## The European Research Council:

ERC Advanced Grants - Continuity in a changing Horizon



European Research Council

Lionel Thelen, PhD **Panel coordinator Social Sciences and Humanities Unit ERC Scientific Management Department** Info Day NCP Belgium, 26 Avril 2019

# **Outline**



- ➤ What is the ERC? What does the ERC offer for AdG Principal Investigators and their teams?
- How is Belgium doing at the ERC?
- How are ERC research proposals evaluated?
- Some tips on preparing an ERC proposal

## **ERC** mission



To encourage the highest quality research in Europe through competitive funding and to support investigator-driven frontier research across all fields, on the basis of scientific excellence

#### **ERC Basics**













# What is the European Research Council?





# The ERC supports excellence in frontier research through a bottom-up, individual-based, pan-European competition



Budget: € 13 billion (2014-2020) - 1.9 billion €/year € 7.5 billion (2007-2013) - 1.1 billion €/year



- Scientific governance: independent Scientific Council with 22 members including the ERC President; full authority over funding strategy
- Support by the ERC Executive Agency (autonomous)
- >Excellence as the only criterion



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



Horizon 20 European Ung for Research & movetion

Strategy

egislation

ng



Jean-Pierre BOURGUIGNON



Martin STOKHOF



Dame Janet THORNTON



Fabio ZWIRNER

# Scientific Governance by the Scientific Council



Manuel ARELLANO



Paola BOVOLENTA



Evelne CRONE



Ben L. FERINGA



Margaret BUCKINGHAM



Sir Christopher CLARK



Andrzej JAJSZCZYK



Tomas JUNGWIRTH



Michael KRAMER



Kurt MEHLHORN



Nektarios TAVERNARAKIS



Isabelle VERNOS



Barbara ROMANOWICZ



Ciulio SUPERTI-FURGA



Lone VESTERGAARD HAU



Michel WIEVIORKA



Horizon 2020 European Union funding for Research & Innovation

#### **ERC** in the H2020 Structure



#### > 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

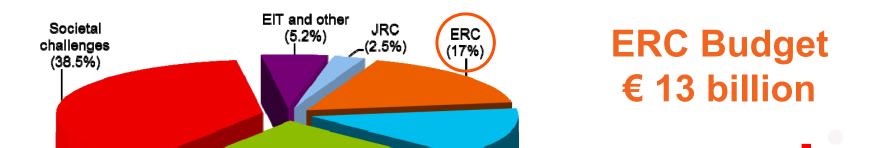
#### > Excellent Science:

- European Research Council (budget under H2020: € 13 billion)
- Future and Emerging Technologies
- Marie Skłodoswka Curie Actions
- Research Infrastructures



## **ERC H2020 Budget**





Industrial leadership (22.1%)

For 2019, the budget is more than 2 billion euros, the highest ever since the beginning of the ERC.



final H2020 Other Excellent 2000 science (14.7%) 1500 1000 500 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 8

FP7

2500

#### **ERC Grant Schemes**



#### **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 Synergy Grants (re-launched 2018) 2 – 4 Principal Investigators up to € 10.0 Mio for 6 years



#### What does ERC offer?

#### Creative freedom to individual grantee



# ERC offers independence, recognition & visibility

- Work on any research topic: bottom-up
- Gain financial autonomy for 5 years
- Negotiate the best work conditions with the host institution
- Attract top team members and collaborators (EU and non-EU)
- Portability of grants
- Attract additional funding and gain recognition:
   ERC is a quality label





## Who can apply?



- Excellent Researchers
- Any nationality, any age or any current place of work
- In conjunction with a Host Institution based in Europe EU or associated countries
- If granted, you need to spend at least 50% of your working time in the EU or associated countries





## Particular emphasis on.....



# Frontier of science, scholarship and engineering, e.g.

- Multi- or interdisciplinary proposals which cross boundaries between different fields of research, or
- ✓ Pioneering proposals addressing new and emerging fields of research, or
- ✓ Proposals introducing unconventional, innovative approaches and scientific inventions.



#### **2019 Panel Structure**



Each panel:

Panel Chair and 12-17 Panel Members

#### **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 Neuroscience 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

#### **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

#### Physical Sciences & Engineering

- PE1 Mathematics
- PE2 Fundamental Constituents of Matter
- PE3 Condensed Matter Physics
- PE4 Physical & 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

# Contrary to what you may think.....



- ✓ ERC funds "frontier research", including applied research
- ✓ The budget is distributed among the scientific panels as a function of demand
- ✓ The panel descriptors do not represent ERC scientific priorities
- ✓ The success rate is virtually flat across the eligibility window (StG, CoG)
- ✓ The Host Institution is not an evaluation criterion

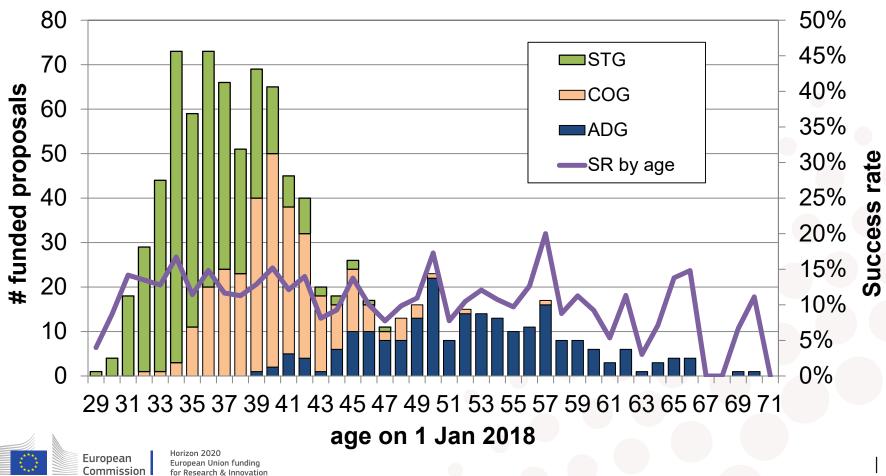


## Shall I apply now or wait another year? 2018 StG/CoG/AdG Calls Age of Grantees

for Research & Innovation



#### 2018 Grantees by age and success rate



# 2018 StG/CoG/AdG Calls "Academic age" of grantees

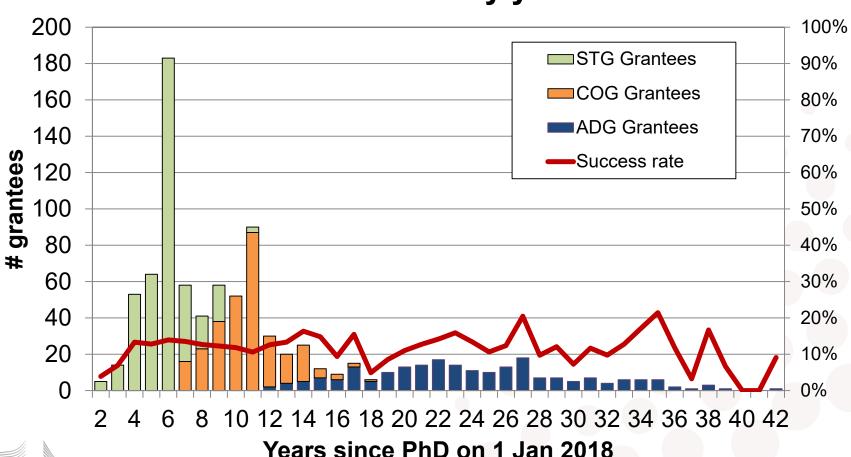
European Union funding

for Research & Innovation

Commission |



#### All calls 2018 Grantees by years since PhD



#### **ERC Advanced Grants**

#### The applicant's profile



#### "Am I competitive enough?"

- Exceptional leader in terms of originality and significance of your research
- Excellent track record and achievements during the last 10 years (this time window can be extended in case of eligible career breaks)
- Substantial track record of significant research achievements
  - as appropriate for the field
  - publications in peer-reviewed journals, monographs, invited presentations, funding, patents, awards, prizes
  - Organisation of international conferences
  - Major contributions to the early careers of excellent researchers
  - Bibliometric data may be one of the proxies used (where appropriate) among many others





#### Design of the Synergy call in a nutshell

2018 Call 2018: 27 projects funded Grant size: budget: 250 up to 10M€ 2019: 40-45 projects M€ + 4M€ for 6 2019: 400M€ years ≥50% of working HI in general to be in EU time in FU or AC and No or Associated Country (AC) 2-3-4 ≥30% of working restrictions **Principal** SyG2019: possible for time on the ERC on their Investigators location

> SvG2019 call closed for submission on 8/11/2018

SyG2019: 3 step evaluation to finish in September 2019

3 Step evaluation: with interviews for all Pls in step 3

project

Deadline for SyG2019 proposal submission: 8 November 2018

SyG2020: submission opening planned for July 2019

one PI to be outside of

**EU or AC** 

## **SYNERGY 2018**



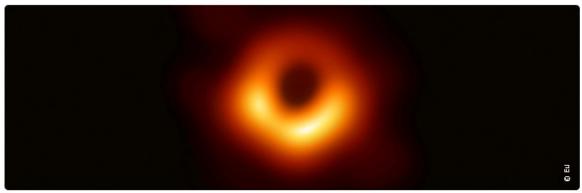
HI Country (SyG 2018)	Synergy Pls	Corresponding_PIs	Pls
AT	1		1
BE	1		1
СН	11	4	7
CZ	1		1
DE	23	6	17
DK	2	1	1
EL	1		1
ES	7	2	5
FI	1	1	
FR	14	5	9
HU	2	1	1
IL	4	2	2
IT	6	2	4
NL	1		1
NO	1		1
PT	1		1
SE	1		1
UK	10	3	7
Total	88	27	61



#### **EXAMPLE OF A GROUND-BREAKING SYNERGY PROJECT**



Established by the European Commission



The first ever image of a black hole, with EU support

#### Black hole breakthrough: a European success

by Helena Gonzalez-Sancho Bodero, ERCEA

11/04/2019 | 130 = 20

Since yesterday, it's been all over the media: the first ever image of a massive black hole. 'First-ever?' some may wonder. Yes, despite the abundance of artistic simulations and pictures from science fiction, the truth is that astrophysicists know little about these mysterious places in space. It has taken several years of research and an unprecedented international cooperation to obtain the long-awaited image. The support of the EU has been key in this fascinating quest.

You cannot see black holes. By nature, they are out of sight. Gravity pulls so much inside them that they swallow nearby planets and stars, even light. Since Einstein described these cosmic objects in his *Theory* 

# ERC Synergy Project: https://blackholecam.org/



# **ERC Proof-of-Concept (POC) Grants**



- For Principal Investigators of existing grants
- Lump sum of EUR 150 000 for a period of 18 months
- > To maximise the value-creation of the ERC-funded research

Provide funds to bring ERC-funded ideas to a *pre-demonstration* for:

- Generation of return for innovators (economic, reputation, prestige, influence, ...)
- Generation of new value for users (socio-economic benefits)

# **Outline**



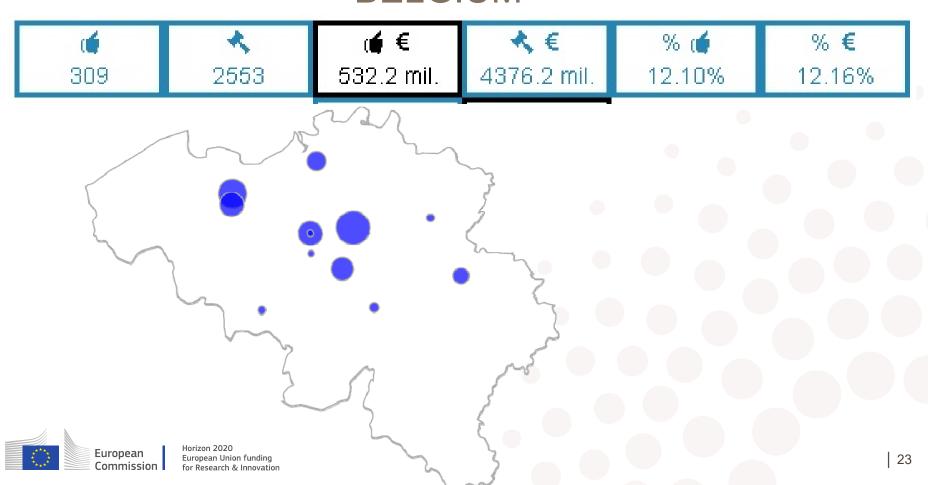
- ➤ What is the ERC? What does the ERC offer?
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#### ERC & BELGIUM – State of Play April 2019



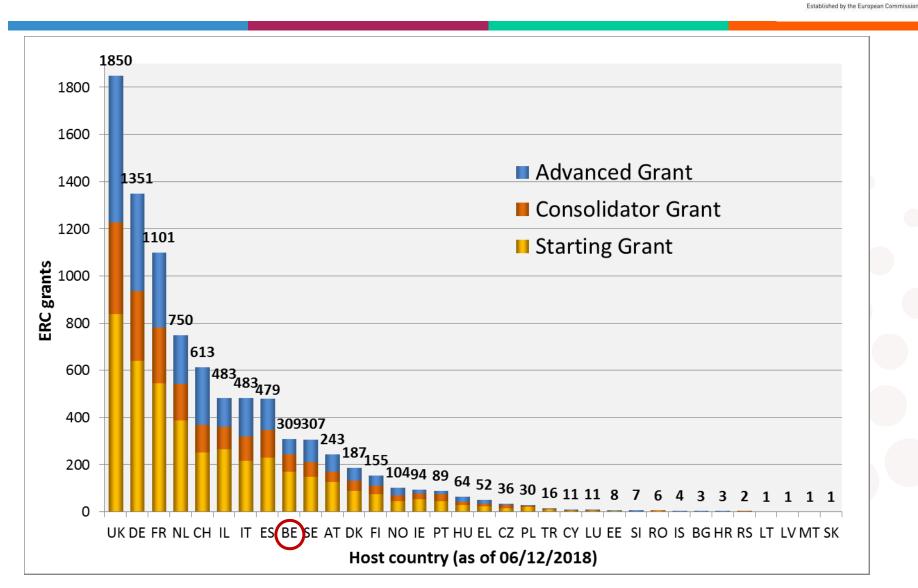
#### **BELGIUM**



# **ERC Funded Projects by Country of Hi**



European Research Council

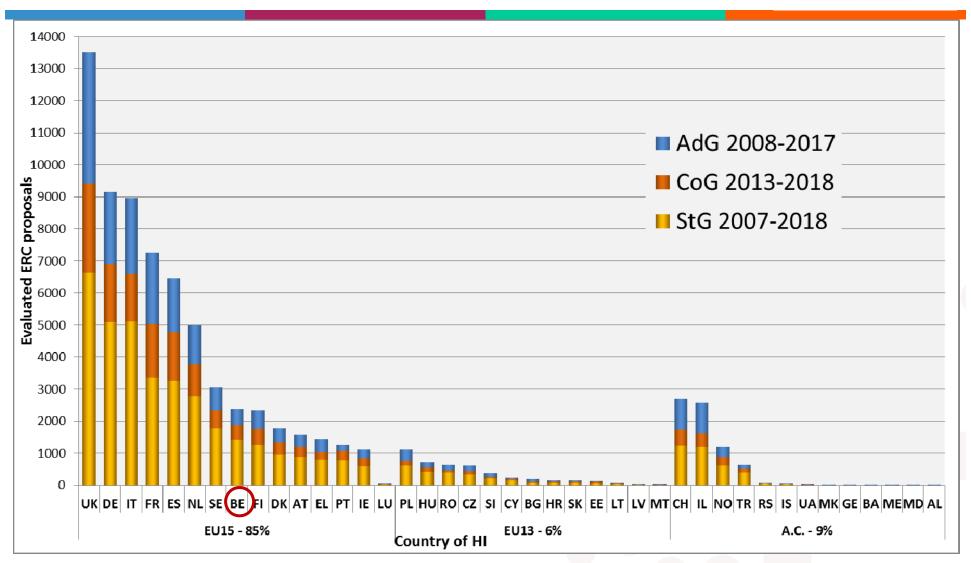


# **Evaluated ERC Proposals by HI Country**

European Research Council

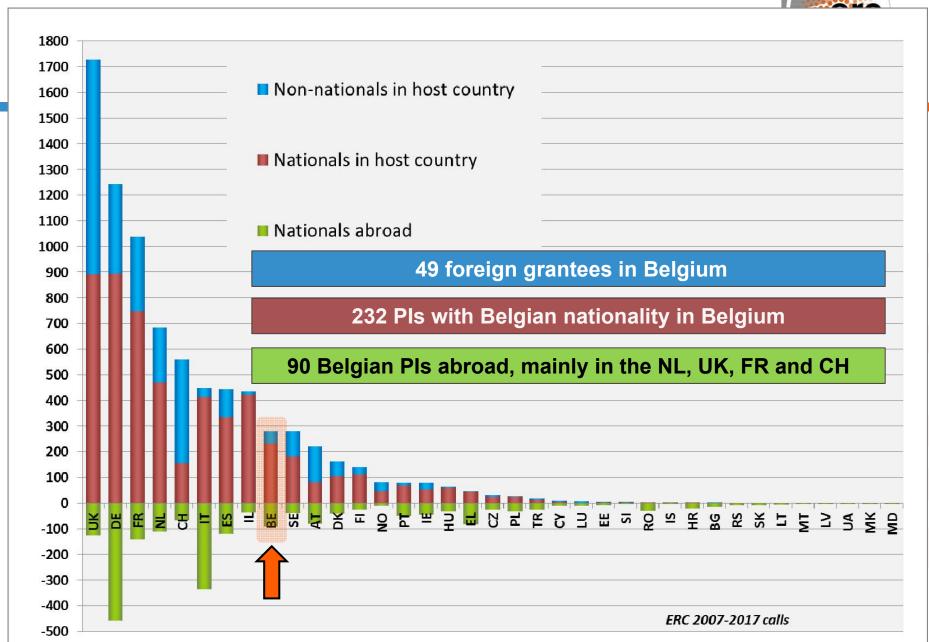
erc

Established by the European Commission



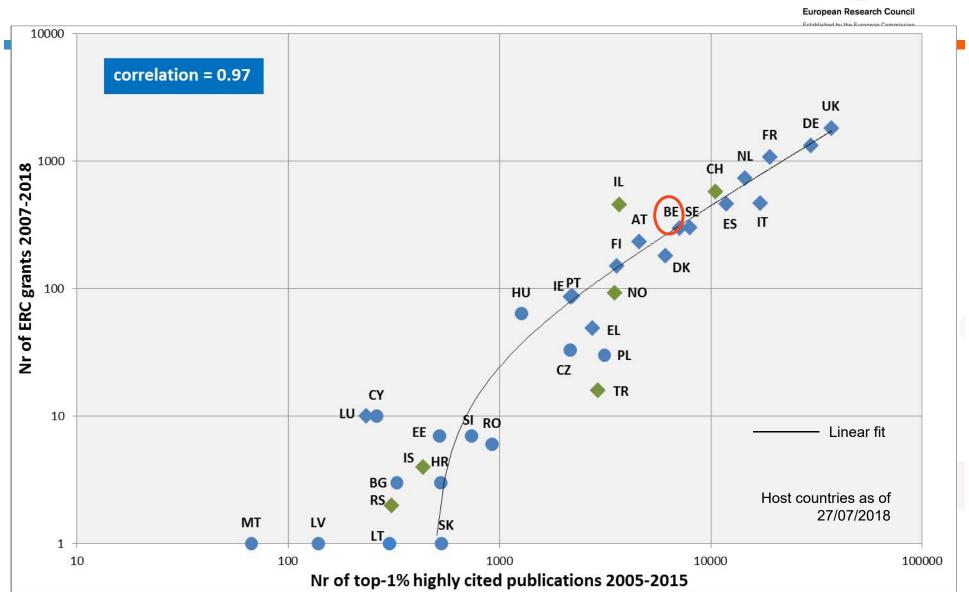
#### **Grantees at Home and Abroad**





# **ERC Grants versus Top Publications**

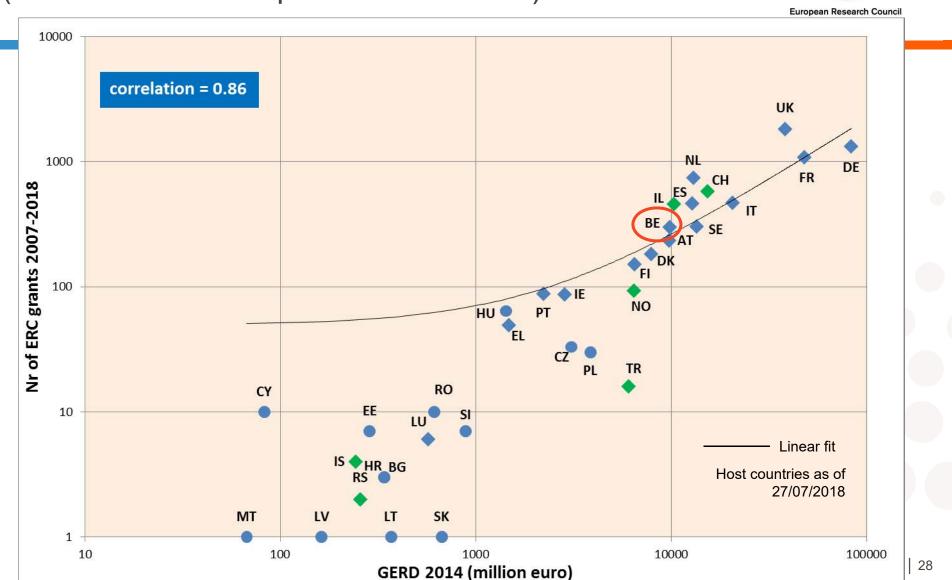




#### **ERC Grants versus GERD**

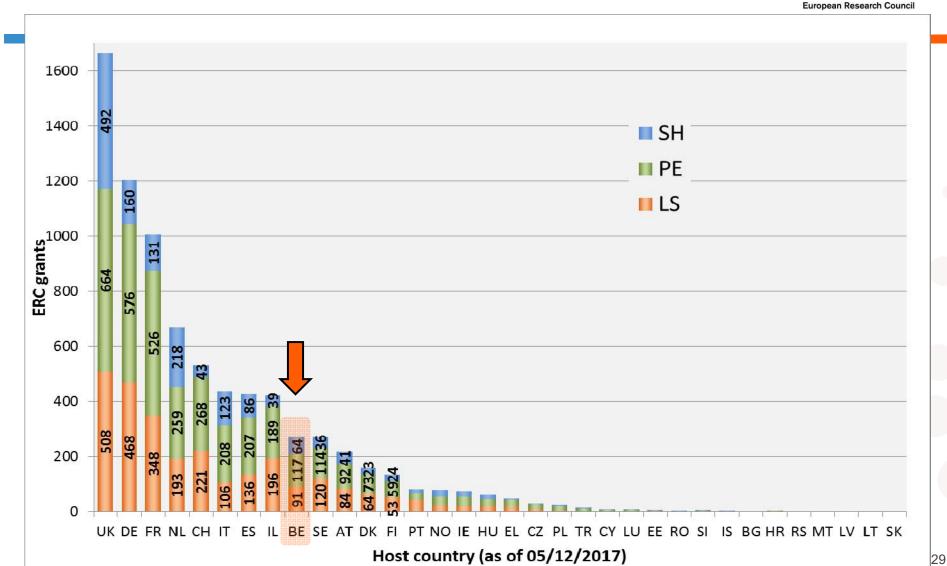
(Gross domestic expenditure on R&D)





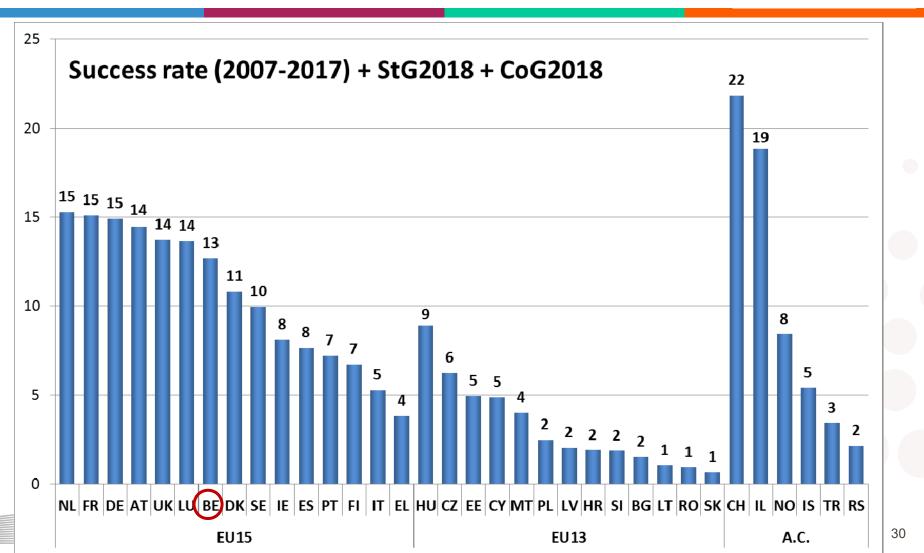
# **ERC Funded Projects by Domain**





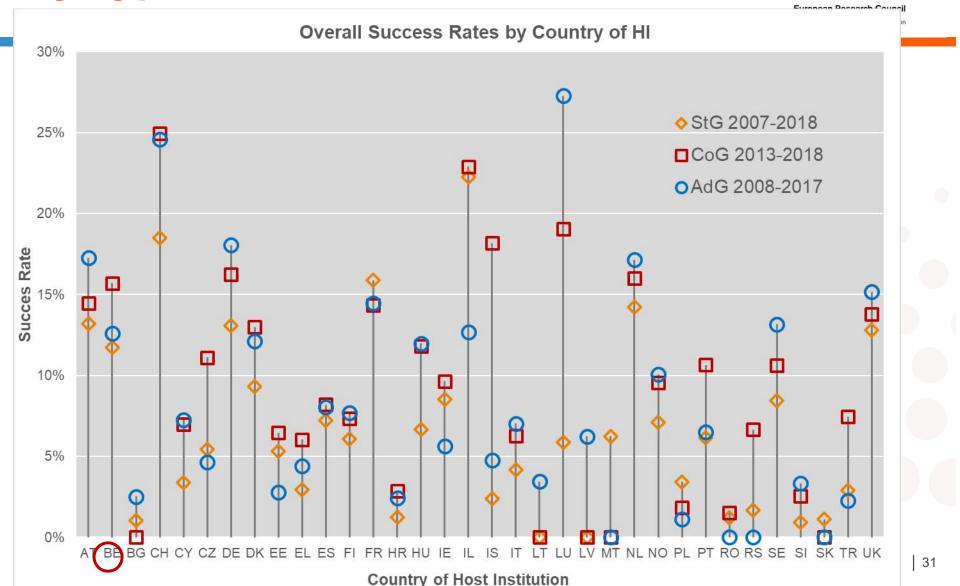
# **Success Rate by Country of HI**





# Success Rate by Country of HI and by Type of Grant



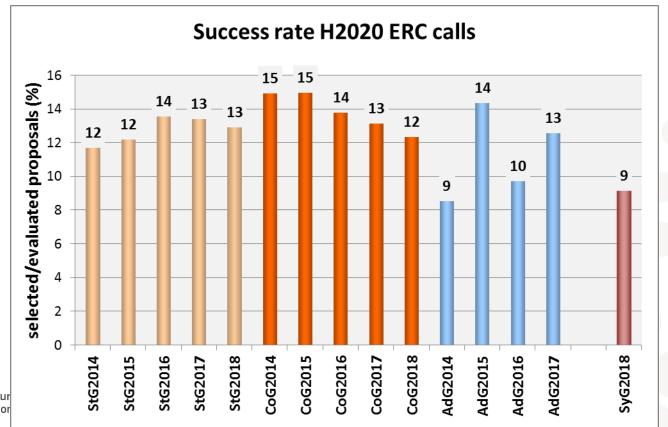


# **Overall Success Rates by Type of Grant**

European Research Council
Established by the European Commission

erc

	StG 2007-2018	CoG2013-2018	AdG2008-2017	Total
Funded Proposals	4257	1920	2678	8855
<b>Evaluated Proposals</b>	40960	15240	21091	77291
Success Rate	10%	13%	13%	11%





Country	Higher-Education Institution	No	StG	CoG	AdG	Total	LS	PE	SH
UK	University of Cambridge	1	103	48	82	233	82	111	40
UK	University of Oxford	2	85	52	94	231	65	96	70
UK	University College London	3	80	40	49	169	63	48	58
CH	Swiss Federal Institute of Technology Zurich (ETH Zurich)	4	54	22	75	151	39	105	7
IL	Weizmann Institute	5	67	41	42	150	87	61	2
CH	Swiss Federal Institute of Technology Lausanne (EPFL)	6	63	23	55	141	36	102	3
IL	Hebrew University of Jerusalem	7	65	21	40	126	53	51	22
UK	University of Edinburgh	8	45	17	41	103	35	41	27
UK	Imperial College	9	53	20	28	101	31	67	3
DE	University of Munich (LMU)	10	44	10	37	91	35	32	24
DK	University of Copenhagen	11	43	25	21	89	39	32	18
NL	University of Amsterdam	12	48	16	24	88	8	25	55
IL	Tel Aviv University	13	50	17	18	85	35	42	8
BE	University of Leuven	14	40	14	26	80	21	42	17
NL	Delft University of Technology	15	40	17	18	75	10	57	8
CH	University of Zurich	16	31	16	26	73	38	14	21
NL	Utrecht University	17	30	24	18	72	13	28	31
FI	University of Helsinki	18	34	15	22	71	39	17	15
NL	Radboud University Nijmegen	19	36	17	17	70	23	21	26
NL	Leiden University	20	35	14	19	68	1	25	42
UK	University of Bristol	21	26	9	32	67	13	40	14
IL	Technion - Israel Institute of Technology	22	39	11	14	64	20	43	1
DE	Technical University of Munich	23	27	17	17	61	14	46	1
UK	University of Manchester	24	21	14	24	59	10	40	9
Country	Research Organisation	No	StG	CoG	AdG	Total	LS	PE	SH
FR	National Centre for Scientific Research (CNRS)	1	235	124	108	467	129	280	58
DE	Max Planck Society	2	105	36	87	228	118	92	18
DE	Helmholtz Association of German Research Centres	3	69	35	31	135	81	53	1
FR	National Institute of Health and Medical Research (INSERM)	4	52	27	28	107	99	4	4
ES	Spanish National Research Council (CSIC)	5	33	20	18	71	20	43	8
FR	French Alternative Energies and Atomic Energy Commission	6	43	9	17	69	10	57	2

Top
European
Institutions
Hosting
ERC
Grantees
by Funding
Schemes

ERC calls 2007-2017 +StG2018+CoG2018

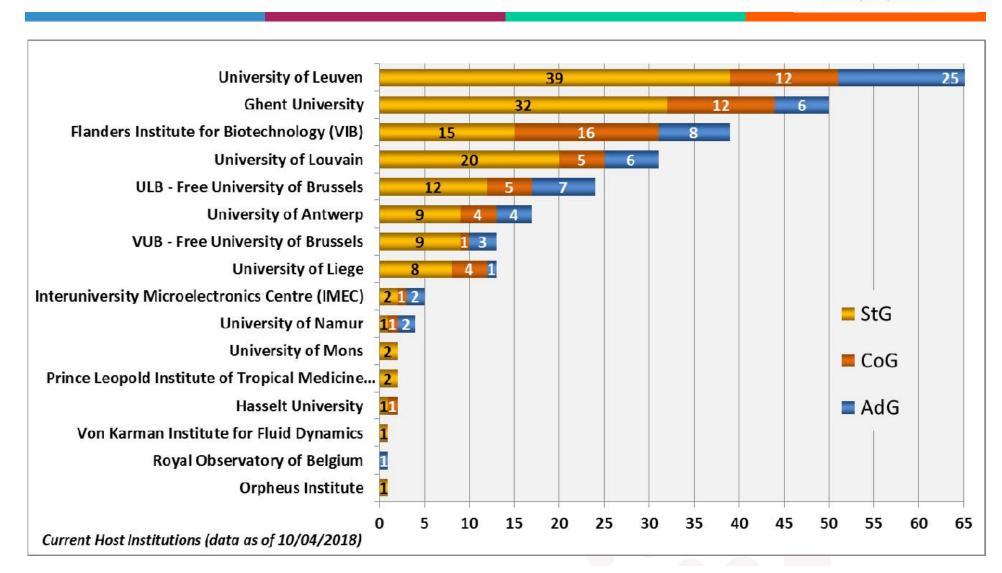
Current signatories of the grant agreement

Data as of 06/12/2018

# **ERC Grants by Belgian institutions**

(provisional data)





# **ERC Grants by Belgian institutions** in **EU/AC**



European Research Council
Established by the European Commission

ERC calls 2007-2017: 762 institutions

1	National Centre for Scientific Research (CNRS)	425	
2	University of Cambridge	218	
3	University of Oxford	214	
4	Max Planck Society	210	
5	University College London	157	
6	Swiss Federal Institute of Technology Zurich (ETH Zurich)	136	
7	Swiss Federal Institute of Technology Lausanne (EPFL)	134	
8	Weizmann Institute	133	
9	Hebrew University of Jerusalem	117	
10	Nat. Institute of Health and Medical Research (INSERM)	101	
11	Imperial College	97	
12	University of Edinburgh	97	
13	University of Amsterdam	83	
14	University of Copenhagen	80	
15	University of Munich (LMU)	80	
16	University of Leuven	76	
17	Tel Aviv University	75	
18	Delft University of Technology	66	
19	French Alternative Energies and Atomic Energy Comm.	66	
20	Spanish National Research Council (CSIC)	66	
34	Ghent University	50	
45	Flanders Institute for Biotechnology (VIB)	39	
rope62	University of Louvain la Neuve	31	35
mm <del>i799</del> 0r	ULBesear Free University of Brussels	24	1 00

# **Outline**



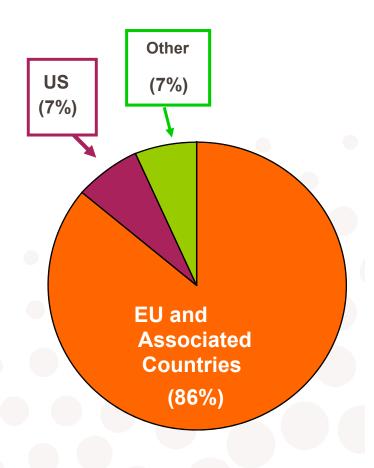
- ➤ What is the ERC? What does the ERC offer?
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### **Evaluation- StG/CoG/AdG**Peers



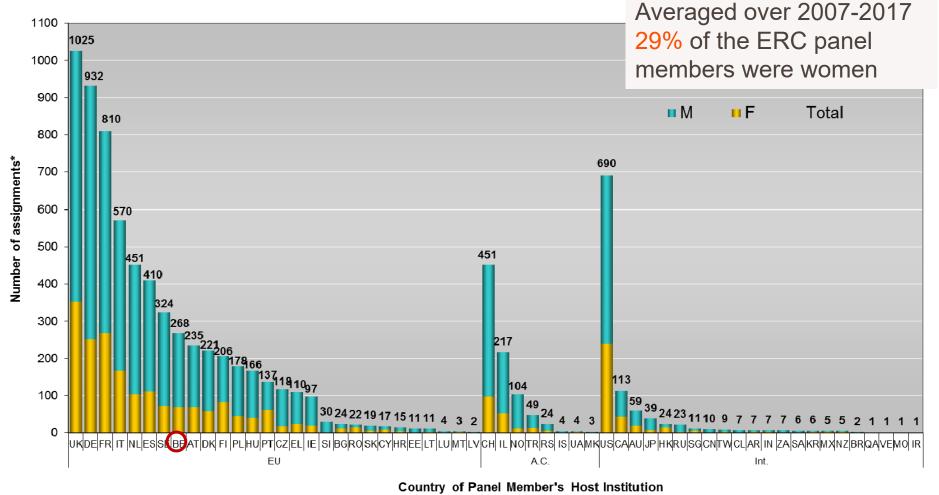
- Panel members: typically 425 / call (SyG:~90)
  - High-level scientists
  - Recruited by the ERC Scientific Council from all over the world: ~14% from outside Europe
  - About 14-17 members, including one chair person
- Referees: typically 2000 / call
  - Evaluate only a small number of proposals
  - Similar to normal practise in peerreviewed journals



#### **ERC Panel Members by Country of HI and Gender**



European Research Council



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

#### StG/CoG/AdG: Submission to Panels

(SyG: all proposals are submitted to a single panel)



- Proposals are submitted to a targeted Panel (of PI's choice)
  - Can flag one "Secondary Review Panel"
- Applicant chooses his/her panel, and this panel is "responsible" for the evaluation of the proposal
- Proposals can be moved to other panels in exceptional cases, e.g. if clear mistake on part of applicant, or due to the necessary expertise being available in a different panel
- In case of cross-panel or cross-domain proposals, evaluation by members of other panels possible



### Online Submission Proposal structure



#### Administrative forms (Part A)

- 1 General information
- 2 Administrative data of participating organia.
- 3 Budget
- 4 Ethics
- 5 Call sr stions

#### **Annexes**

Commitment of the host institution, PhD certificates, certificates on extension of eligibility, ethics issues etc

#### Part B1 (submitted as pdf)

Evaluated in Step 1 & Step 2

Text box - Cross-domain nature explanation

a – Extended synopsis 5 pages

b – Curriculum vitae 2 pages

Appendix – Funding ID

c - Track-record 2 pages

Part B2 (submitted as pdf)

NOT evaluated in Step 1 (Step 2 only)

Scientific proposal 15 pages

a – State-of-the-art and objectives

b - Methodology

c - Resources

#### → Read the Information for Applicants



### How are ERC research proposals evaluated? Excellence is the sole evaluation criterion

European Research Council

#### Evaluation of excellence at two levels:

- Excellence of the Research Project
  - Ground breaking nature
  - ✓ Potential impact
  - Scientific Approach
- Excellence of the Principal Investigator
  - Intellectual capacity
  - Creativity
  - ✓ Commitment



#### **Evaluation**

#### Review procedure (StG, CoG and AdG)



Established by the European Commission

STEP 1 STEP 2 Remote assessment by Panel members of Remote assessment by Panel members and section 1 – PI and synopsis reviewers of full proposals Panel meeting + interview (StG and CoG) Panel meeting Proposals retained Ranked list of proposals for step 2 Feedback to applicants



Appropriate treatment of interdisciplinary proposals



### How to prepare and submit a successful ERC research proposal?



- Have a bright, original, exciting idea
- Design a research project to implement the idea
- Get a letter of support from a Host Institution where the project is to be carried out (the HI must be located in the EU or any of the H2020 associated countries)
- Write your research proposal
- Fully electronic/web based submission system
- Submit your research proposal before the deadline



#### **Outline**



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#### **Preparing your proposal (1)**



- Register early, get familiar with the system and templates and start filling in the forms
- A submitted proposal can be revised until the call deadline by submitting a new version and overwriting the previous one
- Make sure you are eligible
- Follow the formatting rules and page limits.
- Download and proof-read the proposal before submitting.
- Make use of the help tools and call documents (Information for Applicants, Work Programme, Frequently asked questions)
- Talk to the National Contact Points and your Institution's grant office



### Preparing your proposal (2): Host Institution



- You can change it during the project's life
- Negotiate with the HI (your position, equipment, administrative support, access to infrastructure, etc.)

Rumour 1: The quality/fame of the HI is increasing my chances/scores.

**X NOT true**: the HI is not an evaluation criterion!

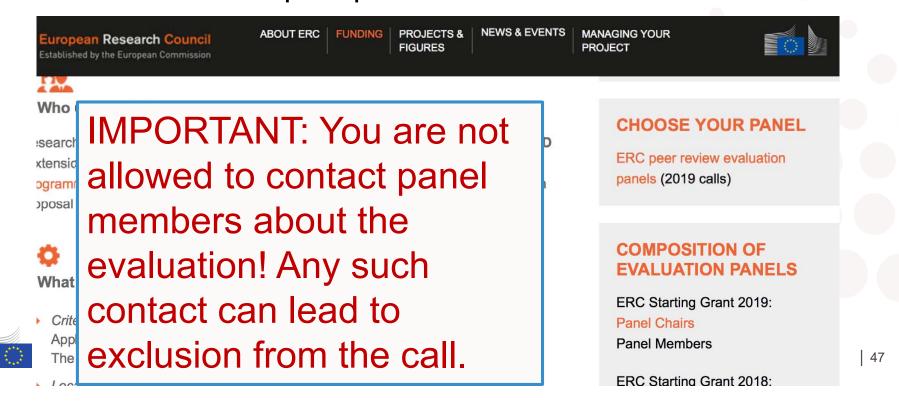


# Preparing your proposal (3): Choosing the Panel



https://erc.europa.eu/projects-and-results/erc-funded-projects

- Check out projects funded under panel
- Check out past panel members



# Preparing your proposal (4): Choosing descriptors



- Descriptors and free keywords may influence:
  - Evaluation Panel
  - Panel members
  - Whether a cross-panel evaluation is necessary

**Rumour 2**: The more cross-panel descriptors indicated, the higher the funding chances, since I emphasize like this the interdisciplinarity of my proposal.

**NOT true**: even though these are used to allocate proposals to Panel Members, once the proposals are allocated, Panel Members do not see the keywords and descriptors used.



# Preparing your proposal (5): Part B1: the research project



- Is my project new, innovative, bringing new solutions/theories?
- Does it promise to go substantially beyond the state of the art? no incremental research. Think big!
- Know your competitors what is the state of play and why is your idea and scientific approach outstanding?
- Only the extended Synopsis is read at Step 1: concise and clear presentation is crucial (evaluators are not all experts in the field)
- How can I prove/support my case? Are my goals realistic? Explain your scientific approach in sufficient detail to convince the panel about the feasibility of your project
- What's the risk? Mitigating measures?
- Societal impact is **not** an evaluation criterion (which does not mean ERC-funded projects would not have such impact)



# Preparing your proposal (6): Part B1: the principal investigator



- Why am I the best/only person to carry it out? Know your competitors
- Am I able to work independently, and to manage a 5-year project with a substantial budget?
- Am I competitive?
- Have I shown my scientific leadership in my CV?

**Rumour 3:** One needs publications in Nature/Science/High Impact Factor journals to succeed.

**XNOT** true



#### Preparing your proposal (7): Part B2



### In Step 2, both part B.1 and part B.2 are read by Panel Members and specialists from around the world

- Do not repeat the synopsis, provide sufficient details on your methodology and work plan
- Make sure that the quantitative and qualitative differences to the state of the art are clear and referenced - show you did your homework.
- Provide alternative strategies to mitigate risks
- Explain involvement of team members
- Justify requested resources explain your budget properly

## Preparing your proposal (8): Proposal budget considerations



- Budget analysis carried out in Step 2 evaluation (meeting)
- Panels have responsibility to ensure that resources requested are reasonable and well justified
- Budget cuts need to be justified on a proposal by proposal basis (no across-the-board cuts)
- Panels to recommend a final maximum budget based on the resources allocated/ removed
- Panels do not "micro-manage" project finances
- Awards made on a "take-it-or-leave-it" basis: no negotiations



### Typical reasons for not making it into Step 2



- Incremental in nature
- Hypothesis and objectives not sufficiently clear
- No realisation of risks & challenges, contingency
- For interdisciplinary proposals: expertise missing in one area

It does take a considerable effort to compose a good application!

#### Some useful tools and links



- Read Information for Applicants and Work Programme
- View the step-by-step video
   Introduction to application process,
   including tips & tricks for the interview
   https://vimeo.com/94179654
- Consult ERC website for latest funding opportunities, view ERC funded projects







#### The European Research Council



More information on erc.europa.eu

Read through the ERC Work Programme 2019!

National Contact Point in your country erc.europa.eu/national-contact-points

#### Follow us on



EuropeanResearchCouncil



**ERC** Research





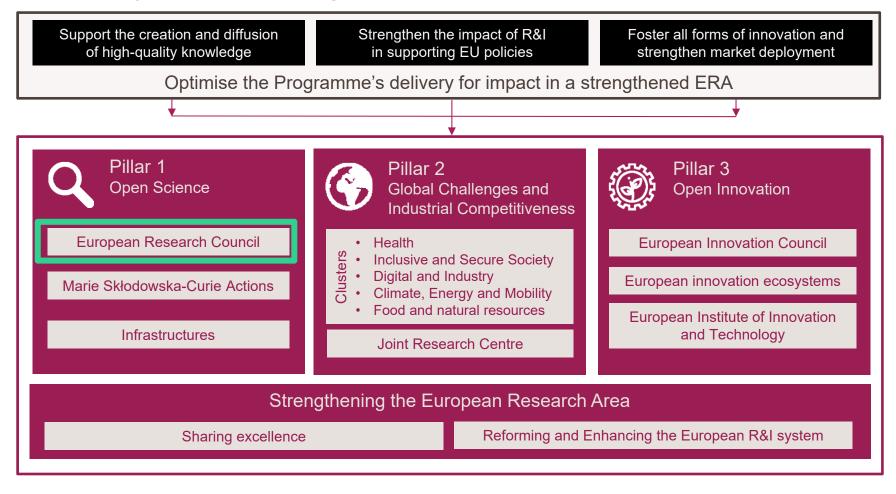
# Outlook next Framework Programme



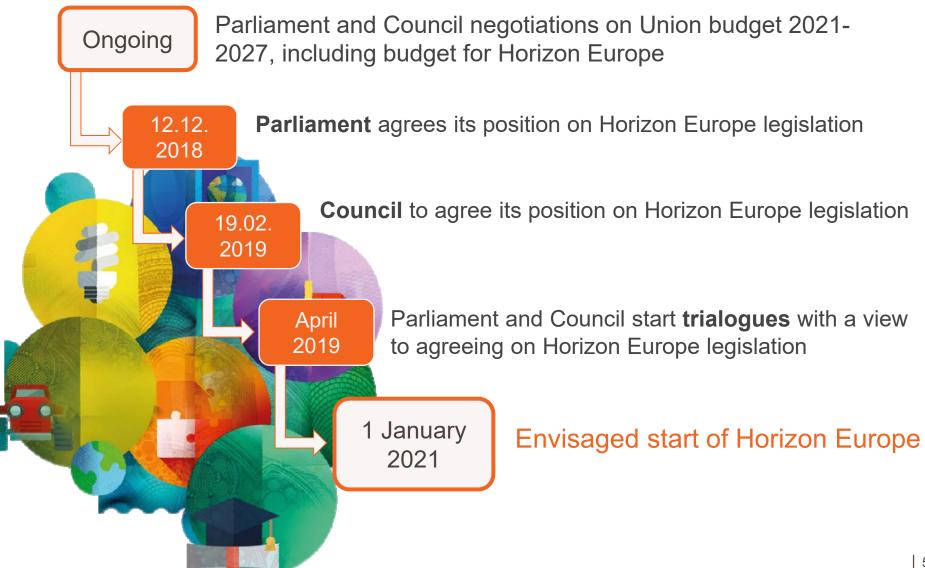
Horizon 2020 European Union funding for Research & Innovation

#### Horizon Europe: Evolution not Revolution

Specific objectives of the Programme



#### What Next? update



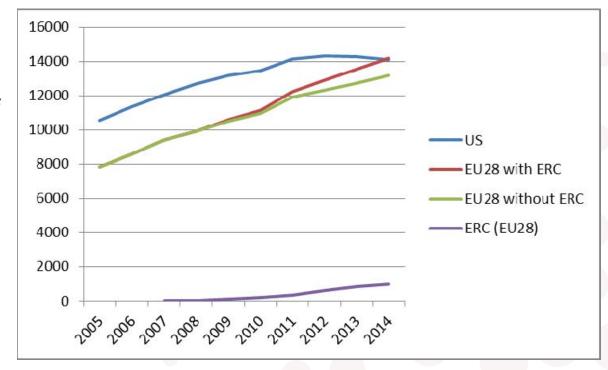
# **ERC** is Putting Europe Back on the Map



The first reported ERC publications began to appear in 2007 and since then publications acknowledging ERC funding have gone from contributing less than 0.1% of EU top 1% publications in 2007 (2) to nearly 7% in 2014 (973).

In 2014, for the first time authors based in the EU appeared on more top 1% cited publications (14,172) than authors based in US (14,093) in absolute numbers.

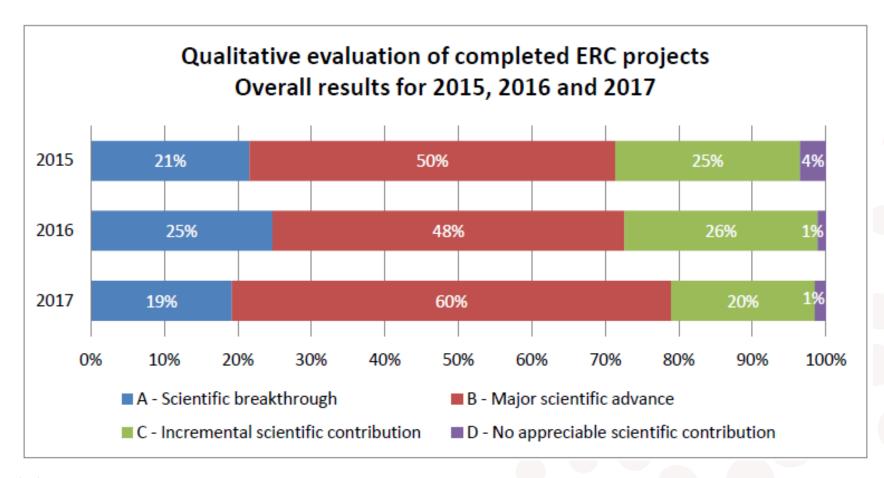
#### Diagramme until 2014 (1% most cited Publications)





# 21% of the ERC-funded Projects Deliver Scientific Breakthroughs

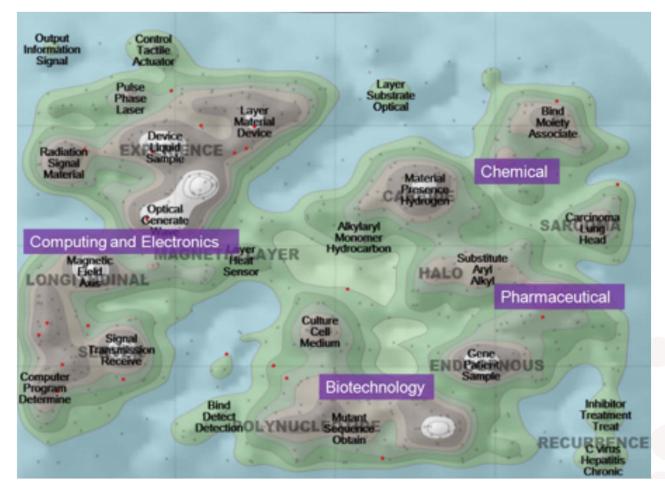




#### Frontier Research Leads to Innovation



With 17% of the budget of the 7<sup>th</sup> Framework Programme (FP7), the ERC accounts for 29% of FP7-funded patent filings (>800)



Thematic concept map of ERC supported inventions

#### **Proposal submission**

#### ERC Work Programme 2019 calendar



ERC calls	Budget	Call Opening	Submission Deadline(s)
Starting Grants ERC-2019-StG	580 M€ (390 grants)	1 August 2018	17 October 2018
Synergy Grants ERC-2019-SyG	400 M€ (48 grants)	2 August 2018	8 November 2018
Consolidator Grants ERC-2019-CoG	602 <b>M€</b> (314 grants)	24 October 2018	7 February 2019
Advanced Grants ERC-2019-AdG	391 <b>M€</b> (166 grants)	21 May 2019	29 August 2019
Proof of Concept ERC-2019-PoC	25 <b>M€</b> (167 grants)	6 October 2018	22 January 2019 25 April 2019 19 September 2019

### Q: Can you show us an example of a successful proposal ancerc say what factors made it stand out from the crowd?



We can't provide a 'representative' example.

Every panel decides whether and why a proposal is successful as compared to others.

The reasons for this can be very different from one panel to another.

Applicants should find their own way and rely on themselves to come up with a convincing proposal.

See on the ERC Website what projects have been funded in your field.