European Research & Mobility Financing Tools

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Moscow, Russia,
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RESEARCHERS IN MOTION

Content

1. Innovation Union: EU strategy for ERA development
2. Horizon 2020: Marie Sklodowska-Curie Actions
3. Horizon 2020: European Research Council
4. Financial tools for SMEs

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1 Innovation Union: EU strategy for ERA development; Definition, Horizon 2020

- **European Research Area (ERA) "**… is a unified research area **open to the world** based on the Internal Market, in which researchers, scientific knowledge and technology circulate freely. Through ERA, the Union and its Member States will strengthen their scientific and technological bases, their competitiveness and their capacity to collectively address grand challenges" (ERA Communication, 2012)
- "Knowledge is the currency of the new economy";
- Increase in the EU R&D budget to about €80 billion for Horizon 2020;
- Member States - to invest on average 3% of EU GDP in R&D by 2020.
- Europe must increase the efficiency, effectiveness and excellence of its public research system.
- ERA is at the heart of the Europe 2020 Strategy and Innovation Union policy

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Innovation Union: EU strategy for ERA development; Some aims

- "A key aim for ERA is **to reduce both brain drain**, notably from weaker regions, as well as the **wide regional variation in research and innovation performance**, aiming at **excellence** across the Union through **smart specialization**" (ERA Communication, 2012)
- It is an opportunity for less well-performing Member States to take responsibility for reforming their research systems, driving a process of smart specialisation, and helping **to close the innovation divide**
- Horizontal coordination, e.g. harnessing **Horizon 2020, Structural Funds,** national funds, public-private investments, etc.
- **Fifth Freedom** – "free circulation of researchers and scientific knowledge, including via digital means";

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1 Innovation Union: EU strategy for ERA development; ERA priorities

- **More effective national research systems** – including increased competition within national borders and sustained or greater investment in research
- **Optimal transnational co-operation and competition** - common research agendas on grand-challenges, raising quality through Europe-wide open competition, research infrastructures
- An **open labour market for researchers** - to ensure the removal of barriers to researcher mobility, training and attractive careers
- **Gender equality and gender mainstreaming in research** – to end the waste of talent which we cannot afford and to diversify views and approaches in research and foster excellence
- **Optimal circulation, access to and transfer of scientific knowledge including via digital ERA** - to guarantee access to and uptake of knowledge by all.

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Innovation Union: EU strategy for ERA development; Digital ERA

To remove all barriers preventing development of e-Science:

- Develop and ensure provision of e-infrastructures
- Improve seamless access and use of digital research services and infrastructures
- Support take up of ICT-enabled research practices
- Policy follow-up and coordination
- Promoting Open Access to scientific information
- DIGITAL MOBILITY?!

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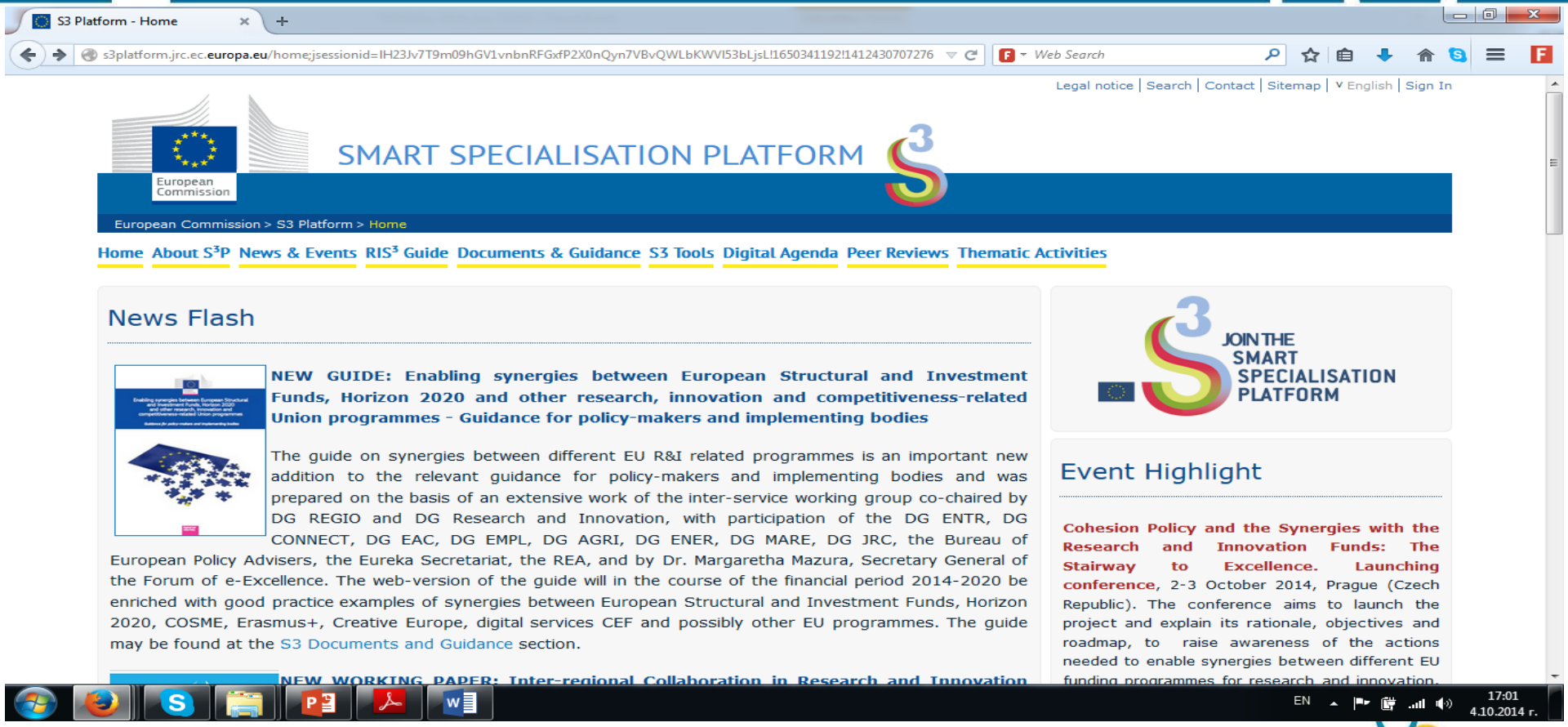
1 Innovation Union: EU strategy for ERA development; Smart Specialisation



http://s3platform.jrc.ec.europa.eu

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Innovation Union: EU strategy for ERA development; Stairway to Excellence

Stairway to Excellence, © EU, 2014

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Horizon 2020: Marie Sklodowska-Curie Actions

- Marie Skłodowska Curie Actions (MSCA) – a European Union funded programme for **researcher training, mobility and career development**
- Named after the double Nobel Prize winning Polish-French scientist
- Objectives – to ensure development and dynamic use of Europe's intellectual capital in order to generate **new skills, knowledge and innovation**
- Supports **all levels** of research from PhD researcher upwards
- Bottom-up approach – supports **all areas of research**
- Actions for European and international mobility - **anywhere** and for any research performing organization (public or private)
- Budget: € 6.162 billion

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RESEARCHERS IN MOTION

European Researchers' Night (NIGHT), public events involving researchers which take place every year across Europe on the fourth Friday of September.
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Horizon 2020: Marie Sklodowska-Curie Actions

- **Innovative Training Networks (ITN)**: support for doctoral and early-stage training; Researchers apply to a project
- **Individual Fellowships (IF):** support for experienced researchers undertaking mobility between countries, with the option to work outside academia; Researchers apply to a call for proposals
- **RISE**: International and inter-sector cooperation through the exchange of staff; Researchers supported in the institutions
- **COFUND**: co-funding of regional, national and international doctoral and fellowship programmes; Researchers apply to a call co-funded by the MSCA
- **European Researchers' Night** (NIGHT), public events involving researchers which take place every year across Europe on the fourth Friday of September.

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Horizon 2020: Marie Sklodowska-Curie
Quick guide

YOU	Host applies	Individuals apply with an organisation	Funder applies
You have < 4 years research experience	ITN, RISE		COFUND
You have > 4 years research experience or a PhD	RISE	Individual Fellowships (IF)	COFUND
Managerial and technical staff	RISE		
Events	NIGHT	http://ec.europa.eu/research/researchersnight/events_en.htm	

http://ec.europa.eu/research/mariecurieactions/about-msca/quick-guide/index_en.htm

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Horizon 2020: Marie Sklodowska-Curie
Innovative Training Networks (ITN)

- **High quality doctoral-level training in and outside academia**
- **ITN bring together universities, research centres and companies from different countries worldwide.**
- **The funding boosts scientific excellence and business innovation, and enhances researchers' career prospects through developing their skills in entrepreneurship, creativity and innovation.**

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Horizon 2020: Marie Sklodowska-Curie
Innovative Training Networks (ITN)

- **European Training Networks (ETN)-** Joint research training; to develop transferable skills by working on joint research projects; participants from any organisation anywhere in the world can join a network.
- **European Industrial Doctorates (EID)-** Joint doctoral training delivered by at least one academic partner entitled to award doctoral degrees, doctoral candidates to develop skills inside and outside academia that respond to public and private sector needs.
- **European Joint Doctorates (EJD)** - delivering joint, double or multiple degrees. Joint supervision of the research fellow and a joint governance structure are mandatory; to promote international, inter-sectoral and multi/interdisciplinary collaboration in doctoral training in Europe.

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Horizon 2020: Marie Sklodowska-Curie
Individual Fellowships (IF)

- **European Fellowships** - held in the EU or associated countries; Open to researchers either coming to Europe or moving within Europe; Can help to restart research careers after a break such as parental leave; Can also help reintegrate researchers coming back to Europe.
- **Global Fellowships** - fund secondments outside Europe for researchers based in the EU or associated countries; There is a mandatory one-year return period;
- **European and Global Fellowships** can also include a secondment period of up to 3 or 6 months in another organisation in Europe, where this would boost the impact of the fellowship.

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Horizon 2020: Marie Sklodowska-Curie

Research and Innovation Staff Exchange (RISE)

- funds **short-term exchanges** for staff to develop careers combining scientific excellence with exposure to other countries and sectors. RISE enables more interaction between academia and non-academic organisations within Europe and worldwide.
- **SMEs** are encouraged to participate.
- **Inter-sectoral exchange**. In worldwide partnerships, exchanges within the same sector are possible.
- **Joint projects** - proposals for networking opportunities, sharing of knowledge and the skills development of staff members.
- **Research staff of any nationality and any career level** (postgraduates to experienced researchers) can undertake a **secondment**. Staff members working in managerial, technical or administrative roles can also be seconded.

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Horizon 2020: Marie Sklodowska-Curie COFUND

- This action is meant for organisations that fund or manage doctoral programmes or fellowship programmes for researchers.

- Each COFUND proposal should have **a sole participant**, which could be a government ministry, regional authority, funding agency, university, research organisation, research academy or enterprise.

- Experienced researchers apply directly with the funding organisation while doctoral candidates can find vacancies of co-funded programmes on Euraxess.

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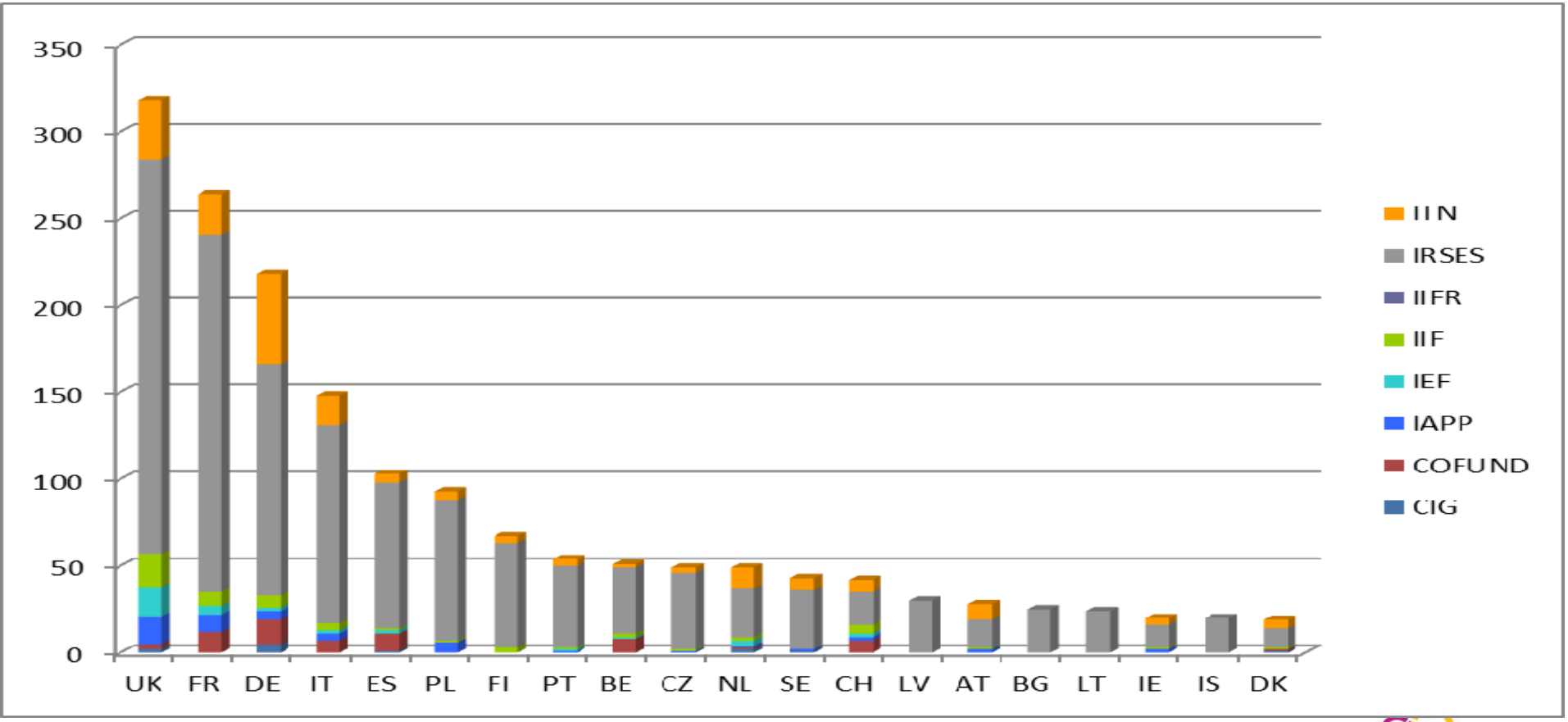
RESEARCHERS IN MOTION

Horizon 2020: Marie Sklodowska-Curie Actions: Facts

- More than 90,000 researchers of 100 different nationalities working in 70 countries were supported since 1996.
- More than 6 000 universities, research organisations and companies participated (since 2007).
- Countries hosting the highest number of Marie Curie researchers: United Kingdom, Germany, France, Spain, the Netherlands, Italy
- **Russia (2007-2014)**:
  - Number of Russian researchers funded - **1811**
  - Researchers coming to Russian organisations - **1385**
  - EU budget allocated so far to Russian organisations - **€ 11.5 million**
  - Number of Russian organisations participating MSCA - **170**
  - Number of projects - **134**

Horizon 2020: Marie Sklodowska-Curie Actions: Facts



Russian fellows benefitting from a MC grant, grouped by the country of destination (top countries): http://ec.europa.eu/research/mariecurieactions/documents/funded-projects/statistics/non-eu/marie-curie-actions-country-fiche-ru_en.pdf

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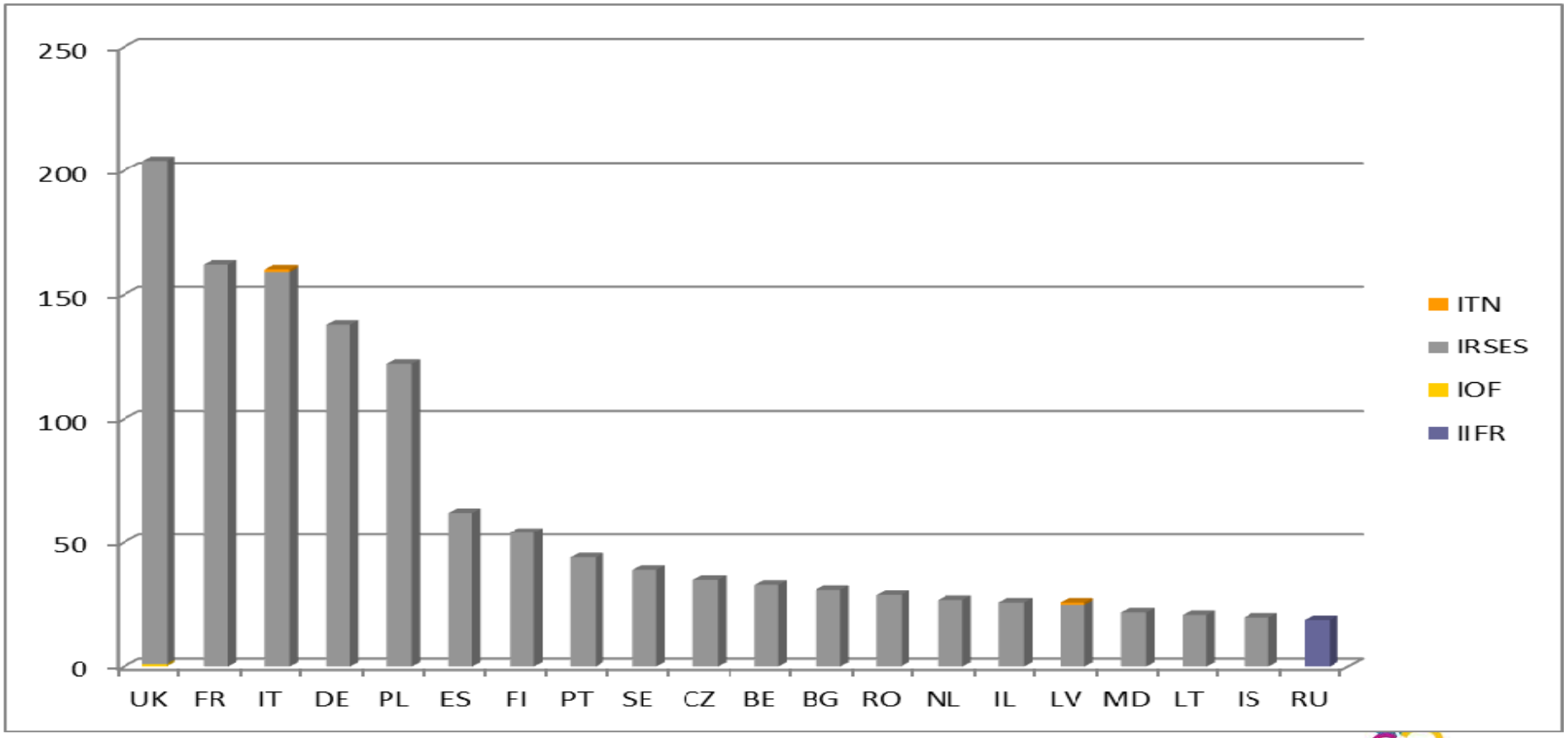
Horizon 2020: Marie Sklodowska-Curie Actions: Facts



Fellows going to Russia, grouped by their nationality (top nationalities)
http://ec.europa.eu/research/mariecurieactions/documents/funded-projects/statistics/non-eu/marie-curie-actions-country-fiche-ru_en.pdf

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Horizon 2020: Marie Sklodowska-Curie Actions: Useful links

- Marie Curie Actions home page http://ec.europa.eu/mariecurieactions
- Research Participant Portal http://ec.europa.eu/research/participants/portal/page/home
- EURAXESS http://ec.europa.eu/euraxess
- EU-Russia Researchers' Mobility Forum https://researchersmobilityforum.teamwork.fr/
- Innovative Training Networks (ITN) http://ec.europa.eu/research/mariecurieactions/about-msca/actions/itn/index_en.htm
- Individual Fellowships (IF) http://ec.europa.eu/research/mariecurieactions/about-msca/actions/if/index_en.htm
- Research and Innovation Staff Exchange (RISE) http://ec.europa.eu/research/mariecurieactions/about-msca/actions/rise/index_en.htm
- COFUND http://ec.europa.eu/research/mariecurieactions/about-msca/actions/cofund/index_en.htm

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Horizon 2020: European Research Council

- Autonomous funding body set up by the EU in 2007 and led by scientists
- Funding excellent researchers of any nationality, to carry out frontier research in Europe
- In all fields of science and humanities, without thematic priorities
- 1 researcher, 1 Host Institution, 1 project, 1 selection criterion
- Substantial grants and a recognised label of excellence
- International, top level peer-review

(Official presentation of ERC are adapted in this presentation, such as: http://www.math.bas.bg/mds2014/resources/ppt-ERC-Bourguignon-Sofia.pdf)

Horizon 2020: European Research Council ERC main funding schemes

Starting Grants
starters
(2-7 years after PhD) up to € 2.0 Mio
for 5 years

Consolidator Grants
consolidators
(7-12 years after PhD) up to € 2.75 Mio
for 5 years

Advanced Grants
track-record of significant research achievements in the last 10 years
up to € 3.5 Mio
for 5 years

Proof--of--Concept - bridging gap between research - earliest stage of marketable innovation €150,000 for ERC grant holders

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RESEARCHERS IN MOTION

Horizon 2020: European Research Council
Grants

- **Researcher (PI: Principal Investigator)**
  - ERC funds individual scientists
  - Any nationality, age or current place of work in the world
  - Starting, Consolidator or Advanced grant (depending on work experience and scientific achievements)
  - Exceptional scientific profile
- **Research team**
  - The PI can choose national or trans-national team members if scientific added value proven
  - The grant covers the salary of team members

Horizon 2020: European Research Council
Grants

- **Frontier research project**
  - All fields of fundamental research: Physical Sciences & Engineering, Life Sciences, Social Sciences & Humanities
  - Bottom-up: no predetermined subjects, no priorities
  - High risk/high gain
  - Up to 5 years projects
  - No consortia
- **Host Institution (HI) in Europe**
  - The one where the researcher already works, or any other institution established in the EU or associated countries
  - Grants are portable (the PI can change Host Institution)
  - Universities, research centres; public or private

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Horizon 2020: European Research Council ERC achievements

- Highly recognised by the research community
- Over 4 300 top researchers funded (65% are at an early-career stage); 64 nationalities represented
- **Highly competitive** (average success rate 12%)
- Working in almost 600 different institutions in 29 countries
- 50% of grantees in 50 institutions: “Excellence attracts excellence”
- **Benchmarking** effect: impact on national programmes and agencies; national funding for best "runners-up"
- Efficient and fast grant management

Horizon 2020: European Research Council
Grantees

ERC offers independence, recognition & visibility

- to work on a research topic of **own choice**, with a team of **own choice**
- to gain true **financial autonomy** for 5 years
- to negotiate with the host institution the **best conditions** of work
- to move with the grant to any place in Europe if necessary (**portability of grants**)
- to attract additional funding and gain recognition; ERC is a quality label
- to attract top team members (EU and non-EU) and collaborators
- ERC calls are open to researchers of **any nationality, age or current place of work** in the world (but at least 50% of work time in Europe)

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ERC:
Evaluation of proposals: panel structure

Life Sciences

- LS1 Molecular & Structural Biology & Biochemistry
- LS2 Genetics, Genomics, Bioinformatics & Systems Biology
- LS3 Cellular and Developmental Biology
- LS4 Physiology, Pathophysiology & Endocrinology
- LS5 Neurosciences & neural disorders
- LS6 Immunity & infection
- LS7 Diagnostic tools, therapies & public health
- LS8 Evolutionary, population & environmental biology
- LS9 Applied life sciences & biotechnology

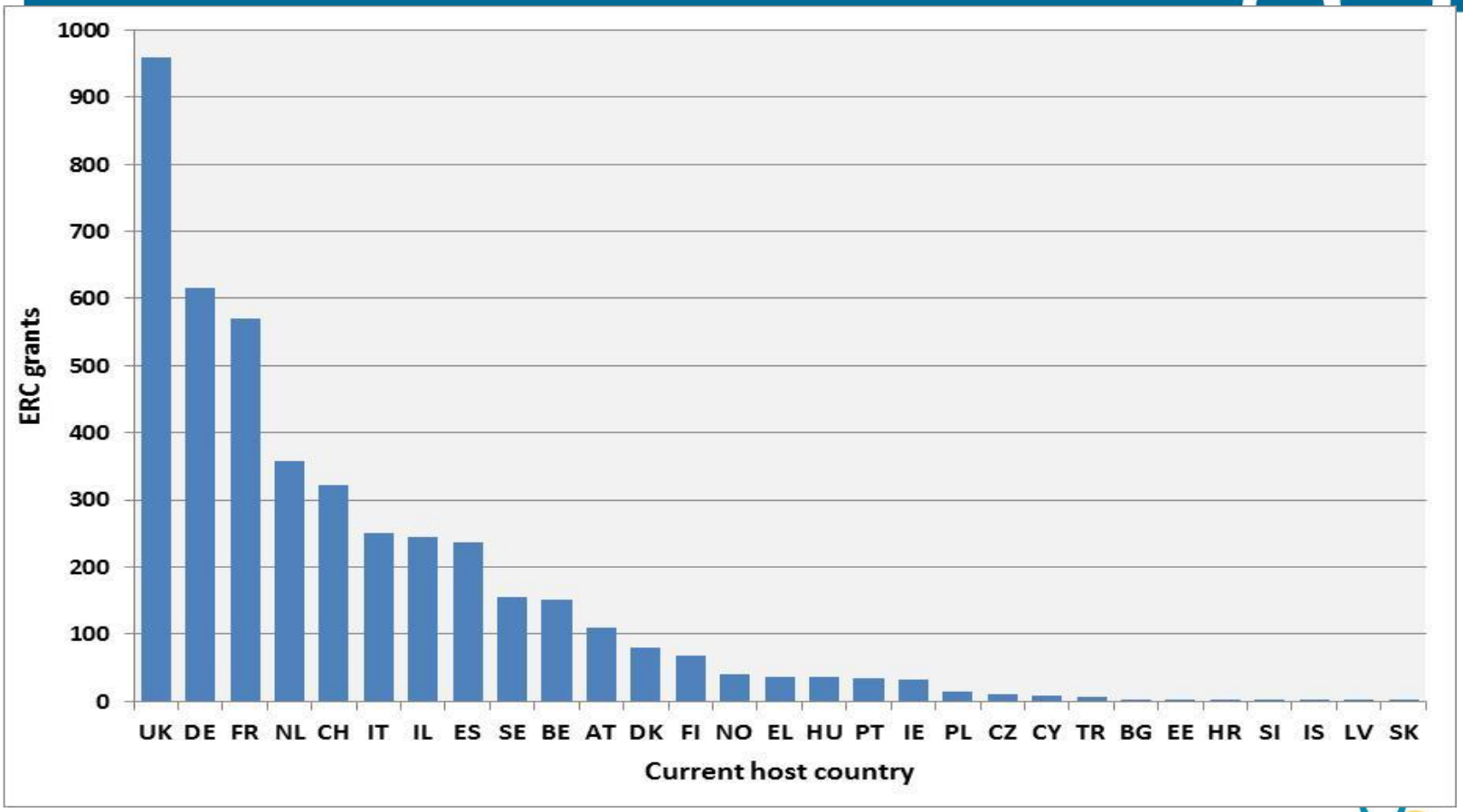
Social Sciences and Humanities

- SH1 Individuals, institutions & markets
- SH2 The social world, diversity and common ground
- SH3 Environment ,space and population
- SH4 The Human Mind and its complexity
- SH5 Cultures & cultural production
- SH6 The study of the human past

Physical Sciences & Engineering

- PE1 Mathematics
- PE2 Fundamental constituents of matter
- PE3 Condensed matter physics
- PE4 Physical & Analytical Chemical sciences
- PE5 Materials & Synthesis
- PE6 Computer science & informatics
- PE7 Systems & communication engineering
- PE8 Products & process engineering
- PE9 Universe sciences
- PE10 Earth system science

ERC achievements Grants per country of host institution ERC Starting, Consolidator, Advanced Grant calls 2007-2013



Current Host Institutions – data as of 11/02/2014

Top European Institutions hosting at least 30 ERC Grantees by funding Schemes

Country	Higher-Education Institution	No	StG/CoG	AdG	Total	LS	PE	SH
UK	University of Oxford	1	63	58	121	37	51	33
UK	University of Cambridge	2	69	49	118	40	57	21
UK	University College London	3	55	30	85	34	18	33
CH	Swiss Federal Institute of Technology Zurich (ETH Zurich)	4	35	46	81	25	53	3
CH	Swiss Federal Institute of Technology Lausanne (EPFL)	5	44	36	80	23	55	2
IL	Weizmann Institute	6	51	28	79	45	33	1
IL	Hebrew University of Jerusalem	7	43	30	73	33	26	14
UK	Imperial College	8	34	27	61	23	38	
UK	University of Edinburgh	9	24	21	45	10	21	14
BE	University of Leuven	9	30	15	45	12	23	10
UK	University of Bristol	10	18	21	39	8	25	6
DE	University of Munich (LMU)	11	14	24	38	16	16	6
NL	University of Amsterdam	11	21	17	38	3	11	24
NL	Radboud University Nijmegen	12	25	12	37	14	11	12
NL	Leiden University	13	21	15	36	1	17	18
NL	Utrecht University	14	20	13	33	8	17	8
IL	Technion - Israel Institute of Technology	14	25	8	33	9	23	1
CH	University of Zurich	14	18	15	33	21	5	7
UK	King's College London	15	22	9	31	12	5	14
IL	Tel Aviv University	15	17	14	31	11	17	3
CH	University of Geneva	15	14	17	31	19	9	3
FI	University of Helsinki	16	16	14	30	21	7	2
SE	Karolinska Institute	16	18	12	30	28		2

Country	Research Organisation	No	StG	AdG	Total	LS	PE	SH
FR	National Centre for Scientific Research (CNRS)	1	143	66	209	59	119	31
DE	Max Planck Society	2	65	45	110	58	45	7
FR	National Institute of Health and Medical Research (Inserm)	3	39	18	57	54	1	2
FR	French Alternative Energies and Atomic Energy Commission	4	34	9	43	7	35	1
ES	Spanish National Research Council (CSIC)	5	25	15	40	15	20	5
FR	National Institute for Research in Computer Science and Automatic Control (INRIA)	6	19	12	31		31	

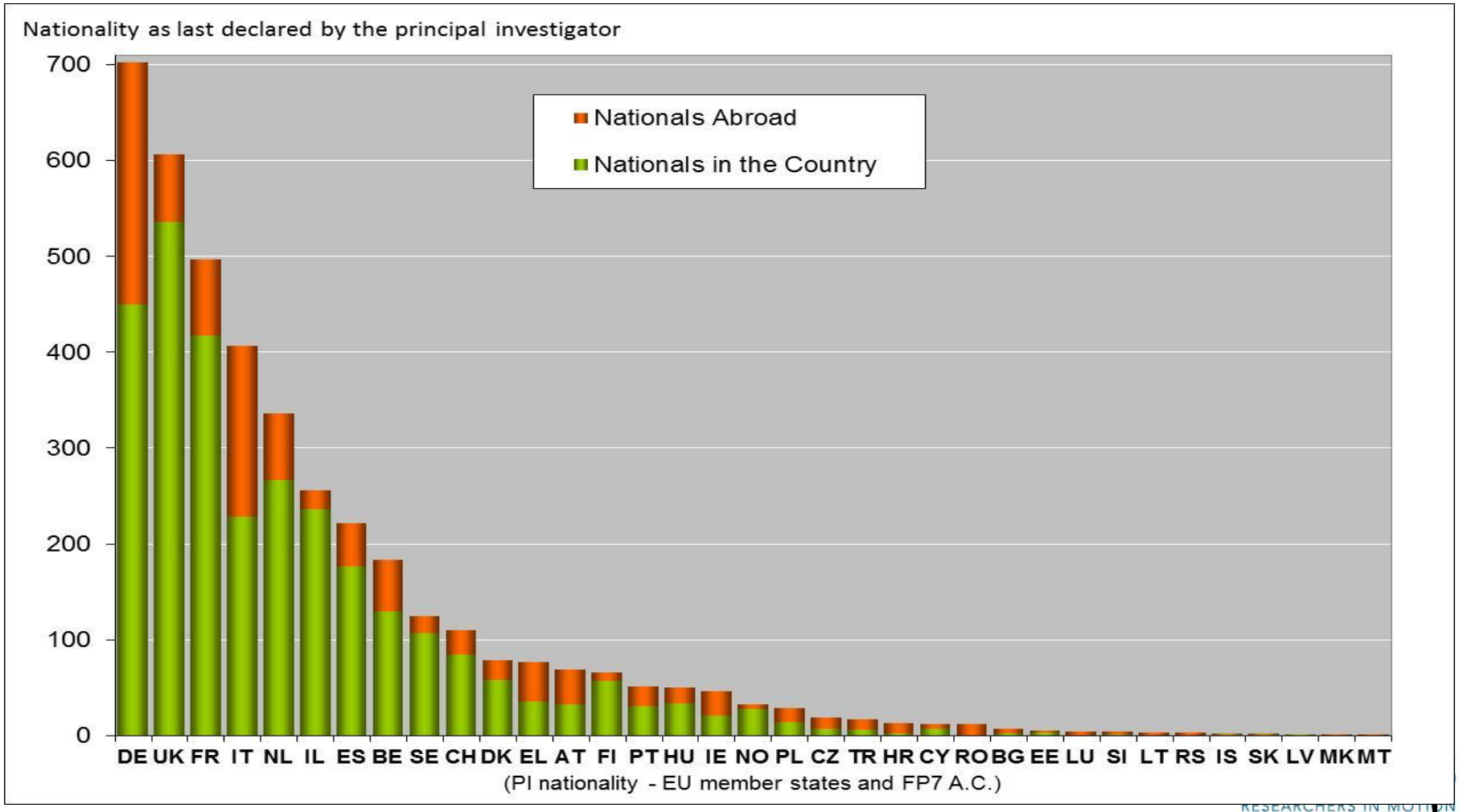
StG/CoG 2007-2013
AdG 2008-2013

First legal signatories of the grant agreement

Data as of 11/02/2014

ERC achievements

ERC grantees with ERA nationality*



*) nationality as last declared by the principal investigator

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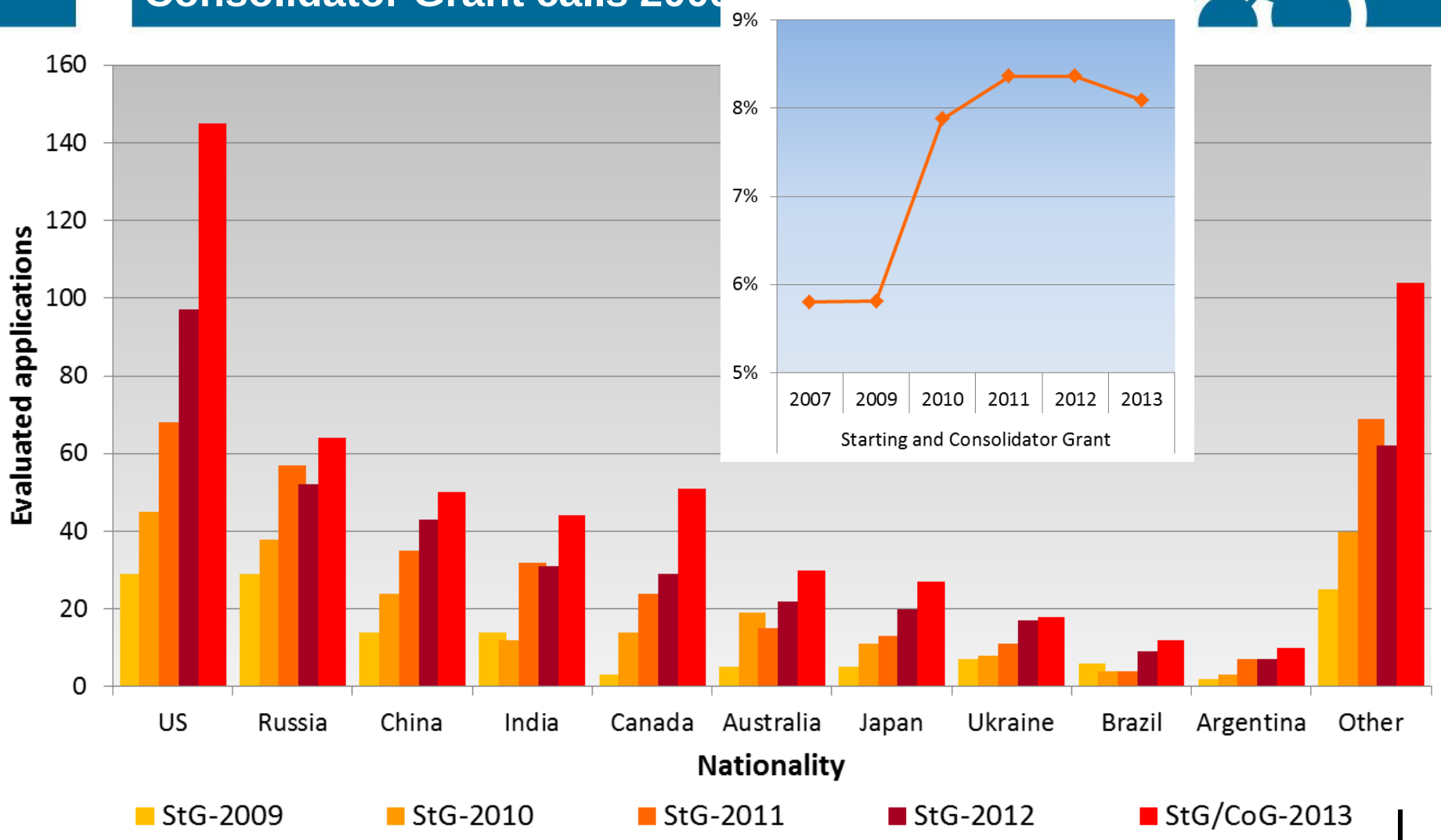
ERC achievements Evaluated proposals from researchers with non-ERA* nationality; ERC Starting and Consolidator Grant calls 2009 – 2013



* ERA = European Research Area

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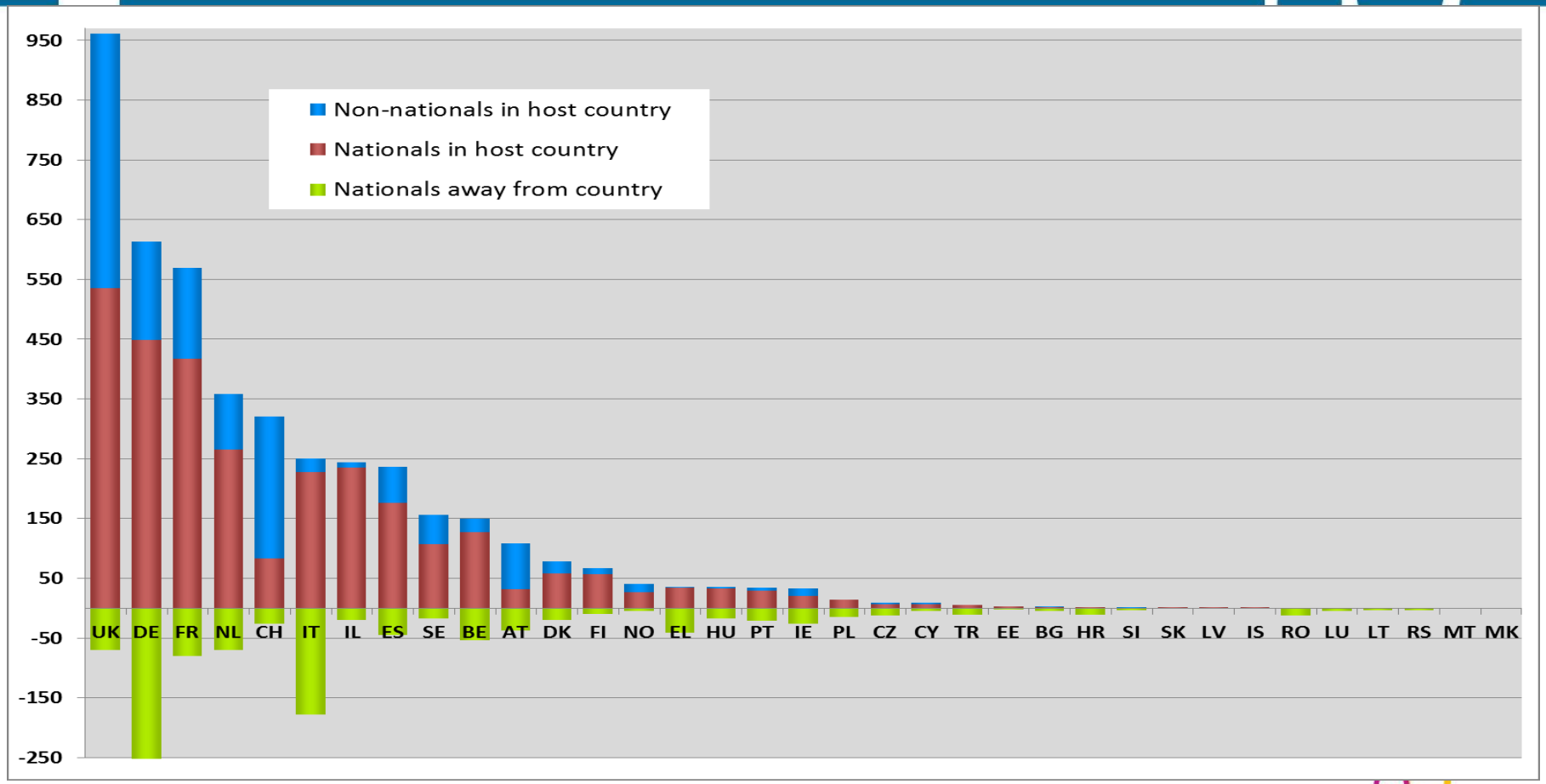
Mobility of Researchers



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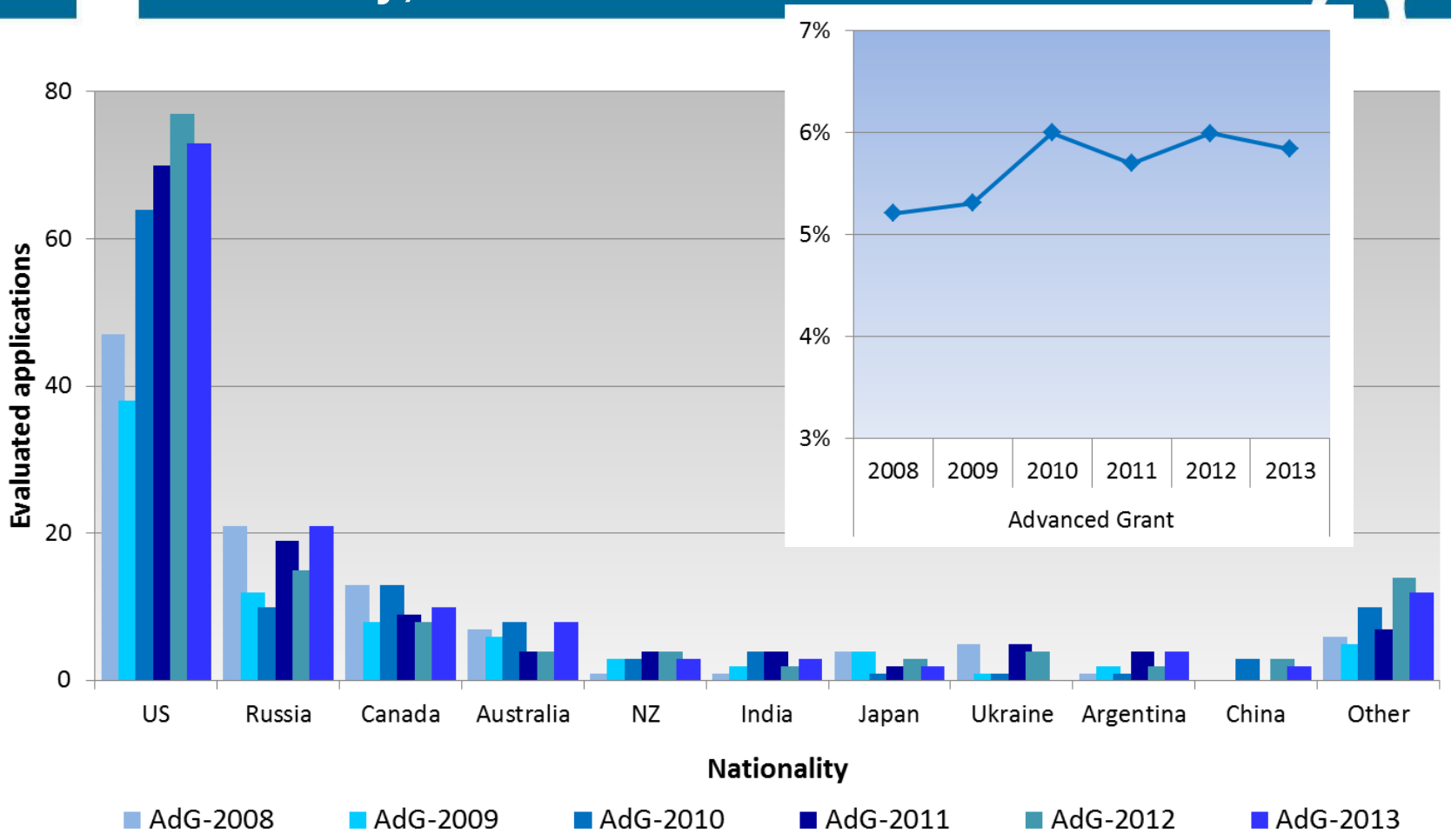
*** ERA = European Research Area**

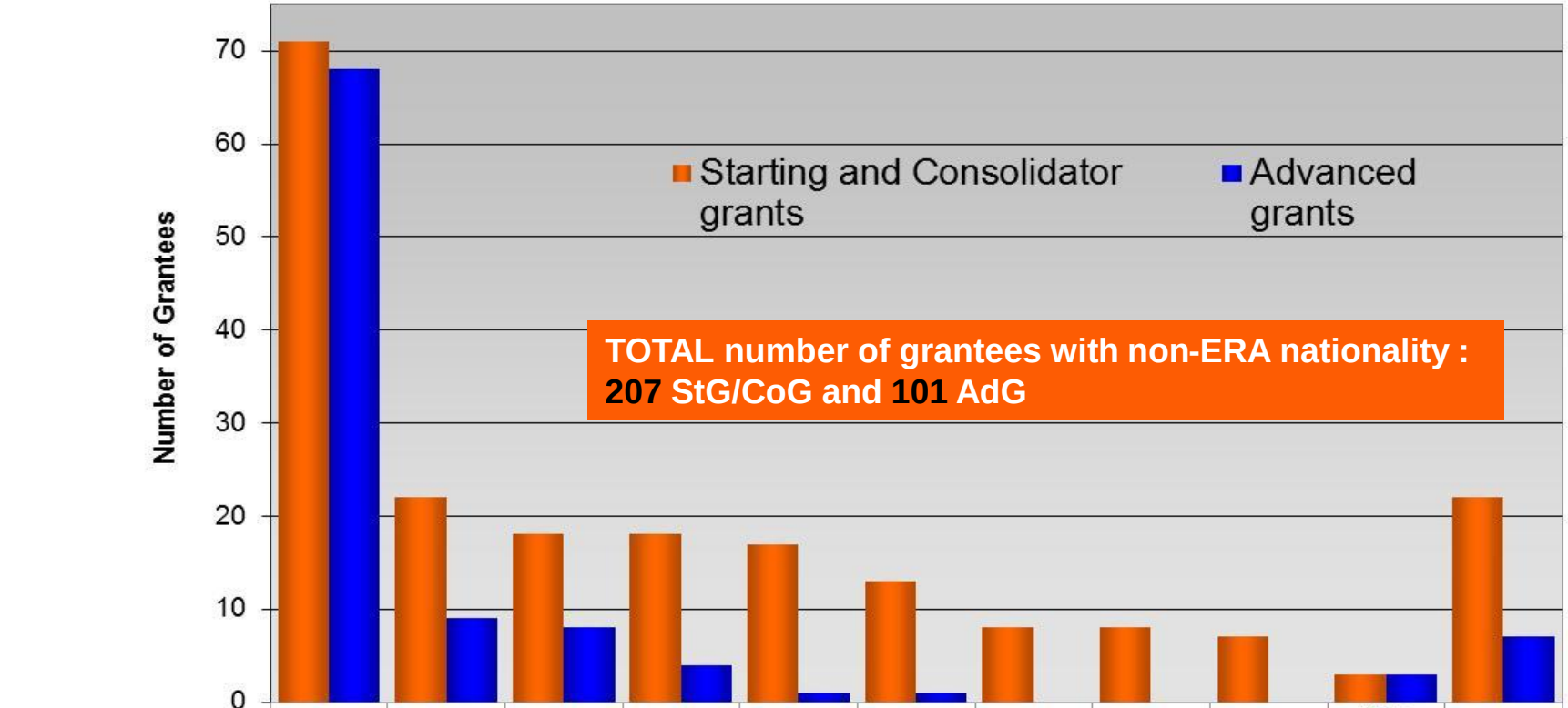
ERC achievements

Evaluated proposals from researchers with non-ERA* nationality; ERC Advanced Grant calls 2008 – 2013



*** ERA = European Research Area**

ERC achievements ERC grantees with a non-ERA nationality* ; ERC Starting, Consolidator and Advanced Grant calls 2007 – 2013



	USA	Canada	Russia	Australia	India	Japan	Argentina	China	Ukraine	New Zealand	Others
Starting and Consolidator grants	71	22	18	18	17	13	8	8	7	3	22
Advanced grants	68	9	8	4	1	1	0	0	0	3	7

Nationality

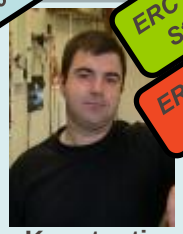
Data as of 11/02/2014

*) nationality as last declared by the principal investigator

ERC achievements

Highly distinguished grantees

Serge Haroche
Nobel 2012
ERC Grantee AdG 2009



Konstantin Novoselov
Nobel 2010
ERC Grantee StG 2007
ERC Grantee SyG 2012

Ada Yonath
ERC Grantee AdG 2012

Andre Geim
ERC Grantee AdG 2012

Christoforos Pissarides
ERC Grantee AdG 2012

Theodor Hansch
ERC Grantee AdG 2010

James Heckman
ERC Grantee AdG 2010

Jean-Marie Lehn
ERC Grantee AdG 2011

Stanislav Smirnov	AdG 2008
Elon Lindenstrauss	AdG 2010
Simon Donaldson	AdG 2009

2014 Breakthrough Prize: Simon Donaldson (Math), Michael Green (Phys), Michael Hall (Life Sci)

2014 Brain Prize	G. Rizzolatti and S. Dehaene - AdG 2009
2014 Kavli Prize	Thomas Ebbesen - AdG 2008
2014 Wolf Prize	Leif Andersson - AdG 2011
2014 EMBO Gold Medal	Sophie Martin - StG 2010

Other Prizes awarded to ERC grantees

BALZAN PRIZE 2013 - Pascale COSSART - AdG 2008, Alain ASPECT - AdG 2010

EUROPEAN LATSIS PRIZE 2012 - Uffe HAAGERUP - AdG 2009

LEIBNIZ PRIZE 2012 Michael BRECHT - AdG 2008, Joerg WRACHTRUP - AdG 2010

FEBS|EMBO WOMEN IN SCIENCE 2014 - Pascale COSSART - AdG 2008

FEBS|EMBO WOMEN IN SCIENCE 2011 - Carol ROBINSON - AdG 2010

CRAFOORD PRIZE 2011 and EUROPEAN LATSIS PRIZE 2010 – Ilkka Hanski - AdG 2008

L'ORÉAL-UNESCO AWARD FOR WOMEN IN SCIENCE 2011 - Anne L'Huillier - AdG 2008

WOLF PRIZE 2010 – Anton ZEILINGER, David BAULCOMBE - AdG 2008, Alain ASPECT - AdG 2010

HOLBERG PRIZE 2013 - Bruno LATOUR - AdG 2010

WOLF PRIZE 2013 - Peter ZOLLER -

CRAFOORD PRIZE 2013 – L. KLARESKOG - AdG 2009

BALZAN PRIZE 2012 - David BAULCOMBE - AdG 2008

KELVIN PRIZE 2012 - Colin McINNES - AdG 2008

EMBO GOLD MEDAL 2012 - Jiri FRIML - StG 2011

EMBO GOLD MEDAL 2011 – S. BOULTON - AdG 2010

EMBO GOLD MEDAL 2010 – Jason W CHIN - StG 2007

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Horizon 2020: European Research Council RUSSIA

- FP7: Russia 452 organisations in 281 projects, €54.9 million; USA 369 organisations in 287 projects, €36.4 million
- ERC: Selected projects of researchers of Russian nationality – 25; About € 37.4 million;
- some researchers of Russian nationality applied and were selected for an ERC grant with a different nationality. They are thus not included in the above statistics.

(ERC Country Sheet)

3

Horizon 2020: European Research Council RUSSIA

- **Dr Konstantin Novoselov**, holder of an ERC Starting grant and an ERC Synergy grant, was awarded the N**obel Prize in Physics in 2010**, together with Sir Andre Geim, an ERC Advanced grantee since 2012, for "**ground-breaking experiments regarding the two-dimensional material graphene**". Two years earlier, he received an ERC grant for his project on the same material, a one-atom-thick crystal with unusual quantum conductive properties. It is tipped for a number of future applications in electronics and photonics.
- **Eight national scientists** are serving as ERC panel members or remote referees, external experts involved in the evaluation and the selection of ERC grantees.

3

Horizon 2020: European Research Council Examples of ERC projects

Theme: The role of financial institutions in the 2008 crisis

- Current models of financial markets do not take into account financial institutions such as investment banks, mutual funds or hedge funds. It is however believed that the financial markets served as the main channel that amplified and propagated the financial crisis in 2008. With her Starting grant, Dr Anna Pavlova intends to model how financial institutions influence market prices and allocations. Her project is two-fold. It first aims at shedding light on how institutional investors make decisions to buy or sell a particular asset. What are their incentives in choosing one or the other? The second line of work integrates international economics and finance (asset pricing) to build a model that could explain how choices are made to compose asset portfolios and which factors make financial markets move in similar directions at international level. The ultimate goal, by combining insights from both strands of work, is to understand how instability in the financial sector spreads across countries and how financial institutions contribute to this spread.
- Principal investigator: **Anna Pavlova**
- Host institution: London Business School, UK
- Project: Institutional Frictions in International Finance and Asset Pricing (IFAP)
- ERC call: Starting grant 2010
- ERC funding: € 926 000 for 5 years

euraxess RESEARCHERS IN MOTION

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Horizon 2020: European Research Council Examples of ERC projects

- Could we estimate the parameters of the tsunami source from the ionosphere?
- Some years ago, it was found that earthquakes can generate pressure waves in one of the atmospheric layers - the ionosphere - which in turn can affect Global Positioning System (GPS) signals. Since atmospheric signals travel much faster than tsunamis, they constitute a potential means to warn countries of upcoming tsunamis. With her ERC Starting grant, Dr Elvira Astafyeva at the Institut de Physique du Globe de Paris (France) studies the ionosphere's response to large earthquakes by continuous GPS monitoring of the upper atmosphere. The outcome of her innovative research would contribute to determine parameters of seismic source from ionospheric data shortly after an earthquake. This would open new possibilities of early tsunami warnings.
- Principal investigator: **Elvira Astafyeva**
- Host institution: Institut de Physique du Globe de Paris, France
- Project: Seismology in the ionosphere? This is REAL! Ionosphere as a natural indicator of numerous geophysical events (SIREAL)
- ERC call: Starting grant 2012
- ERC funding: € 858 000 for 5 years

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Horizon 2020: European Research Council Examples of ERC projects

- A promising model for research on stem cell, regeneration and ageing

- According to the ‘stem-cell theory of ageing', the functional decline of adult stem cells is one of the factors contributing to ageing. The number of stem cells does not diminish but changes occur that affect the way they function, which could have a role in triggering the ageing process. Experiments in the promising model organism Macrostomum lignano - a small, transparent flatworm living in the Adriatic sea - suggest that, when regeneration is provoked in this animal, its ‘ageing programme’ is reset and the flatworm lives longer than average. Dr Eugene Berezikov studies the molecular mechanisms behind the high regeneration capacity of M. lignano. He aims to further advance the animal as a model organism for research into stem cells, regeneration and ageing. To do this, he will develop missing genetic tools and resources, including genome sequencing and annotation, methods for efficient transgenesis (i.e. the process of introducing a new gene into a living organism so that it acquires a new property) and gene manipulation. These efforts would ultimately support research endeavours to understand the mechanism of regeneration, stem cell ageing and rejuvenation.
- Principal investigator: **Eugene Berezikov**
- Host institution: Academisch Ziekenhuis Groningen, The Netherlands
- Project: Harvesting the power of a new model organism: stem cells, regeneration and ageing in Macrostomum lignano (MACMODEL)
- ERC call: Starting grant 2012
- ERC funding: € 1.5 million for 5 years

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Horizon 2020: European Research Council Examples of ERC projects

- Super-resolution mass spectrometry for health and energy applications

- Research into chemical and biological processes in nature and technology increasingly requires observations at a molecular level. Mass spectrometry is a key technique for this purpose: it can provide high-resolution data for in-depth analysis of organic, inorganic and biological molecules even when sample amounts are minimal. In this project, Prof. Yury Tsybin wants to advance mass spectrometry-based applications by speeding things up significantly and opening new avenues in molecular structure analysis. This would for instance improve the identification and quantification of low-abundant proteins in a cell, structure analysis of large intact proteins, e.g., monoclonal antibodies, or the analysis of the numerous constituents of crude oils or biofuels. In a longer term and at smaller scale, the tool could even be considered in an attempt to differentiate positional isomers of small molecules by mass, which may be seen as an ability to weigh chemical bonds within a molecule. The latter represents the ultimate goal of mass spectrometry in terms of resolution and may be useful for a rational design of pharmaceutical molecules. This project could have applications in the field of health for drug discovery, preventive and personalised medicine; and for environmental sciences in energy production and processing.
- Principal investigator: **Yury Tsybin**
- Host institution: Ecole Polytechnique Fédérale de Lausanne, Switzerland
- Project: Super-resolution mass spectrometry for health and sustainability (SRMS4HESUS)
- ERC call: Starting grant 2011
- ERC funding: € 1.42 million for 5 years

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Financial tools for SMEs
MSCA

Non academic sector, including SME, may not necessarily have the facilities, financial resources or human capital to run their research projects as they would like to. However, MSCA enable them to:

- collaborate with research organisations
- have access to equipment only found in academic institutions
- associate some of the highly skilled researchers found in academia with the research projects of the firm.

With the MSCA, companies, and in particular SMEs, can recruit PhD candidates or experienced researchers (post-doc) during their entire fellowship and participate in staff exchange programmes in order to benefit from knowledge transfer and enhance their competitiveness.

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Financial tools for SMEs
SME Instrument

The SME instrument has been designed specifically for single or groups of highly innovative SMEs with international ambitions, determined to turn strong, innovative business ideas into winners on the market. The instrument provides full-cycle business innovation support from the stage of business idea conception and planning (phase I) over business plan execution and demonstration (phase II) to commercialisation (phase III). Participants will be able to call on business innovation coaching for the duration of their project.

- **Phase I (proof-of-concept):** Explore the scientific or technical feasibility and commercial potential of your new idea in order to develop an innovation project, with the help of a € 50,000 grant, and receive more support in case of a positive outcome!
- **Phase II (development & demonstration)**: Develop your sound, ground-breaking business idea further with the help of a grant in the order of € 500,000 to 2,5 million into a market-ready product, service or process!
- **Phase III (go-to-market):** Take advantage of additional EU support to enter the market successfully (no grants).

http://ec.europa.eu/research/participants/portal/desktop/en/funding/sme_participation.html

Questions?