure (e.g. composites, oxides, biomaterials), and increasingly both. The programme brings together different communities: materials scientists, experimentalists, and theorists. Together with an established (and US National Science Foundation-funded) programme, the network will acquire an international dimension across North America and Asia.

> More information: www.esf.org/ intelbiomat

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 programme 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 characterisation 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 programme 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 relationships discovered recently by mathematicians and physicists between integrable differential equations, the topology of Deligne-Mumford moduli spaces and singularity theory are being investigated.

> *More information: www.esf.org/misgam*

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 nano-structured 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)
18 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 organisations 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 develops and uses these techniques. The programme contains instruments to enhance interdisciplinarity and the discovery of new fields at the frontiers between different disciplines as well as training activities aimed 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)
17 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 quantisation 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 generalisation 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 quantised 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

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-sensitised 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. The programme includes activities such as scientific events and fellowships.

> More information: www.esf.org/organisolar

New Trends and Applications of the Casimir Effect (CASIMIR) • (2008 – 2013)
12 contributing organisations

The availability of experimental set-ups that allow accurate measurements of surface forces between macroscopic objects at submicron separations has recently stimulated a renewed interest in the Casimir effect and in its possible applications to micro- and nanotechnology. In the last few years, a large number of European groups belonging to very different areas of expertise has provided relevant theoretical and experimental contributions to this highly interdisciplinary topic. Collaborations between European theorists and experimentalists, often belonging to different countries, have also given rise to the design of new experiments that, relying on forefront technology, will soon address several open issues of the theory. Some of these experiments have already received economical support and are now under development. This scenario represents a unique scientific opportunity that calls for the development of a European network dedicated to the Casimir effect which is the subject of this programme. The CASIMIR network represents an invaluable tool that will allow scientists to discuss long-standing problems and analyse new trends in Casimir force experiments, applications and theory.

> More information: www.esf.org/casimir

Optimisation with PDE Constraints (OPTPDE) • (2008-2013)
17 contributing organisations

This project is concerned with the development, analysis and application of new, innovative mathematical techniques for the solution of constrained optimisation problems where a partial differential equation (PDE) or a system of PDEs appears as an essential part of the constraints. Such optimisation problems arise in a wide variety of important applications in the form of, e.g., parameter identification problems, optimal design problems, or optimal control problems. The efficient and robust solution of PDE constrained optimisation problems has a strong impact on more traditional applications in, e.g., automotive and aerospace industries and chemical processing, as well as on applications in recently emerging technologies in materials and life sciences including environmental protection, bio- and nanotechnology, pharmacology and medicine. The appropriate mathematical treatment of PDE constrained optimisation problems requires the integrated use of advanced methodologies from the theory of optimisation and optimal control in a functional analytic setting, the theory of PDEs as well as the development and implementation of powerful algorithmic tools from numerical mathematics and scientific computing. Experience has clearly shown that the design of efficient and reliable numerical solution methods requires a fundamental understanding of the subtle interplay between optimisation in function spaces and numerical discretisation techniques which can only be achieved by a close cooperation between researchers from the above mentioned fields.

> *More information: www.esf.org/optpde*

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 programme 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*

The New Physics of Compact Stars (CompStar) • (2008-2013)
11 contributing organisations

Over the last decade, compact stars have been shown to be excellent tools to test fundamental properties of gravity and matter under extreme conditions. At present, we are therefore experiencing the blooming of astronuclear physics, an exciting research area in which the physics of compact stars plays a fundamental role. While a part of this physics relies on theories that are well tested in terrestrial laboratories, a good part of it is basically unknown in the regimes found in compact stars. Unveiling this picture is a task made challenging by the multidisciplinary character of the problem, which requires expertise from historically independent disciplines, such as nuclear and particle physics, astrophysics, gravitational and computational physics. The present programme will aim to link the best European scientists in these fields, so as to reach a better understanding of the physics of compact stars.

> More information: www.esf.org /compstar

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 Neuroscience and Society Network (ENSN) • (2007-2012)
10 contributing organisations

Despite evidence that advances in the neurosciences are having a significant impact on the lives of individuals across Europe, there has been little formal engagement within the European social sciences with the ethical, social and legal implications of recent developments in the new brain sciences. The European Neuroscience and Society Network (ENSN) aims to establish a multidisciplinary forum for timely and necessary engagement with these issues, through the development of research strategies, conferences and workshops that will bring together leading European neuroscientists and social scientists for sustained discussions and cross-disciplinary exchanges about the present and future impact of advances in the neurosciences on our lives.

> More information: www.esf.org/ensn

Evolution of Social Cognition: comparisons and integration across a wide range of human and non-human animal species (CompCog) • (2008-2012)
Joint Activity with LESC
14 contributing organisations

CompCog aims to provide an evolution-based approach by presenting a broader view of cognition in diverse animal species. It brings together researchers (and laboratories) which have a different scientific background and work on different species. The proposed programme activities are planned for five years according to the following triple aims, adjusted to the requirements of the comparative cognition field both in the short and in the long term:

1) Complementary research activity throughout Europe: CompCog would provide regular fora for experts in the field to exchange views and discuss both long-debated and newly-emerging problems of comparative cognition. This is envisioned to be the most effective way to facilitate research on theoretically highly relevant topics in various species in a truly comparative way.
2) Systematic collection of research results: CompCog would provide a unified system to collate research methods and results across various species. The systematic collection of data produced by different research groups would enhance the study of social cognition in an operationally comparative way.
3) Training of future researchers: CompCog would provide a framework for training PhD students and young researchers early in their career in order to raise a new generation of researchers with a broader insight and a knowledge about a wide range of human and non-human animal species, together with various research methods and theoretical and applied approaches. The only efficient way to achieve this goal is to give students the opportunity to form their own experiences with different species and to gain first hand information from experts and peers from the different subfields.

> *More information: www.esf.org/compcog*

Globalising Europe Economic History Network (GLOBALEURONET) • (2006-2010)
15 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 longstanding 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)

15 contributing organisations

The use of qualitative research methods has become increasingly widespread throughout the social sciences. It has, however, become evident that while qualitative research is a popular and visible way of collecting and analysing data, there is a proliferation of sub-specialisms which reflect both national and disciplinary boundaries.

There is evidence to suggest that some qualitative research is methodologically limited. Difficulties have been reported in the recruitment of researchers with sufficiently well-developed skills to carry out funded research. In addition, the methodological literature has been dominated by publications from the UK and America, thereby (to an extent) overlooking the traditions of other national and intellectual disciplines in Europe. There is thus a need to bring together important, but mutually isolated, traditions to inform the existing literature and the collective skills of European social scientists to enhance research capacity.

This programme, linking social scientists across Europe, will ensure that expertise is shared across the major national and regional research communities and allow the development of further innovation.

> More information: www.esf.org/euroqual

Quantitative Methods in the Social Sciences (2) (QMSS2) • (2008-2011)
18 contributing organisations

The need to ensure that European social scientists are working at the cutting-edge of quantitative methods is becoming increasingly important. In many countries there is concern over a shortage of younger social scientists with the necessary training and skills in quantitative methods.

The QMSS 2 network will provide a focal point for methodological innovation and advancement and ensure that we develop a new generation of European researchers able to use advanced quantitative methods across the social sciences. The programme represents a continuation of the very successful work carried out under Quantitative Methods in the Social Sciences, led by Chris Skinner at the University of Southampton.

QMSS 2 will focus on five areas of critical importance in quantitative methods. It will bring together, through annual seminars, leading European experts with unprecedented expertise across a wide range of methods and discipline areas. Cutting-edge methods will be disseminated to the new generation of European researchers through theme-based summer schools. The seminars will provide a focal point where specialists from different disciplines and different countries will share their experience – not just amongst themselves but also with younger researchers. These seminars will provide both the vision and the framework for planning the summer schools designed to train young European researchers in specific methods. These activities will be supplemented by short visits between junior researchers to promote collaboration in developing joint research projects.

> More information: www.esf.org/qmss2

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 seven countries to compare the impact of transnational shifts on life course inequality across Europe.

> More information: www.esf.org/transeurope

The European Children Cohorts Network (EUCCONET) • (2008-2012)
Joint Activity with EMRC
see p. 82

Science Management

With the new agenda and the set-up of cross-disciplinary actions, the logical extension of the ESF Strategic Plan is the provision of services to ESF Member Organisations in the form of programme management which defines the third pillar of ESF operations – 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 creating synergies between funding sources and by assisting the breaking down of barriers to cross-boundary co-operation.

ERA-NET and other European Commission coordination

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 coordinating 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, it has been proposed to expand the ERA-NET instrument to include funding contributions to cooperative research.

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

AMPERA, an FP6 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 eight European countries, the 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*

BiodivERsA

BiodivERsA is an ERA-NET involving 19 major research funding agencies from 14 countries in Europe with research funding in the field of terrestrial, freshwater and marine biodiversity.

The aim of BiodivERsA 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 further 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. A first pan-European joint call for research projects has been launched in 2008 and the selected projects - after the external peer-review process - will start running from 2009.

> *More information: www.eurobiodiversa.org*

Coordination Action for Research Activities on Life in Extreme Environments (CAREX)

The CAREX project is a Coordination Action funded by the European Commission under the Seventh Framework Programme. CAREX builds on the ESF "Investigating Life in Extreme Environments" initiative (2004-2006) and adopts an interdisciplinary approach to the subject, covering microbial life, life strategies of plants and life strategies of animals on various extreme environments ranging from deep sea to polar regions and even outer space bodies.

The two main objectives of the proposed CAREX project are i) to strengthen the structure of the community involved in life in extreme environments research in Europe by catalysing

networking, interactions and exchange of best practices among it and, ii) to further the knowledge of life in extreme environments by developing a strategic research agenda for Europe in this field. This project lasts three years (2008-2010) and encompasses, among other things, three large scale interdisciplinary workshops and the implementation of a web-based communication platform.

> *More information: www.carex-eu.org*

European Polar Consortium (EUROPOLAR ERA-NET)

EUROPOLAR ERA-NET 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 European programmes and contributions to environmental policy development in the European Union.

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 a 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 programme areas of frontier polar science including the fields of astronomy and astrophysics, polar genomics and life in extreme environments. ESF-European Polar Board unit is responsible for the strategic direction and management of the project.

> *More information: www.europolar.org*

European Polar Research Icebreaker Consortium (ERICON-AB)

The ERICON-AB project, involving 10 countries, will generate the strategic, legal, financial and organisational frameworks required from national governments and the European Commission to commit financial resources to the construction and running of the European polar research icebreaker AURORA BOREALIS. Scientific management frameworks will be assessed including mechanisms to handle dedicated large-scale multi-year or special mission-specific research programmes. The strategic integration of the facility into the fabric of the European Research Area shall be achieved by connecting the national research priorities and the demand for ship time of the stakeholder countries with a European level facility. The relevance of the facility in promoting science and technology cooperation with EU strategic partner countries such as the Russian Federation will be specifically analysed.

Deliverables will focus on moving the project from the preparatory phase to the construction phase by addressing key barriers

especially in relation to engineering initial financial models that allow the participation of both EU member states and non-EU partner countries. Consortium beneficiaries and legal experts will develop the environment for frameworks for joint ownership and operation of a multi-country research facility. A dedicated legal implementation structure for managing and operating the AURORA BOREALIS will be proposed and its connection with other existing research assets such as polar stations, air support and supporting satellite assets will be analysed. The final deliverables of this project will be concerned with reaching a decision point and agreement with nations ready to move forward with the construction phase. It is anticipated that a series of natural decision points for agencies/governments to pass on their individual degree of integration into the project will be programmed in to the ERICON - AB stakeholder councils meetings.

> *More information: www.eri-aurora-borealis.eu*

European Social Survey

The European Social Survey is a multi-country, biannual survey designed to monitor and interpret changing public attitudes and values within Europe and to investigate how they interact with Europe's changing institutions. The first three rounds of the survey took place in 2002, 2004 and 2006 and the field work of round four took place in the autumn of 2008. So far the fourth round is the most successful: 30 countries participate in the project, more than ever.

The European Social Survey has been one of the main success stories of ESF: more and more countries have been supporting it since its start 10 years ago; it was the first social science project that got the Descartes Prize; Roger Jowell, its principal investigator, was knighted by the Queen of England; a review panel of the best possible experts from around the world gave a very favourable evaluation of its performance.

Now, ESS is working on becoming a fully-fledged European Research Infrastructure (ERI) after 2012. ESF in general and SCSS in particular have helped ESS start, develop and reach a point where the ERI status is a probable next stage for the project.

> *More information: www.esf.org/ess*

European Young Investigator Awards (EURYI)

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

The European Heads of Research Councils (EUROHORCs) and the ESF decided to collaborate to create EURYI which was launched in 2003. The scheme made awards each worth at least 1 million Euros over five years. Awards could be held in any of the countries participating in the scheme, which was designed to create a high-profile incentive for the best and brightest researchers to build careers in Europe.

Coordination of the EURYI scheme was supported by the EC Sixth Framework Programme until March 2008.

With the launch of the European Research Council's Starting Investigators Research Grant scheme, which shares many characteristics with EURYI, EUROHORCs and ESF decided that the principal objective of EURYI had been achieved and the fifth and any further calls were cancelled. A total of 95 EURYI awards were made over the four calls.

ESF will continue to provide coordination for the basic management of the scheme, on behalf of EUROHORCs, for the duration of the awards, the last of which is expected to finish in 2013.

> More information: www.esf.org/euryi

Humanities in the European Research Area (HERA)

HERA is an ERA-NET project involving 16 national funding agencies for the humanities and the ESF. 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 at establishing best practices in science management in the humanities and at setting up joint research programmes.

On 8-10 October 2008, ESF organised the fourth HERA conference and the first European Conference for Collaborative Humanities Research (ECCHR) that highlighted researchers supported by five major public supra-national research funders in the humanities: FP7, including ERC, ESF, COST and HERA.

ESF has been responsible, in 2008, for the preparation of the HERA joint research programmes (HERA JRP) launched in January 2009: "Cultural Dynamics: inheritance and identity" and "Humanities as a Source of Creativity and Innovation". The programmes will be supported by 13 national partners under a common pot funding mechanism (over 12 million Euros with a top-up requested from the European Commission under the ERA-NET Plus scheme, the total budget being between 12-16 million Euros). ESF has been assigned as the handling agency for the HERA joint research programme, responsible for the call for proposals, the peer review process, the project funding management and the scientific networking activities.

> More information: www.heranet.info

MarinERA

MarinERA is an FP6 ERA-NET project jointly coordinated by Ifremer (Institut Français de Recherche pour l'Exploitation de la Mer) and the Marine Board. It aims to facilitate the coordination of national and regional marine RTD programmes in Europe. MarinERA is a partnership of the 16 leading marine RTD funding organisations from 13 European States. 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*

Systems Biology for Medical Applications (SysBioMed)

SysBioMed is an EC FP6 funded Specific Support Action seeking to explore the potential of systems biology for medical research, therapy and drug development through a series of workshops on topics at the frontier of systems biology and physiology and through raising awareness beyond the traditional community. The major output of the activity which corresponds to Workpackage 2 is a Science Policy Briefing (SPB) under the responsibility and guidance of two scientific units of ESF i.e. LESC and EMRC. The SPB No 35 highlighting the importance of systems biology for a better understanding of cellular processes in health and disease was published at the end of 2008 (*see p. 50*).

> *More information: www.esf.org/sysbiomed*

Towards a European Strategy for Synthetic Biology (TESSY)

Towards a European Strategy for Synthetic Biology (TESSY) is a Specific Support Action (SSA) supported by the EC (contract number: 043449). Synthetic biology is an emerging field that aims to (re)design and manufacture biologically based devices and systems employing engineering principles. Being an emerging area at the cross-roads between molecular biology and engineering, synthetic biology has a high potential for research and development, and future applications will be beneficial for economy and society. To this end, TESSY developed a roadmap for synthetic biology in Europe, which was presented to different stakeholder groups, notably ESF Member Organisations, at the TESSY stakeholder meeting in Brussels in June 2008.

The detailed roadmap and further information is available at *www.tessy-europe.eu*

European Cooperation in Science and Technology (COST)

COST is an intergovernmental European framework for international cooperation between nationally funded research activities. COST supports scientific networks and enables scientists to collaborate on a wide spectrum of activities in research and technology.

Since 1971, COST has developed into one of the largest frameworks for research cooperation in Europe and is a valuable mechanism coordinating national research activities in Europe. COST addresses the growing demand for cooperation across national borders and across research disciplines. It complements the European Union's Framework programme and supports more than 30 000 scientists participating in more than 200 networks from 34 European member countries and one cooperating state (Israel).

COST has a membership which extends beyond the European Union since it also allows participation from institutions in non-COST countries. There are no geographical restrictions on *ad hoc* participation in COST's activities based on a mutual benefit for science.

COST Actions

COST networks, called Actions, are networks of national research projects in fields that are of interest to at least five COST countries. COST Actions cover basic and pre-competitive research for peaceful purposes as well as activities of public utility, as part of the Lisbon objectives.

Every COST Action has an objective, defined goals and clear deliverables. They achieve results through network building activities such as workshops, training schools and short-term scientific missions. Existing COST Actions operate across a wide spectrum of scientific fields, can be multi-disciplinary in nature, and their results often maintain beyond their normal four-year duration.

Today, COST has more than 200 running Actions in the following nine scientific domains:

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

COST Structure

The Committee of Senior Officials (CSO) is COST's decision-making body and consists of representatives of the 35 COST countries. The nine COST Domain Committees (DC) are constituted by scientists representing the research communities of the COST countries. Their mission is to assess proposals for new Actions, monitor the progress of ongoing Actions and evaluate the results of ending Actions in their particular research domain. The Management Committees (MC) – one for each Action – are formed by experts nominated by the countries participating in the Action. They coordinate the activities of the Action and report to the relevant DC.

The secretariat to the CSO is provided by the general secretariat of the Council of the European Union. The scientific and administrative secretariat to the COST Domain Committees and to the Actions is provided by the COST Office based in Brussels. The European Science Foundation (ESF) – in its capacity as implementing agent for COST – operates the COST Office on the basis of a contract with the European Commission.

COST Funding

National research funding underpins the many projects represented in COST Actions. COST funding covers the coordination costs associated with organising and attending meetings, workshops and conferences; short-term scientific missions as well as publications and other dissemination activities. The research activities themselves (staff, infrastructure etc.) are not supported by COST.

The funds for COST are provided by the EU Seventh Framework Programme (FP7) which foresees 210 million Euros in support for COST (2007-2013) with the possibility of another 40 million Euros depending on a positive mid-term evaluation in 2010.

COST Open Call

A continuous COST open call was put in place in 2006 to attract the best proposals for new COST Actions. The continuous call is thematically open and proposals playing a precursor role for other European programmes and/or initiated by early-stage researchers are particularly welcome.

Proposers are invited to locate their topic within one domain. However, interdisciplinary proposals not fitting readily into a single domain are also welcome and are assessed separately.

Proposals are assessed in two stages. Preliminary proposals, consisting of a brief overview and an impact description, are checked for eligibility first and, when eligible, assessed by the relevant DC against the published criteria. The top ranked preliminary proposals are then invited to submit a full proposal which is peer reviewed according to the published assessment criteria. The time between the collection date and the approval of the best full proposals by the COST CSO is approximately nine months.

COST Characteristics

- "bottom up approach": the initiative of launching a COST Action comes from the European scientists themselves;
- "*à la carte* participation": only countries interested in the Action participate;
- "equality of access": participation is open also to the scientific communities of countries not belonging to the European Union; and
- "flexible structure": easy implementation and light management of the research initiatives.

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

Administration and Finance

Managing resources to support the strategy

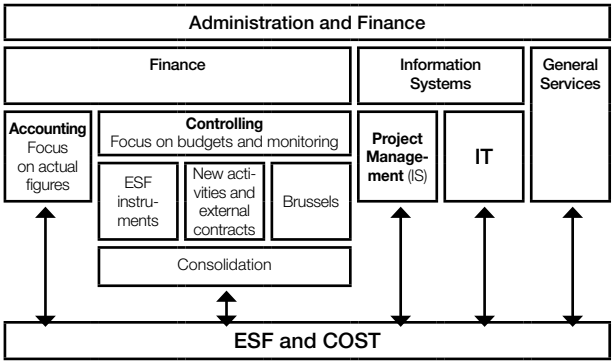
The ESF Administration and Finance manages financial and infrastructure resources to support the achievement of the ESF mission and strategy.

ESF has experienced a dramatic growth over the last five years. Over this period, the yearly budget increased from 17 million Euros to 52 million Euros, which are funded from Member Organisations' contributions and numerous external contracts, in particular EC contracts. The ESF Administration and Finance team now deals with around 27 000 transactions per year. With three locations, external contracts and new activities, the team aims at providing professional services to science initiatives in a client-oriented way.

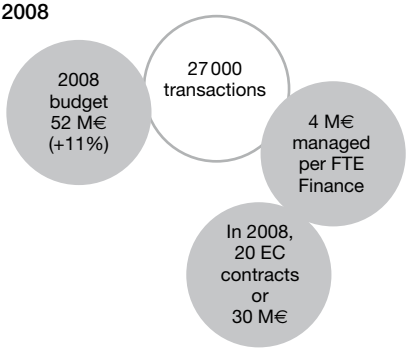
Finance and Audit Committee (FAC): link to Governance

The Finance and Audit Committee is an advisory committee of the Governing Council. The FAC is chaired by Martin Hynes, Chief Executive of IRCSET (Ireland) and Member of the ESF Governing Council, and is composed of high level finance and science managers nominated by Member Organisations.

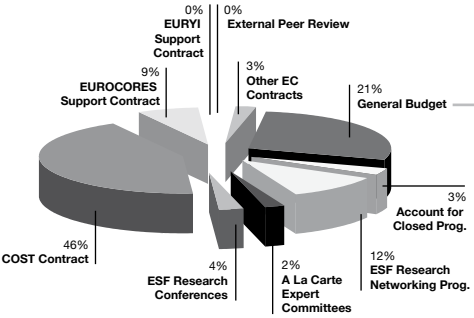
Team and Functions



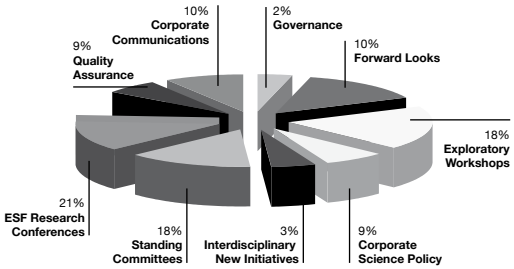
Key Figures 2008



2008 Consolidated Expenditure



Science Activities funded by the ESF General Budget 2008



Budget Structure

Budget components	Related activities	Sources of funding
General Budget	• Basic activities that are essential for the proper implementation of the ESF mission such as Exploratory Workshops and Forward Looks • Quality assurance • 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 Research Networking Programmes and Expert Boards	• Contributions from MOs on an *à la carte* basis
Partnerships	• Partnership activities such as ESF Research Conferences	• Partners' contributions • Contribution from General Budget • Participation fees
Contracts with external parties	• Support for the coordination of programmes such as EUROCORES and ERA-NETs • Management of scientific secretariats for activities such as COST	• Grants from the European Commission

ESF Governing Bodies

ESF Member Organisations in 2009

80 Member Organisations in 30 countries


Finland
Estonia
Lithuania
Poland
lovak Republic
ngary
Romania
Bulgaria
Turkey
Greece
Cyprus

Austria

Fonds zur Förderung der wissenschaftlichen Forschung in Österreich (FWF)
Austrian Science Research Fund
www.fwf.ac.at

Österreichische Akademie der Wissenschaften (ÖAW)
Austrian Academy of Sciences
www.oeaw.ac.at

Belgium

Fonds National de la Recherche Scientifique (FNRS)
National Fund for Scientific Research
www.fnrs.be

Fonds voor Wetenschappelijk Onderzoek - Vlaanderen (FWO)
Research Foundation Flanders
www.fwo.be

Bulgaria

Българска академия на науките (BAS)
Bulgarian Academy of Sciences
www.bas.bg

Научни изследвания
National Science Fund of Bulgaria
www.nsfb.net

Croatia

Hrvatska akademija znanosti i umjetnosti (HAZU)
Croatian Academy of Sciences and Arts
www.hazu.hr

Nacionalna zaklada za znanost, visoko skolstvo i tehnologijski razvoj Republike Hrvatske (NZZ)
The National Foundation of Science, Higher Education and Technological Development of the Republic of Croatia
www.nzz.hr

Cyprus

Ίδρυμα Προώθησης Έρευνας (RPF)
Cyprus Research Promotion Foundation
www.research.org.cy

Czech Republic

Akademie věd České republiky (ASČR)
Academy of Sciences of the Czech Republic
www.cas.cz

Grantová agentura České republiky (GAČR)
Czech Science Foundation
www.gacr.cz

Denmark

Danmarks Grundforskningsfonden (DG)
Danish National Research Foundation
www.dg.dk

Det Kongelige Danske Videnskabernes Selskab
Royal Danish Academy of Sciences and Letters
www.royalacademy.dk

Forskningsrådet for Kultur og Kommunikation (FKK)
Danish Research Council for the Humanities

Forskningsrådet for Natur og Univers (FNU)
Danish Natural Science Research Council

Forskningsrådet for Samfund og Erhverv (FSE)
Danish Social Science Research Council

Forskningsrådet for Sundhet og Sygdom (FSS)
Danish Medical Research Council

Forskningsrådet for Teknik og Produktion (FTP)
Danish Research Council for Technolgy and Production Sciences

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

Estonia

Eesti Teadusfond (ETF)
Estonian Science Foundation
www.etf.ee

Eesti Teaduste Akadeemia
Estonian Academy of Sciences
www.akadeemia.ee

Finland

Suomen Akatemia/Finlands Akademi
Academy of Finland
www.aka.fi

Suomen Tiedeakatemiain Valtuuskunta/Delegationen för Vetenskapsakademierna i Finland
Delegation of the Finnish Academies of Science and Letters
www.helsinki.fi/science/deleg

France

Agence Nationale de la Recherche (ANR)
French National Research Agency
www.agence-nationalerecherche.fr

Centre National de la Recherche Scientifique (CNRS)
National Centre for Scientific Research
www.cnrs.fr

Commissariat à l'Énergie Atomique/Direction des Sciences de la Matière (CEA/DSM)
Material Sciences Division of the Atomic Energy Commission
www.cea.fr

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

Institut National de la Recherche Agronomique (INRA)
National Institute for Agricultural Research
www.inra.fr

Institut National de la Santé et de la Recherche Médicale (Inserm)
National Institute for Health and Medical Research
www.inserm.fr

Institut de Recherche pour le Développement (IRD)
National Institute for Development
www.ird.fr

Germany

Deutsche Forschungsgemeinschaft (DFG)
German Research Foundation
www.dfg.de

Hermann von Helmholtz-Gemeinschaft Deutscher Forschungszentren (HGF)
Helmholtz Association of German Research Centres
www.helmholtz.de

Max-Planck-Gesellschaft (MPG)
Max Planck Society
www.mpg.de

Secretariat for German Academies:
Union der deutschen Akademien der Wissenschaften
Union of the German Academies of Sciences and Humanities
www.akademienunion.de

Greece

ΕΟΝΙΚΟ ΙΔΡΥΜΑ ΕΡΕΥΝΩΝ
National Hellenic Research Foundation (NHRF)
www.eie.gr/index-en.html

Ίδρυμα Τεχνολογίας και Ερευνας (FORTH)
Foundation for Research and Technology – Hellas (FORTH)
www.forth.gr

Hungary

Magyar Tudományos Akadémia (MTA)
Hungarian Academy of Sciences
www.mta.hu

Országos Tudományos Kutatási Alapprogramok (OTKA)
Hungarian Scientific Research Fund
www.otka.hu

Iceland

RANNIS
Icelandic Centre for Research
www.rannis.is

Ireland

An Chomhairle um Thaighde sna Dána agus sna hEolaíochtaí Sóisialtas
Irish Research Council for the Humanities and Social Sciences (IRCHSS)
www.irchss.ie

Enterprise Ireland
www.enterprise-ireland.com

Health Research Board (HRB)
www.hrb.ie

Irish Research Council for Sciences, Engineering and Technology (IRCSET)
www.ircset.ie

Science Foundation Ireland (SFI)
www.sfi.ie

Italy

Consiglio Nazionale delle Ricerche (CNR)
National Research Council
www.cnr.it

Istituto Nazionale di Fisica Nucleare (INFN)
National Institute for Nuclear Physics
www.infn.it

Lithuania

Lietuvos Valstybinis Mokslo Ir Studijų Fondas
Lithuanian State Science and Studies Foundation
www.vmsfondas.lt

Luxembourg

Fonds National de la Recherche (FNR)
National Research Fund
www.fnr.lu

The Netherlands

Koninklijke Nederlandse Akademie van Wetenschappen (KNAW)
Royal Netherlands Academy of Arts and Sciences
www.knaw.nl

Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)
Netherlands Organisation for Scientific Research
www.nwo.nl

Norway

Det Norske Videnskaps-Akademi
Norwegian Academy of Science and Letters
www.dnva.no

Norges Forskningsråd
Research Council of Norway
www.forskningsradet.no

Poland

Polska Akademia Nauk (PAN)
Polish Academy of Sciences
www.pan.pl

Portugal

Academia das Ciências de Lisboa
Lisbon Academy of Sciences
www.acad-ciencias.pt

Fundação para a Ciência e a Tecnologia (FCT)
Foundation for Science and Technology
www.fct.mctes.pt

Romania

Consiliul National al Cercetarii Stiintifice din Invatamantul Superior (CNCSIS)
National University Research Council
www.cncsis.ro

Slovak Republic

Agentúra na podporu výskumu a vývoja (APVV)
Slovak Research and Development Agency
www.apvv.sk

Slovenská Akadémia Vied (SAV)
Slovak Academy of Sciences
www.sav.sk

Slovenia

Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)
Slovenian Research Agency
www.arrs.gov.si

Slovenska Akademija Znanosti in Umetnosti (SAZU)
Slovenian Academy of Sciences and Arts
www.sazu.si

Slovenska Znanstvena Fundacija (SZF)
Slovenian Science Foundation
www.szf.si

Spain

Consejo Superior de Investigaciones Científicas (CSIC)
Council for Scientific Research
www.csic.es

Comisión Interministerial de Ciencia y Tecnología (CICYT)
Interministerial Committee on Science and Technology
www.micinn.es

Sweden

Forskningsrådet för arbetsliv och socialvetenskap (FAS)
Swedish Council for Working Life and Social Research
www.fas.forskning.se

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

Kungliga Vetenskapsakademien
Royal Swedish Academy of Sciences
www.kva.se

Kungliga Vitterhets, Historie och Antikvitets Akademien
Royal Academy of Letters, History and Antiquities
www.vitterhetsakad.se

Riksbankens Jubileumsfond
Bank of Sweden Tercentenary Foundation
www.rj.se

Vetenskapsrådet (VR)
Swedish Research Council
www.vr.se

VINNOVA
Swedish Agency for Innovation Systems
www.vinnova.se

Switzerland

Akademien der Wissenschaften Schweiz/ Académies suisses des sciences
Swiss Academies of Arts and Sciences
www.cass.ch

Schweizerischer Nationalfonds (SNF)
Swiss National Science Foundation
www.snf.ch

Turkey

Türkiye Bilimsel ve Teknolojik Arastırma Kurumu (TÜBITAK)
The Scientific and Technological Research Council of Turkey
www.tubitak.gov.tr

United Kingdom

Arts and Humanities Research Council (AHRC)
www.ahrb.ac.uk

Biotechnology and Biological Sciences Research Council (BBSRC)
www.bbsrc.ac.uk

The British Academy
www.britac.ac.uk

Economic and Social Research Council (ESRC)
www.esrc.ac.uk

Engineering and Physical Sciences Research Council (EPSRC)
www.epsrc.ac.uk

Medical Research Council (MRC)
www.mrc.ac.uk

Natural Environment Research Council (NERC)
www.nerc.ac.uk

Science and Technology Facilities Council (STFC)
www.scitech.ac.uk

Governing Council

Members of the Governing Council (2009)

Professor Ian Halliday
United Kingdom, President

Professor Matthias Kleiner
Germany, Vice-President

Dr. Arnold Migus
France, Vice-President

Professor Jüri Allik
Estonia

Professor Leszek Borysiewicz
United Kingdom

Dr. Franci Demsar
Slovenia

Professor Ioan Dumitrache
Romania

Dr. Arvid Hallén
Norway

Mr. Romain Henrion
Luxembourg

Dr. Daniel Höchli
Switzerland

Mr. Martin Hynes
Ireland

Professor Michal Kleiber
Poland

Professor Christoph Kratky
Austria

Professor Dimitrios Kyriakidis
Greece

Professor Stefan Luby
Slovak Republic

Professor Luciano Maiani
Italy

Professor Gábor B. Makara
Hungary

Professor Markku Mattila
Finland

Professor Milan Mogus
Croatia

Dr. Andreas Moleskis
Cyprus

Dr. Elisabeth Monard
Belgium

Dr. Ebba Nexø
Denmark

Dr. Gudrún Nordal
Iceland

Professor Pär Omling
Sweden

Dr. Sigitas Rencys
Lithuania

Professor Rafael Rodrigo Montero
Spain

Professor João Sentieiro
Portugal

Professor Nüket Yetis
Turkey

Nominations from Bulgaria and Spain are awaited.

Observers

Professor Jüri Engelbrecht
ALLEA

Dr. John Smith
EUA

Mr. Robert-Jan Smits
European Commission

ESF Office Directory

Chief Executive's Office

• Professor Marja Makarow
Chief Executive
Email: ceo@esf.org

• Dr. Marc Heppener
Director of Science and Strategy Development
Email: mheppener@esf.org

• Ms. Veronica Schauinger-Horne
Senior Personal Assistant to the Chief Executive
Tel: +33 (0)3 88 76 71 16
Email: vschauinger@esf.org

• Ms. Isabelle Vonesch
Personal Assistant to the Director of Science and Strategy Development
Tel: +33 (0)3 88 76 71 09
Email: ivonesch@esf.org

• Dr. Vanessa Campo Ruiz
Science Officer to the Chief Executive
Tel: +33 (0)3 88 76 71 17
Email: vcamporuiz@esf.org

• Dr. Farzam Ranjbaran
Senior Science Officer - Peer Review and EUROCORES Scheme Coordination
Tel: +33 (0)3 88 76 21 68
Email: franjbaran@esf.org

Humanities

• Dr. Nina Kancewicz-Hoffman
Head of Unit
Tel: +33 (0)3 88 76 71 15
Email: nhoffman@esf.org

• Dr. Arianna Ciula
Science Officer
Tel: +33 (0)3 88 76 71 04
Email: aciula@esf.org

• Dr. Eva Hoogland
Science Officer – EUROCORES Coordination
Tel: +33 (0)3 88 76 21 83
Email: ehoogland@esf.org

• Dr. Doubravka Olšáková
Science Officer – EUROCORES Coordination
Tel: +33 (0)3 88 76 71 54
Email: dolsakova@esf.org

• Ms. Julia Boman
Junior Science Officer – HERA
Tel: +33 (0)3 88 76 21 71
Email: jboman@esf.org

Life, Earth & Environmental Sciences

• Dr. Arja Kallio
Head of Unit
Tel: +33 (0)3 88 76 71 29
Email: akallio@esf.org

• Dr. Bernard Avril
Science Officer
Tel: +33 (0)3 88 76 71 78
Email: bavril@esf.org

• Dr. Paul Beckers
Science Officer – EUROCORES Coordination
Tel: +33 (0)3 88 76 21 73
Email: pbeckers@esf.org

• Dr. Didier Hauglustaine
Science Officer – EUROCORES Coordination
Tel: +33 (0)3 88 76 21 89
Email: dhauglustaine@esf.org

• Dr. Inge Jonckheere
Science Officer – EUROCORES Coordination
Tel: +33 (0)3 88 76 21 66
Email: ijonckheere@esf.org

• Dr. Astrid Lunkes
Science Officer – EUROCORES Coordination
Tel: +33 (0)3 88 76 21 72
Email: alunkes@esf.org

Marine Sciences

• Dr. Niamh Connolly
Head of Unit
Tel: +32 (0)2 59 34 01 63
Email: nconnolly@esf.org

• Mr. Jan-Bart Calewaert
Junior Science Officer
Tel: +32 (0) 59 34 01 70
Email: jbcalewaert@esf.org

• Mr. Aurelién Carbonnière
Junior Science Officer
Tel: +32 (0) 59 34 01 56
Email: acarbonniere@esf.org

• Ms. Maud Edvard
Junior Science Officer
Tel: +32 (0) 59 34 01 54
Email: medvard@esf.org

Marine Board - ESF
Wandelaarkai 7
8400 Ostend, Belgium
Tel: +32 (0) 59 34 01 63
Email: marineboard@esf.org

Medical Sciences

• Dr. Carole Moquin-Pattey
Head of Unit
Tel: +33 (0)3 88 76 71 73
Email: cmoquin-pattey@esf.org

• Dr. Thomas Bruhn
Science Officer
Tel: +33 (0)3 88 76 71 63
Email: tbruhn@esf.org

• Dr. Maria Manuela Nogueira
Science Officer
Tel: +33 (0)3 88 76 21 80
Email: mmnogueira@esf.org

Physical & Engineering Sciences

• Mr. Neil Williams
Head of Unit
Tel: +33 (0)3 88 76 71 21
Email: nwilliams@esf.org

• Dr. Antonella Di Trapani
Science Officer - EUROCORES Coordination
Tel: +33 (0)3 88 76 71 76
Email: aditrapani@esf.org

• Dr. Ana Helman
Science Officer - EUROCORES Coordination
Tel: +33 (0)3 88 76 21 36
Email: ahelman@esf.org

• Dr. Thibaut Lery
Science Officer
Tel: +33 (0)3 88 76 71 05
Email: tlery@esf.org

Polar Sciences

• Dr. Paul Egerton
Head of Unit
Tel: +33 (0)3 88 76 71 74
Email: pegerton@esf.org

• Dr. Roberto Azzolini
Science Officer - Ericon Project
Tel: +33 (0)3 88 76 21 74
Email: razzolini@esf.org

• Ms. Hélène Hasle
Finance and Legal Project Manager – Ericon Project
Tel: +33 (0)3 88 76 71 49
Email: hhasle@esf.org

Social Sciences

• Dr. Balázs Kiss
Head of Unit
Tel: +33 (0)3 88 76 71 31
Email: bkiss@esf.org

• Dr. Frank Kuhn
Science Officer
Tel: +33 (0)3 88 76 21 77
Email: fkuhn@esf.org

• Ms. Sarah Moore
Junior Science Officer – EUROCORES Coordination
Tel: +33 (0)3 88 76 21 70
Email: smoore@esf.org

Space Sciences

• Dr. Jean-Claude Worms
Head of Unit
Tel: +33 (0)3 88 76 71 88
Email: jcworms@esf.org

• Mr. Nicolas Walter
Science Officer - CAREX Project Manager
Tel: +33 (0)3 88 76 71 66
Email: nwalter@esf.org

ESF Research Conferences

• Ms. Caroline Hirst
Head of Unit
Tel: +32 (0)2 533 20 21
Email: chirst@esf.org

• Ms. Benita Lipps
Conferences Manager
Tel: +32 (0)2 533 20 22
Email: blipps@esf.org

ESF Conferences Unit
149 avenue Louise, Box 14
Tour Generali, 15th Floor
1050 Brussels, Belgium
Tel: +32 (0)2 533 2020
Email: conferences@esf.org

Administration & Finance

• Mr. David Weber
Director
Tel: +33 (0)3 88 76 71 50
Email: dweber@esf.org

• Ms. Anne-Sophie Piavaux
Personal Assistant to the Director of Administration and Finance
Tel: +33 (0)3 88 76 71 10
Email: apiavaux@esf.org

• Mr. Emmanuel Barmoy
IT Manager
Tel: +33 (0)3 88 76 71 33
Email: ebarmoy@esf.org

• Ms. Valérie Brasse
IS Project Manager
Tel: +33 (0)3 88 76 71 75
Email: vbrasse@esf.org

• Mr. Sam Charpentier
Accounting Manager
Tel: +33 (0)3 88 76 21 57
Email: scharpentier@esf.org

• Ms. Nathalie Karamanoukian
General Services Manager
Tel: +33 (0)3 88 76 71 12
Email: nkaramanoukian@esf.org

• Ms. Carmen Paolone
Finance Project Manager
Tel: +33 (0)3 88 76 21 55
Email: cpaolone@esf.org

• Ms. Philippa Rowe
Corporate Finance Controller
Tel: +33 (0)3 88 76 71 60
Email: philippa@esf.org

Communications

• Ms. Sofia Valleley
Communications Project Manager
Tel: +33 (0)3 88 76 21 59
Email: svalleley@esf.org

Human Resources

• Ms. Catherine Lux
Director
Tel: +33 (0)3 88 76 21 56
Email: clux@esf.org

• Ms. Jacqueline Steydli
HR Manager
Tel: +33 (0)3 88 76 71 08
Email: jsteydli@esf.org

European Science Foundation address:
European Science Foundation
1 quai Lezay-Marnésia - BP 90015
67080 Strasbourg cedex
France
Tel: +33 (0)3 88 76 71 00
Fax: +33 (0)3 88 37 05 32

www.esf.org

COST Office

Management

• Dr. Martin Grabert
Director
Tel: +32 (0)2 533 3810
Email: mgrabert@cost.esf.org

• Dr. Afonso Ferreira
Head of Science Operations
Tel: +32 (0)2 533 3815
Email: afonso.ferreira@cost.esf.org

Biomedicine and Molecular Biosciences (BMBS)

• Dr. Kalliopi Kostelidou
Senior Science Officer
Tel: +32 (0)2 533 3816
Email: bmbs@cost.esf.org

• Dr. Magdalena Radwanska
Science Officer
Tel: +32 (0)2 533 3816
Email: bmbs@cost.esf.org

Chemistry and Molecular Sciences & Technologies (CMST)

• Dr. Javier Caldentey
(Until April 2009)
Science Officer
Tel: +32 (0)2 533 3817
Email: cmst@cost.esf.org

• Dr. Erwan Arzel
(from April 2009)
Science Officer
Tel: +32 (0)2 533 3817
Email: cmst@cost.esf.org

Earth System Science and Environmental Management (ESSEM)

• Dr. Carine Petit
Science Officer
Tel: +32 (0)2 533 3831
Email: essem@cost.esf.org

Food and Agriculture (FA)

• Dr. Albino Maggio
Science Officer
Tel: +32 (0)2 533 3825
Email: fa@cost.esf.org

Forests, their Products and Services (FPS)

• Ms. Melae Langbein
Science Officer
Tel: +32 (0)2 533 3824
Email: fps@cost.esf.org

Individuals, Societies, Cultures and Health (ISCH)

• Dr. Julia Stamm
Science Officer
Tel: +32 (0)2 533 3833
Email: isch@cost.esf.org

Information and Communication Technologies (ICT)

• Dr. Gian Mario Maggio
Senior Science Officer
Tel: +32 (0)2 533 3826
Email: ict@cost.esf.org

Materials, Physical and Nanosciences (MPNS)

• **Dr. Caroline Whelan**
Science Officer
Tel: +32 (0)2 533 3814
Email: mpns@cost.esf.org

Transport and Urban Development (TUD)

• **Dr. Thierry Goger**
Science Officer
Tel: +32 (0)2 533 3832
Email: tud@cost.esf.org

COST Office address:
COST Office
Avenue Louise 149
1050 Brussels
Belgium
Tel: +32 (0)2 533 38 00/01
Fax: +32 (0)2 533 38 90
Email: info@cost.esf.org
www.cost.esf.org

Latitude: / April 2009 / Print run: 12 000

EUROPEAN SCIENCE FOUNDATION
SETTING SCIENCE AGENDAS FOR EUROPE

1 quai Lezay-Marnésia **I** BP 90015
67080 Strasbourg cedex **I** France
Tel: +33 (0)3 88 76 71 00 **I** Fax: +33 (0)3 88 37 05 32
www.esf.org