ERC: Supporting Investigator-driven Frontier Research

Jean-Pierre BOURGUIGNON
ERC President
ERC in the Horizon 2020 Programme

➢ The HORIZON 2020 main components:
  ▪ Excellent Science
    ➔ *World class science is foundation of technologies, jobs, well-being*
    ➔ *Europe needs to develop, attract, retain research talent*
    ➔ *Researchers need access to the best infrastructures*
  ▪ Industrial leadership
  ▪ Societal challenges

➢ Excellent Science:
  ▪ European Research Council
  ▪ Future and Emerging Technologies
  ▪ Marie-Skłodowska-Curie Actions
  ▪ Research Infrastructures
ERC Budget in Horizon 2020

Horizon 2020 Budget for the period 2014-2020
€ 76 billion

ERC Budget in Horizon 2020
€ 13 billion
ERC Budget and Funding Facts

- ERC 2016 budget: 1700 M€
- ERC awarding some 1000 grants annually
- Average ERC grant size of about 2 M€ for 5 years
- 25% overhead for institutions hosting ERC grants
What is special about the ERC?
ERC Mission: "to reinforce excellence, dynamism and creativity in European research".
Supporting Frontier Research

Frontier research stands at the forefront of creating new knowledge and understanding.

Frontier research is an intrinsically risky endeavour.

Frontier research pursues questions irrespective of established disciplinary boundaries.

There are no barriers between basic and applied research!
Awards are granted solely on the basis of scientific quality with no priorities, targets or quotas.
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 attract **top team members** (EU and non-EU) and **collaborators**
- 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
Grants to Individual Researchers

**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 - earliest stage of marketable innovation
- up to €150,000 for ERC grant holders
Attracting Researchers to Europe

Nationality of ERC project teams (PIs not included)
Analysis of 1,901 Starting and Advanced Grants

**EU:** 71%
**Assoc. Countries:** 10%
**non-ERA:** 17%
unknown: 2%

In all ERC grants
+ 9,000 non-ERA team members most from
*China, US, India, and Russia*
Priority to Young Scientists

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

+ 30,000 PhD and post-doc researchers working in ERC teams.
What is unique in the ERC structure?
Scientists in the Driver's Seat

The European Commission
- Provides financing through the EU framework programmes
- Guarantees autonomy of the ERC
- Assures the integrity and accountability of the ERC
- Adopts annual work programmes as established by the Scientific Council

The ERC Scientific Council
- 22 prominent researchers proposed by an independent identification committee
- Appointed by the Commission (4 years, renewable once)
- Establishes overall scientific strategy; annual work programmes (incl. calls for proposals, evaluation criteria); peer review methodology; selection and accreditation of experts
- Controls quality of operations and management
- Ensures communication with the scientific community

The ERC Executive Agency
- Executes annual work programme as established by the Scientific Council
- Implements calls for proposals and provides information and support to applicants
- Organises peer review evaluation
- Establishes and manages grant agreements
- Administers scientific and financial aspects and follow-up of grant agreements
- Carries out communications activities and ensures information dissemination to ERC stakeholders
The Scientific Council

The designation of members is under the responsibility of the European Commission which is helped in this task by an Identification Committee.

Members have a first mandate of 4 years with the possibility of being renewed for another mandate, typically of 2 years.
International Peer Review System

Led by top scientists and scholars from all over the world in 25 panels and 3 domains

With scientific quality as the sole criterion, aiming for excellence

Looking for ground breaking, high risk/high gain, beyond the state of the art proposals!
ERC Panel Members by Country

Based on the ERC StG, CoG and AdG calls 2007 - 2015

* Number of instances that experts of a certain country of origin are contributing to the ERC peer review
Evaluation Panel Structure (WP2017)

**Life Sciences**
- LS1 Molecular and Structural Biology and Biochemistry
- LS2 Genetics, Genomics, Bioinformatics and Systems Biology
- LS3 Cellular and Developmental Biology
- LS4 Physiology, Pathophysiology and Endocrinology
- LS5 Neurosciences and Neural Disorders
- LS6 Immunity and Infection
- LS7 Diagnostics, Therapies, Applied Medical Technology and Public Health
- LS8 Evolutionary, Population and Environmental Biology
- LS9 Applied Life Sciences and Non-Medical Biotechnology

**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
ERC: Some Data
Success Rate by Country of HI

Success rate (2007-2015 + StG2016)

Average success rate around 11%
Funded Projects by Country of HI

Host country (as of 19/09/2016)

UK: 1431
DE: 992
FR: 845
NL: 560
CH: 444
IT: 363
ES: 360
IL: 357
BE: 227
SE: 225
AT: 170
DK: 101
FI: 65
IE: 64
PT: 63
NO: 48
HU: 43
EL: 24
CZ: 23
PL: 14
TR: 6
CY: 4
EE: 3
LU: 3
RO: 3
BG: 1
HR: 1
IS: 1
SI: 1
LV: 1
MT: 1
RS: 1
SK: 1

ERC grants

AdG
CoG
StG
## Top European Institutions Hosting ERC Grantees by Funding Schemes

**ERC calls 2007-2015 + StG2016**

**Current signatories of the grant agreement**

Data as of 19/09/2016

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<th>Higher-Education Institution</th>
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FP7 ERC Grants versus Top Publications

4,354 Starting, Consolidator and Advanced grants awarded by ERC during

**correlation: 0.97**

*) Host institution refers to the current host organisation of the grant; data as of 19/09/2016
10 years of ERC: A Success Story
The Nobel Prize in Chemistry 2016 was awarded jointly to Jean-Pierre SAUVAGE, Sir J. Fraser STODDART and Bernard L. FERINGA "for the design and synthesis of molecular machines".

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

The Nobel Prize in Economic Sciences 2014 was awarded to Jean TIROLE "for his analysis of market power and regulation".

2 ERC grantees received the Nobel prize in 2010 and 2012. Other 6 ERC grantees were already Nobel laureates at the moment they received the ERC grant.
Prof. Bernard FERINGA, based at the University of Groningen in the Netherlands, received ERC Advanced Grants in 2008 and 2015 for his projects exploring nano-machines and molecular motors.
Funding Excellence Everywhere in Europe
Dr Iva TOLIC, a cell biophysicist, went from Munich back to the Boskovic Institute in Zagreb, Croatia, when she got an ERC grant.
Non-Equilibrium Many-particle Systems

**Background**
Many things in our everyday life are close to equilibrium, at least in thermodynamic sense: a resting ball on a football pitch or a glass of water. But we are also surrounded by phenomena that are far from equilibrium, such as cracks in materials, ice cubes melting in a drink, or storms.

**Research**
Prof. Prosen studies materials in non-equilibrium state, but in the quantum realm. He looks at quantum many-body systems, that consist of individual constituent particles, such as atoms or electrons that strongly interact, i.e. the behaviour of the system as a whole can be radically different from the behaviour of its individual constituents.

**Importance**
Results may have huge potential for applications in fields such as superconductivity, novel magnetic storage systems, spintronics and quantum information systems.

**ERC Project: OMNES**
Tomaž PROSEN
University of Ljubljana (Slovenia)
ERC Advanced Grant 2 M€
## ERC 2017 Upcoming Calls

<table>
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<th>ERC calls</th>
<th>Budget Million €</th>
<th>Call Publication</th>
<th>Submission Deadline(s)</th>
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<tr>
<td><strong>Consolidator Grants</strong></td>
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<td>ERC-2017-CoG</td>
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<td>20 October 2016</td>
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<td><strong>Advanced Grants</strong></td>
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<td><strong>Proof of Concept</strong></td>
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More Information

• Website: erc.europa.eu

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