



European Research Council

Established by the European Commission

Jean Pierre BOURGUIGNON
ERC President



Horizon 2020
European Union funding
for Research & Innovation

June 2019

The European Research Council



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ERC: Achievements and Perspectives

Jean Pierre BOURGUIGNON
ERC President

What is the ERC?



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The ERC supports excellence in Frontier Research through a bottom-up, individual-based, pan-European competition

Strategy

- Support for the **individual scientists** – no networks!
- **Global peer-review**
- No predetermined subjects (**bottom-up**)
- Support of **frontier research** in **all fields of science and humanities**

Legislation

- Scientific governance: **independent Scientific Council** with 22 members including the ERC President; **full authority over funding strategy and evaluation**
- Support by the **ERC Executive Agency** (autonomous)
- **Scientific quality** as the only criterion aiming for excellence



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ERC Scientific Council in the Lead



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- Prof. Manuel ARELLANO (*Economics*)
- **Prof. Jean-Pierre BOURGUIGNON** (*Mathematics*), **ERC President**
- Prof. Paola BOVOLENTA (*Neurobiology*)
- Prof. Margaret BUCKINGHAM (*Biology*)
- Prof. Eveline CRONE (*Psychology*)
- Prof. Ben L. FERINGA (*Organic Chemistry*)
- Prof. Andrzej JAJSZCZYK (*Electronics and Communication Engineering*)
- Prof. Tomas JUNGWIRTH (*Condensed Matter Physics*)
- Prof. Michael KRAMER (*Astrophysics*)
- Prof. Kurt MEHLHORN (*Computer Science*)
- Prof. Barbara ROMANOWICZ (*Geophysics*)
- Prof. Martin STOKHOF (*Philosophy*), **ERC Vice-President**
- Prof. Giulio SUPERTI-FURGA (*Medical Systems Biology*)
- Prof. Nektarios TAVERNARAKIS (*Molecular Systems Biology*)
- Prof. Janet THORNTON (*Bioinformatics and Structural Biology*), **ERC Vice-President**
- Prof. Isabelle VERNOS (*Molecular and Cell Biology*)
- Prof. Lene VESTERGAARD HAU (*Nanophysics*)
- Prof. Michel WIEVIORKA (*Sociology*)
- Prof. Fabio ZWIRNER (*Theoretical and High-Energy Physics*), **ERC Vice-President**

ERC Grant Scheme



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Starting Grants

starters
(2-7 years after PhD)
up to € 1.5 Mio
for 5 years

Consolidator Grants

consolidators
(7-12 years after PhD)
up to € 2 Mio
for 5 years

Advanced Grants

track-record of
significant research
achievements in the
last 10 years
up to € 2.5 Mio
for 5 years

Proof-of-Concept

bridging gap between research and
early stage of marketable innovation
up to €150,000 for ERC grant holders

Synergy Grants (re-launched 2018)

2 – 4 Principal Investigators
up to € 10.0 Mio for 6 years

Covering All Domains of Science

Life Sciences

- LS1 Molecular Biology, Biochemistry, Structural Biology and Molecular Biophysics
- LS2 Genetics, 'Omics', Bioinformatics and Systems Biology
- LS3 Cellular and Developmental Biology
- LS4 Physiology, Pathophysiology and Endocrinology
- LS5 Neurosciences and Neural Disorders
- LS6 Immunity and Infection
- LS7 Applied Medical Technologies, Diagnostics, Therapies and Public Health
- LS8 Ecology, Evolution and Environmental Biology
- LS9 Applied Life Sciences, Biotechnology and Molecular and Biosystems Engineering

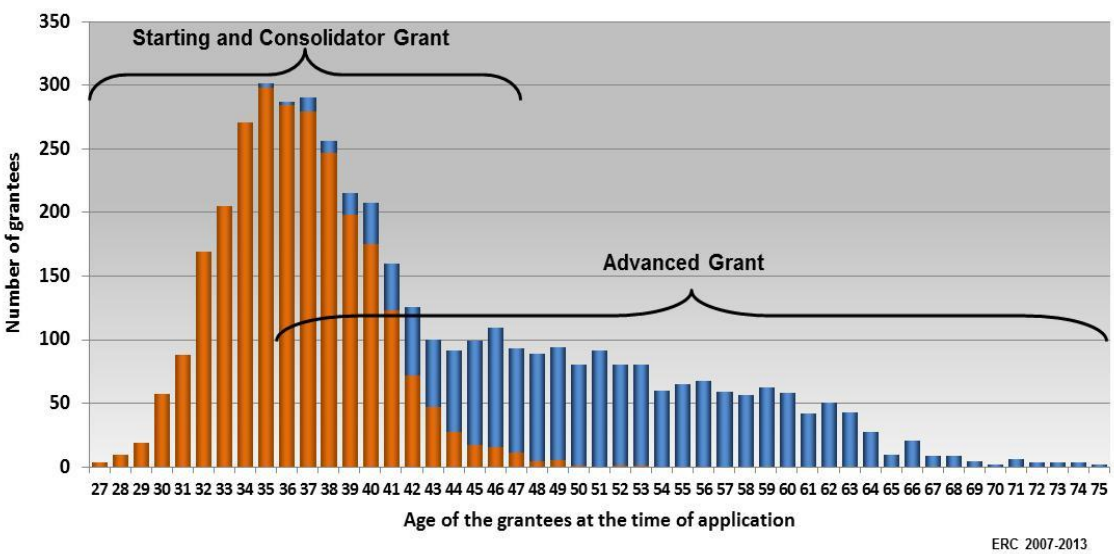
Physical Sciences & Engineering

- PE1 Mathematics
- PE2 Fundamental Constituents of Matter
- PE3 Condensed Matter Physics
- PE4 Physical and Analytical Chemical Sciences
- PE5 Synthetic Chemistry and Materials
- PE6 Computer Science and Informatics
- PE7 Systems and Communication Engineering
- PE8 Products and Process Engineering
- PE9 Universe Sciences
- PE10 Earth System Science

Social Sciences and Humanities

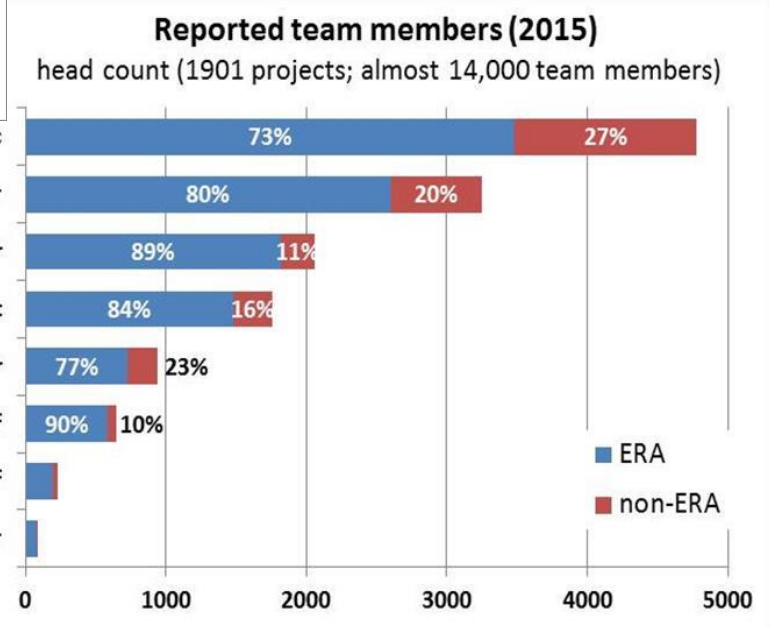
- SH1 Individuals, Markets and Organisations
- SH2 Institutions, Values, Environment and Space
- SH3 The Social World, Diversity, Population
- SH4 The Human Mind and Its Complexity
- SH5 Cultures and Cultural Production
- SH6 The Study of the Human Past

Priority to Young Scientists



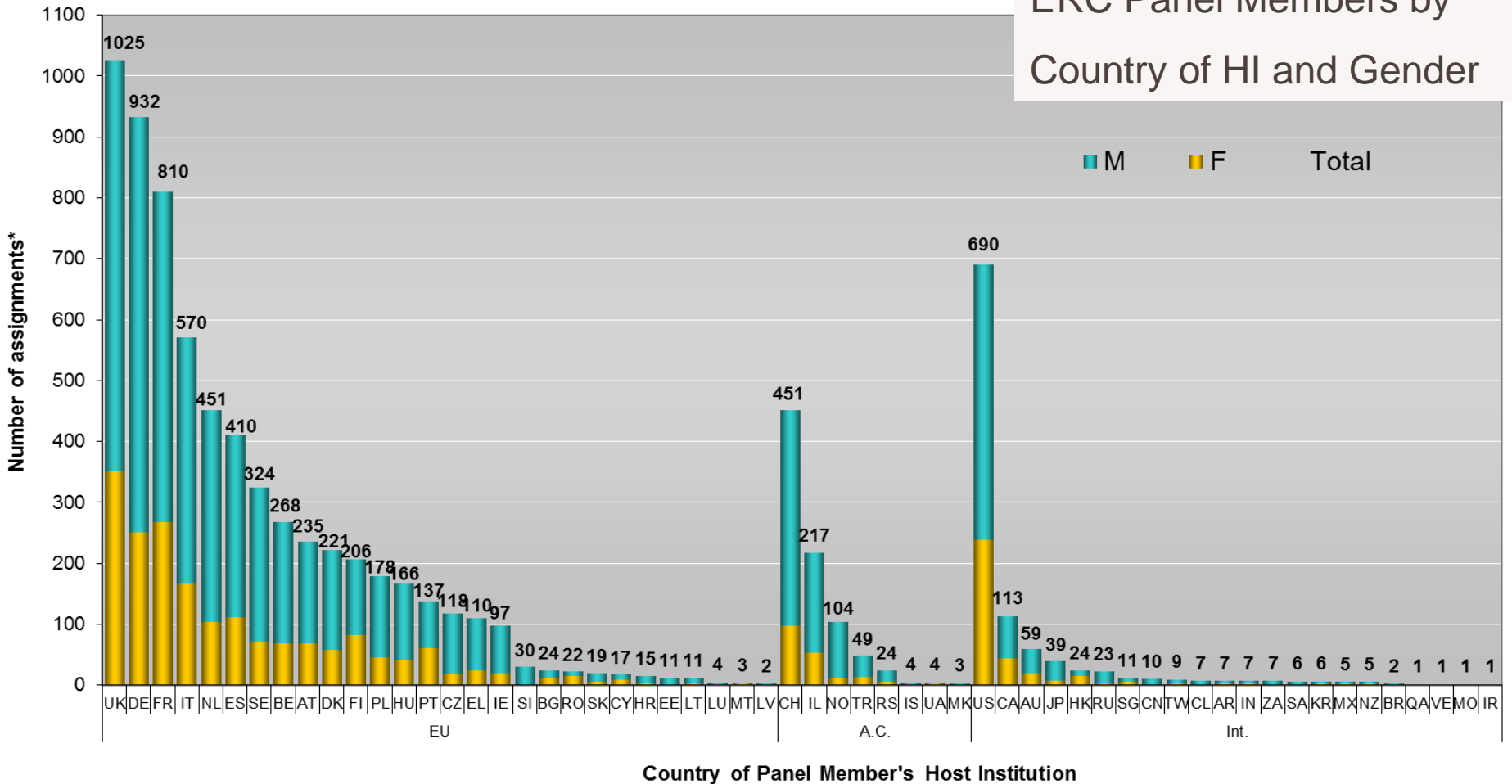
> 40 000 PhD and post-doc researchers working in ERC teams

Two-thirds of ERC grants to early-stage Principal Investigators



International Peer Review

ERC Panel Members by Country of HI and Gender



Based on the ERC StG, CoG and AdG calls 2007 - 2017



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ERC Impact

A European Success Story



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"Today's event is one of the most important in my tenure as a Commissioner for one simple reason: You are our jewel in the crown. You are one of the best things to happen in Europe in the last 10 years."

ERC 10th anniversary speech by
Commissioner MOEDAS, 21 March 2017

"Europe must keep being a leader in fundamental science... this is why increasing the ERC budget from 13 to 17 billion € is a European priority"

Carlos MOEDAS,

*Commissioner for Research, Science and Innovation,
ERC Press conference on black hole images taken by
Event Horizon Telescope - 11 April 2019*



Breakthroughs

75%
of completed projects
led to breakthroughs or
major advances



Scientific impact
> 6,000
articles among 1%
most cited scientific
journals



Key figures

> 9000
top researchers funded

60,000
researchers & other professionals
hired in ERC teams



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ERC as a model
17
EU countries set up
ERC-like
structures/funding
schemes



Open to the world

11
international initiatives
for non-EU talent to
join ERC teams



Prestigious prizes, e.g.


6 **5** **4**
Nobel Prizes Wolf Prizes Fields Medals



Highest Prizes to ERC Grantees



The Nobel Prize in Chemistry 2016 was awarded to **Bernard L. FERINGA** "for the design and synthesis of molecular machines", jointly with Jean-Pierre SAUVAGE and Sir J. Fraser STODDART



Bernard FERINGA
Nobel 2016


ERC Grantee AdG 2008
ERC Grantee AdG 2015



Jean TIROLE
Nobel 2014

ERC Grantee AdG 2009

The Nobel Prize in Economics 2014 was awarded to **Jean TIROLE** "for his analysis of market power and regulation"



Stanislav SMIRNOV

ERC Grantee AdG 2008
ERC Grantee AdG 2013



Artur AVILA

ERC Grantee StG 2010



Martin HAIRER

ERC Grantee CoG 2014



Alessio FIGALLI

ERC Grantee CoG 2016




Konstantin NOVOSELOV
Nobel 2010

ERC Grantee StG 2007
ERC Grantee SyG 2012



May-Britt MOSER
Nobel 2014

ERC Grantee AdG 2010



Edvard MOSER
Nobel 2014

ERC Grantee AdG 2008
ERC Grantee AdG 2013

Fields Medals: in 2010 Stanislav SMIRNOV for "the conformal invariance of the percolation model"; in 2014 Artur AVILA and Martin HAIRER "for their work in stochastic singularities and dynamical systems and", and in 2018 to Alessio FIGALLI "for his work on Calculus of Variations"



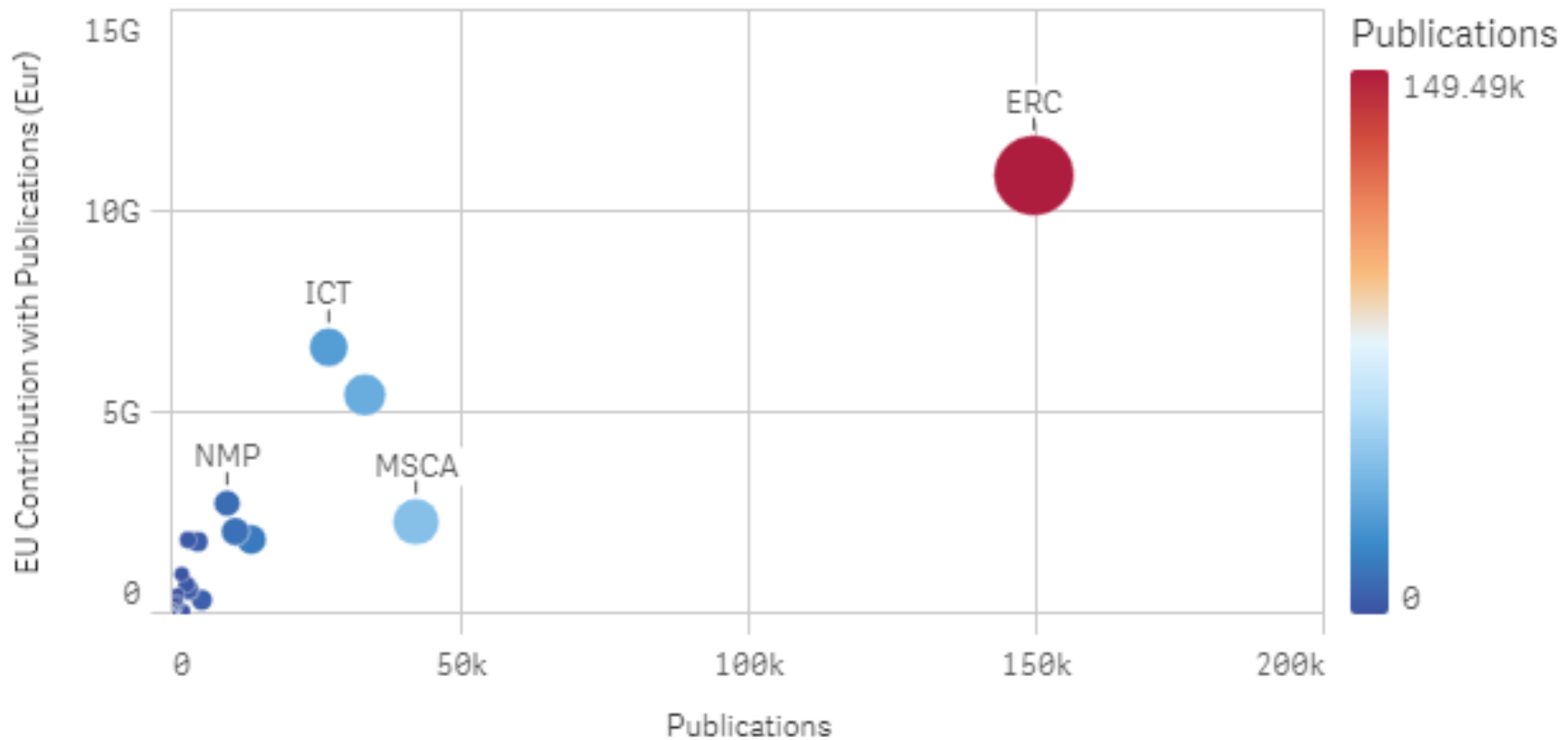
Serge HAROCHE
Nobel 2012

ERC Grantee AdG 2009

The Nobel Prize in Physiology or Medicine 2014 awarded to **May-Britt MOSER** and **Edvard MOSER**, together with John O'KEEFE, "for their discoveries of cells constituting a positioning system in the brain".

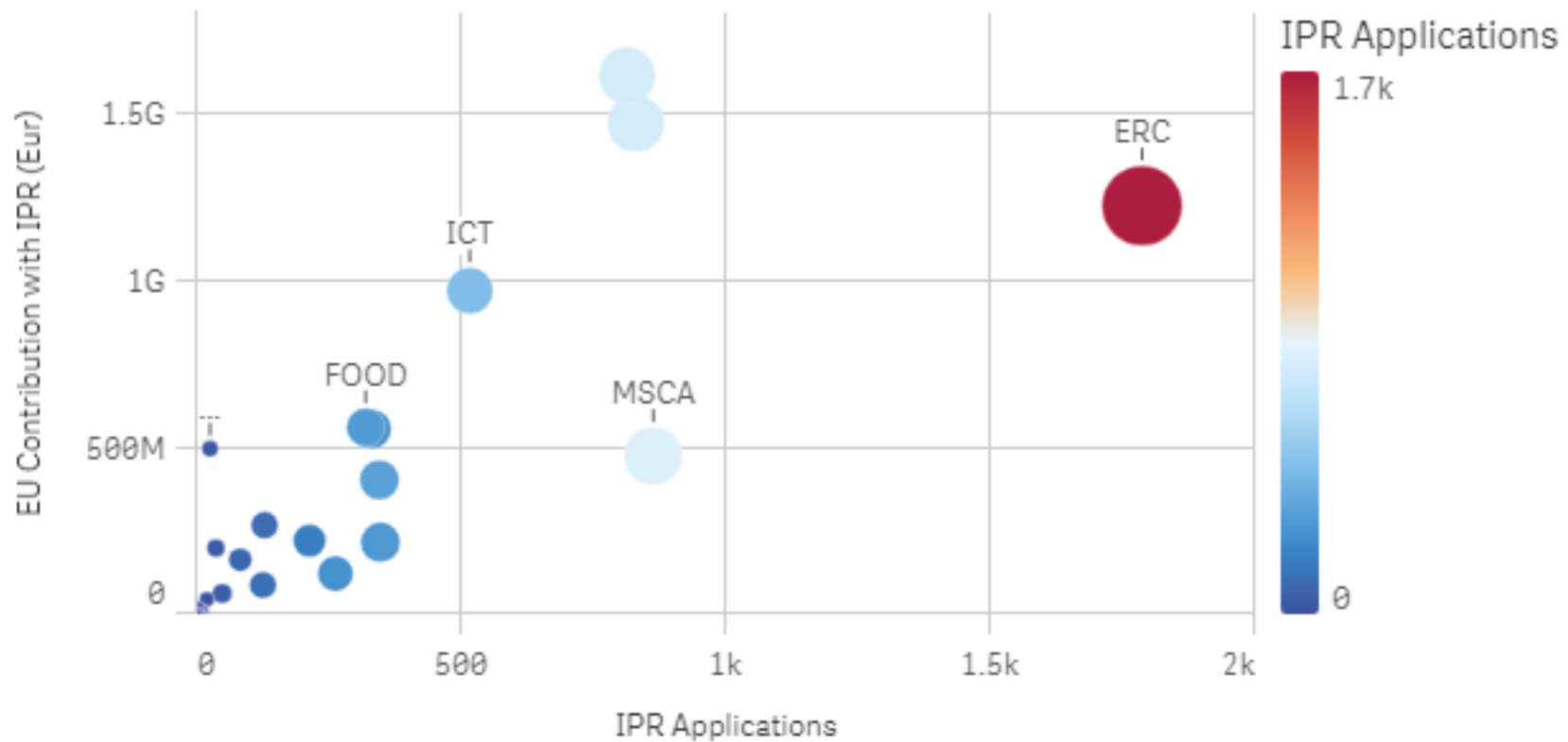
Impact of Publications in Horizon 2020

Scientific Publications by Research Thematic Priority



Impact in IPR for Horizon 2020

IPR Applications by Research research Thematic Priority



Funding Breakthrough Research

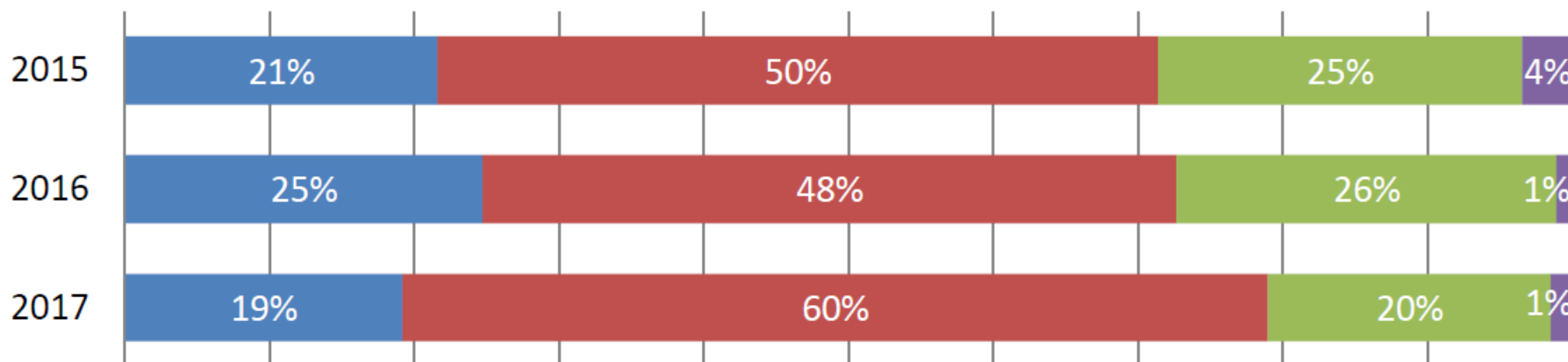


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- A - Scientific breakthrough
- B - Major scientific advance
- C - Incremental scientific contribution
- D - No appreciable scientific contribution

Overall results for 2015, 2016 and 2017



Source: 2018 Ex-post Analysis of ERC-funded studies



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ERC Open to the World

Attracting Brilliant Minds with no Boundaries



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- Additional “start-up” funding for scientists moving to Europe (EUR 500 000 for Starting, EUR 750 000 for Consolidator and EUR 1 Million for Advanced grantees),
- Grantee can keep affiliation with home institute outside Europe (“significant part” of work time in Europe, at least 50%).
- Team members can be based outside Europe.
- Grantee can move within Europe with the grant.

ERC Synergy Open to the World (I)



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A feature of the ERC Synergy programme?

Objective: to foster research at the intellectual frontiers by enabling **a group of two to four Principal Investigators** and their teams, to bring together complementary skills, knowledge, and resources in new ways to jointly address ambitious research problems.

Applicants must demonstrate synergies, complementarities and added value that could lead to **breakthroughs that would not be possible by the individual Principal Investigators working alone.**

Synergy Grants may be awarded up to a maximum of **10 M** for a period of **6 years.**

ERC Synergy Open to the World (II)

ERC 2019 Work Programme introduced the possibility for one Principal Investigator in a Synergy Grant Group to be based anywhere in the world, including outside the territory of the European Union (EU) Member States and Associated Countries.



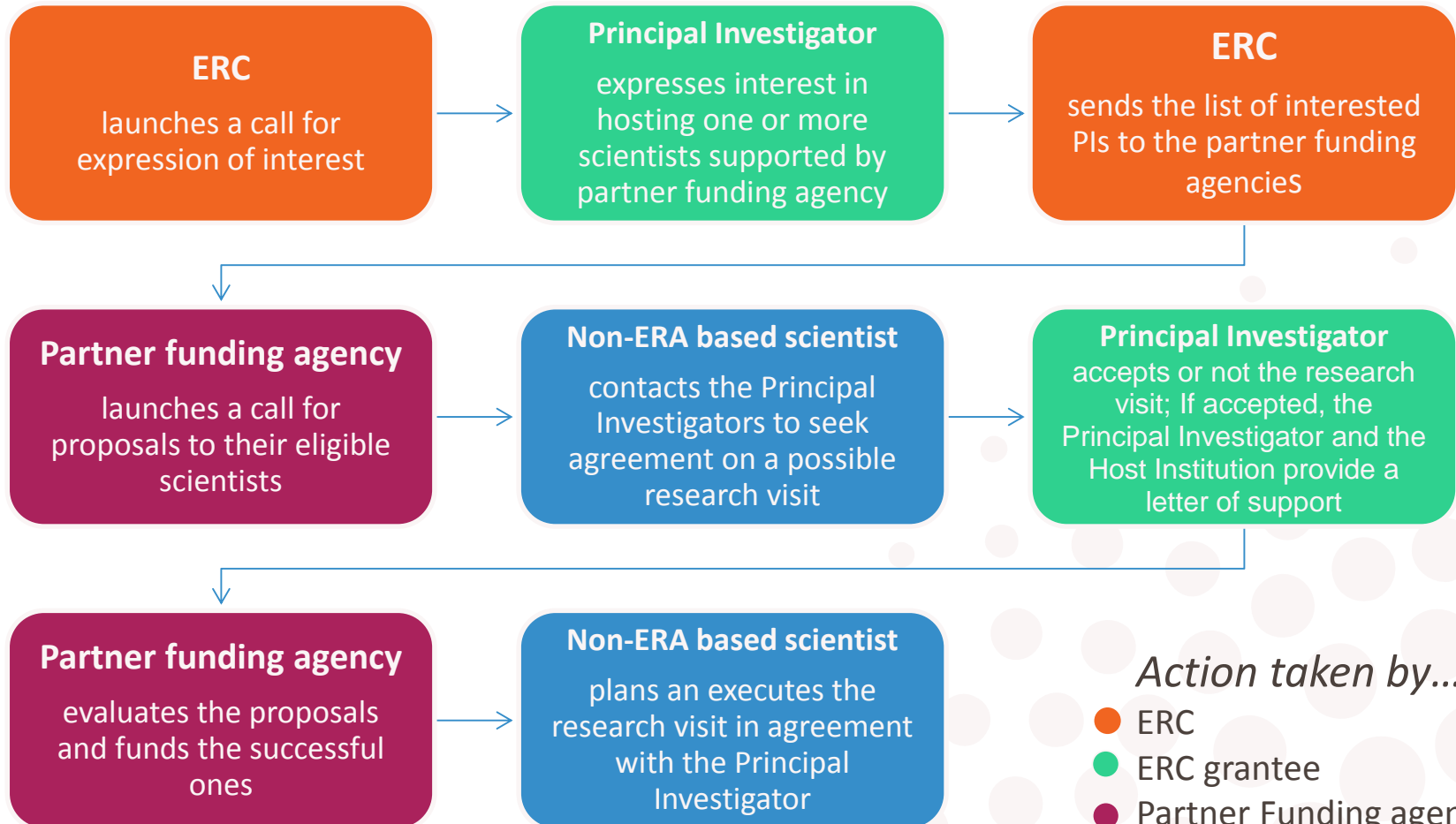
Implementing Arrangements (IA)

Implementing arrangements signed with the following countries:

- USA (2012)
- Republic of Korea (2013)
- Argentina (2015)
- China (2015)
- Japan (2015, 2018)
- South Africa (2015)
- Mexico (2015)
- Brazil (2016)
- Canada (2016)
- India (2017)
- Australia (2018, 2019)

- Opportunity for **non-European researchers** supported by foreign agencies to visit ERC research teams (unilateral approach).
- The foreign researchers are expected to be **excellent** ("national version" of the ERC grantee).
- The **foreign scientist** should take the **initiative** in the "matchmaking".
- The **ERC does not intervene** in the selection of the visitors.
- In general terms, travel costs of the visit are **mostly covered** by the foreign agency.

IA: Structure and Process



Action taken by...

- ERC
- ERC grantee
- Partner Funding agency abroad
- Visiting scientist



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ERC Perspectives

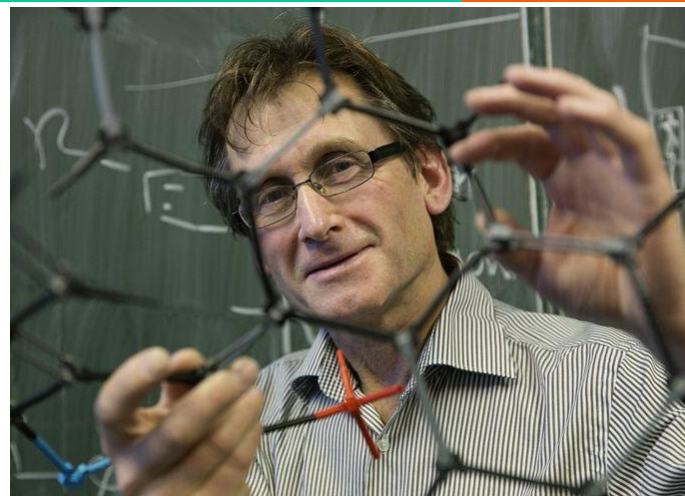
Industry and Scientists Support the ERC



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On **30 November 2018** Nobel Prize laureates and leaders of Europe's largest companies have joined to urge political leaders across the EU to support an ambitious European research and innovation programme in the forthcoming EU budget cycle.



“The innovative research funded by the EU, notably via the European Research Council, is critical - now more than ever - to deliver scientific breakthroughs and technological advances that improve people's quality of life and helps Europe face the ever-increasing global competition. [...] We are convinced that the next generation of Nobel Prize winners and life-changing advances in research won't come unless leaders across Europe commit to the investment needed over the coming years.” **Nobel laureate Ben FERINGA**



European Round Table of Industrialists



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ERC Scientific Council Statement on ERC in FP9



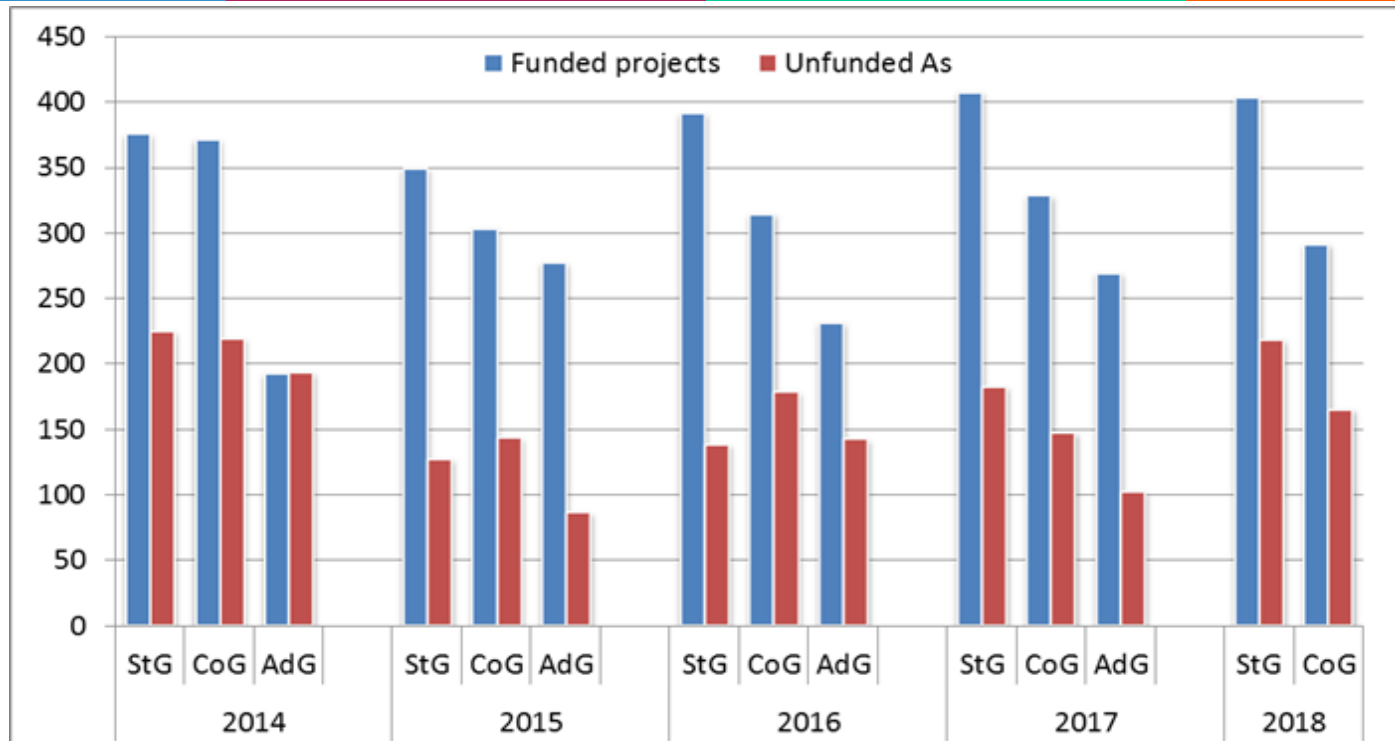
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- ✓ Continuity
- ✓ Agility
- ✓ Scale-up

- Continuity:
 - ✓ Of structure from the current legal framework
 - ✓ Of governance arrangements: independence of Scientific Council and operational autonomy
- Agility:
 - ✓ To innovate and adapt its scientific strategy
 - ✓ To manage its resources flexibly
 - ✓ To use tailor made tools and procedures when necessary
- Scale-up:
 - ✓ To turn ERC into one of Europe's main funders
 - ✓ To ensure appropriate success rates
 - ✓ To support more Europe's top-performing researchers

More Top Talent to Fund!



With a higher budget, ERC could fund much more excellence across Europe. In recent years, there has been an average of >400 unfunded top projects each year. This talent may leave/have left Europe.

What is Next!



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