

Funding excellence in Europe: European Research Council (ERC)

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- **What is the ERC?**
- ERC Grant Schemes
- ERC Evaluation Principles
- Overview of Previous Calls
- Impact so far



European Research Council (ERC)

- The first European funding body set up to support **bottom up, investigator-driven frontier** research via FP7 IDEAS program: € 7.51 bn (~ 15% of FP7 budget)
- Encourages and supports the **very best, truly creative** scientists, scholars and engineers
 - to be adventurous and take risks in their research
 - to go **beyond established frontiers** of knowledge and **boundaries of disciplines**



ERC in brief

ERC is a new type of funding body in Europe to support excellence in frontier research; bottom-up, individual-team, pan-European competition

Legislation

- Scientific Council with 22 members
- Supported by the ERC Executive Agency
- Significant budget (average 1.1 billion €/year)
- Excellence as the only criterion

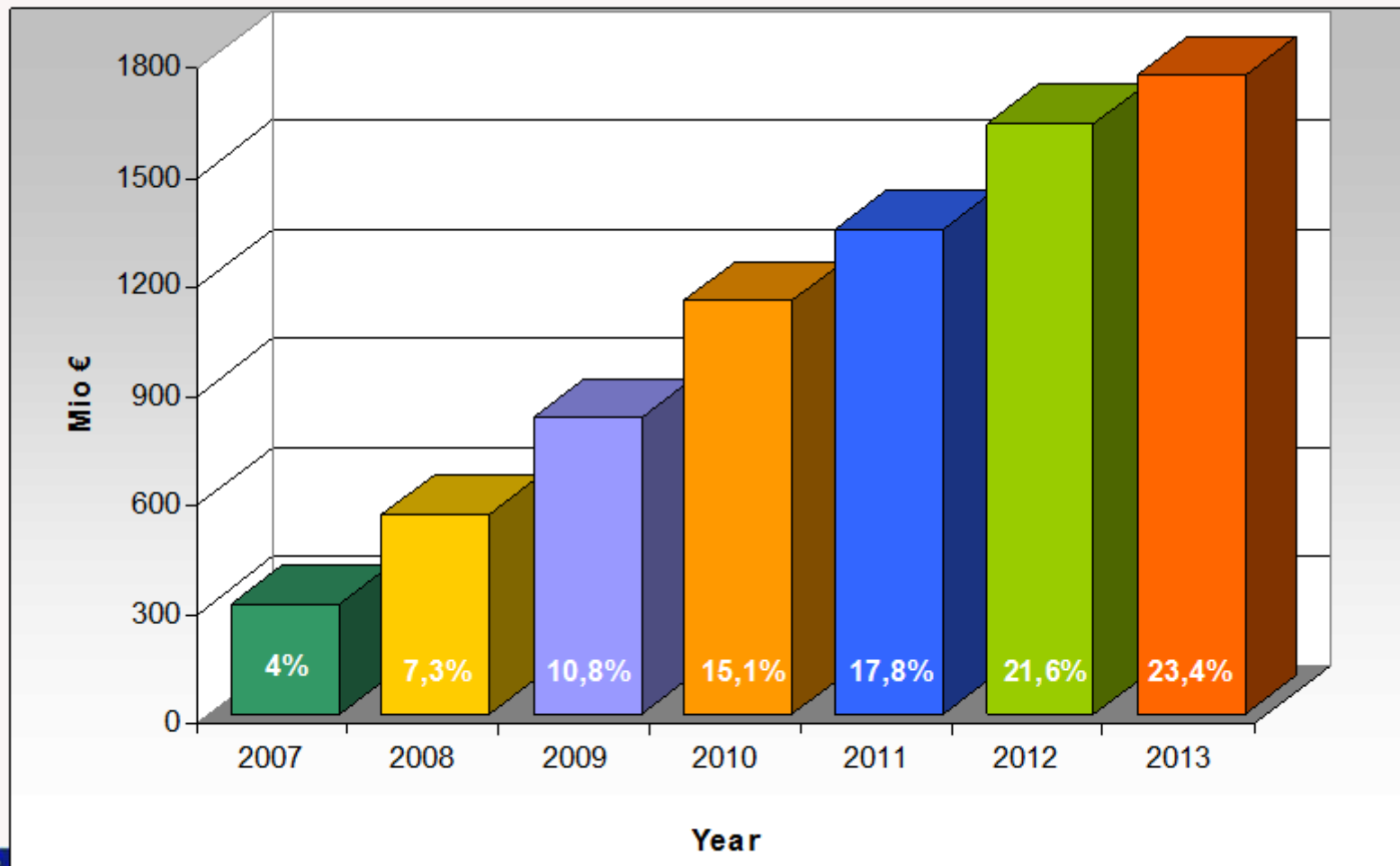
Strategy

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

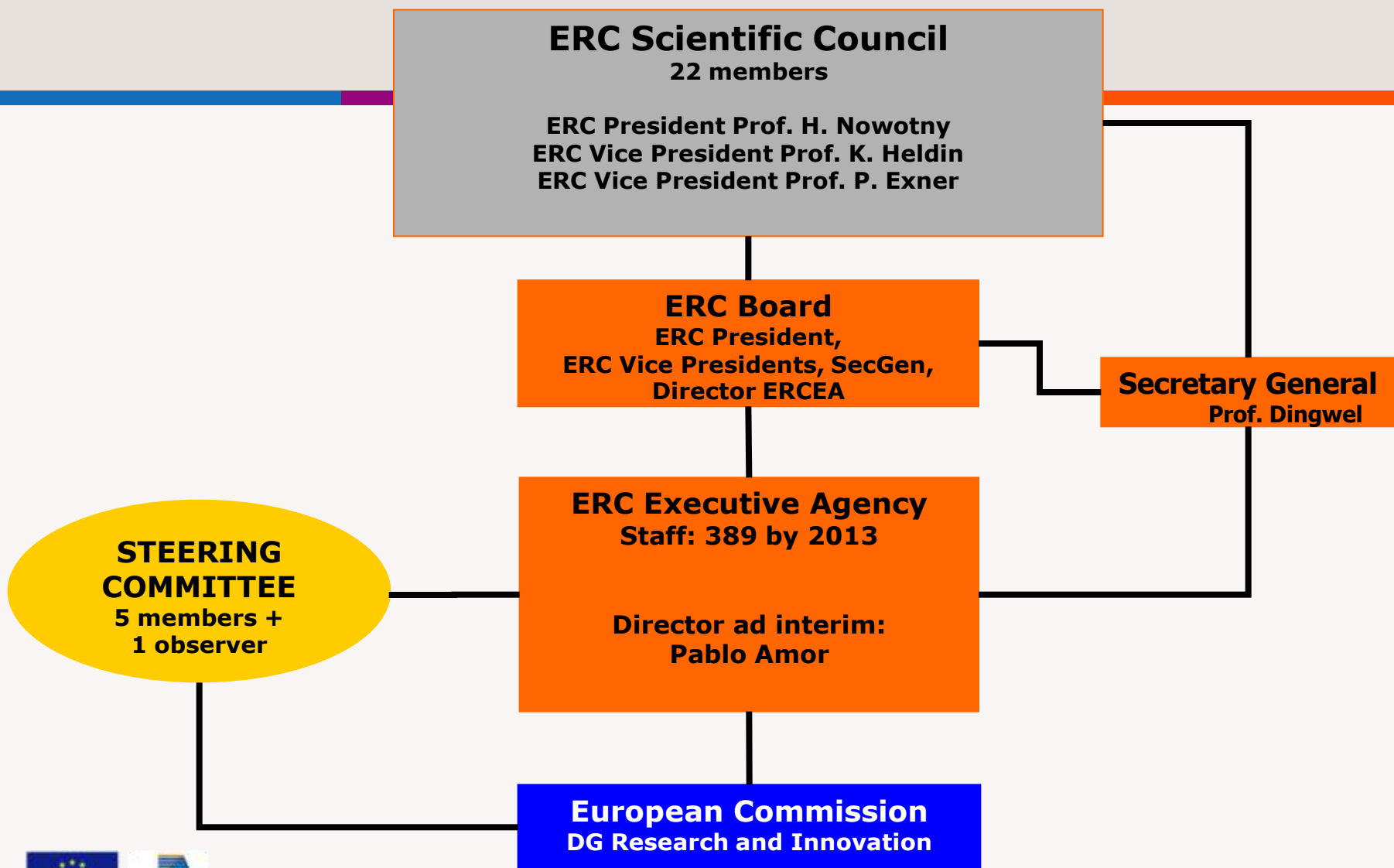


ERC Budget 2007 – 2013: € 7.51 bn

Annual budget evolution by 250 M€ (prospective schedule)



ERC Structure



The Scientific Council

Establishing and controlling the funding strategy/methodologies

22 highly respected researchers reflecting the full scope of European research and scholarship



- Establishes ERC overall **scientific strategy** establishes annual work programmes (incl. calls for proposals, evaluation criteria); defines peer review methodology; ensures selection and accreditation of experts
- **Controls quality** of operations and management
- **Ensures communication** with the scientific community



The Executive Agency: ERCEA

Implementing and operating the funding strategy/methodologies

- **Executes annual work programme**
as established by the Scientific Council
- **Implements calls for proposals**
and provides information and support to applicants
- **Organises peer review evaluation**
- **Establishes and manages grant agreements**
- **Administers scientific and financial aspects**
and follow-up of grant agreements
- **To reach 389 employees by 2013**



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ERC Grant Schemes

Funding Strategy

Aim: Retain – Repatriate – Recruit

⇒ Favour “**brain gain**” and “**reverse brain drain**”

- improve **career opportunities and independence** - especially for young researchers
- increase **competition, recognition and international visibility** - for excellent individual scientists and scholars in Europe
- raise **aspiration and achievement** of basic research in Europe

Funding schemes:

- ERC **Starting** Grant (StG)
- ERC **Advanced** Grant (AdG)
- ERC **Proof of Concept** Grant (from 2011)
- ERC **Synergy** Grant (from 2012)



ERC Grant Schemes

Strategic principles

- **All fields of science and scholarship are eligible**
Investigator-driven, bottom-up
- **Excellence is the only valid criterion**
Individual team + research project
- **Investment in research talent**
Attractive, flexible grants, **up to five years** (StG, AdG, SyG)
Under control of the lead researcher (Principal Investigator)
- **Independent individual teams in Europe**
Nationality and Age of researchers is not relevant
Host organisation to be located in MS or AC



ERC Grant Schemes

Who can apply? General requirements

- **Researcher (PI)**
Any nationality, age or current place of work
- **In conjunction with a Host Institution (HI)**
HI to be based in Europe and associated countries
- **Frontier Research project**
No thematic priorities, all fields of science and scholarship
- **Individual research team**
Freedom to choose national or trans-national team, if scientific added value



ERC Main Grant Schemes

ERC Starting Grant:

- attract & retain next generation of independent researchers: support researchers at the start of their independent research career and establishing or consolidating their own independent research team or research programme
- 2-12 years post PhD
 - Starters: 2-6 years
 - Consolidators: 7-12 years
- up to € 2.0 Mio for 5 years

ERC Advanced Grant:

- attract & support established top researchers: targeting researchers who have already established their independence as team leaders and are exceptional leaders in terms of significance of their research achievements (in the last 10 years)
- track-record in past 10 years
- up to € 3.5 Mio for 5 years



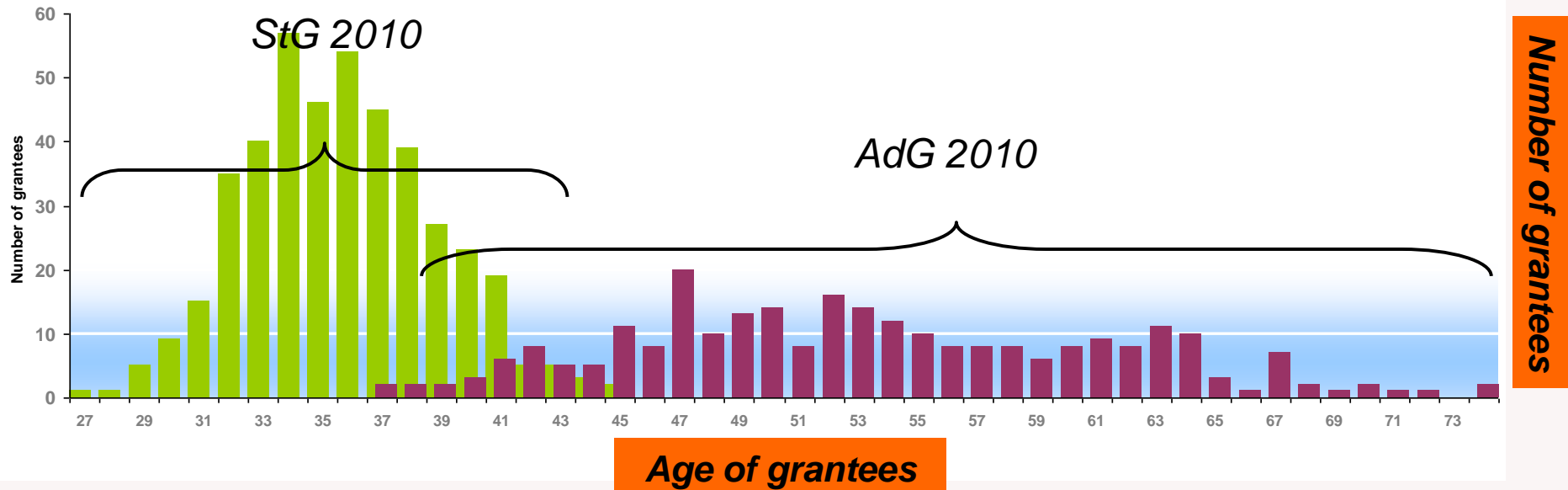
Granting Schemes

support two critical stages in scientific careers

Grantees by age in 2010:

Starting Grants

Advanced Grants

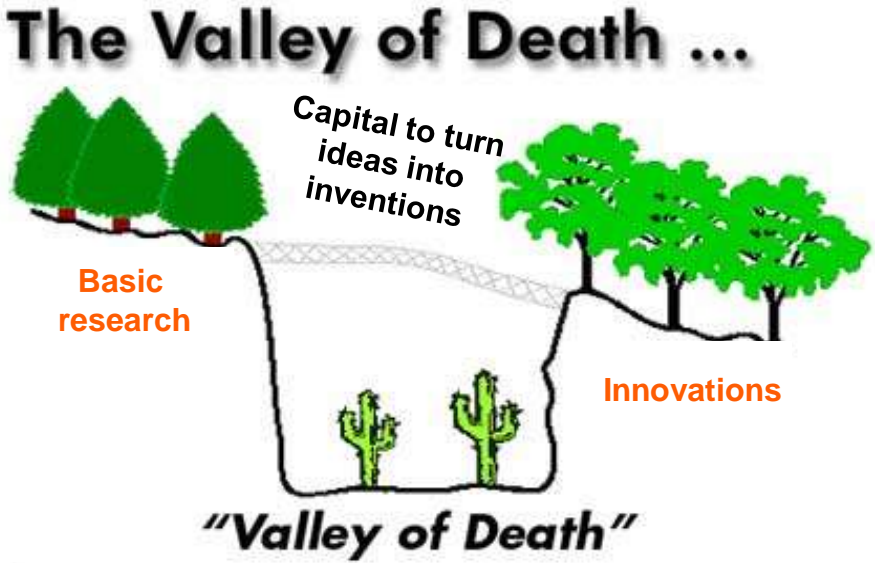


- What is the ERC?
- **ERC Grant Schemes**
 - Starting Grants 2011
 - Advanced Grants 2011
 - **Proof of Concept (PoC)**
 - Synergy Grants (SyG)
- ERC Evaluation Principles
- Overview of Previous Calls
- Impact



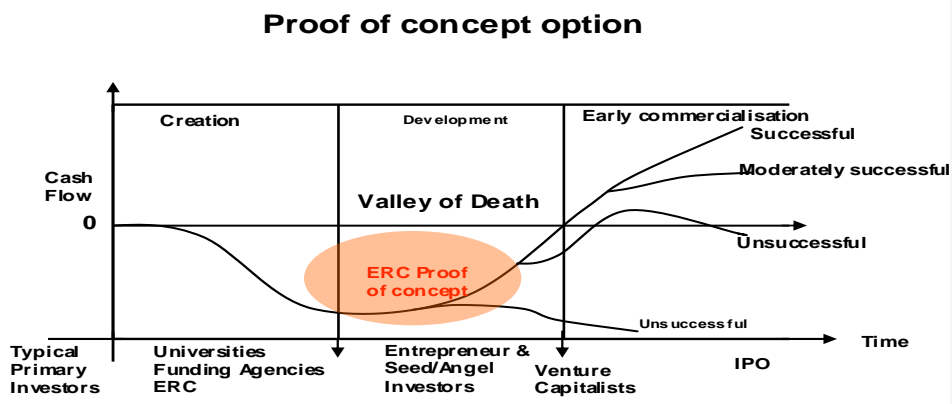
Maximising the ERC's role in the innovation chain: From blue sky research to commercialisation

Bridging the innovation gap



The ERC Proof of Concept

Fundamental research often generates unexpected or new opportunities for commercial application
Useful ERC-funded excellent ideas should not miss these opportunities!



ERC Proof of Concept Scheme

What for:

Establish the innovation potential of an ERC-funded idea - technical validation, market research, clarifying IPR strategy, investigating business opportunities

Eligibility:

Holders of an ERC grant with an idea substantially drawn from an ERC-funded project

Size:

Up to €150,000 over 12 months
Total budget for 2011: €10 million

Outcome:

A "package" to be presented to potential investors

Timing:

29/03/2011: Publication of the ERC-2011-PoC Call for proposals
15/06/2011: 1st Deadline (all proposals received by then are evaluated together)
08/11/2011: 2nd Deadline



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ERC Synergy Grant (in 2012 WP)

- Under the 2012 work programme a third type of grant will be available on a pilot basis for exceptional proposals.
- ERC Synergy Grants will enable small groups of Principal Investigators and their teams to bring together complementary skills, knowledge, and resources, in order to jointly address research problems at the frontier of knowledge going beyond what the individual Principal Investigators could achieve alone.



ERC Synergy Grant

- 2 – 4 Principal Investigators (with one designated lead Principal Investigator)
- Up to €15 m per project for up to six years
- € 150 m total budget



Institutional support...matters!

ERC competition takes place

between **individual researchers** *and* **(crucially)**

between **host institutions / national research systems:**

Where do the brightest researchers want to go?

Which are the most attractive universities/research institutes?

- **Host institutions** need to actively attract researchers, support applicants (from inside and outside the country)
- **National funding institutions** should identify, advise, and support potential applicants (from inside and outside the country)



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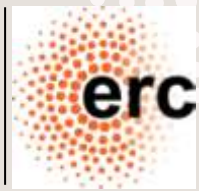


ERC review panels

International peer-reviewing

- Peer review is carried out through 25 panels (for each StG and AdG)
- Panels have about 12-15 members plus a chair person and are coordinated by an ERC Research Officer
- Panels may be assisted by external reviewers
- Panels are grouped along the main scientific domains covering all fields of science, engineering and knowledge





Scientific domains

For operational reasons : **25 panels in 3 main domains**

PE: Physical Sciences, Engineering (10 panels)

LS: Life Sciences (9 panels)

SH: Social Sciences and Humanities (6 panels)

Allocation of **Call budget** per domain as follows:

PE domain: 40%

LS domain: 35%

SH domain: 15%

Interdisciplinary domain: 10% (not anymore from 2012)

Within domains, indicative budget is allocated to panels on a demand basis

► *probability of success independent of panel*



ERC Panel structure

Life Sciences

- LS1 Molecular & Structural Biology & Biochemistry
- LS2 Genetics, Genomics, Bioinformatics & Systems Biology
- LS3 Cellular and Developmental Biology
- LS4 Physiology, Pathophysiology & Endocrinology
- LS5 Neurosciences & neural disorders
- LS6 Immunity & infection
- LS7 Diagnostic tools, therapies & public health
- LS8 Evolutionary, population & environmental biology
- LS9 Applied life sciences & biotechnology

Social Sciences and Humanities

- SH1 Individuals, institutions & markets
- SH2 Institutions, values, beliefs and behaviour
- SH3 Environment & society
- SH4 The Human Mind and its complexity
- SH5 Cultures & cultural production
- SH6 The study of the human past

Physical Sciences & Engineering

- PE1 Mathematical foundations
- PE2 Fundamental constituents of matter
- PE3 Condensed matter physics
- PE4 Physical & Analytical Chemical sciences
- PE5 Materials & Synthesis
- PE6 Computer science & informatics
- PE7 Systems & communication engineering
- PE8 Products & process engineering
- PE9 Universe sciences
- PE10 Earth system science





Submission

Single submission

- ▶ deadline according to domain
- ▶ to a targeted panel

Eligibility check

- ▶ deadline strictly enforced
- ▶ all parts and annexes present and readable

Relevant documents sent to reviewers



ERC Grant schemes

Proposal content and submission

ERC Grant proposal

PART A – online forms

- A1** Proposal and PI info
- A2** Host institution info
- A3** Budget

PART B1 – submitted as .pdf

Section 1 Track Record of PI

- Scientific Leadership Potential 1 p.
- CV (including “funding ID”) 2 p.
- Early achievements track record 2 p.
- Extended synopsis 5 p.

Annexes – submitted as .pdf

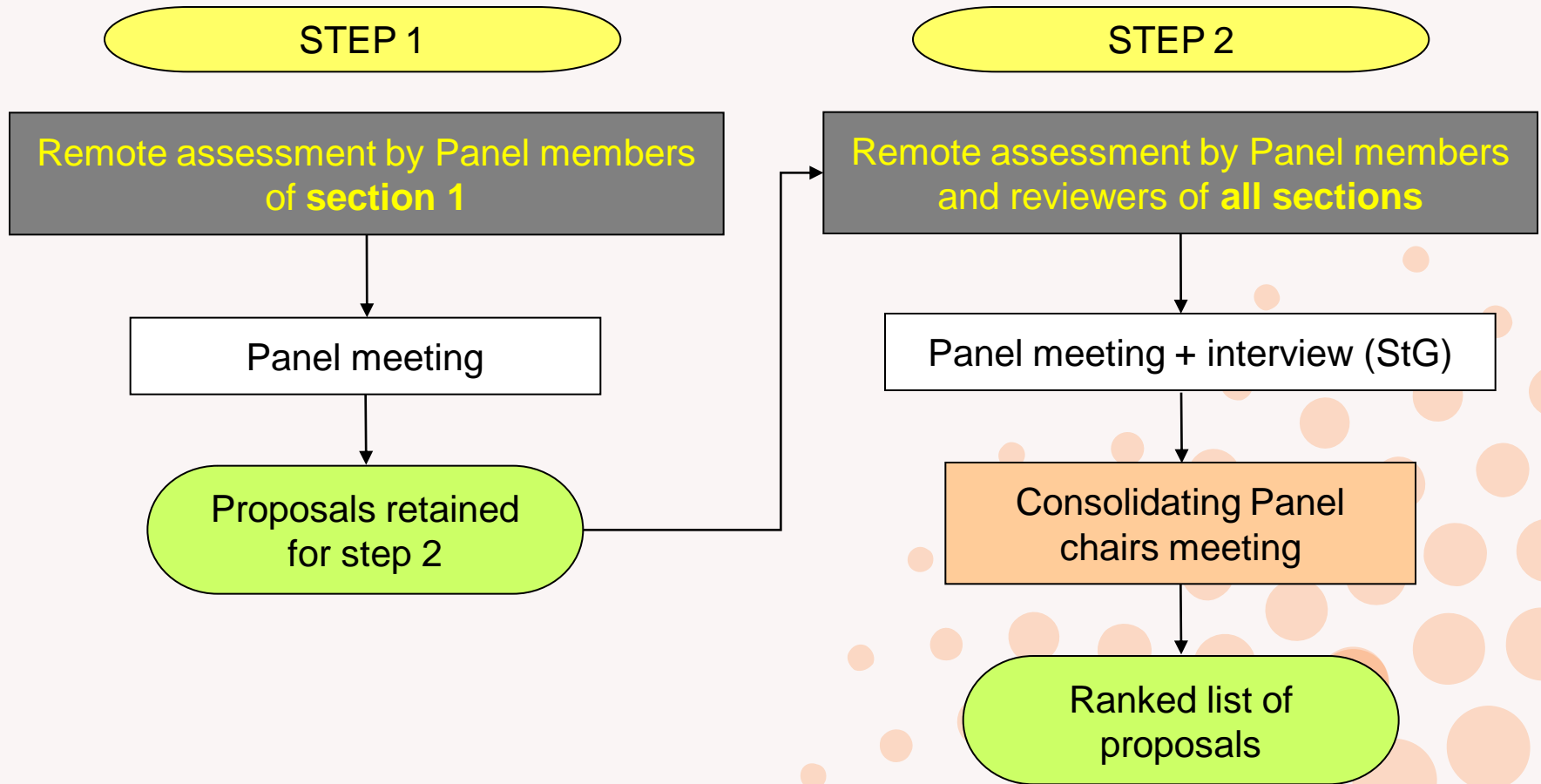
- Statement of support by host
- If applicable: explanatory information on ethical issues
- StG only: PhD certificate (incl. documents proving eligibility career breaks)

PART B2 – submitted as .pdf

- Section 2** Scientific proposal 15 p.
- Section 3** Research Environment 2 p.



Review process (StG and AdG)





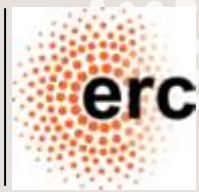
Evaluation on excellence

Scientific Excellence is the sole criterion

- Only the criteria published in the Call are applied
- Evaluation of *excellence* at 2 levels:
 - Quality of Principal Investigator
 - Quality of the Research Project
- Referees and panels **evaluate and score** criteria 1 & 2 numerically which **results in the ranking** of the projects:
 - 1-4 per criterion
 - threshold ≥ 2 per criterion

4: outstanding
3: excellent
2: very good
1: non-competitive





Evaluation criteria

■ Potential of the Principal Investigator: (last 10 years for AdG)

Quality of research output (*track record, qualification, achievements, independence, reputation*)

Intellectual capacity and creativity (*collaborations, mentoring, challenge confrontation, initiative for new lines of thinking*) and **capacity to attract funding** (AdG)

■ Quality of the Research Project:

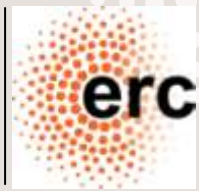
Ground-breaking nature (*challenges, ambition, trans-disciplinary, new concepts*)

Potential impact (*open new horizons, enhance frontier research in Europe*)

Methodology (*approach, timescale, resources, feasibility*)

High risk/high gain balance (*new or unconventional methodology, major breakthrough*)





Interdisciplinarity

- Novel interdisciplinary approaches can open potentials for new fields of science and can contribute to the excellence of a proposal
- to overcome traditional, discipline-based review systems in fairly evaluating interdisciplinary proposals
- ERC has a specific approach (mainstreaming; Interdisciplinary Domain):
 - ERC panels may only loosely follow disciplinary lines
 - proposals can be assigned to members of other panels and to freely-chosen referees to better match expertise
 - 10% of the budget is allocated to an 'Interdisciplinary domain'



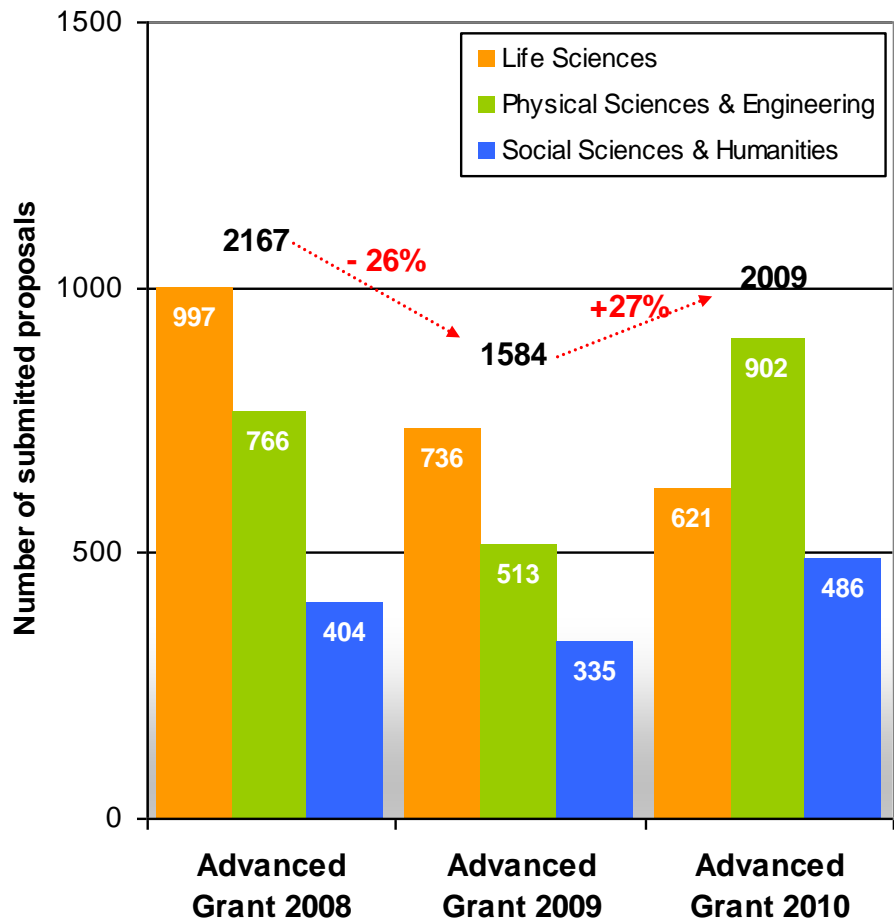
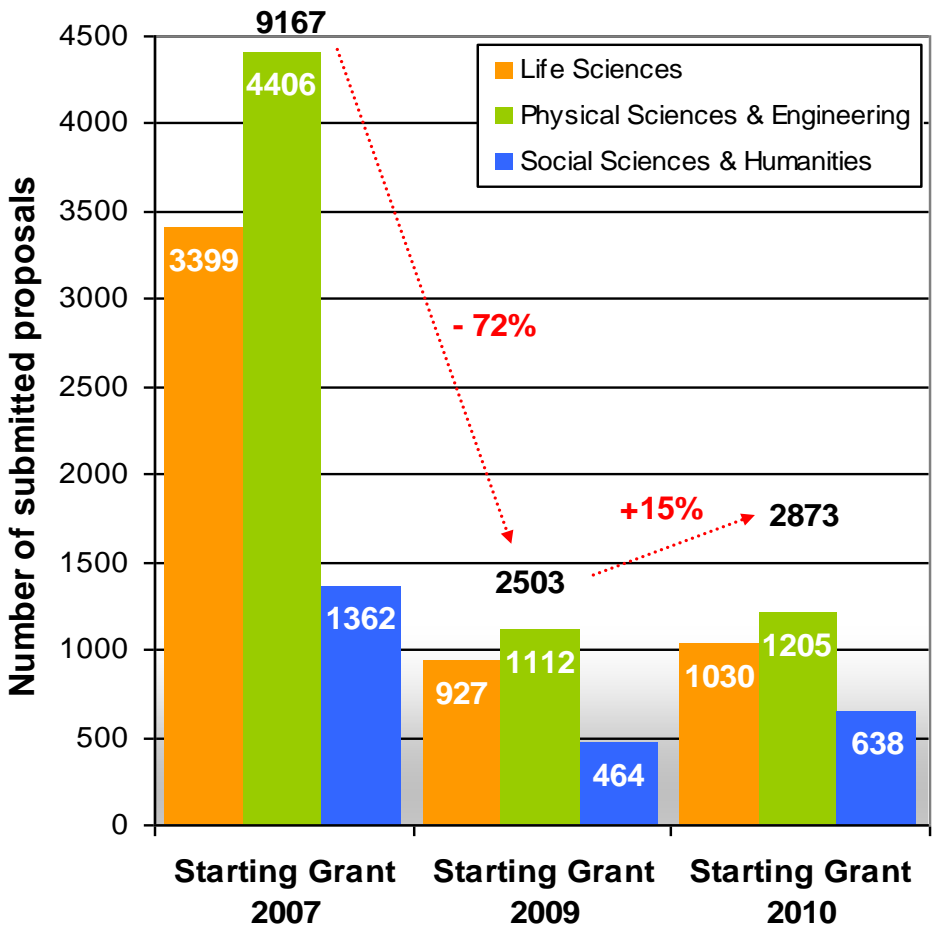
- What is the ERC?
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ERC StG and AdG submissions (2007 – 2010)

Starting Grant Calls

Advanced Grant Calls



ERC 20

ERC 2010





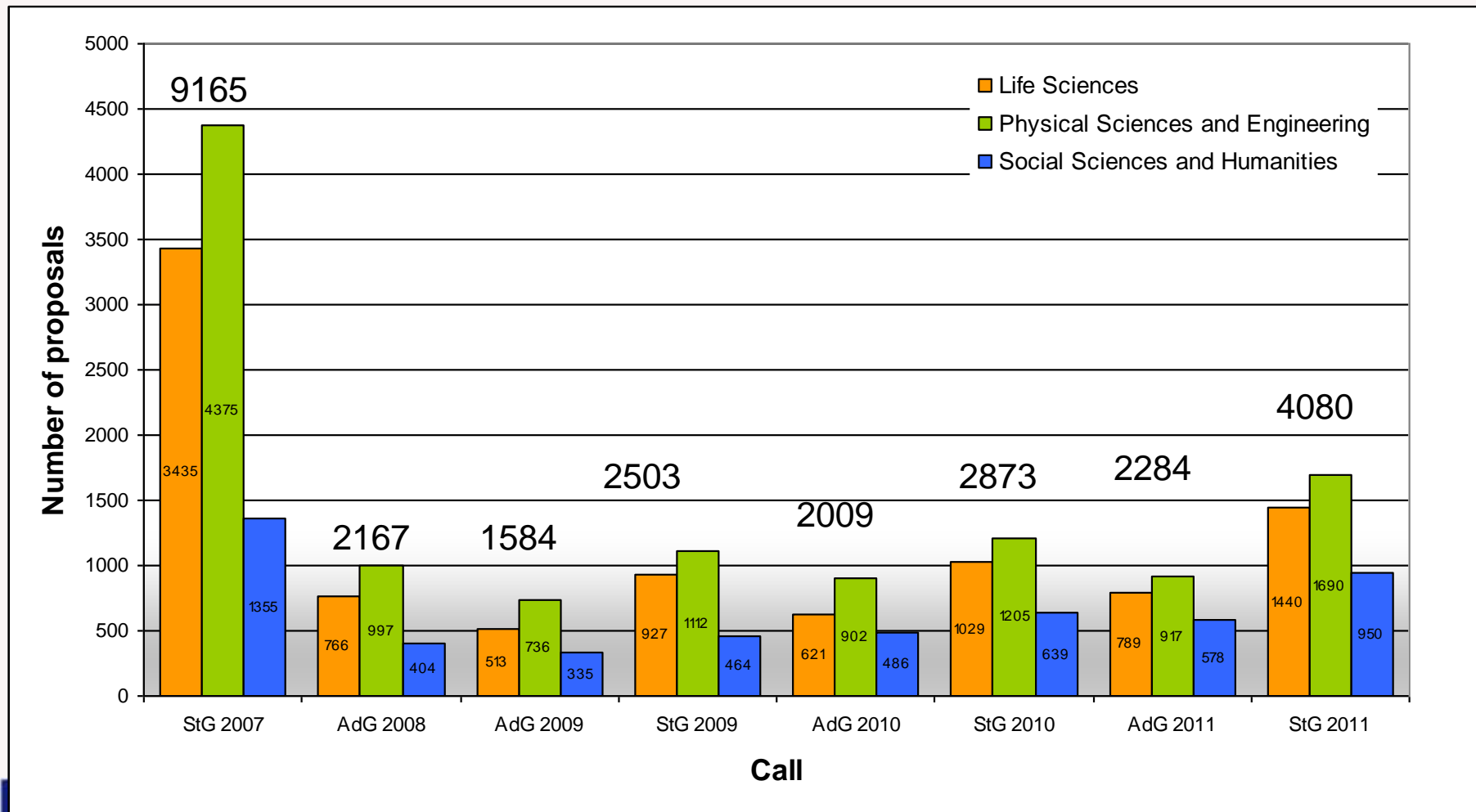
ERC 2007 – 2010: Submitted proposals by host country

StG 07	AdG 08
StG 09	AdG 09
StG 10	AdG 10



ERC StG and AdG 2007-2011

Submission of proposals



StG 2007 – 2010 and AdG 2008 – 2010

Grants by Host Institution country

	2007-StG	2008-AdG	2009-AdG	2009-StG	2010-AdG	2010-StG	Total
UK	56	59	63	45	53	79	355
FR	40	35	34	31	32	74	246
DE	32	28	32	29	46	67	234
NL	28	20	18	16	16	27	125
IT	25	19	14	17	21	22	118
ES	24	14	12	20	13	25	108
IL	22	15	11	14	13	26	101
CH	15	29	29	18	21	29	141
BE	11	5	2	15	5	16	54
SE	11	18	12	6	11	21	79
FI	7	8	1	6	4	5	31
HU	6	4	1	1	4	5	21
AT	4	9	7	8	6	14	48
EL	4	4		3	2	3	16
DK	3	4	3	7	5	6	28
IE	3		1	3	3	5	15
CY	2	1			0	1	4
PT	2	1	1	4	2	5	15
BG	1	1			1	0	3
CZ	1	2			1	2	6
NO	1	4	3		7	2	17
PL	1	1	1	2	0	3	8
EE				1	0	0	1
IS		1			0	0	1



ERC StG – Statistics

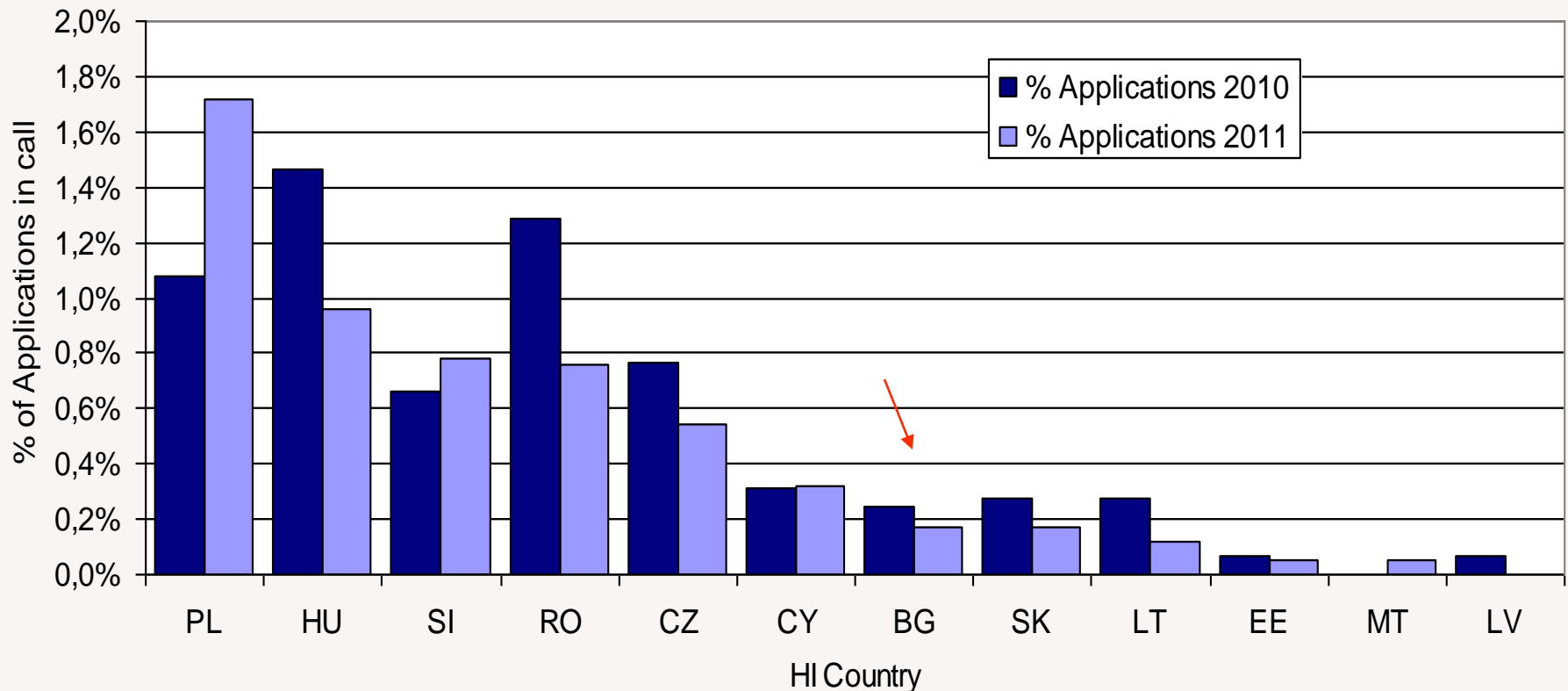
	ERC StG 2007	ERC StG 2009	ERC StG 2010	ERC StG 2011
Submitted proposals	9167	2503	2873	4080
Funded proposals	299	246	440	540 (?) estimated
Success rate	3.3%	9.8%	15.3%	13% (?) estimated



ERC StG 2010-11

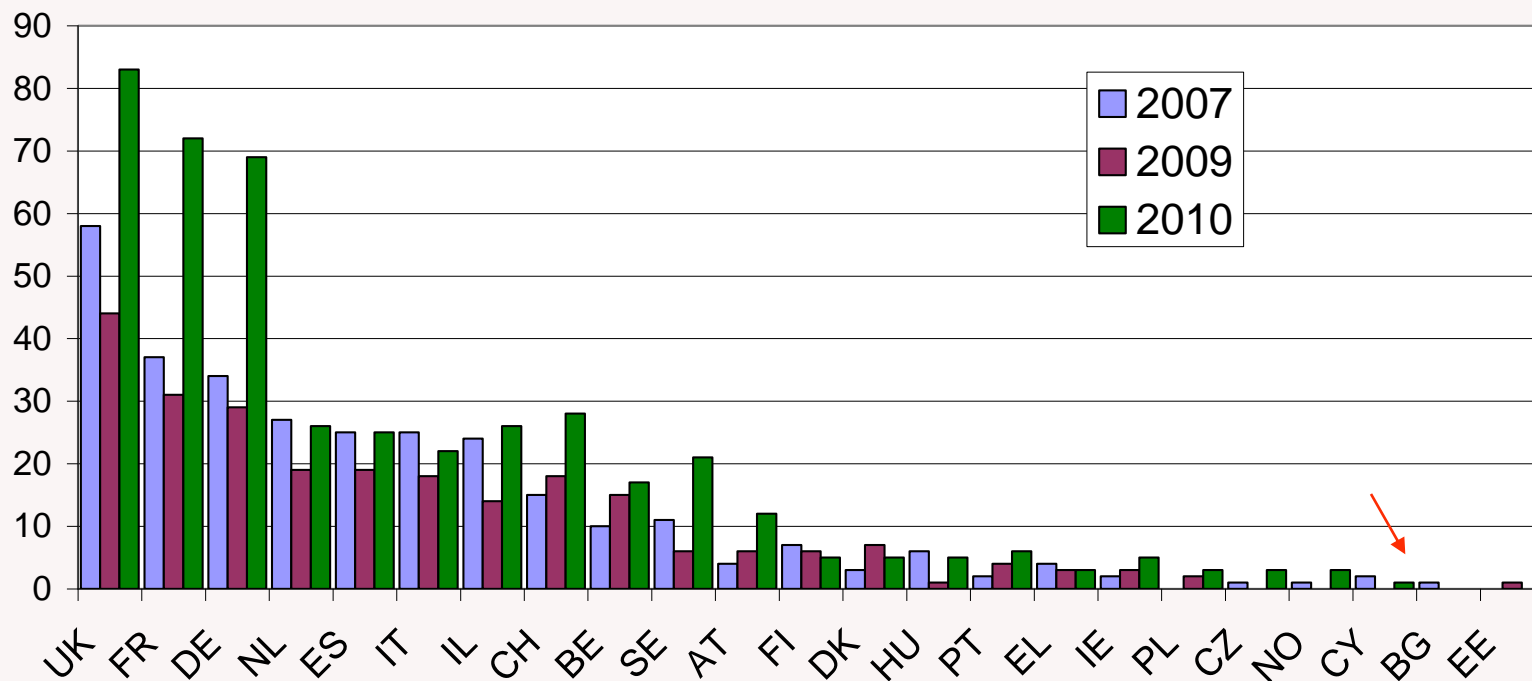
Applications by Country of HI (EU-12)

(in descending order by 2011 value)



ERC StG – Grants by HI country

ERC STG 2007-2010 Number of Grants by Country of Host Institution

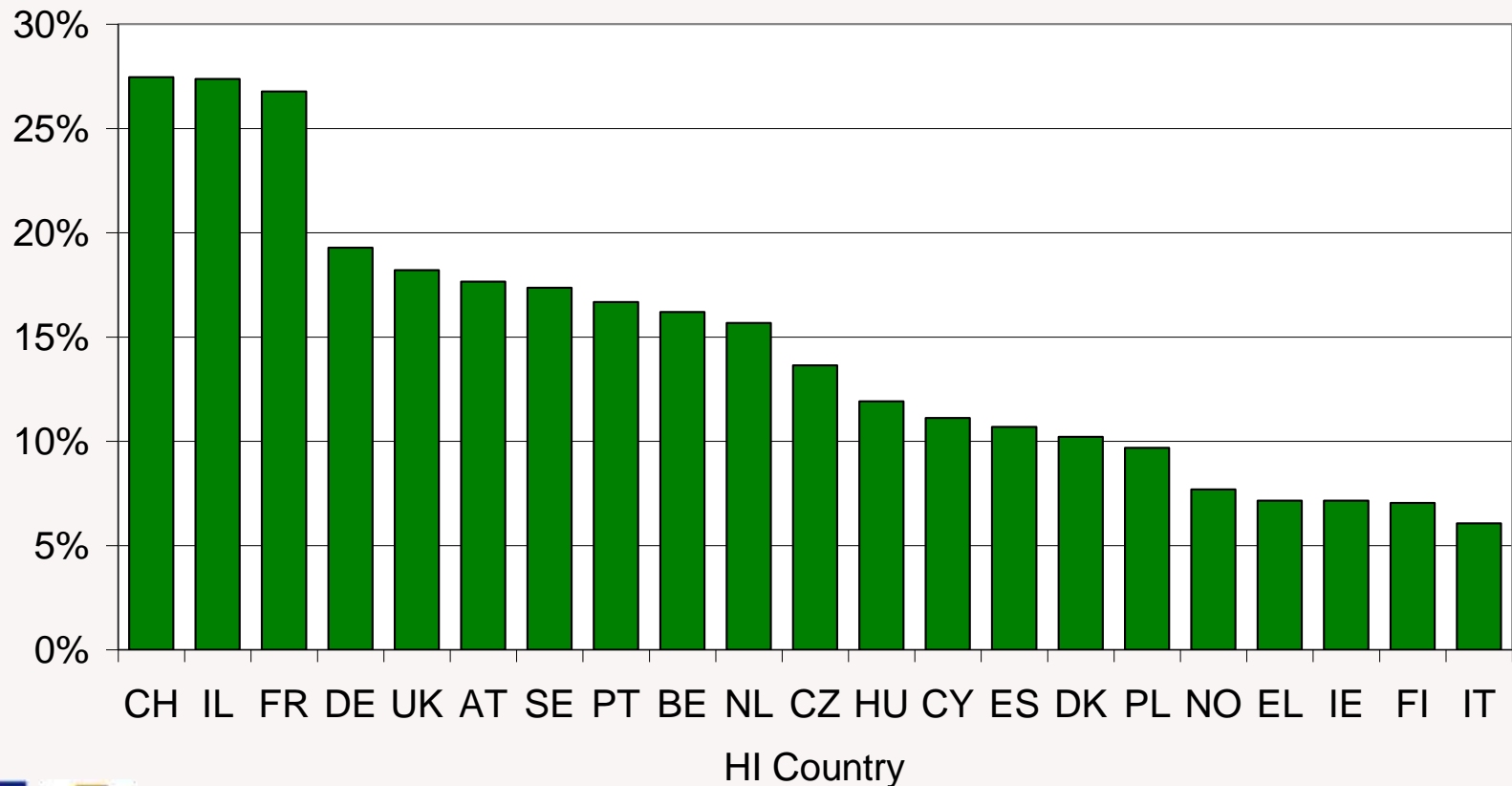


Country of Host Institution - total number of grants in descending order



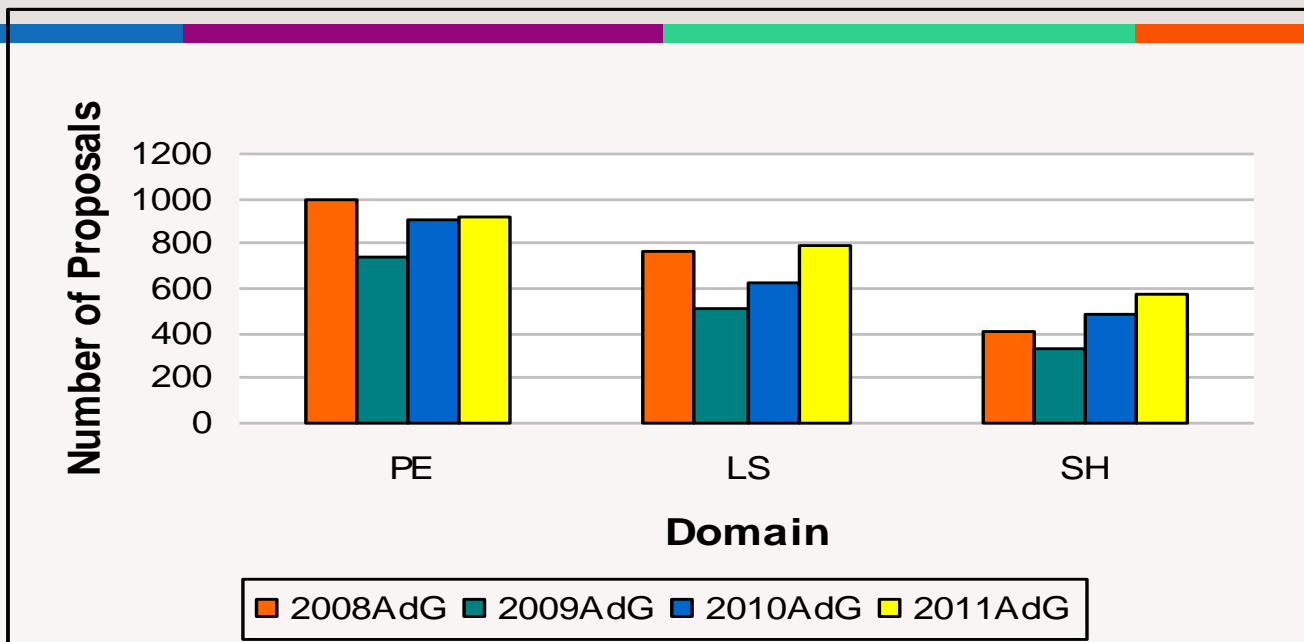
ERC StG 2010: Success rate by HI country

ERC STG 2010 Success Rate by Country of Host Institution



Advanced Grants 2008-2011

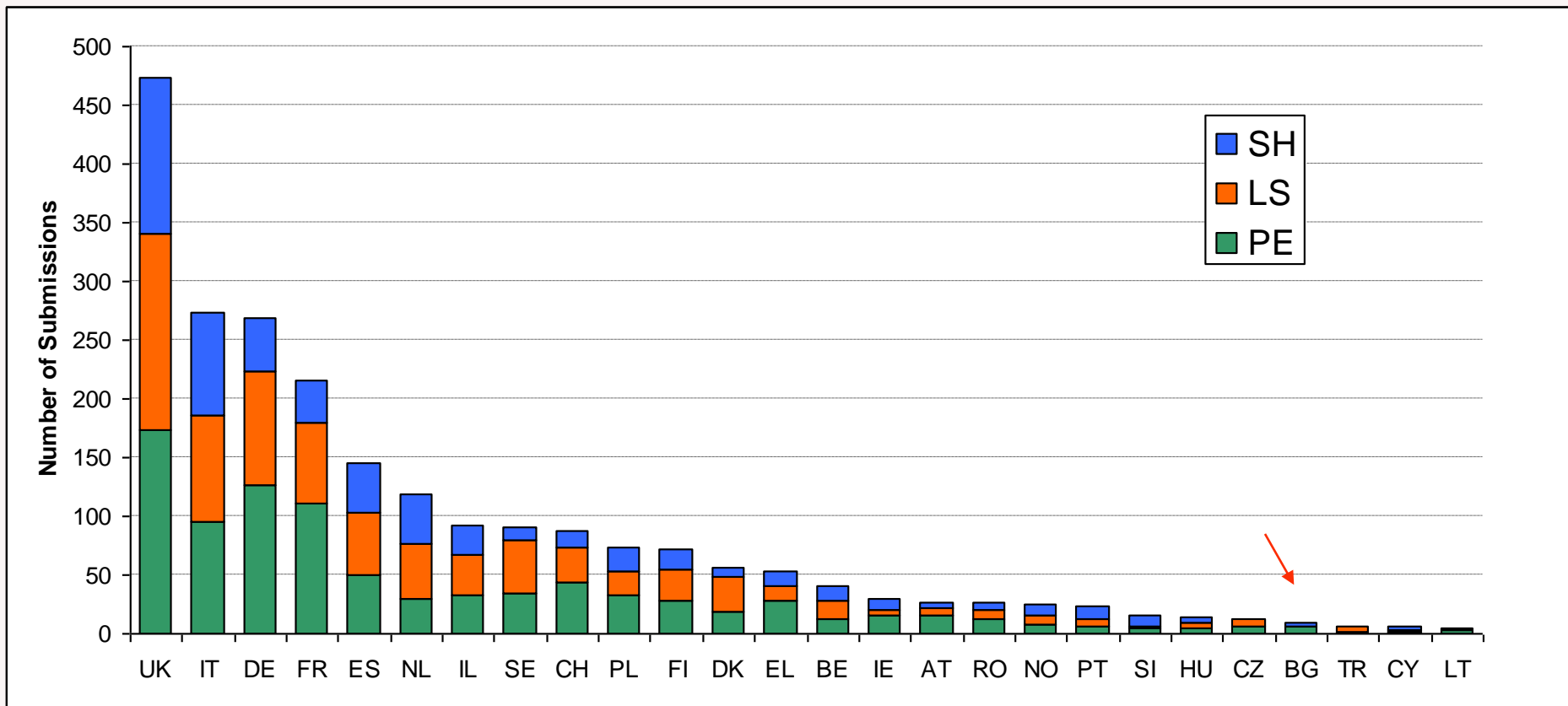
Submissions overview



	2008AdG	2009AdG	2010AdG	2011AdG
PE	997	736	902	917
LS	766	513	621	789
SH	404	335	486	578
Total:	2167	1584	2009	2284



AdG 2011 submissions: domain distribution versus HI countries



Other countries (< 5 submissions): EE, HR, SK, IS, LV, AL

E*CARE FINAL CONFERENCE: „BUILDING A SINGLE EUROPEAN MARKET FOR RESEARCHERS”

15-16 June 2011, Plovdiv, Bulgaria



Advanced grants 2011

Submission overview by HI country – 32 HI countries

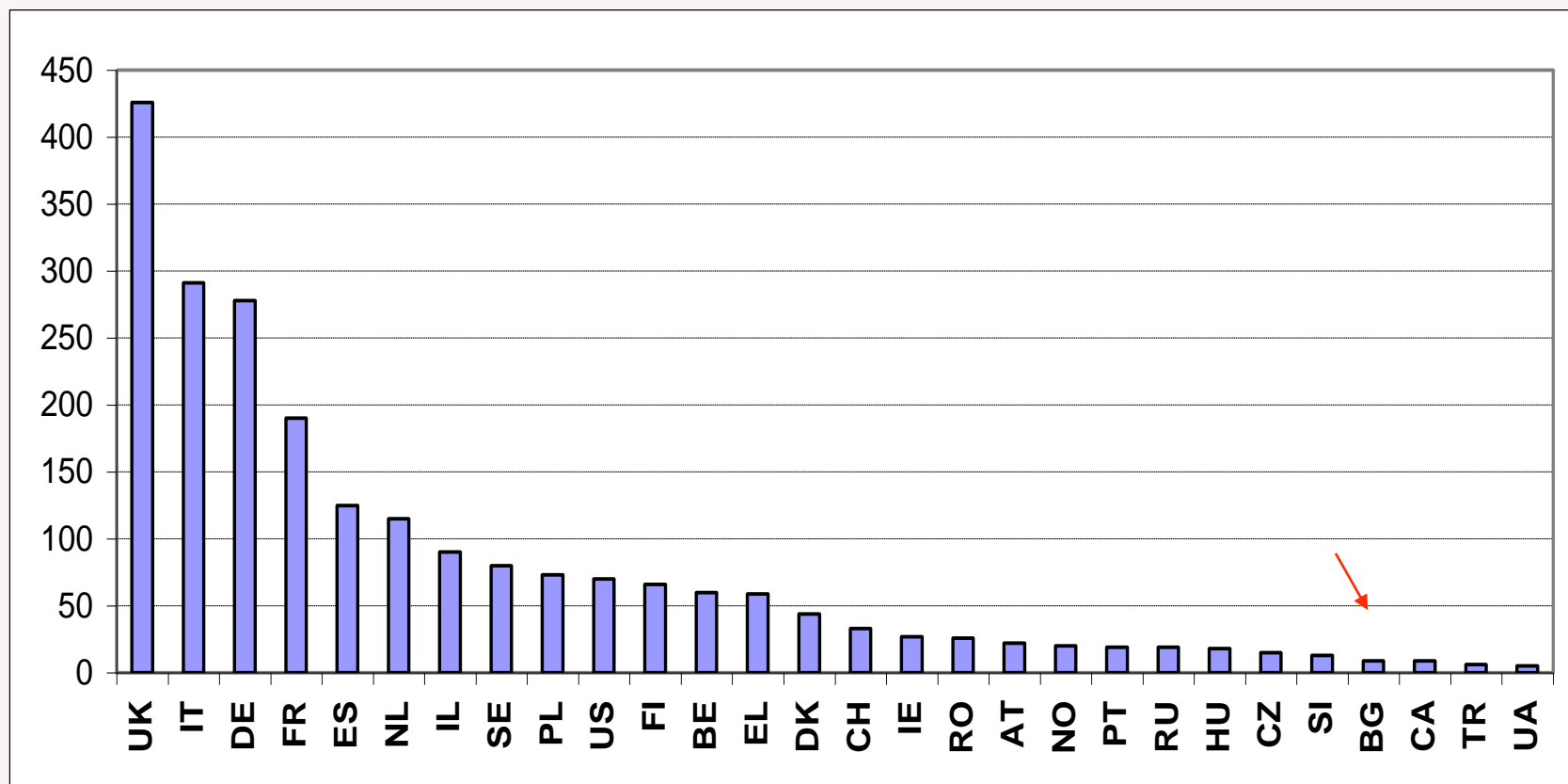
	PE	LS	SH	TOTAL
UK	173	168	133	474
IT	96	89	84	269
DE	126	96	44	266
FR	111	68	36	215
ES	49	52	40	141
NL	29	48	42	119
IL	33	34	25	92
SE	35	45	10	90
CH	42	30	14	86
PL	32	20	20	72
FI	27	26	18	71
DK	18	29	8	55
EL	28	12	11	51
BE	12	15	13	40
IE	16	5	9	30
AT	15	7	5	27
RO	13	7	7	27

	PE	LS	SH	TOTAL
NO	8	8	9	25
PT	7	5	8	20
HU	5	4	5	14
SI	3	3	8	14
CZ	6	6	1	13
BG	6	1	3	10
CY	2	1	3	6
TR	2	4		6
LT	3		2	5
EE	2	2		4
HR	3			3
SK	2		1	3
IS	2			2
LV	1		1	2
AL			1	1



AdG 2011 Submission

Overview by PI Nationality- 47 nationalities



Other countries (< 5 submissions): e.g. BY, EE, IS, JP, LU, SK, DZ, IQ, LV, MY, RS, SG, ZA



AdG 2011 Submission

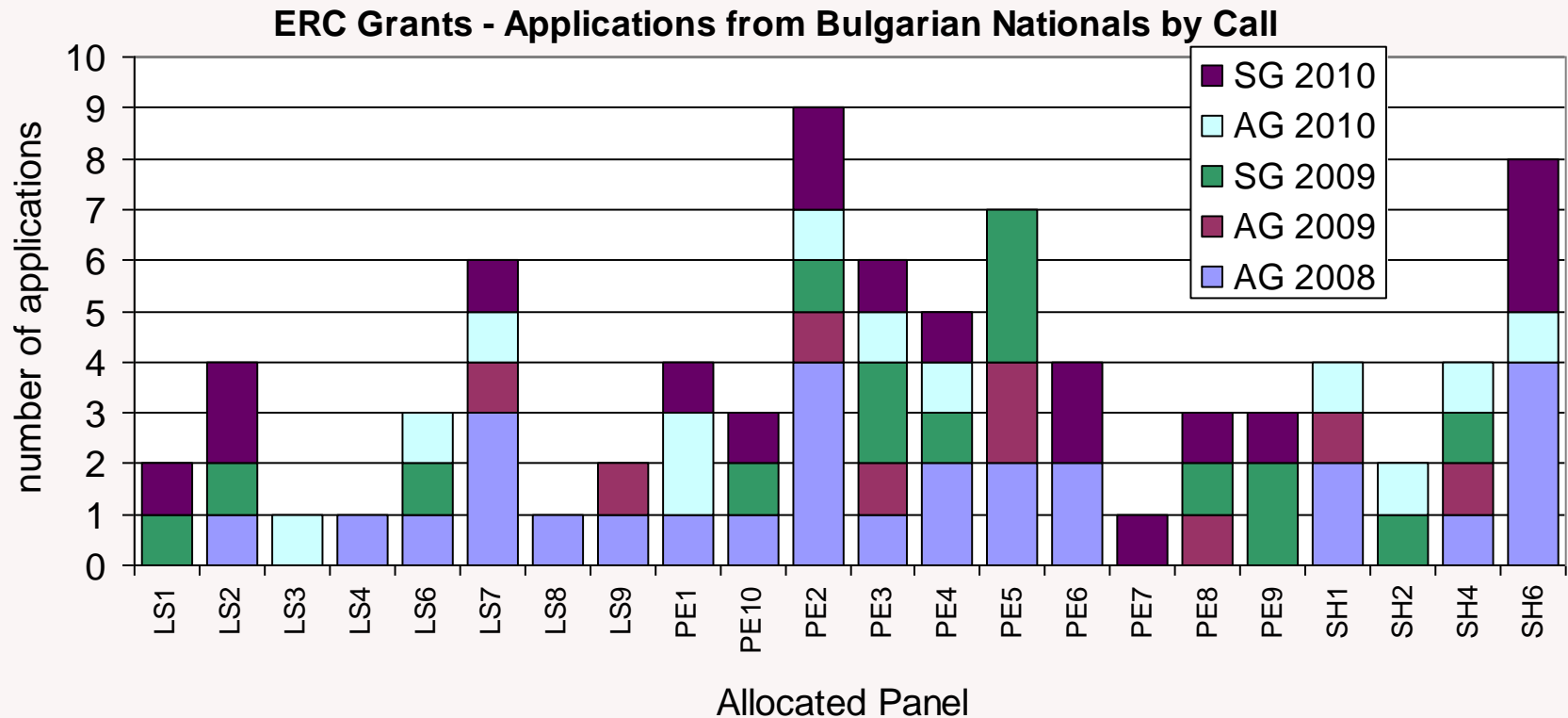
Overview by PI Nationality- 47 nationalities

	PE	LS	SH	TOTAL
UK	161	153	112	426
IT	105	96	89	290
DE	126	99	52	277
FR	99	59	31	189
ES	44	47	34	125
NL	31	48	36	115
IL	33	33	24	90
SE	28	42	10	80
PL	32	20	21	73
US	31	22	17	70
FI	23	27	16	66
BE	15	22	23	60
EL	33	14	12	59
DK	14	24	6	44
CH	12	15	6	33
IE	9	9	9	27
RO	12	7	7	26
AT	11	3	8	22
NO	6	7	7	20
PT	7	4	8	19
RU	14	4	1	19
HU	6	6	6	18
CZ	6	6	3	15
SI	3	4	6	13

	PE	LS	SH	TOTAL
BG	6		3	9
CA	2	3	4	9
TR	3	3		6
UA	4		1	5
AR	2	2		4
AU	2		2	4
CY	1	1	2	4
HR	3	1		4
IN	4			4
LT	3		1	4
NZ	2		2	4
EE	1	2		3
BY		1	1	2
IS	2			2
JP	2			2
LU	1	1		2
SK	2			2
DZ	1			1
IQ	1			1
LV			1	1
MY	1			1
RS	1			1
SG	1			1
ZA	1			1



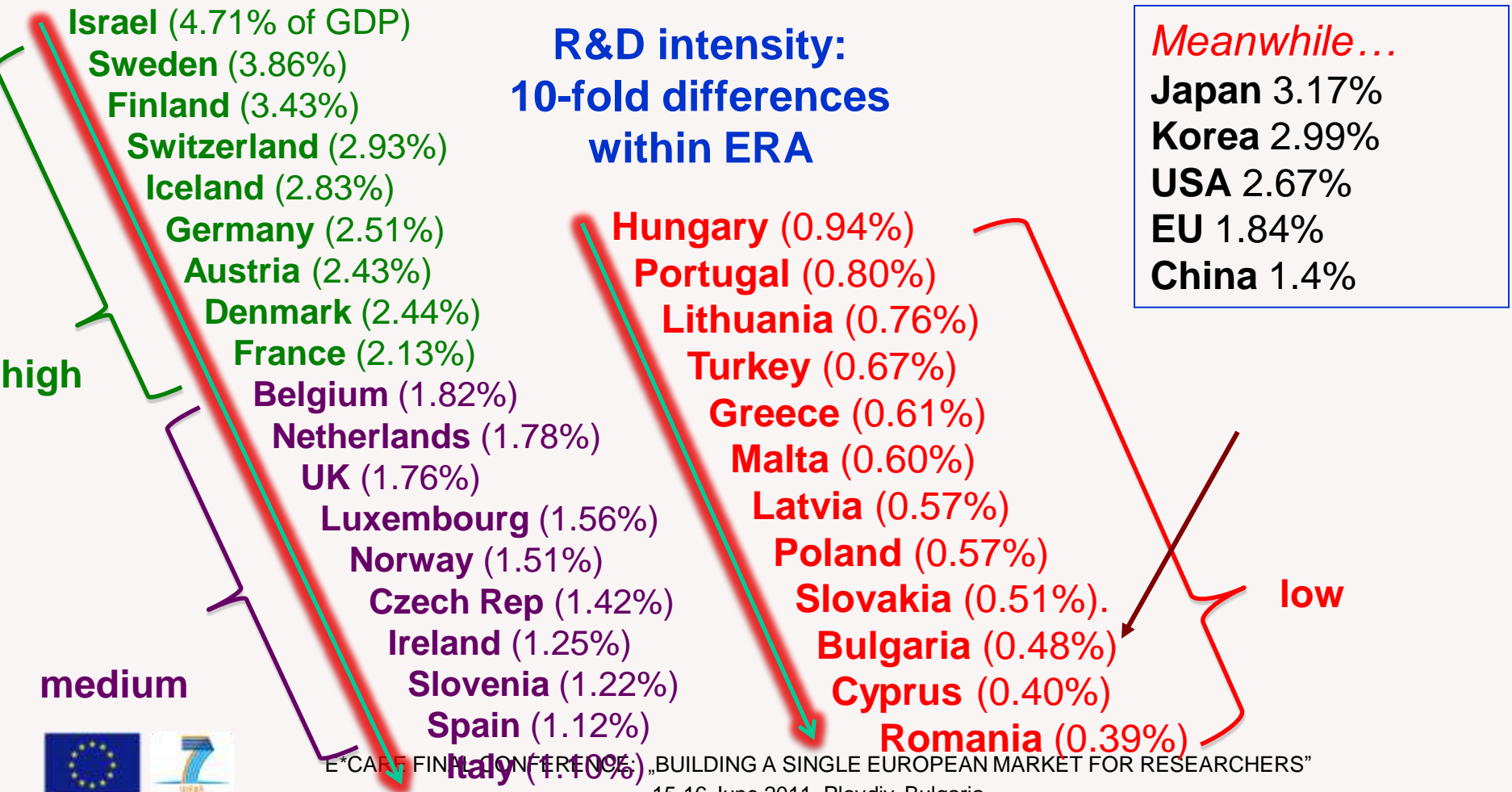
ERC Grants - Applications from Bulgarian Nationals by Call



Disparate national policies: A major challenge

Variable R&D intensity (as % of GDP)

Europe must be competitive as a continent, but also as individual member states



- What is the ERC?
- ERC Evaluation Principles
- Overview of Previous Calls
- **Impact**



Impact: A radical shift in EU Policy

- *First EU funding body to support of bottom-up, PI-driven frontier research*
- Sole criterium: *scientific excellence*
- EU-added value: *first competition at EU-level for frontier research*
- Open to *any nationality and age*, but Host Institution in EU Member State or Associated Country
- *Industry participation welcome (frontier technologies)*



Impact

What has been achieved so far?

8 ERC calls for proposals launched since 2007

1.500 to 4.100 applications per call

Increase in applications, especially PE and SH

€ 2.9 billion total amount of funding so far

**1774 top researchers funded to perform
innovative research throughout Europe**

Success rate: average 12%

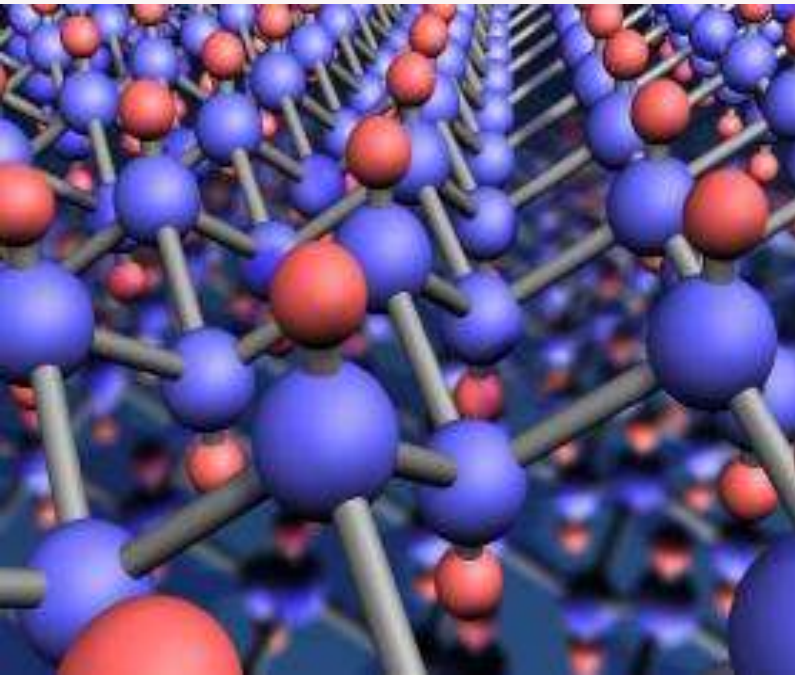


Impact

- Competition of the brightest: The European Research Area
- The ERC has impact on three levels:
 - National Research Systems
 - Host institutions
 - Researchers



Nobel Prize in Physics: ERC grantee Prof. Konstantin Novoselov, Manchester University



One-atom-thick sheets of carbon have been on the scene for just six years but have already drawn a wealth of research interest



Novoselov was a postdoctoral associate working with Andre Geim in 2004 when the researchers discovered they could make atomically thin slabs of carbon by repeatedly cleaving graphite — essentially pencil lead—with adhesive tape.

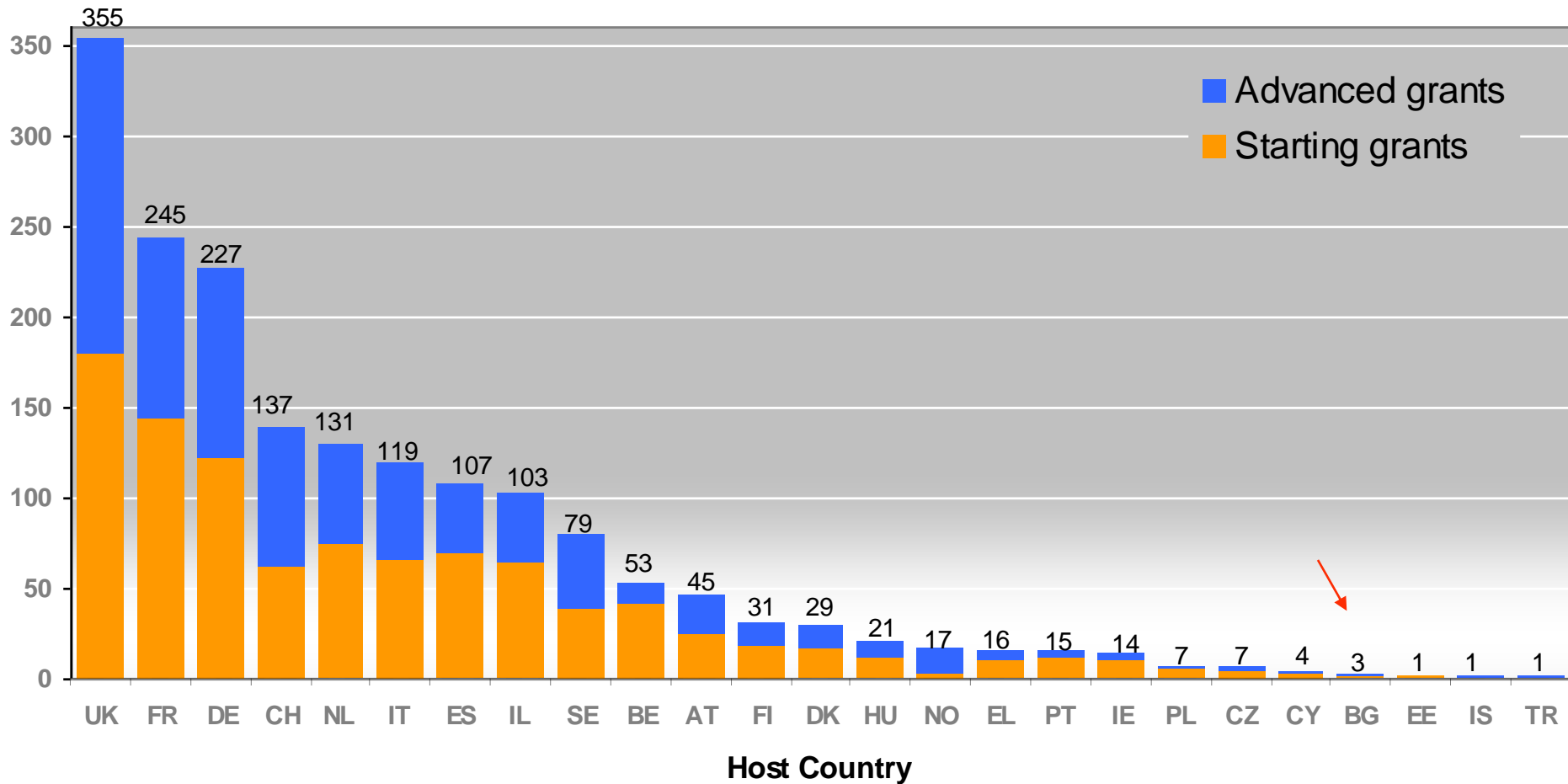
Impact on national research systems

- Raising the standards for evaluation throughout Europe
 - High R&D-ratio: correlation with ERC grantees
- National Initiatives complement by
 - National funding for excellent projects that ERC could not fund
 - Revamping the national funding systems – bringing excellence back in!



ERC grant distribution to countries

AdG2008-10, StG2007-10



Impact on host institutions

- ERC grants have gained very high prestige among European universities and research centers
- Winners have high degree of international openness
- Host Institutions
 - Attract grantees to their institution
 - Build up administrative support for potential ERC grant candidates, professionalize services and support
 - Utilize the ERC grantees for fundraising
 - Identify and cultivate young talent: potential ERC grantees



Top-Host Institutions

Higher Education Institutions				
No.	Institution	Starting Grants	Advanced Grants	Total Grants
1	University of Cambridge	25	22	47
2	University of Oxford	22	21	43
3	Swiss Federal Institute of Technology Lausanne (EPFL)	21	21	42
4	Hebrew University of Jerusalem	20	13	33
5	Swiss Federal Institute of Technology (ETH)	9	23	32
6	Imperial College	13	14	27
7	University College London	13	13	26
8	University of Zurich	8	10	18
9	Catholic University of Leuven	15	2	17
9	University of Munich	6	11	17
9	University of Edinburgh	9	8	17
10	Karolinska institute	8	8	16
10	University of Helsinki	7	9	16
11	University of Leiden	7	7	14
11	University of Bristol	5	9	14
12	University of Vienna	5	8	13
12	Free University Amsterdam	7	6	13
12	Radboud University Nijmegen	9	4	13
12	University of Utrecht	8	5	13
13	University of Amsterdam	5	7	12
13	University of Geneva	4	8	12
14	University of Aarhus	6	5	11
14	University of Ghent	10	1	11
14	University of Heidelberg	8	3	11

Impact on researchers

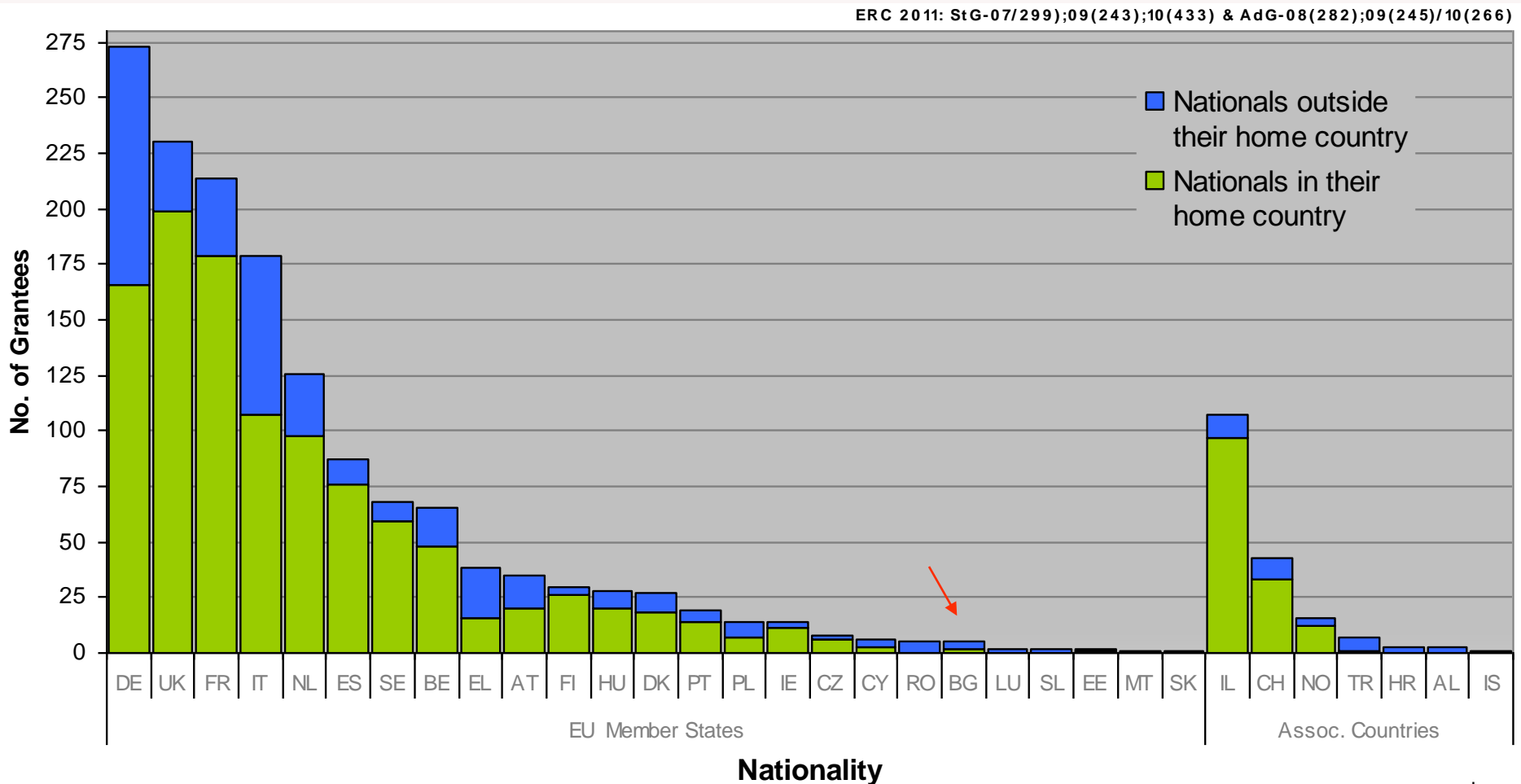
- Researchers acknowledge the high reputation of the ERC: opening doors
- Panels report that grant proposals become stronger every year
- Researchers use the ERC for brain circulation
 - Within Europe
 - From outside to European institutions



Nationality of ERC grantees

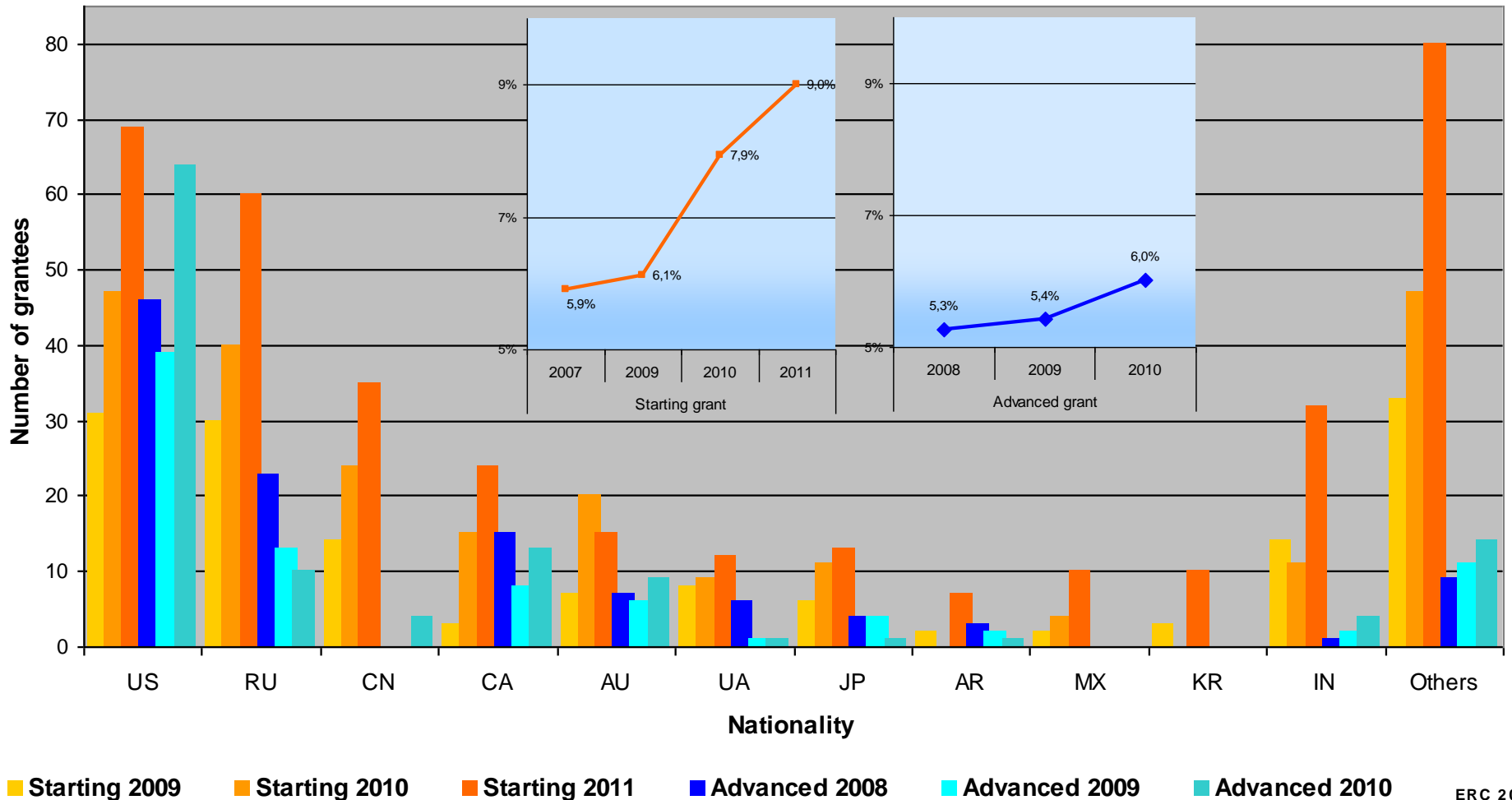
AdG2008-10, StG2007-10

(EU member states and associated countries only)



Submitted proposals from researchers with non-European nationality

ERC Starting & Advanced grant calls 2007 - 2010



Unfinished success story

Making Europe a more attractive place for excellent research

Target:

- higher participation by women & new member states without compromising on excellence
- make Europe more attractive for researchers from overseas
- increase awareness in industry for opportunities of ERC funding
- prepare for Common Strategic Framework after 2013: substantially higher budget & new governance structure





Applicants Services Information and Helpdesks

- **ERC News Alert**
<http://erc.europa.eu/newsalert>
- **ERC National Contact Points**
<http://erc.europa.eu/ncp>
- **ERC helpdesk**
<http://ec.europa.eu/research/enquiries>





ERC related documentation

- **ERC Work Programme**
- **ERC Guide for Applicants**
- **ERC Grant agreement**

Others :

- ERC Guide for Grant Holders
- ERC Guide for Peer Reviewers
- ERC Rules on submission, evaluation, selection and award procedures



Useful Links

- ERC website <http://erc.europa.eu/>
- **Funded projects** section:
 - List with names of grantees and host institutions, grant size, duration, project abstracts
 - ERC Starting Grant brochure with Case Studies
- Various brochures on Starting Grant case studies produced by national actors (e.g. in DE, AT, BE, FR)
- FP7 project database (FP IDEAS projects)
http://cordis.europa.eu/fp7/projects_en.html



WP 2012

- Total budget €1,578m.
- Starting Grant now largest share of budget: €730m
- Advanced Grant: €680m
- Proof of Concept retained: €10m
- **NEW!** Synergy Grant: €150m



ERC Calls Timetable 2011-12

Publication of the 5th StG call ERC-2012-StG: Summer 2011	€ ±720M	Deadlines Autumn 2011
Publication of the 5th AdG call ERC-2012-AdG: Autumn 2011	€ ±690M	Deadlines Winter/Spring 2011/2012

<http://erc.europa.eu/callforproposals>



Submission deadlines for StG 2012

- Tentative => check website for latest news
- Date of publication **StG 2012:** **20 July 2011**
- Call closure deadline for submission:
 - Physical Sciences & Engineering: **12 October 2011**
 - Life Sciences: **09 November 2011**
 - Social Sciences & Humanities: **24 November 2011**
 - **all 17.00 hrs Brussels local time**
- Call budget: **€ 730 Mio**
- Single submission, two-step evaluation
 - only Part B1 is evaluated during Step 1




Submission deadlines for AdG 2012

Expected* submission deadlines

PE	16 February 2012	17h
LS	14 March 2012	17h
SH	11 April 2012	17h

*to be confirmed





**Thank you
for your attention!**

Questions?

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E*CARE FINAL CONFERENCE: „BUILDING A SINGLE EUROPEAN MARKET FOR RESEARCHERS”
15-16 June 2011, Plovdiv, Bulgaria