The European Research Council

ERC in a nutshell

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XLIX International Meeting on Fundamental Physics
Centro de Ciencias de Benasque Pedro Pascual

European Research Council
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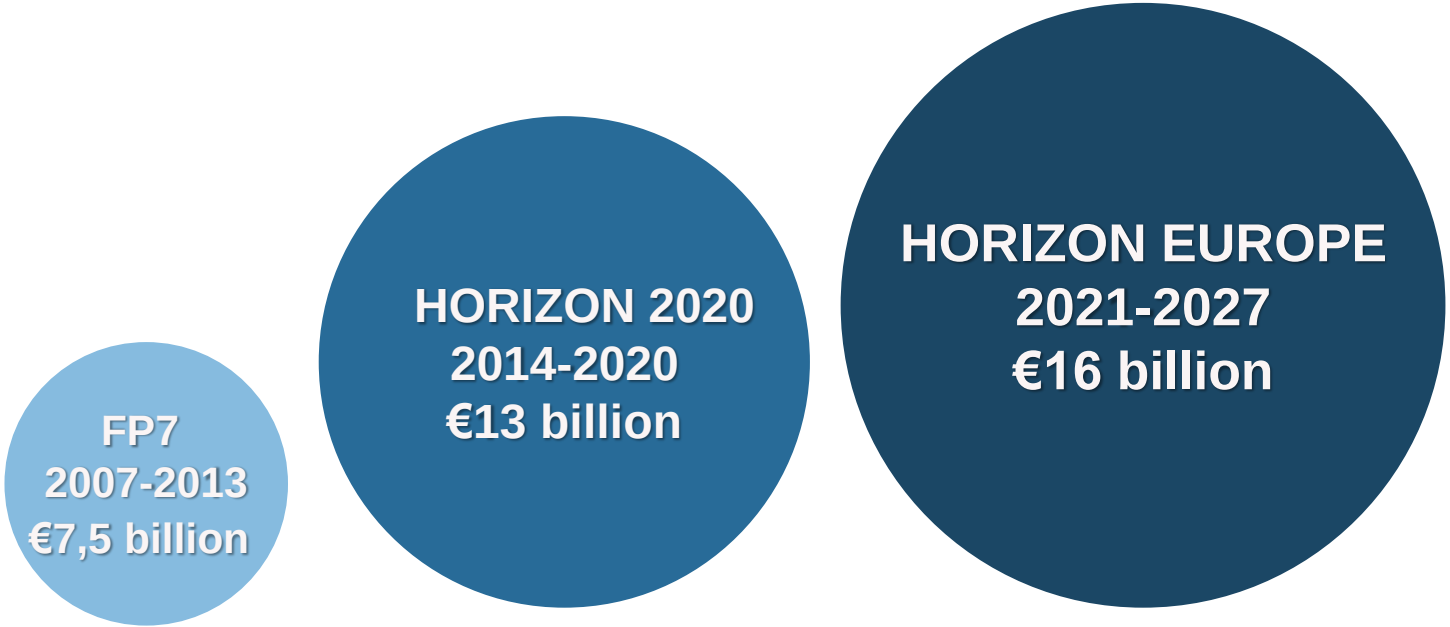
ERC Budget 2007 – 2027: EUR 36,5 billion



ERC is 17%

of the entire Horizon Europe budget

ERC is…
1. The Scientific Council

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ERC is….
2. The ERCEA

The ERC Executive Agency

- Established by the **European Commission** in 2007
- Implements the ERC **strategy** as set by the Scientific Council and manages ERC operations

By courtesy of Art & Build Architect / Montois Partners / credits: S. Brison

ERC in Figures: After 15 Years, a Success Story

Over **11,000**
top researchers funded since the ERC creation in 2007

Over **80,000**
researchers and other professionals employed in ERC research teams

Over **2,200**
patents and other IPR applications generated by ERC funding

Over **400**
start-ups identified as founded or co-founded by ERC grantees

Over **200,000**
articles from ERC projects published in scientific journals

Over **890** research institutions hosting ERC grantees – universities, public or private research centres in the EU or Associated Countries

87
nationalities of grant holders

9 Nobel Prizes, **4** Fields Medals, **11** Wolf Prizes and other prizes awarded to ERC grantees

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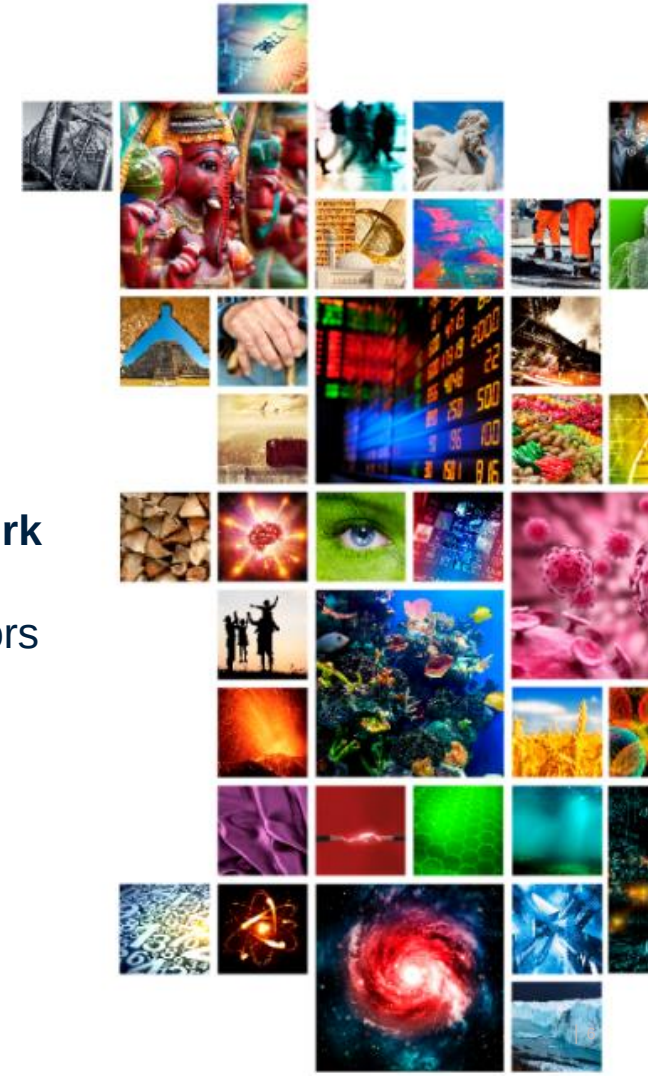
Why should one apply for an ERC Grant?

- Research topic of **own choice**, with a team of own choice
- True financial **autonomy** for 5 years
- Negotiate with the host institution the **best conditions of work**
- Attract top **team members** (EU and non-EU) and collaborators
- **Portability** of grants within Europe
- Attract additional funding



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ERC Grant Schemes

Starting Grant
Up to €1.5 million + up to €1 million
Duration: up to **5 years**
2-7 years of experience after PhD

Consolidator Grant
Up to €2 million + up to €1 million
Duration: up to **5 years**
7-12 years of experience after PhD

Advanced Grant
Up to €2.5 million + up to €1 million
Duration: up to **5 years**
An excellent scientific track record of recognized achievements in the last 10 years

Synergy grant
€10 million + up to €4 million
Duration: up to **6 years**
2 to 4 researchers and their research groups (**one researcher can be based outside EU/AC)**

Proof of Concept
€150 000
Duration: up to **18 months**
Demonstrate that the idea funded by the original ERC grant has innovation potential and significant economic or societal benefits

2022 & 2023 Call Calendar

ERC calls	Call Opening	Submission Deadline
Starting Grants ERC-2023-StG	12/07/2022	25/10/2022
Synergy Grants ERC-2023-SyG	13/07/2022	08/11/2022
Consolidator Grants ERC-2023-CoG	28/09/2022*	02/02/2023*
Advanced Grants ERC-2023-AdG	08/12/2022*	23/05/2023*

* To be confirmed

Evaluation: Principle

Excellence
is the sole evaluation criterion

Excellence of the **Research Project**

- Ground breaking nature
- Potential impact
- Scientific Approach

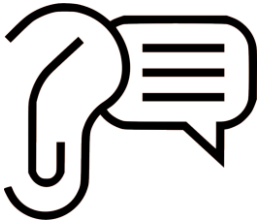
Excellence of the **Principal Investigator**

- Intellectual capacity
- Creativity
- Commitment

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).
- Publication record is not decisive in selection decisions.
- The **Host Institution** is not an evaluation criterion.

Some rumours



Rumour 1: ***You can only apply for an ERC grant if you are a highly accomplished scientist***.

✘ NOT true: Accomplishments are appreciated in relation to your stage/seniority as giving some evidence of your capacity to conduct the research you propose and of creativity.

Rumour 2: ***To be successful, you need to continue an established research line, to prove continuity and credibility***

✘ NOT true: Generally, the opposite is true.

Rumour 3: ***If you have already obtained an ERC grant you are less/more likely to get another one.***

✘ *NOT true: Panels look at each proposal on its own merit, in comparison with the other applications, irrespectively of whether you have or have not obtained an ERC grant in the past. (does not apply for applications to a Proof-of-Concept Grant.)*

Rumour 4: ***The more socially or medically relevant a grant proposal is, the higher the chances of it getting funded.***

✘ NOT true: ERC funds frontier research, not research that promises to be only an incremental advancement of knowledge. This is irrespective of the field and whether it has societal, medical or clinical applications.

Evaluation: Panel Structure (2021-2023)

Life Sciences - LS

- 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 - PE

- 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
- PE11 Materials Engineering

Social Sciences and Humanities - SH

- 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

Evaluation: Panel Structure (2021-2023)

PE9 Universe Sciences

Astro-physics/-chemistry/-biology; solar system; planetary systems; stellar, galactic and extragalactic astronomy; cosmology; space sciences; astronomical instrumentation and data

- PE9_1 Solar physics – the Sun and the heliosphere
- PE9_2 Solar system science
- PE9_3 Exoplanetary science, formation and characterization of extrasolar planets
- PE9_4 Astrobiology
- PE9_5 Interstellar medium and star formation
- PE9_6 Stars – stellar physics, stellar systems
- PE9_7 The Milky Way
- PE9_8 Galaxies – formation, evolution, clusters
- PE9_9 Cosmology and large-scale structure, dark matter, dark energy
- PE9_10 Relativistic astrophysics and compact objects
- PE9_11 Gravitational wave astronomy
- PE9_12 High-energy and particle astronomy
- PE9_13 Astronomical instrumentation and data, e.g. telescopes, detectors, techniques, archives, analyses

PE2 Fundamental Constituents of Matter

Particle, nuclear, plasma, atomic, molecular, gas, and optical physics

- PE2_1 Theory of fundamental interactions
- PE2_2 Phenomenology of fundamental interactions
- PE2_3 Experimental particle physics with accelerators
- PE2_4 Experimental particle physics without accelerators
- PE2_5 Classical and quantum physics of gravitational interactions
- PE2_6 Nuclear, hadron and heavy ion physics
- PE2_7 Nuclear and particle astrophysics
- PE2_8 Gas and plasma physics
- PE2_9 Electromagnetism
- PE2_10 Atomic, molecular physics
- PE2_11 Ultra-cold atoms and molecules
- PE2_12 Optics, non-linear optics and nano-optics
- PE2_13 Quantum optics and quantum information
- PE2_14 Lasers, ultra-short lasers and laser physics
- PE2_15 Thermodynamics
- PE2_16 Non-linear physics
- PE2_17 Metrology and measurement
- PE2_18 Equilibrium and non-equilibrium statistical mechanics: steady states and dynamics

Evaluation: Process

For individual calls: a single submission but a **two-step evaluation**

STEP 1

Remote assessment by **Panel Members see ONLY section 1: Synopsis and CV (Part B1)**

↓

Panel Meeting

↓

Proposal **Rejected** (Scores B&C)

Proposal **Retained** For step 2 (Score A)

STEP 2

Remote assessment by **Panel Members** and **Remote Reviewers** of **full proposals (Part B1+B2)**

↓

Panel Meeting
+ interview StG, CoG and AdG

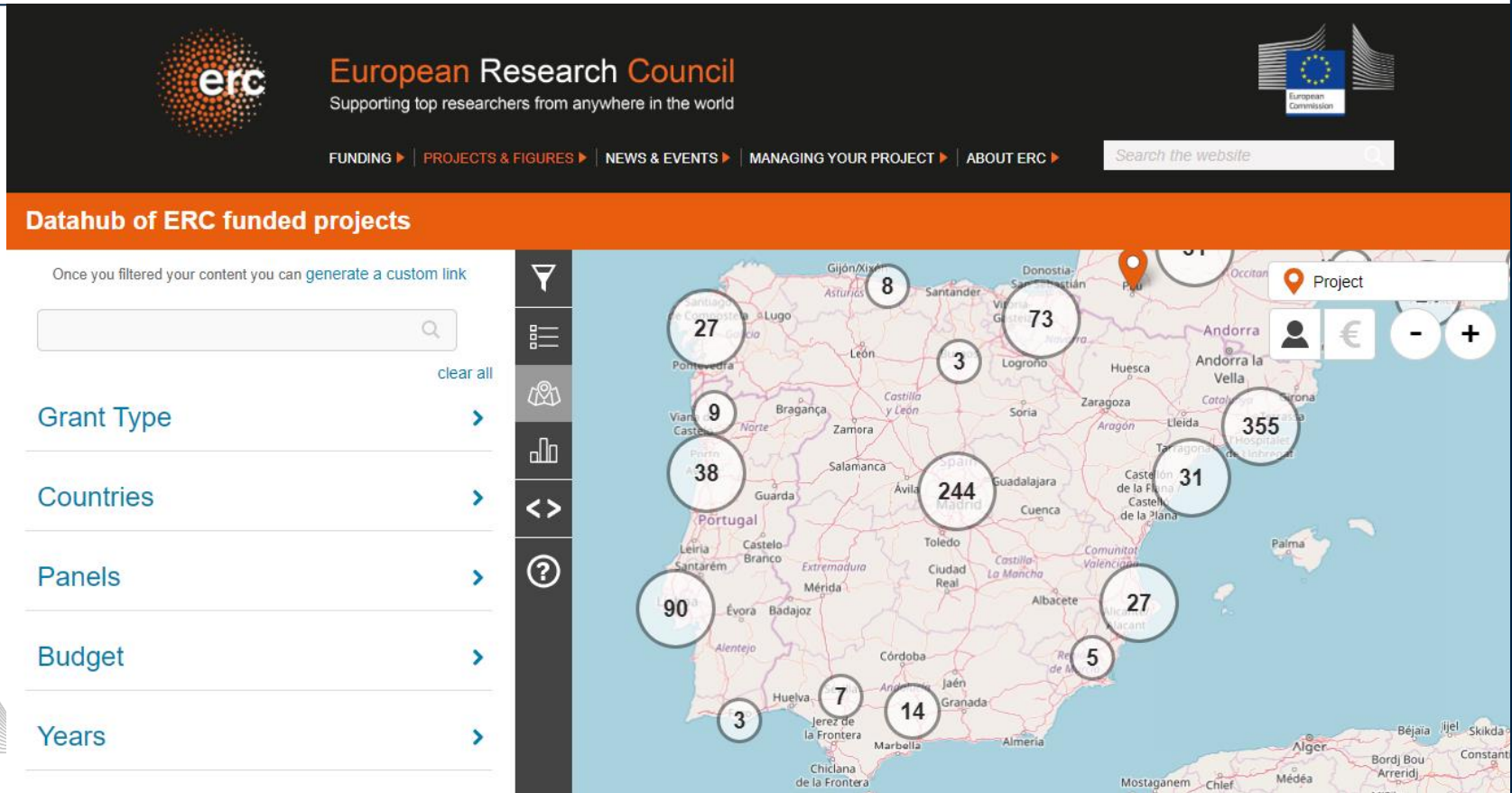
↓

Ranked list of proposal **(Scores A&B)**

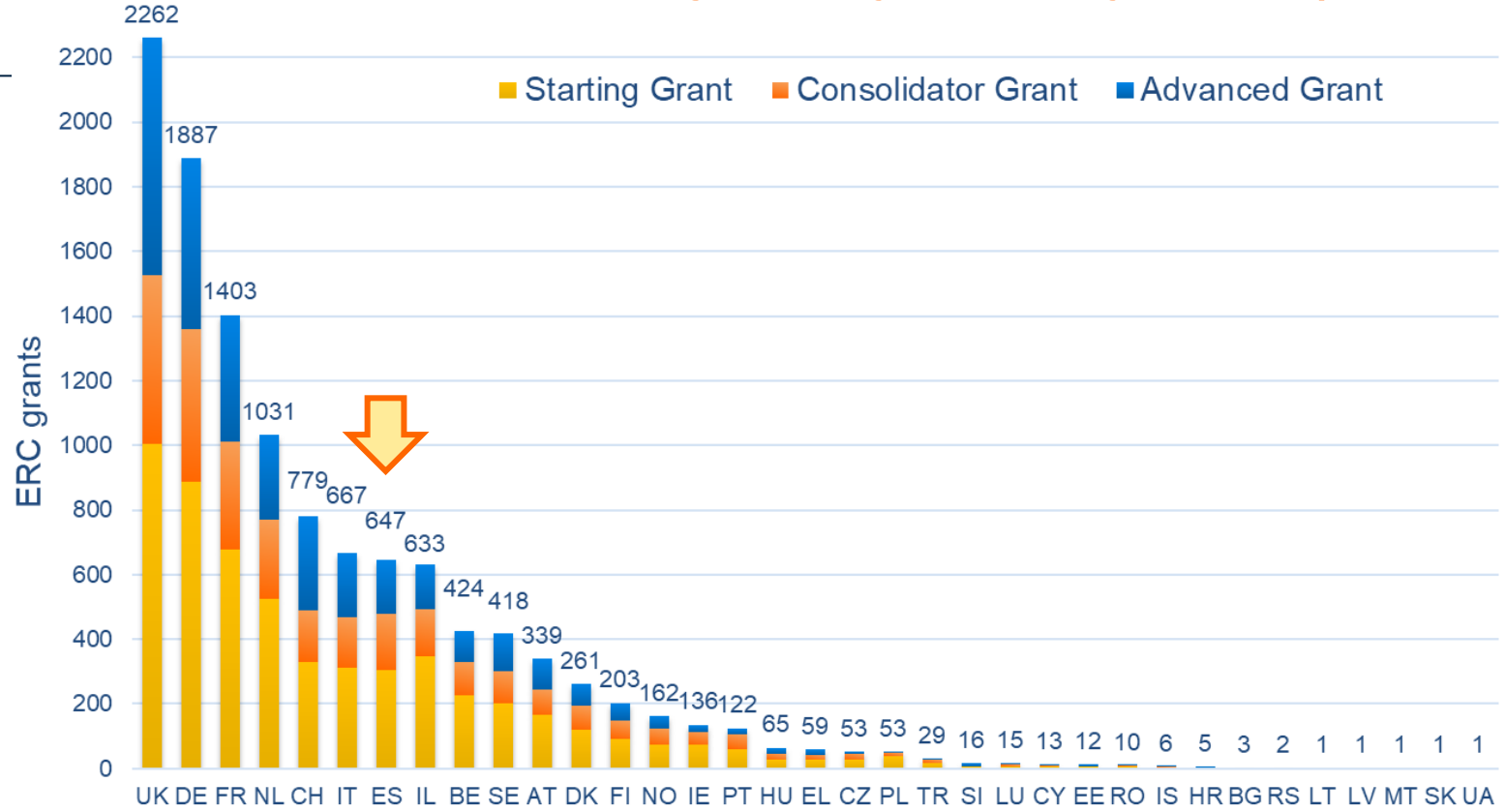
Feedback to applicants

Get inspired by browsing through the ERC-funded projects

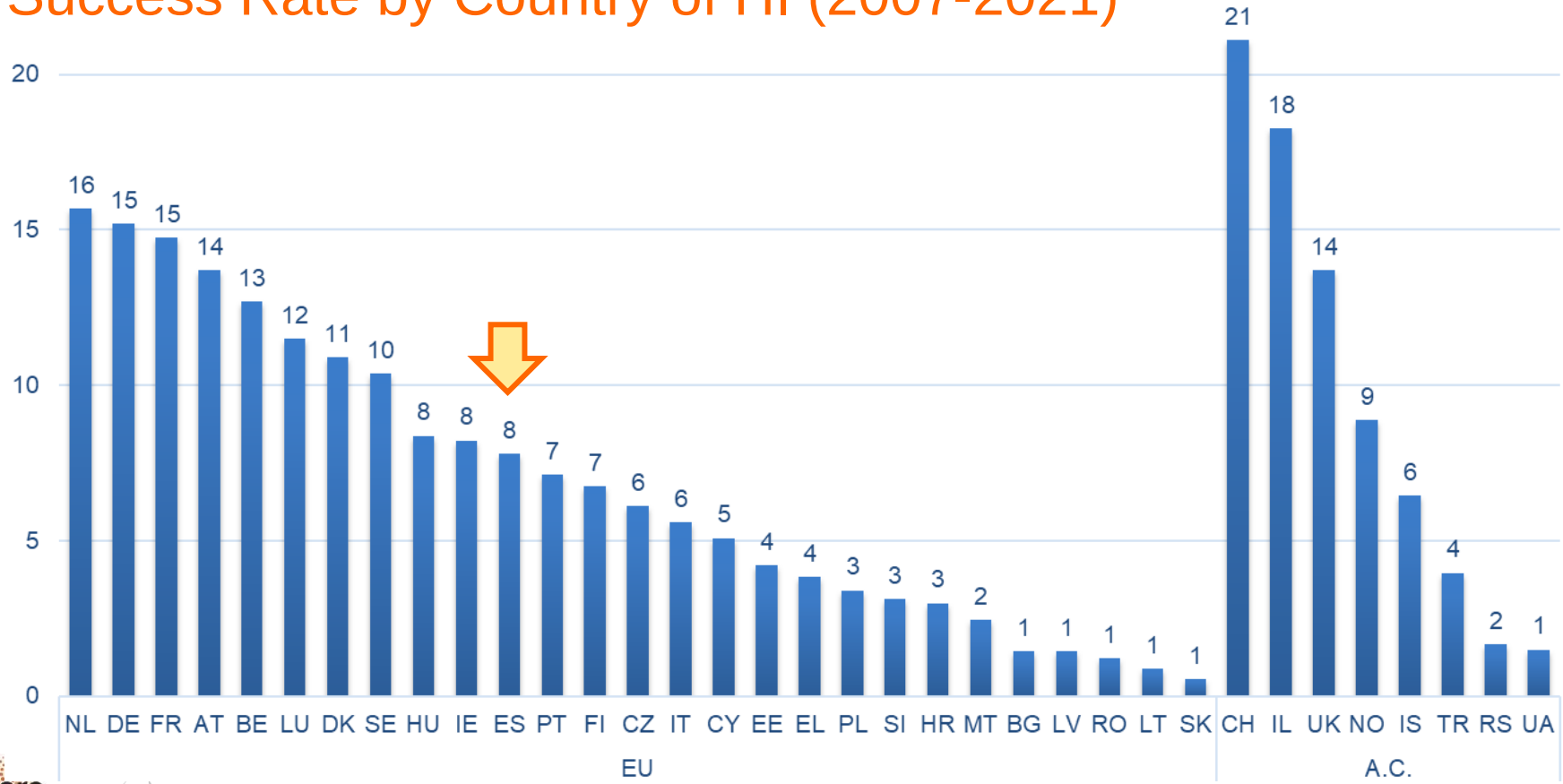
https://erc.europa.eu/projects-and-results/erc-funded-projects



ERC Funded Projects by Country of HI (2007-2021)

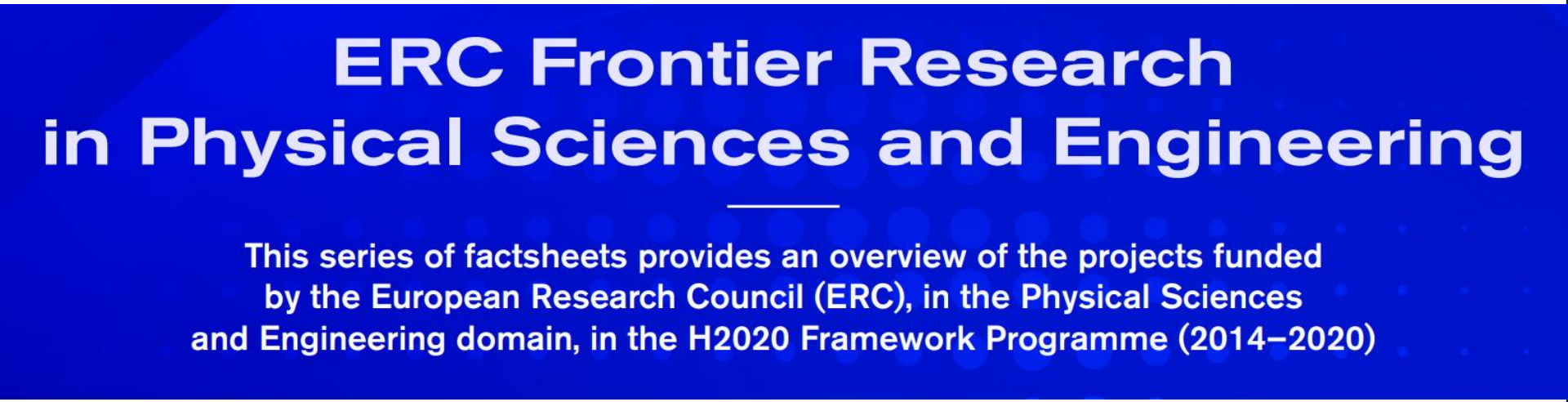


Success Rate by Country of HI (2007-2021)



ERC factsheets

https://erc.europa.eu/news-events/magazine/mapping-frontiers-science-erc-scientific-council-editorial



Fundamental Constituents of Matter (PE2)

2561 applications
(4.7% of total)

326 projects funded
(4.9% of total)

StG

129 projects
(€190M)

CoG

114 projects
(€216M)

AdG

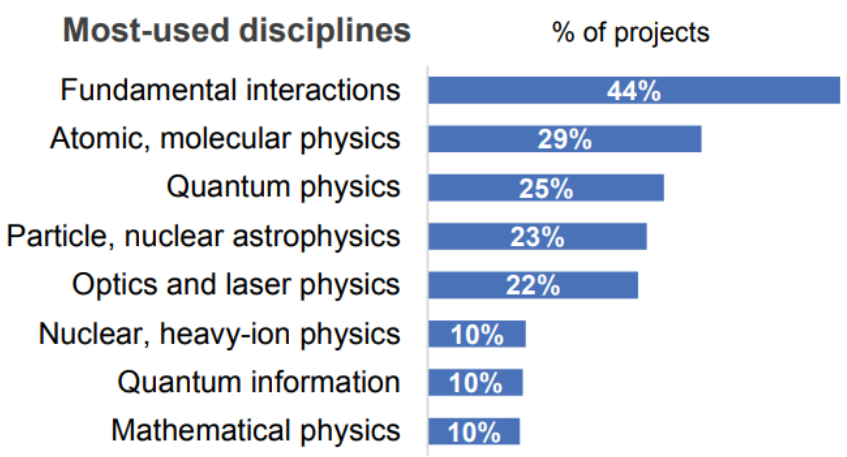
83 projects
(€197M)

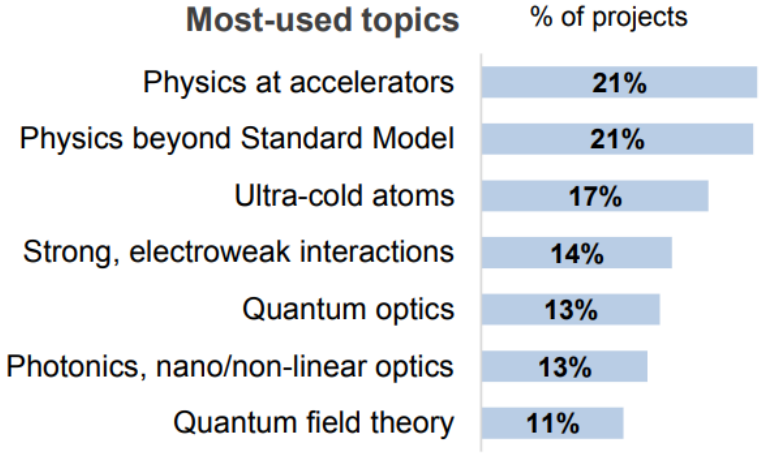
60 female grantees
(18% of grantees in this panel)

€603 million budget

Fundamental Constituents of Matter (PE2)

Scientific landscape of ERC-funded projects in this panel



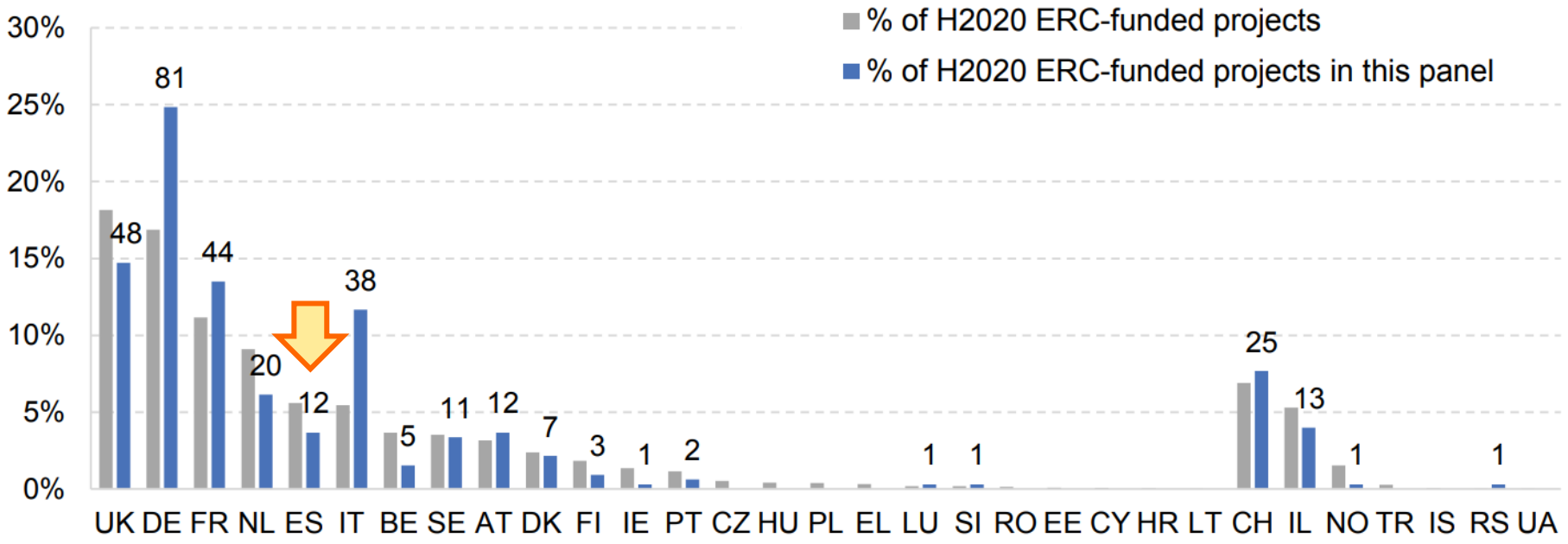


- *Quantum physics*, *Physics at accelerators* and *Physics beyond Standard Model* grew in use from 2014 to 2020
- *Mathematical physics* and *Strong, electroweak interactions* were used more in StG projects compared to those funded in CoG and AdG schemes, while *Particle, nuclear astrophysics*, *Optics and laser physics,* and *Quantum optics* were used more in AdG projects
- A high number of projects in this panel generate methodological developments. *Experimental methods in physics, Theoretical, mathematical methods* and *Quantum methods* are the main ones

Fundamental Constituents of Matter (PE2)

Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

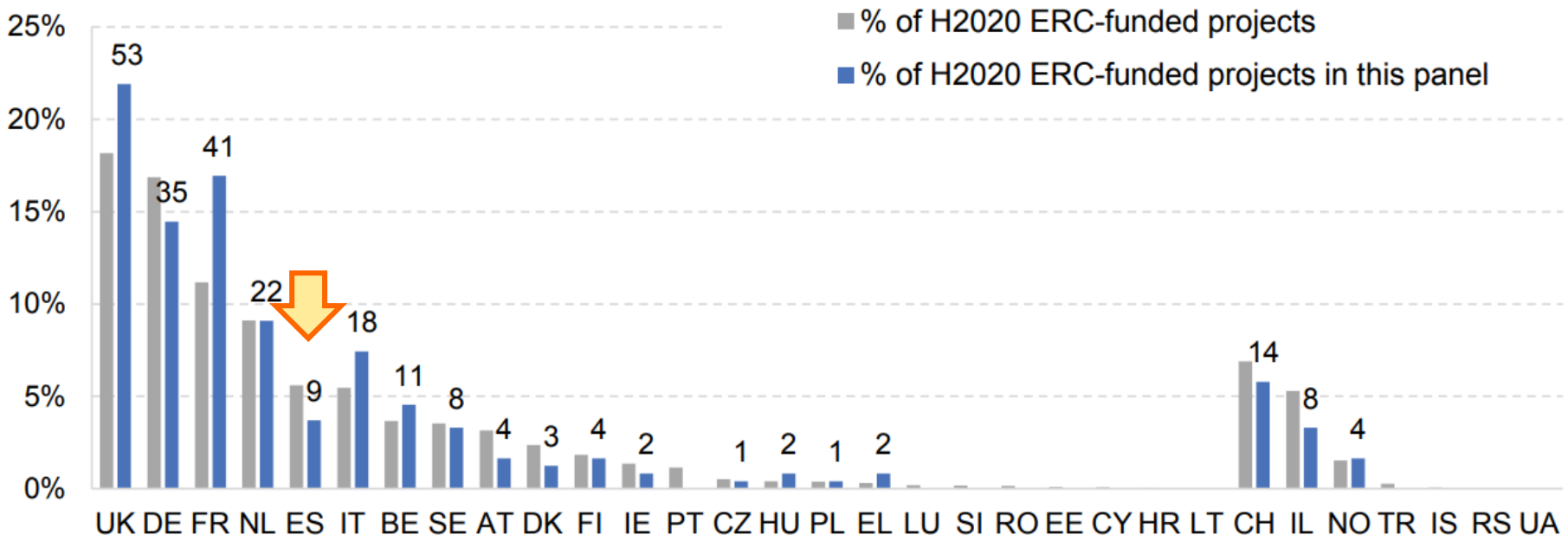
The 326 funded projects (numbers in the graph) are in 15 EU Member States and 4 Associated Countries (ACs)



Universe Sciences (PE9)

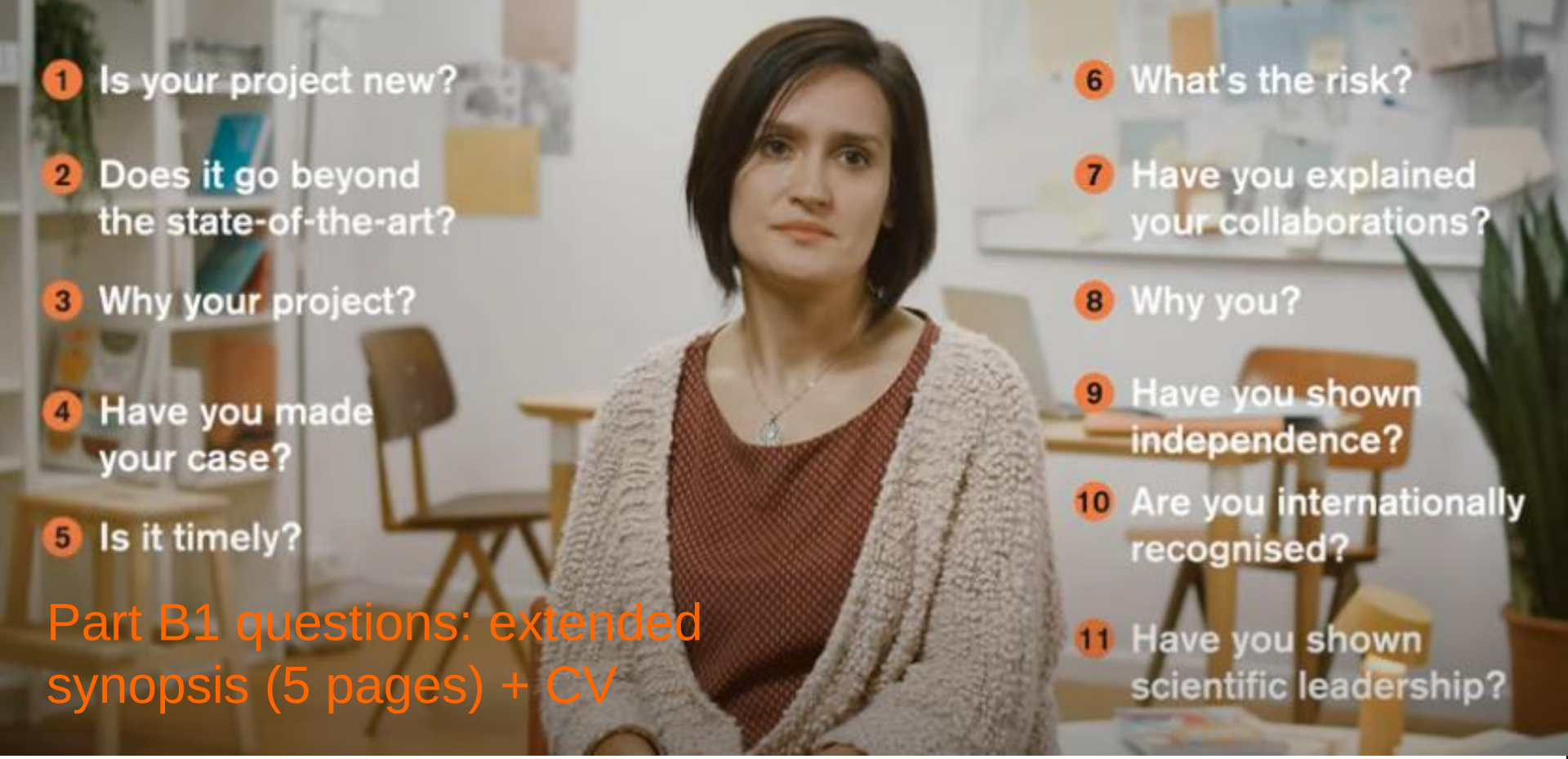
Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

The 242 funded projects (numbers in the graph) are in 16 EU Member States and 3 Associated Countries (ACs)



ERC CLASSES

ALL YOU SHOULD KNOW ABOUT THE ERC EVALUATIONS



Part B1 questions: extended synopsis (5 pages) + CV

https://www.youtube.com/watch?v=HsmQRM88yyM&list=PLtv6FnsXqnXAYRk6HCErwMxwML0ZKoMcy&index=3

https://www.youtube.com/watch?v=4fpHkhitwA0&list=PLtv6FnsXqnXAYRk6HCErwMxwML0ZKoMcy&index=4

How to prepare the interview

https://www.youtube.com/watch?v=F4qXVGcdH5w&list=PLtv6FnsXqnXAYRk6HCErwMxwML0ZKoMcy&index=6

ERC Stories

BABE

Why is the world green

Researcher: Katerina SAM
ERC Starting Grant 2018
HI: Biologicke centrum AV CR, v. v. i., Czechia

“My advice would be that if you have a great idea for a project, just believe in it and go for the ERC. However, when I got my ERC grant some people came to me asking what to write about to get an ERC. This is not how it works – you need to have that really good idea first and then apply with it, not the other way around".

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Thank you!

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