European Research Council
Established by the European Commission

European Commission

Mapping ERC Frontier Research

The European Research Council (ERC) encourages researchers and their teams to push the frontiers of knowledge. With the intention to map the breadth and diversity of the research it supports, the ERC analysed the content of the projects funded under the Horizon 2020 (H2020) framework programme (2014-2020) through an in-house developed, non-hierarchical classification system of almost 900 terms. This classification system allows the ERC to capture the scientific essence of funded projects, to highlight interdisciplinary areas and synergies, and to pinpoint the valuable contribution of ERC frontier research to help tackle global challenges.

The versatility and power of these data is at the centre of this package, which includes:

> This overview fact sheet.

> A collection of 25 fact sheets with data from the ERC evaluation panels in the Starting, Consolidator or Advanced Grant schemes.

> A fact sheet focusing on projects funded under the Synergy Grant scheme.

> A collection of three policy fact sheets.

The overview offers an introduction with general statistics about the ERC's H2020 project portfolio and includes highlights from all fact sheets to give a glimpse of the information they contain.

The panel-specific and Synergy Grant fact sheets provide a general overview of the projects funded in the 25 ERC evaluation panels in three scientific domains (Life Sciences, 9 panels; Physical Sciences and Engineering, 10 panels; Social Sciences and Humanities, 6 panels), and under the Synergy Grant scheme. Encompassing all scientific fields, these fact sheets give a unique insight in the frontier research landscape of the ERC project portfolio.

The policy fact sheets portray the contribution of the ERC's H2020 frontier research projects to three key policy areas of the European Union, namely the European Green Deal, a Europe fit for the digital age and the EU4Health programme. Even though the ERC does not set thematic or policy priorities for the research it funds, many ERC grantees contribute knowledge to address European and global challenges, often offering innovative and sustainable solutions.

Data as of December 2021

Overview of ERC Frontier Research in H2020

This fact sheet provides some general information about the projects funded by the ERC under the ERC Starting Grant (StG), Consolidator Grant (CoG), Advanced Grant (AdG) and Synergy Grant (SyG) schemes in the H2020 Framework Programme (2014–2020)*. It also includes highlights from the panel and policy fact sheets.

Over 54000 applications

6707 projects funded

€13.3 billion budget

2771 projects (€4.15 billion)

2253 projects (€4.39 billion)

1584 projects (€3.78 billion)

99 projects (€0.98 billion)

Domain distribution
(StG, CoG, AdG projects)

Physical sciences and engineering (PE)
2950 projects (€5.58 billion)

Life sciences (LS)
2064 projects (€3.93 billion)

Social sciences and humanities (SH)
1594 projects (€2.80 billion)

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

The 6608 ERC projects funded under the single-investigator calls (ERC StG, CoG and AdG) are based in 24 EU Member States** and 7 ACs. When looking at the geographical distribution of projects funded in the 25 evaluation panels, there are some interesting patterns that emerge. Some of these patterns, together with the geographical share of the 6608 projects, are shown below:

Germany is particularly strong in the **LS** and **PE** domains, hosting the largest share of projects of all countries in 7 of the 9 LS panels and 6 of the 10 PE panels.

In the case of the **SH** domain, the **UK** and the **Netherlands** are the countries that have the largest share of projects, hosting 40% of these projects.

Some countries do particularly well in specific fields. For example, 21% of all projects funded in the Mathematics (**PE1**) panel were hosted in **France**, while 16% of the projects funded in the Genetics, 'Omics', Bioinformatics and Systems Biology (**LS2**) panel were hosted in **Israel.**

In some countries, a large share of the project portfolio accumulates in a specific field. For example, 18% of the projects hosted in **Sweden** were in the Applied Medical Technologies, Diagnostics, Therapies and Public Health (**LS7**) panel. Likewise, in **Portugal**, 16% are in the Products and Processes Engineering (**PE8**) panel and 14% in the Neuroscience and Neural Disorders (**LS5**) panel.

Interesting patterns can also be discerned in countries that host a smaller share of projects. For example, 26% of the projects hosted in **Hungary** are in the Neuroscience and Neural Disorders (**LS5**) panel, while 31% of the projects hosted in **Poland** are in the Computer Science and Informatics (**PE6**) panel.

EU Member States

United Kingdom 1200 (18%)	Austria 209 (3%)	Greece 21 (<1%)	
Germany 1114 (17%)	Denmark 157 (2%)	Luxembourg 13 (<1%)	
France 738 (11%)	Finland 122 (2%)	Slovenia 12 (<1%)	
Netherlands 602 (9%)	Ireland 90 (1%)	Romania 10 (<1%)	
Spain 370 (6%)	Portugal 76 (1%)	Estonia 7 (<1%)	
Italy 361 (5%)	Czech Republic 35 (<1%)	Cyprus 5 (<1%)	
Belgium 243 (4%)	Hungary 27 (<1%)	Croatia 3 (<1%)	
Sweden 234 (4%)	Poland 26 (<1%)	Lithuania 1 (<1%)	

ACs

Switzerland 456 (7%)	
Israel 350 (5%)	
Norway 101 (2%)	
Turkey 18 (<1%)	
Iceland 4 (<1%)	
Serbia 2 (<1%)	
Ukraine 1 (<1%)	

*Data as of December 2021

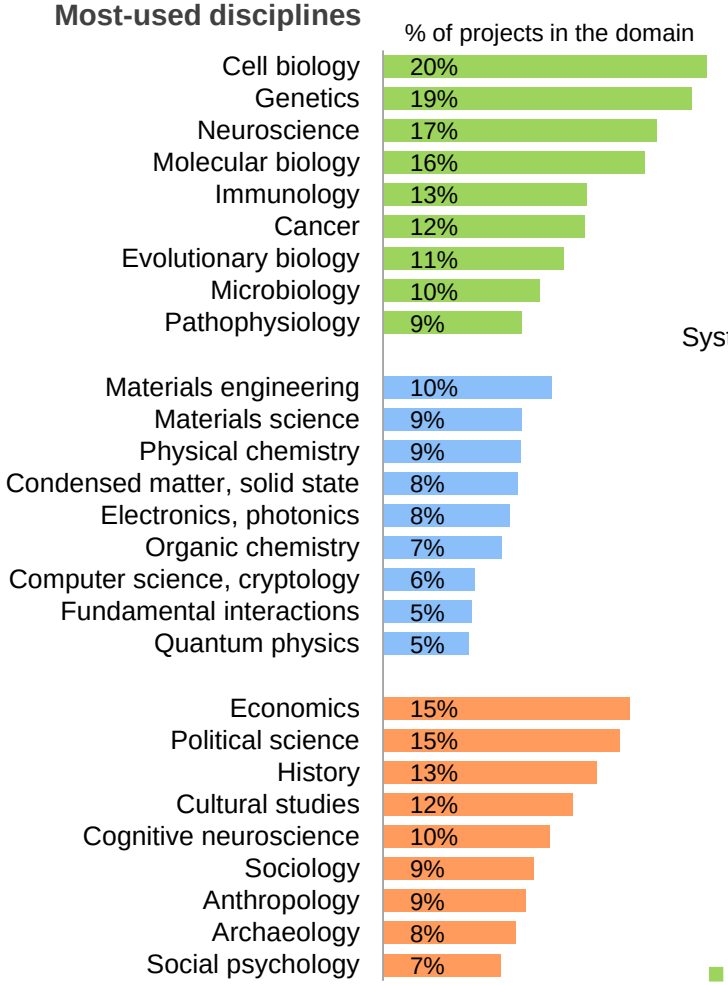
** United Kingdom: Member State until 31st January 2020

Overview of ERC Frontier Research in H2020

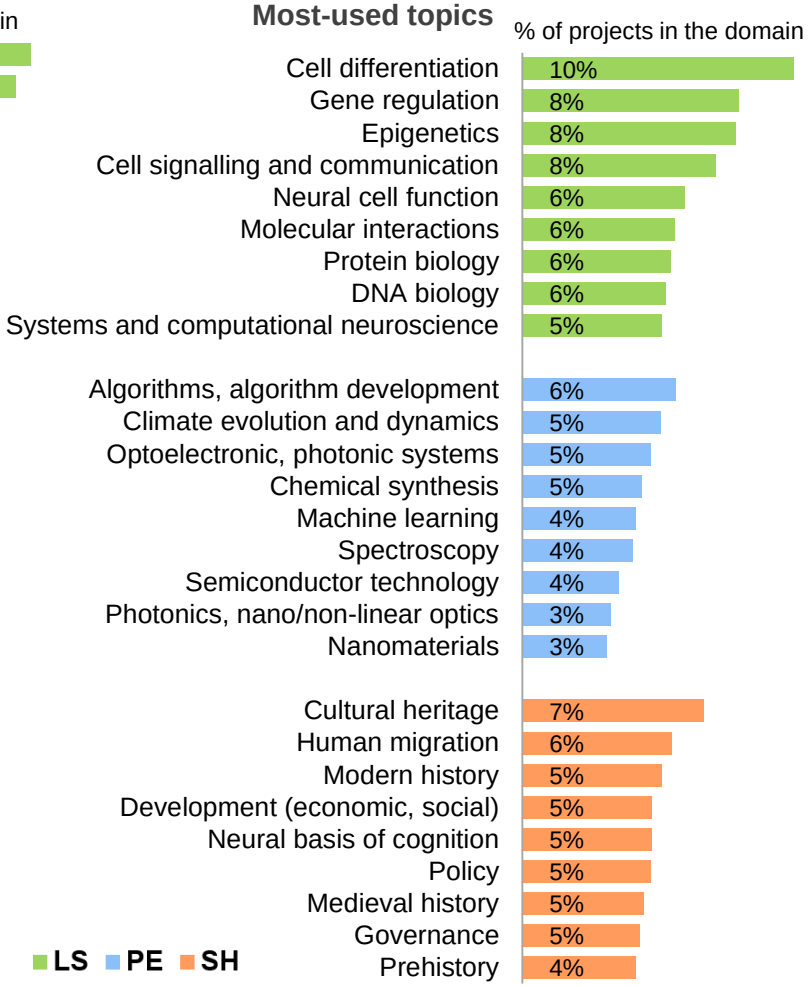
Scientific landscape of ERC-funded projects

(StG, CoG, AdG projects)

Most-used disciplines



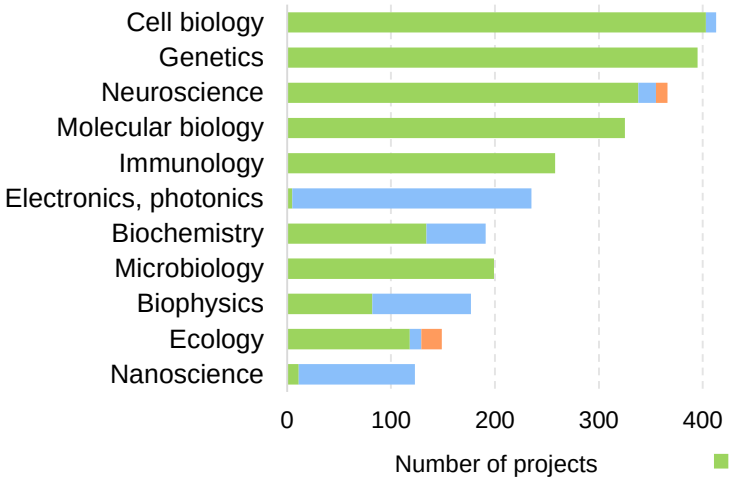
Most-used topics



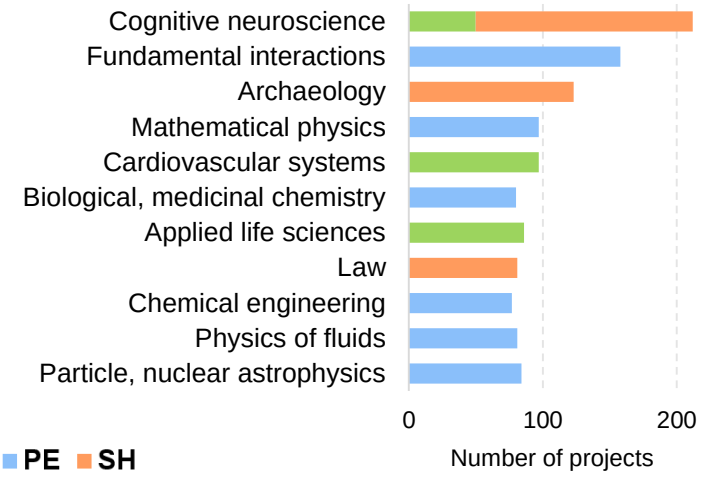
Scientific field use across the 25 panels*

(StG, CoG, AdG projects)

Top disciplines used in ≥7 panels



Top disciplines used in ≤2 panels



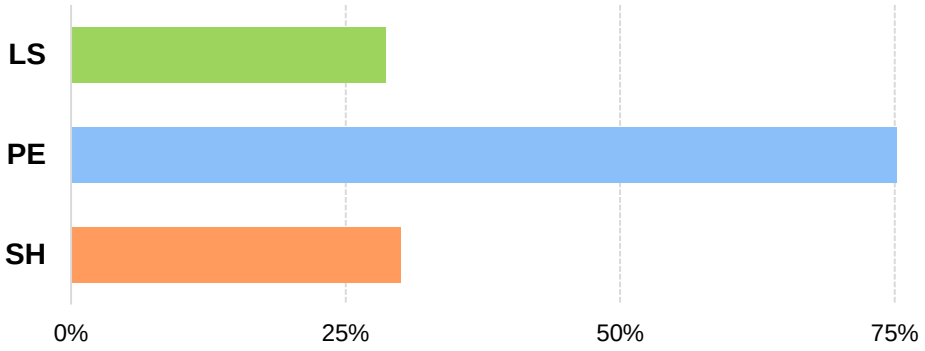
Broadly used disciplines, appearing in projects across several panels (≥7), generally correspond to fields in the life sciences (LS) domain. Cell biology and Neuroscience are the ones used in the largest number of panels (10).

Disciplines that tend to be more panel-specific, even if they are used by many projects, generally correspond to fields in physical sciences and engineering (PE) and social sciences and humanities (SH).

**Only panels where ≥5 projects had these disciplines were considered*

Overview of ERC Frontier Research in H2020

Methodological developments in H2020 ERC-funded projects



% of projects in the domain with methodological developments

New methods and instrumentations are developed as part of the scope of various ERC-funded projects; the main methodological developments in the different domains are in the following areas:

- **LS domain**: *Computational modelling, simulations*, with a focus on demographic models and protein computational prediction, and *Animal models*, with humanized and engineered mouse models being the focus.
- **PE domain**: *Experimental methods*, with a focus on climate models, and *Computational modelling, simulations*, with neural networks being the focus; other methodological developments include *Theoretical, mathematical methods*, with a focus on field theory and algorithms, and *Synthetic methods*, with organic synthesis, chemistry and catalysis being the focus.
- **SH domain**: *Theoretical analysis*, with a focus on finance and economy, and *Computational modelling, simulations*, with cognitive and learning models being the focus.

ERC frontier research relevant for European Commission (EC) policy areas

While the ERC encourages grantees to follow their scientific curiosity without any thematic priorities, their cutting-edge research generates results that address a wide range of issues with significant socioeconomic, environmental and policy relevance. This is exemplified by the contribution of this rich and diverse frontier project portfolio to these three EC policy priorities

European Green Deal

953 projects
€2.0 billion

PE
490 projects
(€1075M)

SH
211 projects
(€425M)

LS
252 projects
(€539M)

StG	CoG	AdG	SyG
400	**324**	**201**	**28**
€619M	€645M	€497M	€278M

14% of H2020 ERC projects contribute to the European Green Deal. Of these projects, the largest proportion (9% of all funded projects) contributes to the Boosting climate action area.

Europe fit for the digital age

757 projects
€1.5 billion

PE
632 projects
(€1226M)

SH
93 projects
(€165M)

LS
32 projects
(€75M)

StG	CoG	AdG	SyG
332	**241**	**177**	**7**
€496M	€467M	€426M	€77M

10% of H2020 ERC projects contribute to a Europe fit for the digital age. Almost half of these projects are in the area of Artificial intelligence, constituting 4% of all funded projects.

EU4Health

2281 projects
€4.6 billion

PE
408 projects
(€844M)

SH
391 projects
(€723M)

LS
1482 projects
(€3046M)

StG	CoG	AdG	SyG
952	**796**	**489**	**44**
€1444M	€1579M	€1180M	€410M

34% of H2020 ERC projects contribute to EU4Health. Two of the largest areas related to health are Brain and human mind research and Cancer, with 9% and 8% of all funded projects, respectively.