

Michal HOCEK

*Institute of Organic Chemistry and Biochemistry,
Academy of Sciences of the Czech Republic,
CZ-16610 Prague 6; Czech Republic*

e-mail: hocek@uochb.cas.cz

<http://hocekgroup.uochb.cas.cz>

Evaluation of ERC proposals

Experience from the panel and tips for ERC Grant applicants



European
Research
Council

member of panel PE5 ERC CoG 2015, 2017, 2019

Types of ERC grants:

ERC Starting Grants: 2-7 years after PhD – at least partly independent or with prospect of independence

A competitive Starting Grant PI must have already shown the [potential for research independence and evidence of maturity](#), for example by having produced at least one important publication as main author or without the participation of their PhD supervisor

ERC Consolidator Grants: 8-12 years after PhD – fully independent position and results

A competitive Consolidator Grant PI must have already shown [research independence and evidence of maturity](#), for example by having produced several important publications as main author or without the participation of their PhD supervisor.

ERC Advanced Grants: no limit – world leading scientists

Super competitive.

ERC Starting Grant 2020

Submitted and selected Proposals by Domain



European Research Council
Established by the European Commission

	Submitted Proposals	Selected Proposals
Life Sciences	923	124
Physical Sciences and Engineering	1409	186
Social Sciences and Humanities	940	126
Total	3272	436

Success rate ~ 13.3 %

ERC Starting Grants 2021

Submitted and selected proposals by domain



European Research Council

Established by the European Commission

	Submitted Proposals	Selected Proposals
Life Sciences	1113	111
Physical Sciences and Engineering	1762	172
Social Sciences and Humanities	1191	114
Total	4066	397

Success rate ~ 9.8 %

ERC Consolidator Grant 2020

Submitted and selected Proposals by Domain



European Research Council

Established by the European Commission

	Submitted Proposals	Selected Proposals
Life Sciences	710	94
Physical Sciences and Engineering	1102	144
Social Sciences and Humanities	694	89
Total	2506	327

Success rate ~ 13 %

ERC Advanced Grant 2020

Submitted and selected Proposals by Domain



European Research Council
Established by the European Commission

	Submitted Proposals	Selected Proposals
Life Sciences	746	62
Physical Sciences and Engineering	1175	92
Social Sciences and Humanities	757	55
Total	2678	209

Success rate ~ 8 %

ERC Advanced Grants 2021

Submitted and selected Proposals by Domain



European Research Council

Established by the European Commission

	Submitted Proposals	Selected Proposals
Life Sciences	501	75
Physical Sciences and Engineering	762	110
Social Sciences and Humanities	472	68
Total	1735	253

Success rate ~ 14.6 %

ERC Starting Grants 2021

Grantees by country of host institution and domain

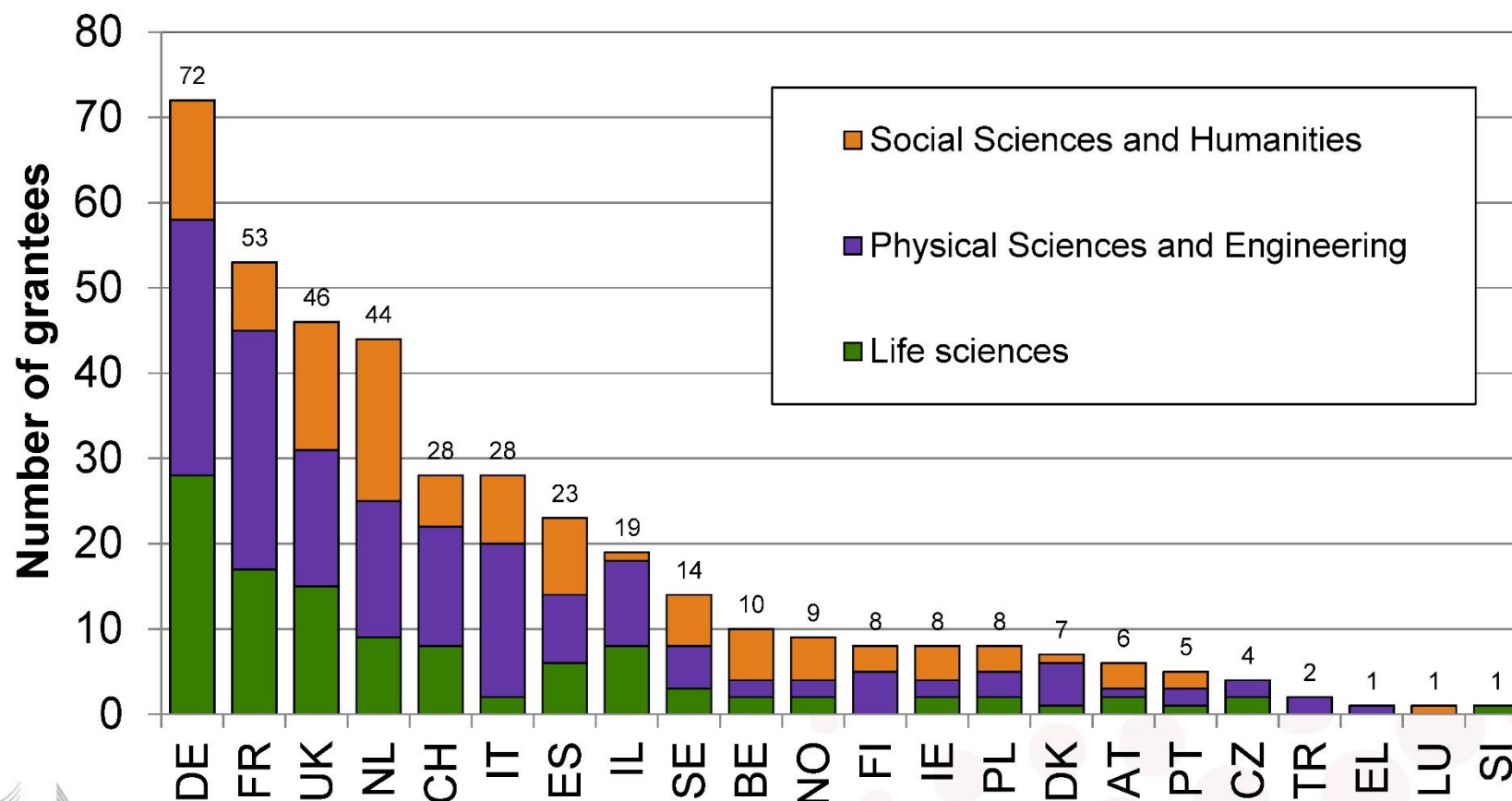
Total 397 grants



European Research Council

Established by the European Commission

22 countries



ERC Consolidator Grants 2020

Grantees by Country of Host Institution and Domain

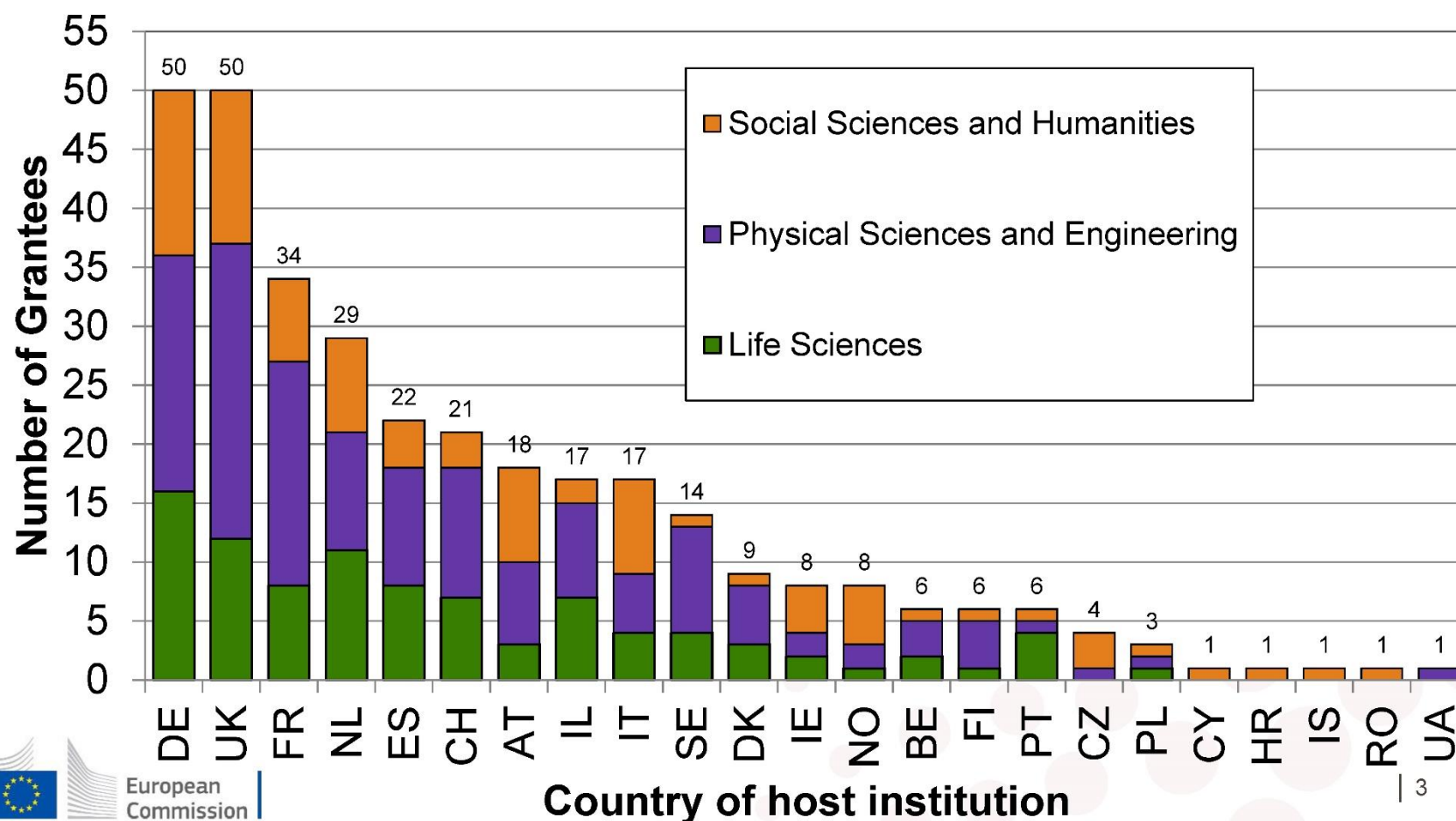
Total 327 grants



European Research Council

Established by the European Commission

23 countries



ERC Advanced Grants 2020

Grantees by Country of Host Institution and Domain

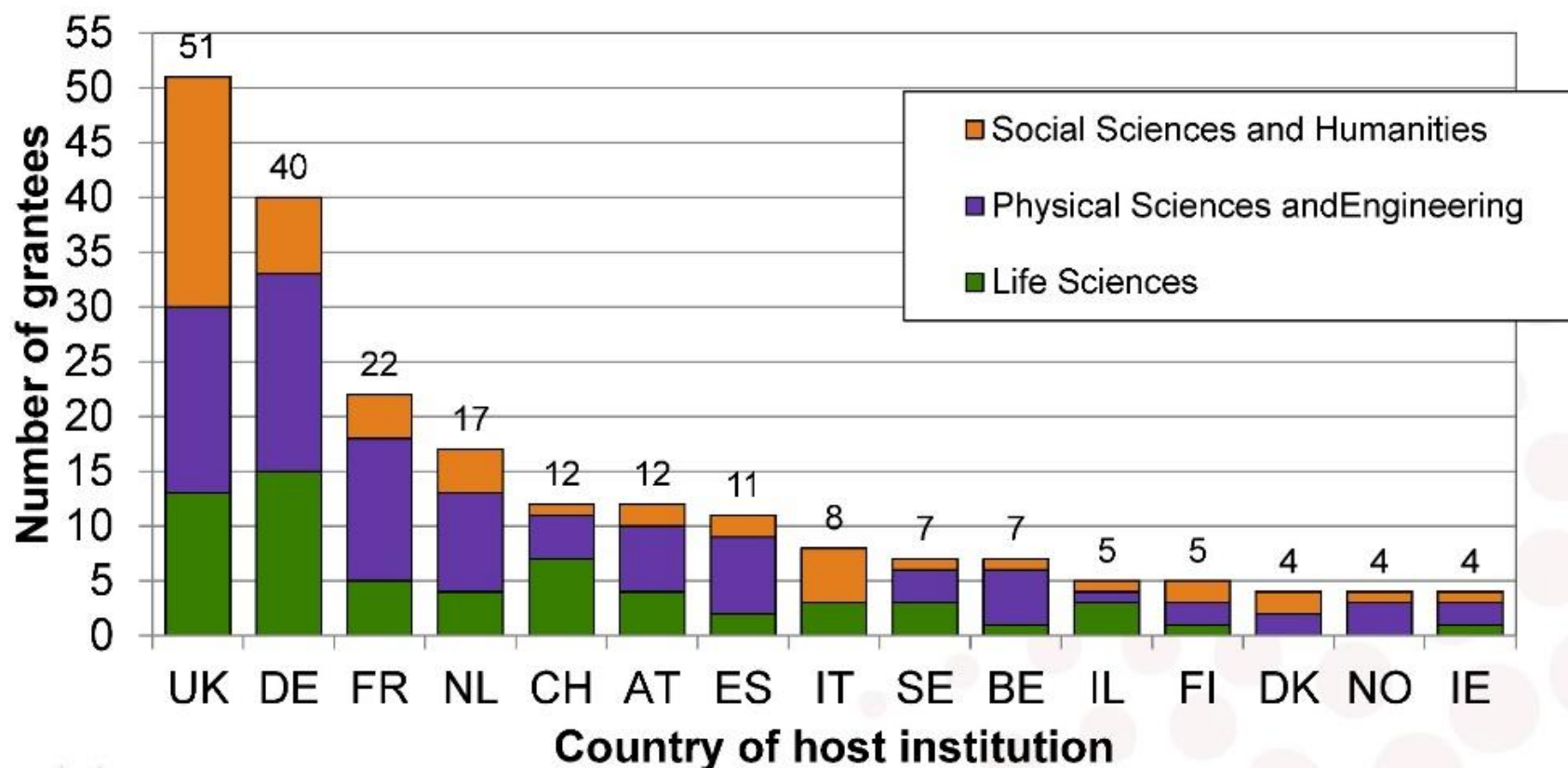
Total 209 grants



European Research Council

Established by the European Commission

14 countries



ERC Advanced Grants 2021

Grantees by Country of Host Institution and Domain

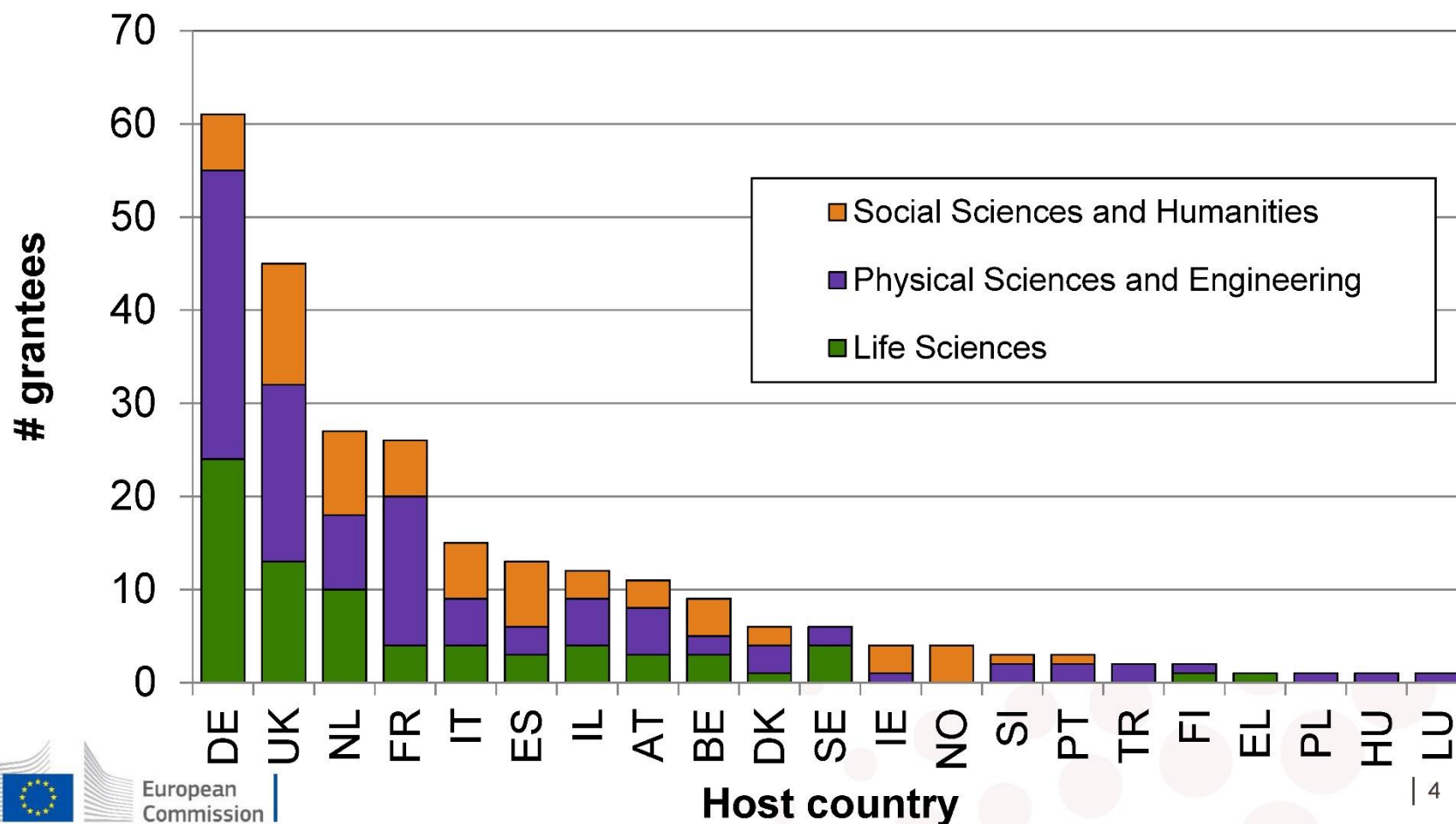
Total 253 grants



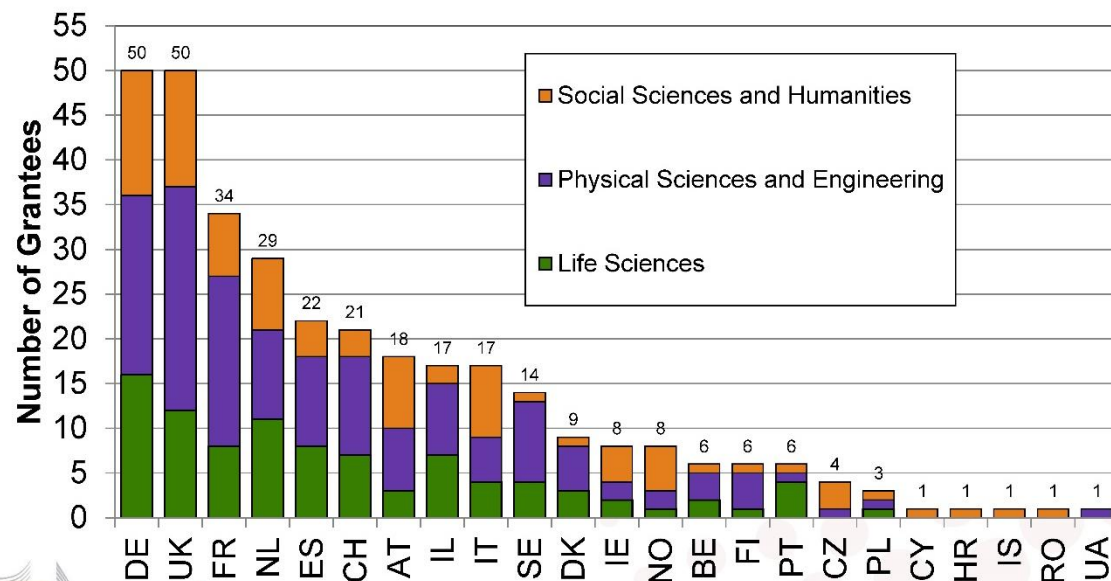
European Research Council

Established by the European Commission

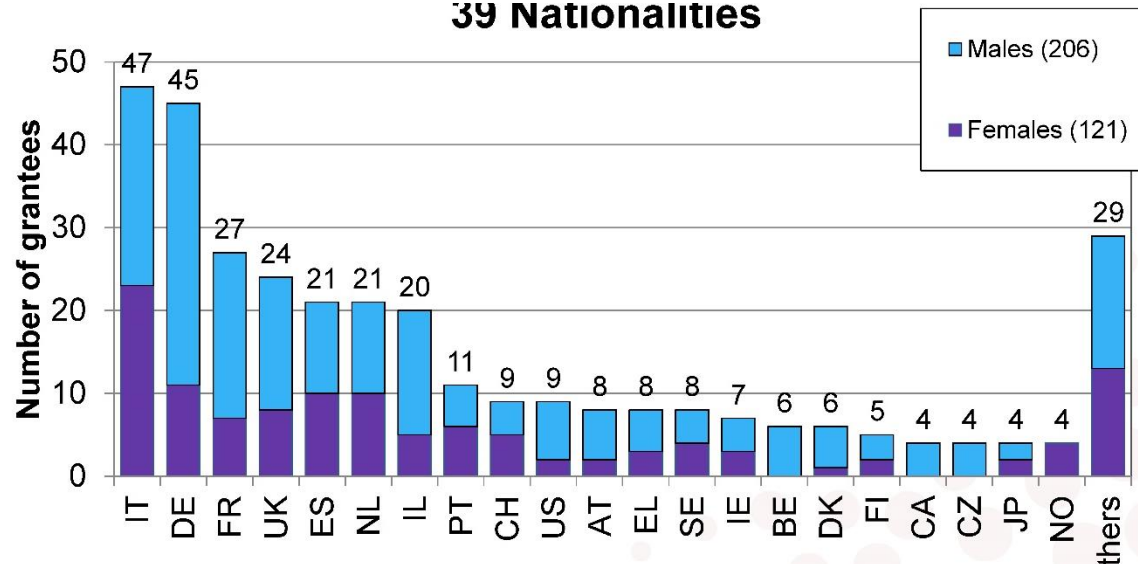
21 countries



23 countries



39 Nationalities



ERC Starting Grants 2021

Grantees by panel

Total 397 grants

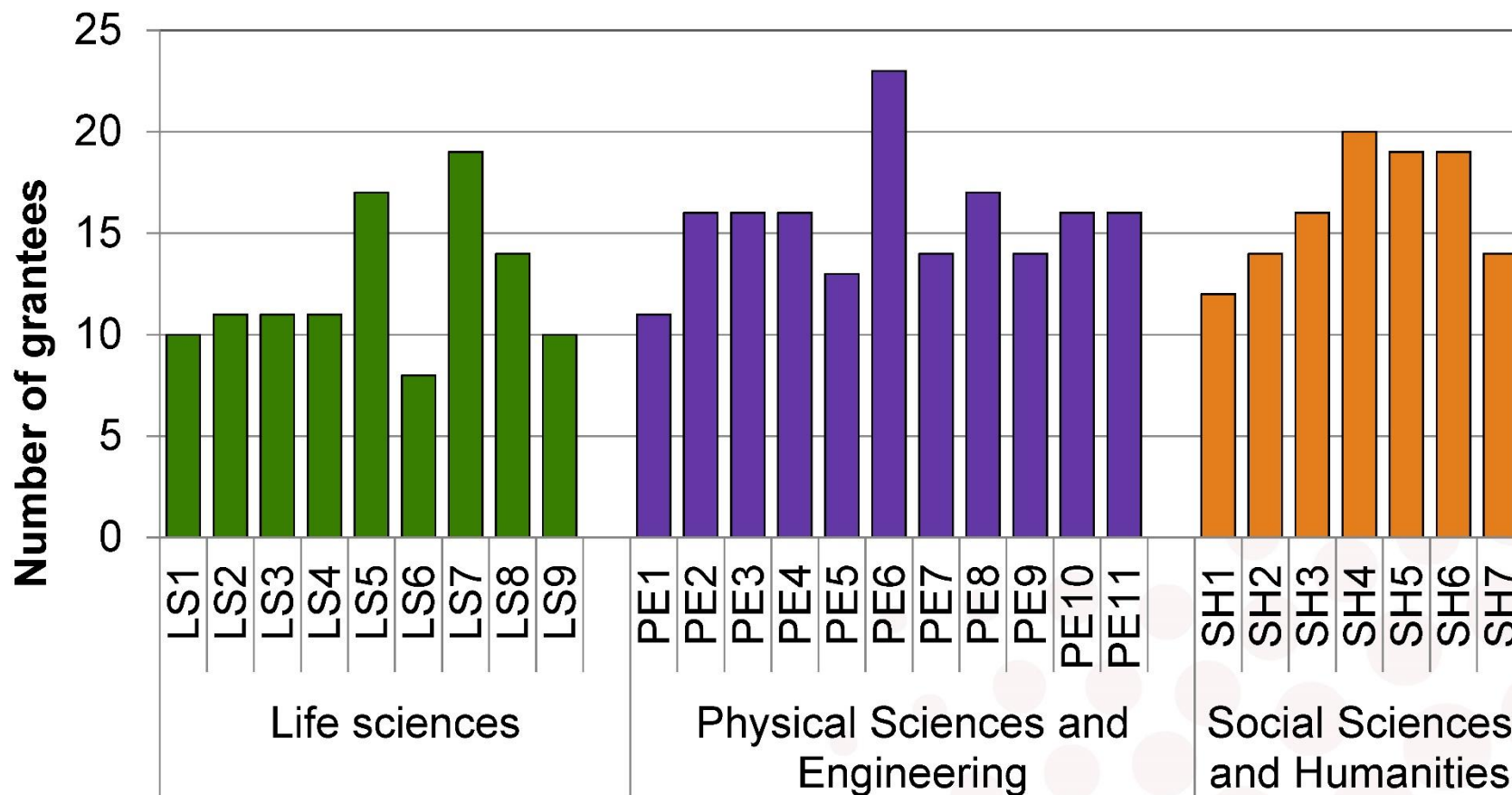
NB: The budget allocated to each panel is in proportion to the requested budget of the proposals allocated to the panel in order to **ensure similar success rate across all panels**.

The difference in the number of funded PIs per panel reflects the difference of submitted proposals to the panel.



European Research Council

Established by the European Commission



Grantees by Panel

Total 253 grants

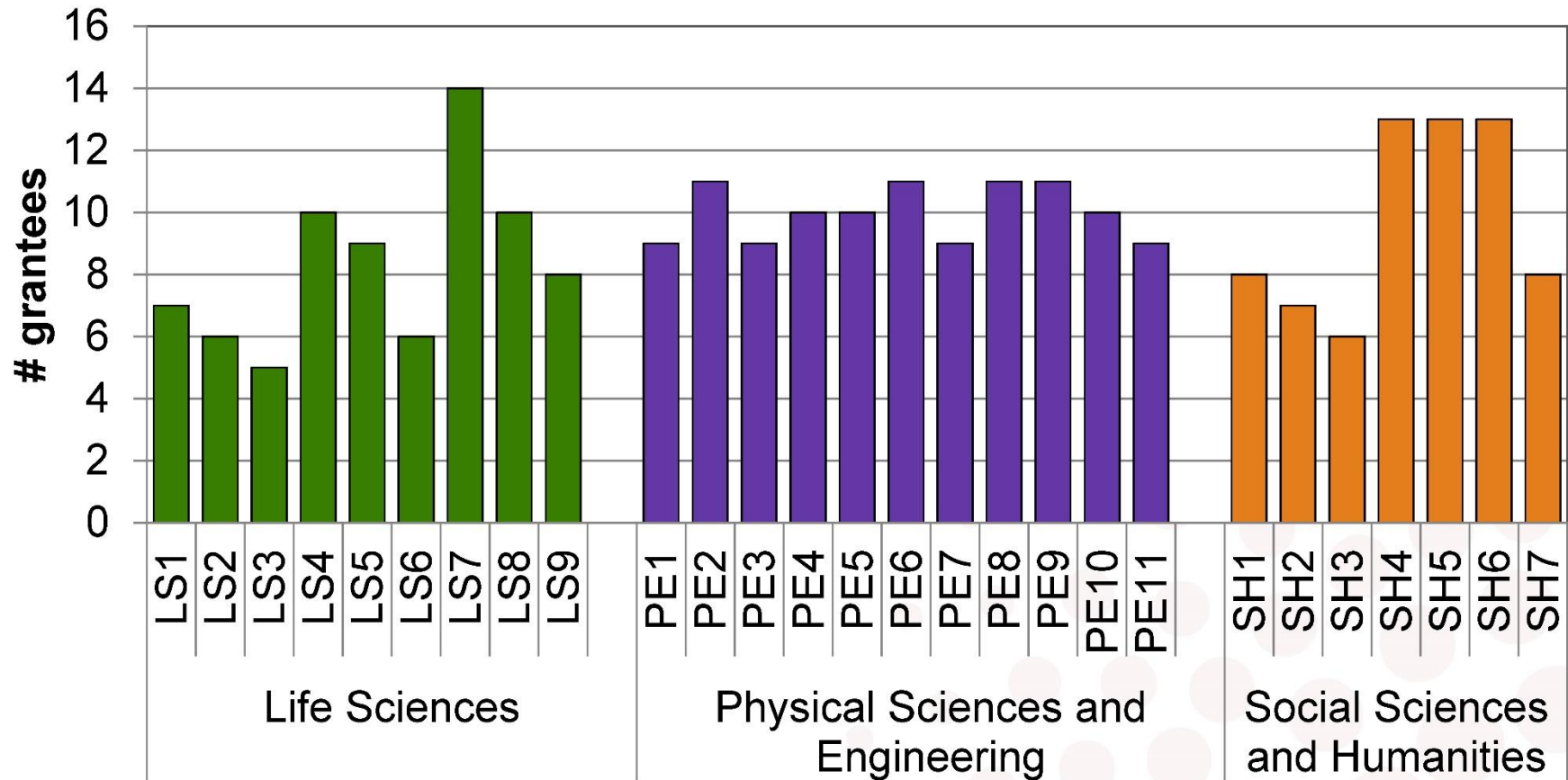
NB: The budget allocated to each Panel is in proportion to the requested budget of the proposals allocated to the Panel in order to **ensure similar success rate across all Panels**.

The difference in the number of funded PIs per Panel reflects the difference of submitted proposals to the Panel.



European Research Council

Established by the European Commission



Panel Chairs of the ERC Peer Review Panels

The list below includes the panel chairs in the ERC Advanced Grant peer review process, identified and invited by the ERC Scientific Council. There are in total 27 panels, divided between 3 domains as follows: 9 panels in Life Sciences (LS), 7 panels in Social Sciences and Humanities (SH) and 11 panels in Physical Sciences and Engineering (PE). The full list of ERC peer reviewers (panel members and remote referees) will be published by the European Commission after the conclusion of the current peer review process.

Note to applicants:

This information is given for reasons of transparency. Under no circumstances should peer reviewers be contacted by applicants, potential applicants or potential host institutions.

Questions can be addressed to:

- [ERC Helpdesk](#)
- [ERC National Contact Points](#)

PHYSICAL SCIENCES AND 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

- Prof. Jonathan Keating
Prof. Richard Keith Ellis
Prof. Marileen Dogterom
Prof. Deborah Leckband
Prof. Antonio M. Echavarren
Prof. Horst Bischof
Prof. Laura Lechuga
Prof. Christian Sattler
Prof. Chryssa Kouveliotou
Prof. Jeannot Trampert
Prof. Dorte Juul-Jensen

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

- Prof. Kristina Djinović-Carugo
Prof. Alea Mills
Prof. Malcolm Bennett
Prof. Karen E Knudsen
Prof. Eero Castren
Prof. Claude-Agnès Reynaud
Prof. Caroline Sabin
Prof. Michel Milinkovitch
Prof. Lone Gram

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

- Prof. H  l  ne Rey
Prof. Stephan Parmentier
Prof. Martina Merz
Prof. Elena Grigorenko
Prof. Anna Chahoud
Prof. Helena Hamerow
Prof. Harriet Bulkeley

PE5 Synthetic Chemistry and Materials

New materials and new synthetic approaches, structure-properties relations, solid state chemistry, molecular architecture, organic chemistry

- | | |
|--------|---|
| PE5_1 | Structural properties of materials |
| PE5_2 | Solid state materials chemistry |
| PE5_3 | Surface modification |
| PE5_4 | Thin films |
| PE5_5 | Ionic liquids |
| PE5_6 | New materials: oxides, alloys, composite, organic-inorganic hybrid, nanoparticles |
| PE5_7 | Biomaterials synthesis |
| PE5_8 | Intelligent materials synthesis – self assembled materials |
| PE5_9 | Coordination chemistry |
| PE5_10 | Colloid chemistry |
| PE5_11 | Biological chemistry and chemical biology |
| PE5_12 | Chemistry of condensed matter |
| PE5_13 | Homogeneous catalysis |
| PE5_14 | Macromolecular chemistry |
| PE5_15 | Polymer chemistry |
| PE5_16 | Supramolecular chemistry |
| PE5_17 | Organic chemistry |
| PE5_18 | Medicinal chemistry |

Synthetic Chemistry and Materials (PE5)

Bruno Chaudret (Panel Chair)

Jan-Erling Backvall
Marco Bettinelli
Rui Fausto
Xinliang Feng
Maria-Pau Ginebra
Véronique Gouverneur
Piet Herdewyn
Eugenia Kumacheva
Benjamin List
Stefan Matile
Bert Meijer
Cyrus Safinya
Ravi Silva
Michael Zaworotko

Panels

- 14-16 members
- Different expertise – cover all subdisciplines (as generalists)
- Different countries (some outside EU)
- Alternate biannually
- Members can serve max. 4 times = ca. 25% exchanged every time
- (check the previous panels in even or odd years to have an idea)
- Chairperson known – members of panels are revealed AFTER publication of results

PE5 Synthetic Chemistry and Materials

New materials and new synthetic approaches, structure-properties relations, solid state chemistry, molecular architecture, organic chemistry

PE5_1 Structural properties of materials

PE5_2 Solid state materials chemistry

PE5_3 Surface modification

PE5_4 Thin films

PE5_5 Ionic liquids

PE5_6 New materials: oxides, alloys, composite, organic-inorganic hybrid, nanoparticles

PE5_7 Biomaterials synthesis

PE5_8 Intelligent materials synthesis – self assembled materials

PE5_9 Coordination chemistry

PE5_10 Colloid chemistry

PE5_11 Biological chemistry and chemical biology

PE5_12 Chemistry of condensed matter

PE5_13 Homogeneous catalysis

PE5_14 Macromolecular chemistry

PE5_15 Polymer chemistry

PE5_16 Supramolecular chemistry

PE5_17 Organic chemistry

PE5_18 Medicinal chemistry

Synthetic Chemistry and Materials (PE5)

Bruno Chaudret (Panel Chair)

Jan-Erling Backvall

Marco Bettinelli

Rui Fausto

Xinliang Feng

Maria-Pau Ginebra

Véronique Gouverneur

Piet Herdewyn

Eugenia Kumacheva

Benjamin List

Stefan Matile

Bert Meijer

Cyrus Safinya

Ravi Silva

Michael Zaworotko

Background about the ERC application

The ERC application consists of 3 parts:

- **The electronic forms** (which are essentially the A form of the application), which also include the budget and resources justification.
- **The B1 form** which consists of two segments: (1) The extended synopsis (section a); and (2) the PI profile (sections b, c and the Funding ID appendix).
- **The B2 form** which includes the full research proposal (sections a: state-of-the-art and objectives; and section b: methodology).

A deeper review of the B1 form

The B1 form 'opens the gate' for your application. After reading the B1 form, the **review panel members** decide whether to pass your ERC application to the 2nd evaluation step. Therefore, this document is very important.

The B1 form consists of two segments: (1) The extended synopsis (section a); and (2) the PI profile (sections b, c and the Funding ID appendix).

PI profile - presented in sections b (CV), c (Track record) and the Funding ID appendix. Different from collaborative funding schemes and many other national grants, the ERC is an investigator-driven grant which focuses great attention on the **PI's excellence manifested by his/her background and experience in carrying through groundbreaking research**. A lot of the review panel members' decision rests on the PI's profile, past achievements, previous research experience, and so on. Hence, it is of paramount importance to ensure that your profile is in line with the ERC expectations in this regard. **For StG and CoG it is crucial to provide the proof of independence.**

Career breaks should be given and justified (1.5 years for each child for mothers, paternity leave, full-time care for somebody, long-term illness, military service etc.) – they are subtracted from the number of years since PhD as eligibility criterion.

Unusual career paths (industry, secondary school teaching etc.) can also be taken into consideration by the reviewers (at least for the number of papers, citations etc.).

Extended Synopsis of your research project. There is a 5-page limit for this section, which presents a great challenge in drafting a **highly competitive and concise** extended synopsis for your ambitious research project. Nonetheless, the Extended Synopsis must aim to include the following:

1. Describe your project, while attending to all key ERC aspects, including the [novelty](#), [high-risk](#), [high-gain](#), [non-incremental](#), investigator-driven and (potentially) [hypothesis-driven research project](#). All these aspects must be well reflected within the extended synopsis text.
2. The scientific reasoning for your ambitious project must be well presented in the synopsis as well. Explain what is the state-of-the-art in the field, while highlighting the knowledge gaps that you are addressing. This should also lead to explaining the motivation and the project's objectives, followed by the selected approaches (not the detailed methodology).

These guidelines contradict an existing urban myth that the extended synopsis should convey your research in general terms, while the B2 form should convey the project proposal in full detail and specific terms. This is derived from the idea that the reviewers of the extended synopsis are 'general' reviewers, in comparison to the 'experts' that will evaluate the B2 form. This urban myth is **inaccurate, incorrect and misleading**, due to the following important points:

1. The extended synopsis is evaluated by 4 selected review panel members. While these review panel members might not be experts in the very specific scientific field of your research proposal, it is expected that they will be experts in the more general research field. Hence, they will certainly be able to review and evaluate your extended synopsis in a critical and relevant manner, suitable for the purpose of the 1st evaluation step.
2. In most cases at least one of the selected panel members will **actually be an expert in your field**.
3. In the 2nd evaluation step, the extended synopsis will also be evaluated by the **external experts** who are experts in your area of research specifically.

Given all the above, the biggest challenge in the extended synopsis is to craft a 5-page text that successfully addresses both **types** of reviewers – those from your exact research area, and the ones that come with a broader research background. Balancing both scientific depths with a broader explanation of your research can be very confusing, but such is the expected process for this section.

A deeper review of the B2 form

The B2 form is the main document that the external experts will review, in addition to the B1 form. In ERC, unlike many other grants, external experts are selected according to the specific nature of the project proposal. In some cases, experts can even be hired to review **only a single proposal** – your proposal, and they can be from anywhere in the world for that matter. Hence, you must write your B2 form with this information in mind, and draft the text as if you were presenting your research to your scientific peers or scientific advisors / experts in the specific field.

B2 form should include a full project description. To achieve this, begin by addressing the state of the art and objectives, while elucidating both the scientific (potentially significant) knowledge gaps that your project addresses, as well as the chosen research approach. Next, the proposal should present the research methodology and a work plan. Important part is the contingency plan how to mitigate the high risks.

The B2 form, similar to the B1 form, must convey the key ERC attributes, including the frontier-research nature of the application, novelty, high-risk, high-gain and non-incremental research. If applicable, it should present a hypothesis-driven research project at the level expected in ERC.

ERC evaluation process

The ERC [evaluation process](#) includes a two-stage peer review process, where only the highest-ranking proposals in step 1 will pass to step 2. Both B1 and B2 are submitted together on the same deadline, however, they are reviewed according to the following process:

- **1st review step** – Only the B1 form is reviewed by the [review panel members](#).
- **2nd review step** – Both B1 and B2 forms are evaluated by the review panel members, as well as sent out to external reviews by experts in the relevant scientific field(s). The feedback from the external experts will be used by the review panel members during the [individual interview phase](#) (which is part of the 2nd review step).

Specific questions for the reviewers (both internal or external)

Ground-breaking nature, ambition and feasibility

Ground-breaking nature and potential impact of the research project

To what extent does the proposed research address important challenges?

To what extent are the objectives ambitious and beyond the state of the art (e.g. novel concepts and approaches or development between or across disciplines)?

To what extent is the proposed research high risk-high gain (i.e. if successful the payoffs will be very significant, but there is a high risk that the research project does not entirely fulfil its aims)?

Scientific Approach

To what extent is the outlined scientific approach feasible bearing in mind the extent that the proposed research is high risk/high gain (based on the Extended Synopsis)?

To what extent are the proposed research methodology and working arrangements appropriate to achieve the goals of the project (based on the full Scientific Proposal)?

To what extent does the proposal involve the development of novel methodology (based on the full Scientific Proposal)?

To what extent are the proposed timescales, resources and PI commitment adequate and properly justified (based on the full Scientific Proposal)?

Intellectual capacity and creativity

To what extent has the PI demonstrated the ability to conduct ground-breaking research?

To what extent does the PI have the required scientific expertise and capacity to successfully execute the project?

To what extent does the PI provide evidence of creative independent thinking

1st review step – Only the B1 form is reviewed by the [review panel members](#).

Each proposal reviewed and ranked by 4 panel members (sometimes they ask for an additional review from other panel if the proposal is interdisciplinary)

Most panel members are NOT experts in the particular field and act as **generalists**

However, 1-2 panel members might be **experts** in the particular field



The B1 part of the proposal must be **interesting and comprehensible for generalists** but also sufficiently **rigorous for experts** – very difficult balance on 5 pages limit...

1st review step – Only the B1 form is reviewed by the [review panel members.](#)

Panel meeting:

- proposals are provisionally ranked based on rankings from internal review
- each proposal is introduced to the panel by the Lead reviewer who summarizes positive and negative aspects
- then follows the discussion by other reviewers and other panel members
- then the panel gives provisional mark (A, AB, B, BC, C) and ranking
- after all proposals discussed, the most important detailed discussion follows on all AB/BA proposals to rectify the ranking
- the panel knows the approximate number of grants to be awarded
- only max. 3 x the number of proposals can be retained to the Step 2 (in reality it is less – ca. 2.5 x) – the success rate in Step 1 ranges from 30-40% (in StG and CoG) to only 23-25% (in AdG)



The B1 part of crucial importance (60-75% of proposals are rejected in Step 1 and the B2 part is not read by anybody...)

Evaluation criteria

Scientific excellence should be the only criterium

PI (CV, papers ...) ~ 25-50% (more in CoG and AdG)

Proposal (novelty – not just continuation of previous excellent research, originality, importance, high-risk-high-gain, groundbreaking) ~ 50-75%



Only strong applicants with outstanding proposals win

In StG the CV has a lower weight – better chance for applicants from underdeveloped countries

Non relevant criteria (forbidden to consider): gender, race, nation, country, host institution

1st review step – Only the B1 form is reviewed by the [review panel members.](#)

Panel meeting:

- Lead reviewer writes up final evaluation report for the rejected proposals (with the help of other reviewers)
- They should give the main reasons for rejection and also some advice what can be improved in future applications
- The rules do not allow any harsher comments or dismissive statements – so in many cases the report is too polite and politically correct and does not give much feedback

Applicants who get B in Step 1 cannot apply the next year

Applicants who get C in Step 1 cannot apply for another 2 years

1st review step – Only the B1 form is reviewed by the [review panel members](#).

Panel meeting:

- For each proposal retained for Step 2, external reviewers are suggested and selected - typically 6-9 names are selected (and often some more are needed if the response is insufficient) – they should be experts on the particular field and topic.



Step 2 - ERC office sends out the proposals for external reviews (typically min. 3 external reviews must be obtained, but often there are 5-6 reviews)

External reviewers evaluate **both B1 and B2** and act as **experts**

External reviewers write up detailed reviews and give ranking

In addition, 4 panel members also evaluate **both B1 and B2** and act as **generalists**

In total 7-10 reviews are obtained – the Lead reviewer compares and summarises them and composes a draft evaluation report and questions for the interview

2nd review step – evaluates both B1 and B2, external & internal review, **interview** and panel evaluation

Panel meeting:

- The panel gets provisional ranking based on the external and internal reviews
- Interviews of each applicant (typically duration 20' – 10' talk, 5'-10' discussion)
- Discussion lead by the Lead reviewer, questions cover critical points raised by external reviewers but also other panel members can ask other questions
- The first question typically is: **what is your standing in your field worldwide, who are your major competitors and in what is your advantage over them**
- Closed discussion of the panel – short after each interview (provisional ranking) and more detailed at the end of each day (rectified ranking A, AB, B...)
- The last day, after finishing all interviews, the final discussion of the ranking is performed – in particular re-discussion and re-ranking of AB and BA proposals
- **Final ranking** is made and approved by all panel members – often takes till late night...
- Discussion of the budget (heavy instruments etc.) – in some cases panel suggests reduction of unnecessary costs (general instruments for whole department etc.)

Some observations from the panel meetings

Controversial proposals with discrepancy in rating (e.g. ABBC) but enthusiastically advocated by one panel member (typically the expert) often score better than “all grey” proposals (e.g. BBBB)

Excellent or weak performance at the interview in most cases prevails over the ranking from reviews

Overselling, too much hype and false claims can kill even an excellent proposal (e.g. claims to cure cancer, solve the energy crisis of the World...)

General tips and advices - proposal

Have a great idea – not every good project is ERCable – check with your colleagues and peers (unsuccessful proposals with low marks get you banned for the next year)

Select the panel – right selection of the panel is crucial (it defines the expertise of your reviewers)

Write for the panel – in interdisciplinary projects, there might be two or more relevant panels – after you choose the panel, write up the proposal in the style and language appropriate for the selected panel

Panel is heterogeneous – only 1-2 members will be experts in your field (ideally the proposal should be comprehensible and interesting both to non-experts and experts)

Start with B1 – part B1 is much more important than B2 (60-70% of proposals are cut off in the first round) – ideally it should be a teaser for the reviewers to read more about the project (in part B2 which should contain methodology, risk analysis etc.)

General tips and advices – proposal II

Be ambitious and original – ERC grants are not for funding of “butter and bread” research or continuation of previous work (often mistake of ERC StG grantees – for a new ERC you must have **new ideas!**)

Novelty / preliminary results – some proof-of-concept preliminary results give your proposal credibility (feasibility is a criterion!) – too much (already published) finished results compromise novelty - find the right balance and timing for your proposal

Work on your CV, be independent – successful candidates must prove previous excellent achievements (papers in top journals, highly cited, awards ...) but also independence (independent position, papers as corresponding author without previous supervisors or current mentors, bosses, department heads [avoid guest authorship of any kind] ...)

Be better than others – only outstanding proposals of outstanding candidates win

General tips and advices – proposal III

Clearly state where is the conceptual novelty and why is it important – panel members and reviewers answer these questions in their review

Compare and distinguish your project with the current state of the art

Do not lie or oversell – some panel members may not be experts in your field but they are not idiots – false statements, overselling or unjustified claims are identified and proposals get killed. Avoid buzzwords!

Fashionable topics not always win – topics that are currently considered as timely and fashionable get stronger competition (many applications on similar topics) – try to be different from others (and ideally come up with the next future fashion!)

Use graphics - well designed scheme/figure explains more than a page of text (ideally the reviewer should understand the basics of the proposal from graphics only and refer to the text only for details)

- I would like to understand what is the best strategy to choose a research topic when also applying for other grants (e.g. GACR Junior Star). Is it fine to use the same research topic for both proposals? Or is it better to invent different topics for the two proposals?
- I would like to know how to find out who could be the potential referees.
- Does the successful proposal in the field of natural science need to include also the application of the methods/techniques which are being established/developed during the project?
- What is considered a good CV for starting grant. How many publications are enough?
- PhD award period in starting grants vary from 2-7 years, this is a long period time. How can a StG proposer of 2 years can compete with one with 7 years experience. How this is taken into account?
- Why was the “Supervision of Graduate Students and Postdoctoral Students” removed from the structured CV for Starting Grant and Consolidator Grant applicants? Is it connected with any larger shift in evaluating excellence of the PIs (leading younger researchers no-longer considered or emphasised)?
- Is it necessary/required to have corresponding author publication as a prove of independence in ERC Starting grant?