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The ERC in EU Framework Programmes: bringing value from bottom-up research in life sciences

Philippe Cupers, PhD
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Research Triangle Park webinar, 29 July 2020



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- What is the ERC?
- ERC achievements
- Statistics



What is the European Research Council ?

What are its funding principles?



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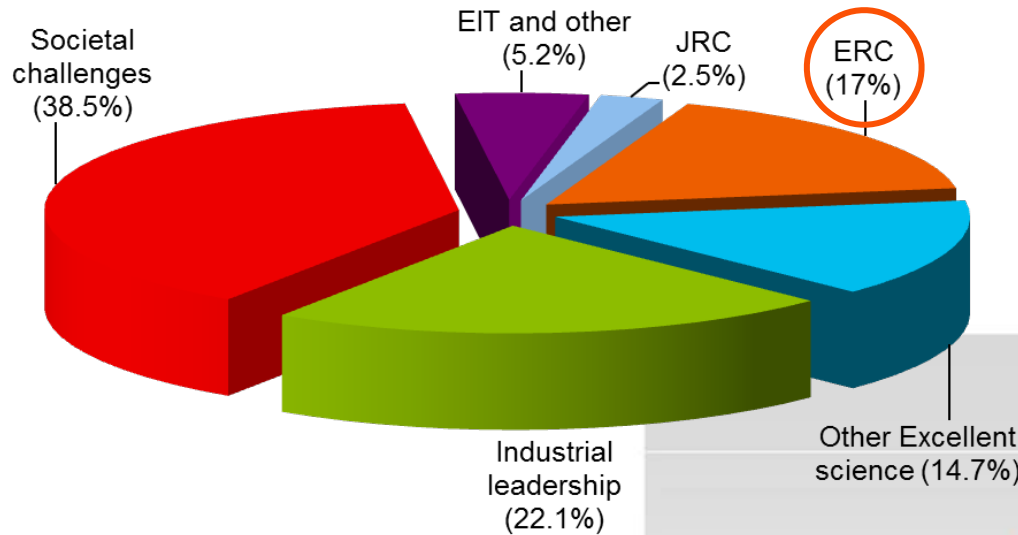


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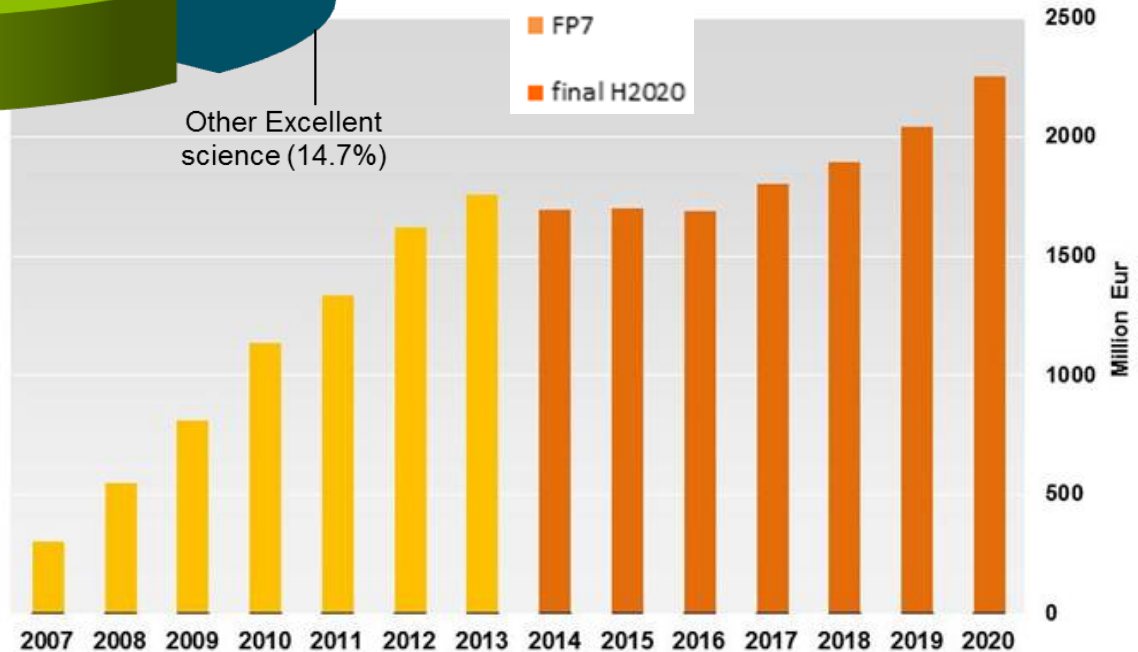
- ERC is **part of H2020 (pillar 1)**, the EU FWP for research and innovation
- ERC's budget is **€ 13 billion (2014-2020) - 1.9 billion €/year**

- ERC supports excellence in **frontier research** through a **bottom-up, individual-based, pan-European competition**
- Applications in **any field of research – no thematic priority**
- **Scientific excellence** as sole evaluation criterion
- Independent researchers of **any age and career stage** and from anywhere in the world can apply for attractive, long-term funding

ERC budget in Horizon 2020



**ERC Budget
€ 13 billion**



Commission Proposal for Horizon Europe (2021-2027)



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May 2018: The Commission adopted its proposal for the next EU budget.

March 2019: Partial Political Agreement on Horizon Europe legislation (passed in Parliament on 17 April).

Summer 2020: Agreement on next EU budget and Recovery Instrument?

1 January 2021: Start of Horizon Europe

Proposed by the Commission

€100 bn for Research and Innovation

€94.1 bn for Horizon Europe

€16.6 bn for ERC



Horizon Europe (2021-2027): Evolution, not revolution



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Support the creation and diffusion of high-quality knowledge

Strengthen the impact of R&I in supporting EU policies

Foster all forms of innovation and strengthen market deployment

Optimise the Programme's delivery for impact in a strengthened ERA



Pillar 1 Open Science

European Research Council

Maria Skłodowska-Curie Actions

Infrastructures



Pillar 2 Global Challenges and Industrial Competitiveness

Clusters

- Health
- Inclusive and Secure Society
- Digital and Industry
- Climate, Energy and Mobility
- Food and natural resources

Joint Research Centre



Pillar 3 Open Innovation

European Innovation Council

European innovation ecosystems

European Institute of Innovation and Technology

Strengthening the European Research Area

Sharing excellence

Reforming and Enhancing the European R&I system

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

ERC governance: the Scientific Council



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The ERC Scientific Council

- Prominent researchers appointed by EC
- Establishes overall scientific strategy
- Controls quality of operations and management
- Ensures communication with the scientific community



Panel Members

- Appointed by the Scientific Council
- Full independence in the evaluation and ranking of the proposals
- Appoint remote referees

ERC governance: the ERC Executive Agency



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The ERC Executive Agency

- Implements calls for proposals
- Organises peer review evaluation
- Establishes and manages grant agreements
- Administers scientific and financial aspects
- Carries out communications activities



ERC Scientific Officers

- Work closely with the panel members
- Manage all practical aspects of the evaluations
- Carry out scientific follow-up

ERC Grant Schemes



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Starting Grants

starters
(2-7 years after PhD)
up to € 1.5 Mio
(+ €1M)
for 5 years

Consolidator Grants

consolidators
(7-12 years after PhD)
up to € 2 Mio
(+ €1M)
for 5 years

Advanced Grants

track-record of
significant research
achievements in the
last 10 years
up to € 2.5 Mio
(+ €1M)
for 5 years

Proof-of-Concept

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

Synergy Grants (re-launched 2018)

2 – 4 Principal Investigators
up to € 10.0 Mio (+ €4M)
for 6 years
1 PI can be based outside EU/AC

Evaluation Panel Structure (WP2021)



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Life Sciences

- LS1 Molecules of Life: Biological Mechanisms, Structures and Functions
- LS2 Integrative Biology: from Genes and Genomes to Systems
- LS3 Cellular, Developmental and Regenerative Biology
- LS4 Physiology in Health, Disease and Ageing
- LS5 Neuroscience and Disorders of the Nervous System
- LS6 Immunity, Infection and Immunotherapy
- LS7 Prevention, Diagnosis and Treatment of Human Diseases
- LS8 Environmental Biology, Ecology and Evolution
- LS9 Biotechnology 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 Processes Engineering
- PE9 Universe Sciences
- PE10 Earth System Science
- PE11 Materials Engineering

Social Sciences and Humanities

- SH1 Individuals, Markets and Organisations
- SH2 Institutions, Governance and Legal Systems
- SH3 The Social World and Its Diversity
- SH4 The Human Mind and Its Complexity
- SH5 Cultures and Cultural Production
- SH6 The Study of the Human Past
- SH7 Human Mobility, Environment, and Space

Changes in the Life Sciences

- Ensures continuity with the former panels' titles, sub-titles and descriptors
- Contours of panels redefined, descriptors enriched
 - To address the multidisciplinary aspect of the domain and the continuum between its different areas of expertise, with translational work often seamlessly emerging from basic studies
 - To address trend of low number of applications in some panels whilst others are oversubscribed
- Address all biologists, medical researchers and environmental life scientists

Impact for Applicants

- New panel structure applicable as of Starting Grant 2021
- Overriding aim is to tap into full potential of applicants in all areas of science
- Proactive communication effort by ERC Scientific Council and Agency
- Publication of full revised panel structure well ahead of time (exceptionally)
- Applicants are advised to familiarise themselves with the changes
- No change in evaluation process linked to this revision

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After More than 10 Years, a Success Story



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- Highly recognised by the research community
- Over **9 500** researchers funded during 2007-2019
- 67% are at an early-career stage
- **82** nationalities represented
- **Highly competitive** (overall success rate tending to 12%)
- Working in over **800** different institutions in **33** 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

Nobel Prize Physiology or Medicine 2019



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Awarded jointly to William G. Kaelin Jr,
Sir Peter J. Ratcliffe and Gregg L. Semenza
"for their discoveries of how cells sense and
adapt to oxygen availability."



Sir Peter J. Ratcliffe is Co-Principal Investigator of an ERC Advanced grant
2008 project
Title: "Project Molecular Mechanism of Oxygen Sensing by Enzymes"
Host Institution: University of Oxford



Highest Prizes to ERC Grantees



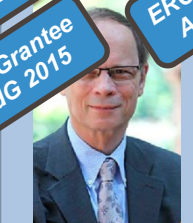
The Nobel Prize in Chemistry 2016 was awarded to **Bernard L. FERINGA** "for the design and synthesis of molecular machines". jointly with Jean-Pierre SAUVAGE and Sir J. Fraser STODDART



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"

ERC Grantee AdG 2008

ERC Grantee AdG 2013



Stanislas SMIRNOV

ERC Grantee StG 2010



Artur AVILA

ERC Grantee CoG 2014



Martin HAIRER

ERC Grantee CoG 2016



Alessio FIGALLI

ERC Grantee StG 2007



Konstantin NOVOSELOV
Nobel 2010

ERC Grantee SyG 2012



May-Britt MOSER
Nobel 2014

ERC Grantee AdG 2010

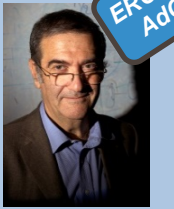


Edvard MOSER
Nobel 2014

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

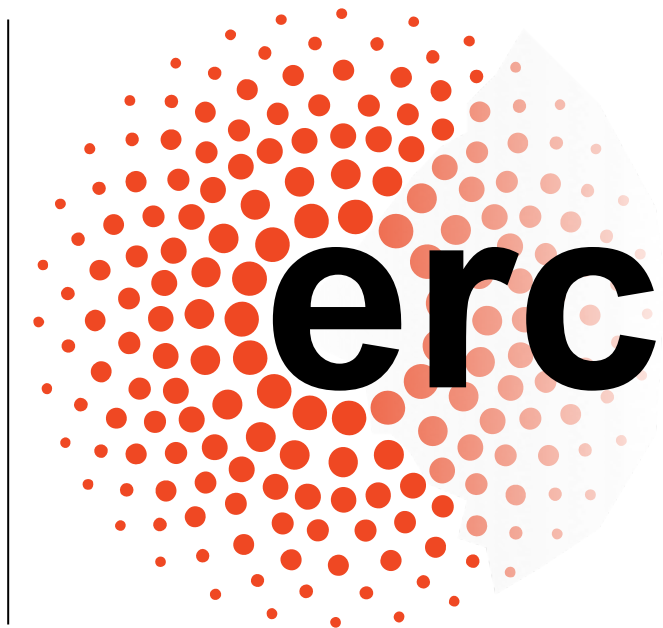
The Nobel Prize in Physiology or Medicine 2014 awarded to May-Britt MOSER and Edvard MOSER, together with John O'KEEFE, "for their discoveries of cells constituting a positioning system in the brain"

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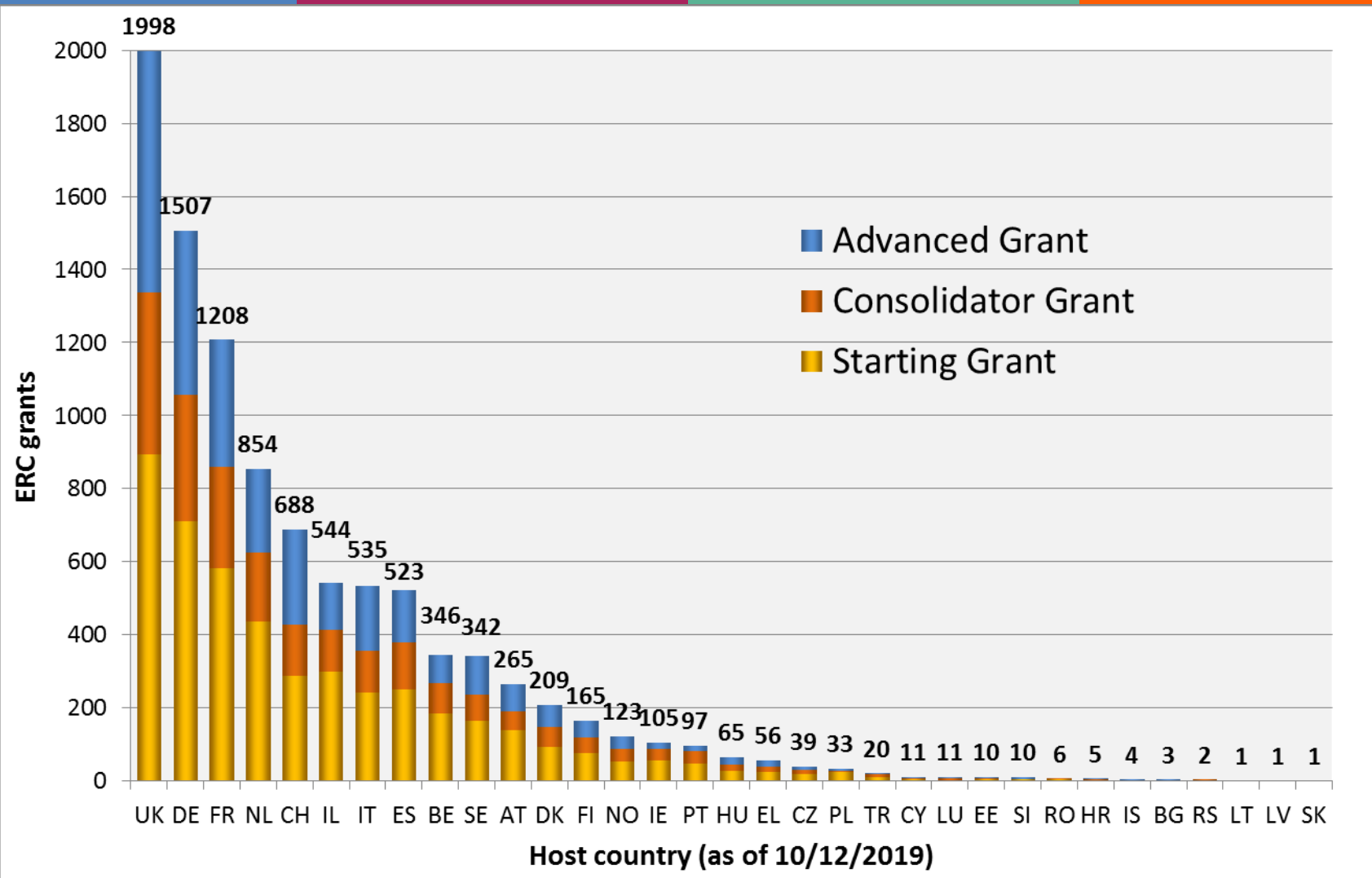
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ERC Funded Projects by Country of HI



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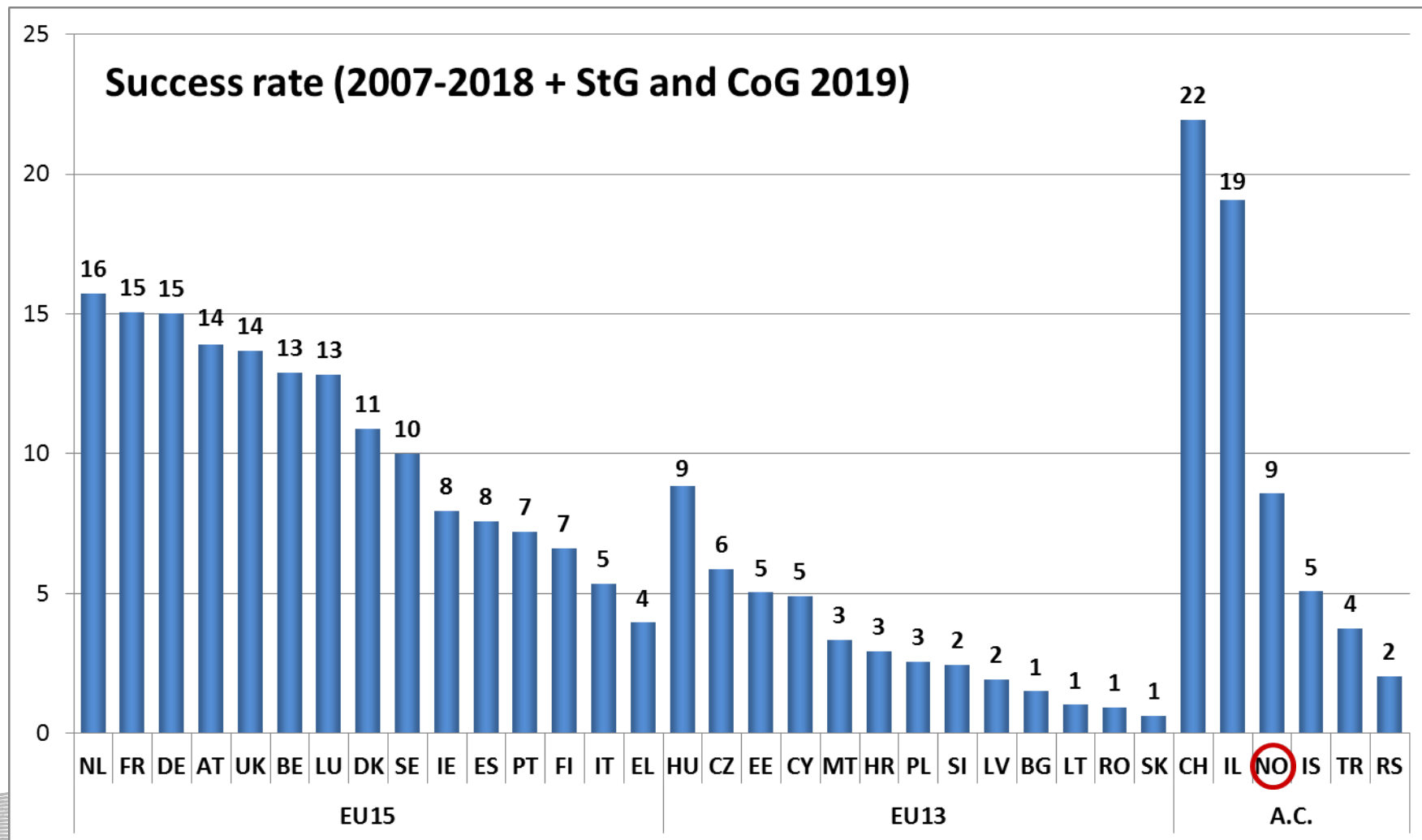


Success Rate by Country of HI



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