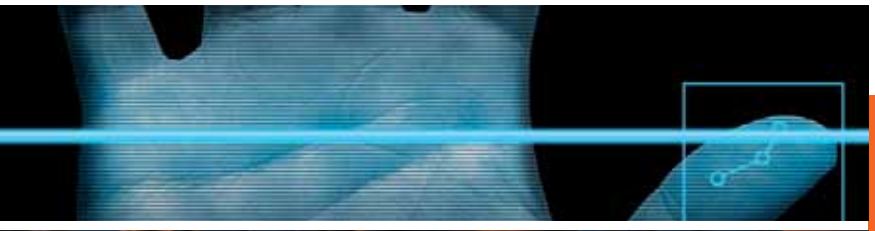
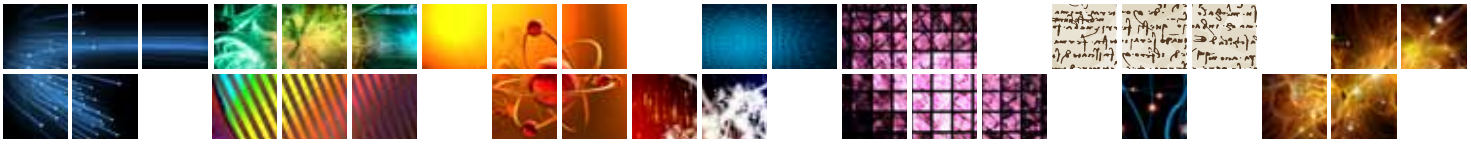


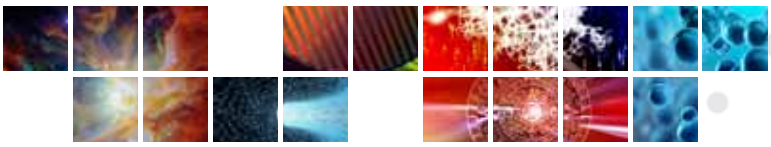
Some striking **ERC projects**

European Research Council

Established by the European Commission

http://erc.europa.eu





European Research Council

Established by the European Commission

The European Research Council in a nutshell

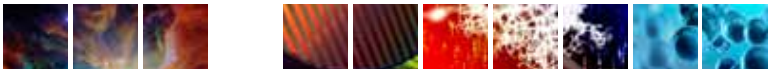
The European Research Council (ERC) is the first pan-European funding body, set up in 2007 by the European Commission. It aims at stimulating scientific excellence in Europe by supporting the very best, creative researchers across and outside Europe.

Through Europe-wide peer-reviewed competition -with scientific excellence as sole selection criterion- the ERC funds the brightest ideas at the frontiers of knowledge and in all disciplines.

Calls are open to top researchers of any age from anywhere in the world, provided they are based in or are moving to Europe. The ERC funds both established senior top researchers (ERC Advanced Grants) and early-career, emerging research leaders (ERC Starting Grants).

In 2011, two new forms of funding were introduced with limited budget. The "Proof of Concept" scheme targets ERC grant holders to cover a funding gap in the earliest stage of an innovation, between "blue sky" research and commercialisation. The "ERC Synergy Grant" is being introduced on a pilot basis for exceptional proposals. It will support a few small teams of researchers with complementary skills, knowledge and resources who will work together on the same project.

The ERC's overall budget is €7.5 billion from 2007 till 2013, with a steady increase of its annual budget of €250 Mio per year. To date, the ERC has funded over 2 200 top researchers to pursue innovative and ground-breaking research. In addition, the ERC triggers new thinking about research management and science policy-making at European and national levels and spurs up the quality of the European research landscape.



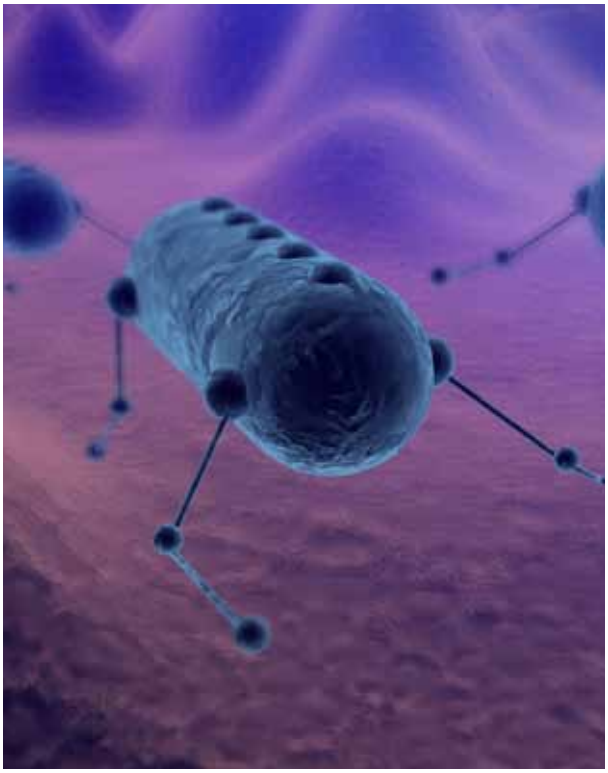
http://erc.europa.eu

František ŠTĚPANEK – Starting Grant

Nationality: ***Czech***

Subject: ***Robotics***

Host institution: ***Vysoka Skola Chemicko-technologicka v Praze, Czech Republic***



In a world of microscopic chemical robots

The aim of this project is to design and manufacture microscopic chemical robots; such robots do not exist at the moment and their development will be unique and very challenging. Many potential applications are anticipated such as targeted delivery of active ingredients in the human body (e.g. medicines) or distributed chemical processing (e.g. neutralisation of toxic spills in difficult-to-access environments).

Links:

Research project:
http://www.chobotix.cz/index.php?view=research

ERC Grantee contact details:
http://www.chobotix.cz/index.php?view=team_stepanek

Article in Research EU*Focus on ERC:
http://www.vscht.cz/chobotix/News_files/research_focus_03%2020.pdf

European Research Council

Established by the European Commission

Alberto BROGGI – Advanced Grant

Nationality: ***Italian***
Subject: ***Open Intelligent Systems - Driverless cars***
Host institution: ***Università degli Studi di Parma (UNIPR), Italy***

"A three months trip, from Italy to China... without a driver!"

The OFAV project aims at exploring the use of "intelligent cars", which move without a driver and with a sophisticated system of sensors. As part of this project, a unique intercontinental 13 000 km test drive from Italy to Shanghai with a driverless car, powered by green energy, took place this year (from July to October 2010). The autonomous car arrived at the World Expo in Shanghai after having travelled through very varied environments, including extreme ones. This experiment showed that it is possible, although in a prototype version, to move goods between two continents in real life conditions with non-polluting vehicles and with virtually no human intervention. The data collected throughout the trip is a valuable source to be analysed in order to advance the technology further in the framework of the OFAV project. The aim is also to demonstrate that the current technology is mature enough for the deployment of non-polluting and no-oil based autonomous vehicles.

Links:

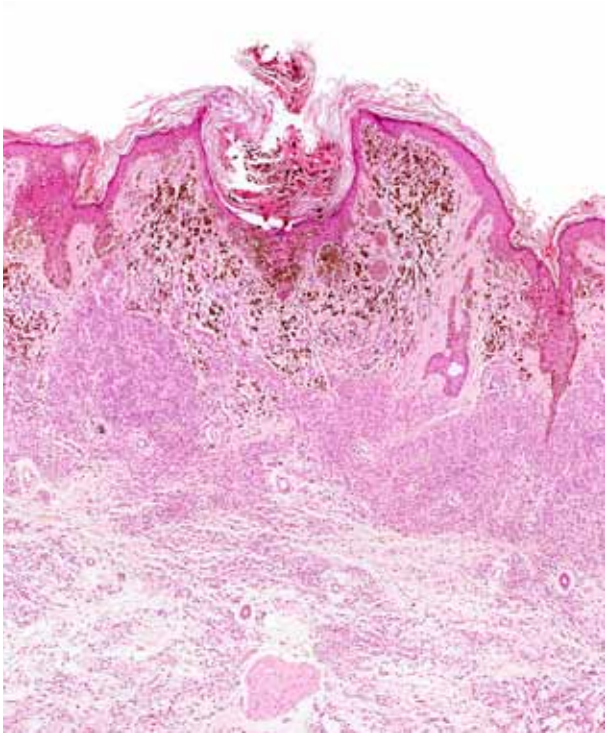
Research project:
http://vislab.it/Projects/view/32/VisLab%27s%20adventure%20on%20the%20Silk%20road

ERC Grantee contact details:
http://vislab.it/Users/view/3

The journey's blog:
http://viac.vislab.it/?page_id=186

Irene May LEIGH – Advanced Grant

Nationality: ***British***
Subject: ***Health – Skin cancer***
Host institution: ***University of Dundee, United Kingdom***



Towards a new treatment of skin cancer and genetic diseases?

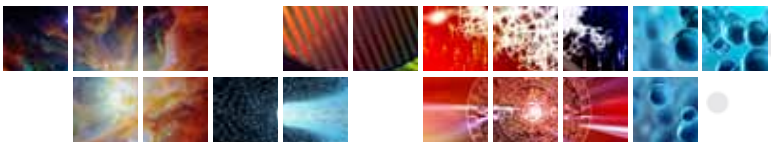
Skin diseases represent a significant health burden. There is a need for robust preclinical models to test interventions and therapies, which mirror the clinical situation and likely outcomes. This will assist key stage decision-making before costly clinical trials are commenced. Irene May Leigh is developing pre-clinical models which can be used to identify therapeutic targets for the treatment of skin cancer and to explore novel approaches to gene and cell therapy. The effects of new small molecules will also be tested.

Links:

Research project:
http://www.dundee.ac.uk/medschool/oncology/skin-biology

ERC Grantee contact details:
http://www.dundee.ac.uk/medschool/staff/irene_leigh

Press contacts at University of Dundee:
http://www.dundee.ac.uk/pressoffice/contacts.htm



European Research Council

Established by the European Commission

Giulio Di Toro – Starting Grant

Nationality: ***Italian***
Subject: ***Natural disasters – Earthquakes***
Host institution: ***Istituto Nazionale di Geofisica e Vulcanologia, Roma, Italy***

Uncovering the Secrets of an Earthquake

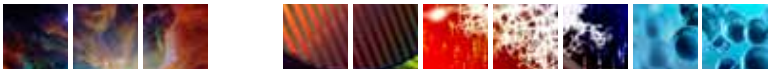
Recent events in Japan and Spain show how important it is to better understand the earthquake generation process in order to avoid natural environmental disasters. This project aims at better understanding one of the "hottest" topics in earthquakes at present: the mechanics of faults as they happen during an earthquake. As part of the research, one of the most powerful earthquake simulators, "SHIVA" (Slow to High Velocity Apparatus) has been successfully installed in Rome. SHIVA simulates the extreme conditions of deformation typical of earthquakes, high pressure and rapidly moving rocks, just as happens in nature. Under these deformation pressures some rocks have been found to melt. The analysis of the original data collected shall provide an unprecedented insight into the mechanics of seismic faulting and will also help to improve industrial techniques to handle solid material. This study has additional implications for understanding other friction-controlled processes, for instance in rock landslide.

Links:

Research Project:
http://www.roma1.ingv.it/laboratori/laboratorio-hp-ht/usems-project

Watch Understanding earthquakes with SHIVA video:
http://erc.europa.eu/multimedia-library

ERC Grantee contact details:
http://www.roma1.ingv.it/mxmcontacts.2008-03-02.8770866788/mxmcontactsperson.2008-06-18.0343585144/view?searchterm=d*



http://erc.europa.eu

Dorthe DAHL-JENSEN – Advanced Grant

Nationality: ***Danish***
Subject: ***Climate change – Towards improved analysis of the ice sheet***
Host institution: ***Københavns Universitet, Denmark***

What does the Greenland ice sheet reveal to us?

This project seeks to map the melt water extent under the Greenland ice sheet for better predicting the ice-sheet's response to climate change, which, in turns, will break new ground in our understanding of future sea level rises. It should also provide opportunities to look for life under the ice and indicates the age of the Greenland ice sheet.

The project studied the DNA from the ice core in South Greenland and it already revealed that Boreal forest covered South Greenland before it was ice covered.

Links:

Research project:
http://www.isogklima.nbi.ku.dk/billeder/waterunderice.pdf/

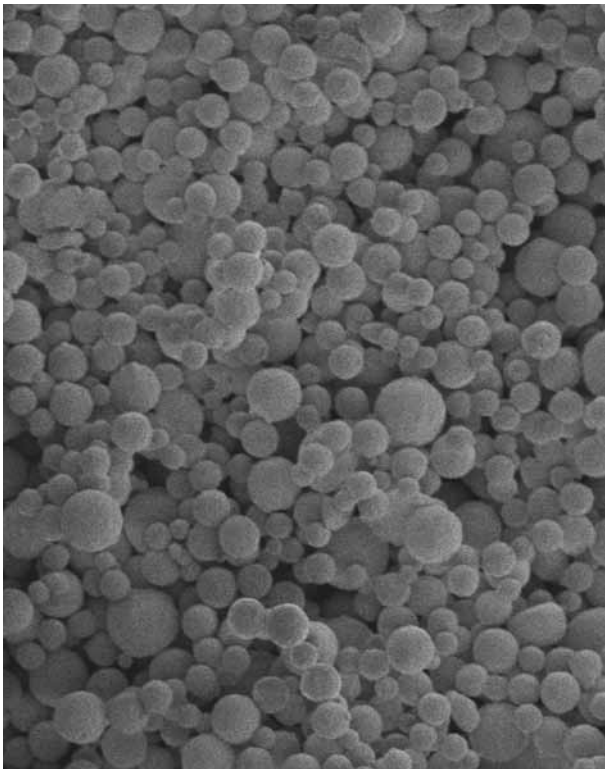
ERC Grantee contact details:
http://www.iceandclimate.nbi.ku.dk/staff/description/?id=45103

European Research Council

Established by the European Commission

Ann-Christine ALBERTSSON – Advanced Grant

Nationality: ***Swedish***
Subject: ***Environment – Biodegradable materials***
Host institution: ***KTH Royal Institute of Technology, Stockholm, Sweden***



Future biodegradable materials for a better quality of life

This ERC-funded project aims at creating a new generation of materials that mimic nature's structural organization and that biodegrade in a controlled manner without leaving any long lasting debris. The materials, surfaces and molecular bonds will be studied closely using the most up-to-date characterization techniques to observe how the structures are created and how they interact with the surroundings. This will ensure that the materials degrade in a manner that does not have an adverse effect on the environment in which they are used. These versatile customized structures will help our understanding of the way polymeric materials should be designed, both for sustainable commodity plastics and in tissue engineering applications.

Links:

Research project:
http://www.kth.se/en/che/divisions/polymer-technology/research/research-projects/albertsson/paradigm-1.59064

ERC Grantee contact details:
http://researchprojects.kth.se/index.php/kb_1/pb_48/pb.html

Fergal O'BRIEN – Starting Grant

Nationality: ***Irish***
Subject: ***Health – Bones regeneration***
Host institution: ***Royal Irish College of Surgeons, Dublin, Ireland***

New solutions for bones transplantations

Bone grafts are second to blood transfusions on the list of transplanted materials worldwide. However, there is a limited amount of bones that an individual can provide to either themselves (autograft) or to another recipient (allograft).
The project combines gene therapy, stem cells technologies and bioreactor technology for the development of bone graft substitute biomaterials. Applications are broad: from the replacement of damaged or diseased bone for patients of trauma, to congenital and degenerative diseases, cancer or reconstructive surgery.

Links:

Research project:
http://www.rcsi.ie/researchdb/research_piprofile.jsp?uid=62&pip=projects#themes
ERC Grantee contact details:
http://www.rcsi.ie/researchdb/research_piprofile.jsp?uid=62&pip=cv#themes

European Research Council

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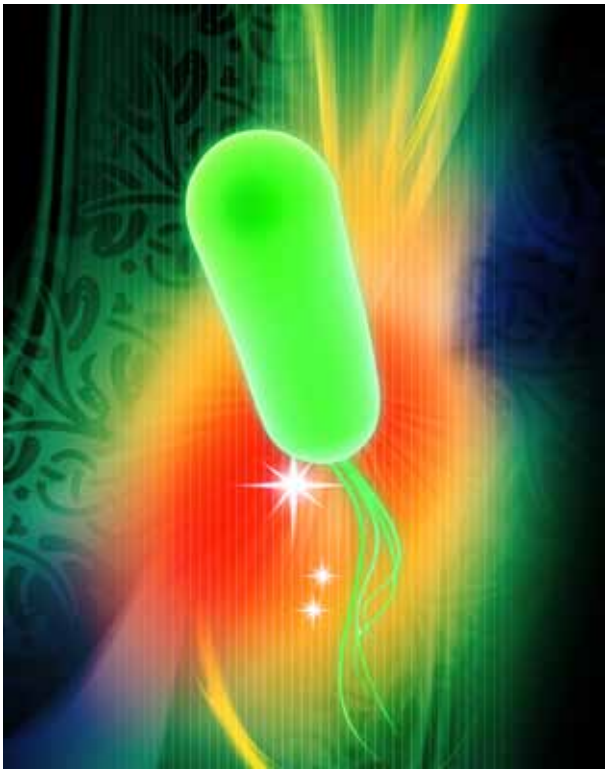
Nathalie BALABAN – Starting Grant

Subject: ***Biology – Antibiotic resistance***
Host institution: ***The Hebrew University of Jerusalem, Israel***



Tackling antibiotic resistance head on

The recent E-coli outbreak in Germany emerged as one of today's major health threats across and outside Europe. and proved to affect the rate of drugs' resistance. When new antibiotics are introduced, bacterial strains become more and more resistant to their action. This ERC-funded project aims to analyse how bacteria evolve to resist antibiotics at the single-cell level and at a population level. The researcher will use microfluidic devices to track these phenomena and will help understand the evolution of drug resistance. Results could make a major contribution in the field of evolutionary biology by pointing to new therapeutic targets and help to minimise the spread of drug resistance.

Links:

ERC Grantee contact details:
http://cond-mat.phys.huji.ac.il/nathalie/

Christian Oliver PASCHEREIT – Advanced Grant

Nationality: ***German***
Subject: ***Energy – Cleaner power generation***
Host institution: ***Technische Universität Berlin, Germany***

More new power-generation installations, less greenhouse gas CO_2 emissions

Global energy consumption is continuously increasing, leading to an increased world wide demand for new power generation installations in the near future. In order to protect the earth's climate, energy conversion efficiency and the use of sustainable resources have to be improved significantly.

Gas turbines play today, and even more in the future, a major role in energy generation, but still far from efficiency at low NOx (Nitrogen Oxides) emission. The challenge is to get improved energy conversion efficiency and a larger use of sustainable resources, at low cost.

The ERC project GREENEST investigates the fundamentals which are needed to develop the technology for a prototype combustor which is capable of burning natural gas, hydrogen and fuels from coal or bio-waste gasification at low NOx emissions. Research will include the combustion process, the aerodynamic design, acoustics and control.

Links:

ERC Grantee contact details:
http://www.fd.tu-berlin.de/index.php?id=paschereit0

European Research Council

Established by the European Commission

David MILSTEIN – Advanced Grant

Nationality: ***Israeli***
Subject: ***Energy – Responding to the Energy Grand Challenge***
Host institution: ***Weizmann Institute of Science, Rehovot, Israel***

Clean and sustainable fuel: using the potential of hydrogen

The long term potential of hydrogen as a clean, sustainable fuel is underpinned by the design of efficient systems for splitting water into hydrogen and oxygen, driven by sunlight. Systems that exist today are very inefficient and often require additional use of sacrificial chemical agents. The ERC project has demonstrated a mechanism for the formation of hydrogen and oxygen from water, without the need for sacrificial chemical agents, through individual steps, using light. The project aims at enhancing the understanding of the fundamental steps involved in this process. The research is expected to lead to the creation of an efficient catalytic system.

Links:

ERC Grantee contact details:
http://www.weizmann.ac.il/oc/milstein.shtml

Cédric BLANPAIN – Starting Grant

Nationality: ***Belgian***
Subject: ***Health – understanding the origin of cancer***
Host institution: ***Université Libre de Bruxelles (ULB), Belgium***

Unexpected research results: from analysing the role of adult stem cells in cancer initiation and growth to treating cardiovascular diseases

Stem cells are said to be at the origin of cancer as they reside and self-renew in tissues for long periods of time, increasing their lifetime risk of accumulating oncogenic mutations. By using for the first time clonal analysis during cancer development, C. Blanpain developed a novel approach to identify the cell process at the origin of cancer, still unknown in most cases. Deriving from its initial goal, this blue-sky research yielded results that could eventually be used to treat patients suffering from cardiovascular diseases. The team has been able to isolate the earliest cardiovascular progenitors, the primitive cells from which cardiac cells and certain blood vessels come from. This "success story" shows how researchers can be inspired to moving beyond disciplines' boundaries and unexpectedly find solutions to unmet medical needs. The hope is that, one day, these progenitors could replace dead or damaged cells to treat various diseases and open new avenues for drug discovery.

Links:

Research project:
http://blanpainlab.ulb.ac.be/research_main.html

ERC Grantee contact details:
http://blanpainlab.ulb.ac.be/contact.html

European Research Council

Established by the European Commission

Armin FALK – Starting Grant

Nationality: ***German***
Subject: ***Economy and neurobiology***
Host institution: ***Rheinische Friedrich-Wilhelms-Universität Bonn, Germany***

What is the role played by our brain in the "money illusion" phenomenon?

Many people view rise in their income as a good thing, even when the increase is completely negated again by inflation. This effect is called "money illusion".

Economists and brain researchers have discovered a neuronal cause of the "money illusion" phenomenon. This project is approaching this topic of "money illusion" from a new angle: by looking at neuronal processes underlying economic decisions. In experiments with 24 subjects, they already could observe that as far as the brain is concerned, money is represented as being "nominal", and not only "real". In other words: people like to be seduced by large numbers.

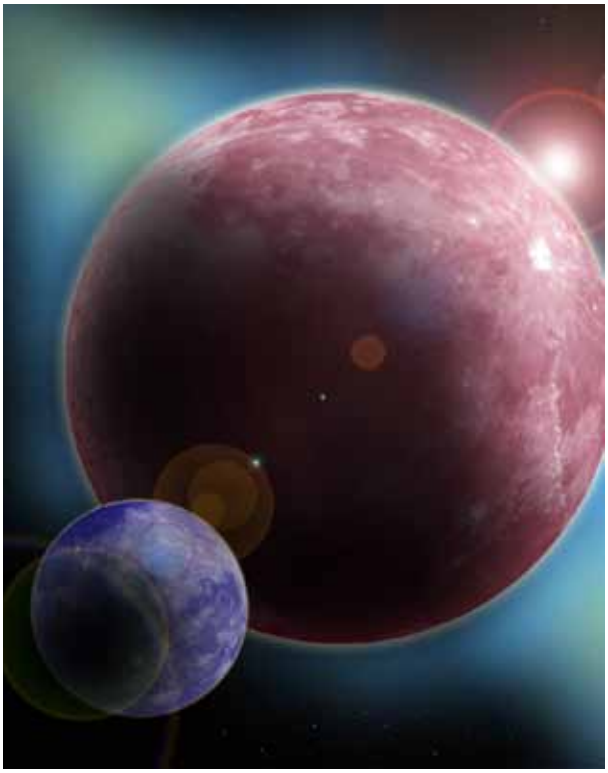
The results may help explain why nominal wages rarely sink, whereas true wages, in contrast, fall in value in period of inflation or the speculative bubbles, such as those in property or shares markets.

Links:

ERC Grantee contact details:
http://www.fiwi.uni-bonn.de/index.php?id=2485

Franck SELSIS – Starting Grant

Nationality: ***French***
Subject: ***Astrobiology – Exoplanets***
Host institution: ***Laboratoire d'Astrophysique de Bordeaux, France***



Looking for life on earth-like planets

The project E3ARTHS studies a key domain of astrobiology: the origin, evolution and identification of habitable worlds in space, and the search of biomarkers on Earth-like planets. Franck Selsis and his team are also revisiting early Earth models for a better understanding of the context of the origins of life, in the light of the recent works on Earth formation, impact history and solar evolution. Using a multidisciplinary and international approach, E3ARTHS has the potential to become one of the cores in European theoretical research on Extrasolar Terrestrial Planets (ETPs), in close interaction with direct observation programs. Since his PHD, F. Selsis has developed his own research on ETPs; he is now integrating new tools to produce virtual observations of Extrasolar Terrestrial Planets and study their potential for life.

Links:

Research project:
http://erc.europa.eu/index.cfm?fuseaction=page.display&topicID=252
http://www.obs.u-bordeaux1.fr/planetologie/Theme1.pdf

ERC Grantee contact details:
http://www.u-bordeaux1.fr/red08/fiche_selsis.htm

European Research Council

Established by the European Commission

Esperanza ALFONSO – Starting Grant

Nationality: ***Spanish***
Subject: ***Social sciences – Multiculturalism***
Host institution: ***Consejo superior de investigaciones cientificas (CSIC), Madrid, Spain***

A lesson of European multiculturalism

From the 13th to the 15th centuries, the Jews of the Iberian Peninsula (Sepharad) lived side by side with Christians and Muslims. Although persistent tensions existed between these three groups, their members contributed to a common artistic, intellectual and scientific endeavour that produced the requisite conditions for the dawn of the European Renaissance. The worldviews of each of the three communities revolved around their sacred texts. Dr. Alfonso's international team studies the production of sacred texts as objects; the history of their cataloguing and preservation; the multiple and conflicting interpretations of their contents; their role as social agents that fostered coexistence or created exclusions; their impact in literature and the arts; their relationship with medieval science; and their relationship to Muslim and Christian Scriptures.

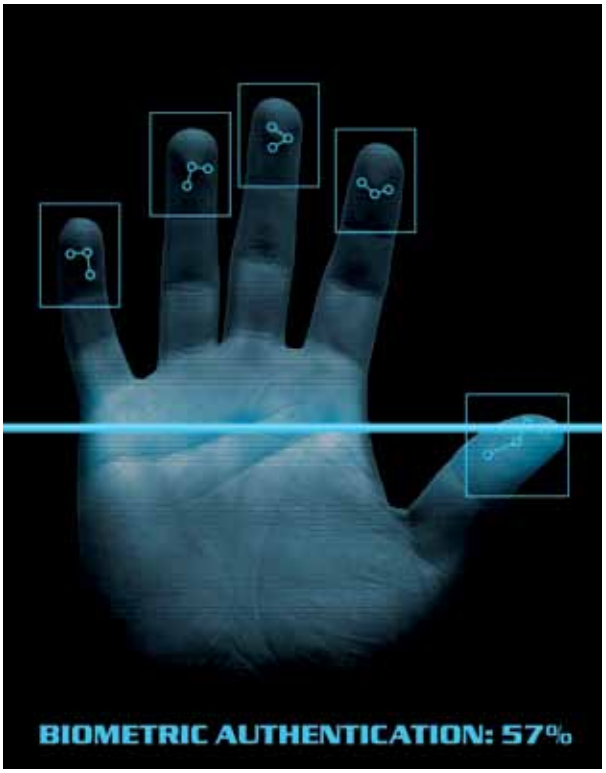
Links:

Research project:
http://erc.europa.eu/index.cfm?fuseaction=page.display&topicID=313
http://www.cchs.csic.es/es/content/oriente-en-occidente-desafiando-fronteras

ERC Grantee contact details:
http://www.cchs.csic.es/es/content/alfonso_carro_esperanza

Irma van der PLOEG – Starting Grant

Nationality: ***Dutch***
Subject: ***Information technologies – Society***
Host institution: ***Hogeschool Zuyd, Maastricht, The Netherlands***



The challenge of managing social and ethical aspects of digital identities.

Digital identity management (IdM) concerns the control of digitalized information related to a person. This type of information is usually called "personal data". With digitisation in several domains of society, the registration of personal identifiable data is increasing exponentially. The implied risks to fundamental rights like privacy and non-discrimination are recognized on the highest policy levels, but as of today still poorly understood or analyzed. In response to this challenge, the DigIDeas project examines the social and ethical aspects of digital identities. By bringing recent insights gained from several disciplines such as science and technology studies, philosophy, computer ethics, Dr Irma van der Ploeg is exploring this issue through a series of selected case studies. The aim is to increase the understanding of the topic as well as to produce a more precise knowledge of the ways IdM is related to contemporary transformations of our identity.

Links:

Research project:
http://erc.europa.eu/index.cfm?fuseaction=page.display&topicID=248
http://www.digideas.nl/

ERC Grantee contact details
http://www.digideas.nl/index.jsp?id=19

European Research Council

Established by the European Commission

Mary Kaldor – Advanced Grant

Nationality: ***British***
Subject: ***Global Governance – security***
Host institution: ***London School of Economics and Political Science, London, United Kingdom***

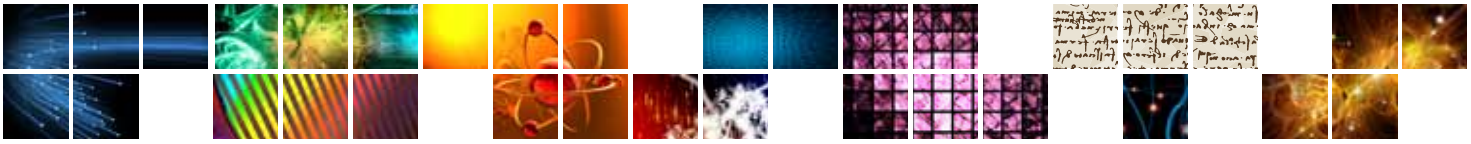
Mary Kaldor (SIT-SG): Field visit in Afghanistan

Fighting 21st century security gap

Armed conflicts, organised crime, financial crisis, or environmental degradation are examples of the 21st century global security risks. The current models of security, based on conventional military forces, can no longer easily address these threats. The project analyses this "security gap" and the ways public and private actors adapt to it. It explores the need for a human security approach to protect individuals thanks to military and civilian forces under international authorisation. By setting new indicators of insecurity, the project will help policy-makers to evaluate and adjust their current security practises in a more appropriate way.

Links:

ERC Grantee contact details:
http://www2.lse.ac.uk/internationalDevelopment/whosWho/kaldorm.aspx



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Prof Helga Nowotny
ERC President and Chair of its Scientific Council

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http://erc.europa.eu