

The European Research Council



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ERC Synergy grants

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Synergy grant call coordinator

Call and Project Follow-up Coordination Unit

Brussel, 17 June 2019





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ERC SYG 2018: Results

Belgian perspective

2018 - proposals with a
Belgian Host Institution:

10

2018 - Successful
Belgian proposals:

1

2018 - BE
Success rate:

5,2%
(Call SR: 9,6%)

SyG2018: 27 proposals were
selected for funding



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ERC SYG 2018: Results Belgian perspective

2018 - proposals with a
Belgian Host Institution:

10

2018 - Successful
Belgian proposals:

1

2018 - BE
Success rate:

5,2%
(Call SR: 9,6%)

2019 - proposals with a
Belgian Host Institution:

18

2019 – Expected call
success rate:

~15%

- SyG 2018: Belgian funded project
- Features of a Synergy grant
- Preparing an application
- Evaluation process and timeline
- Evaluation principles and criteria
- Hints and tips
- SyG 2018- SyG 2019 proposals overview

ERC SyG 2018

Proposal with a BE Host Institution



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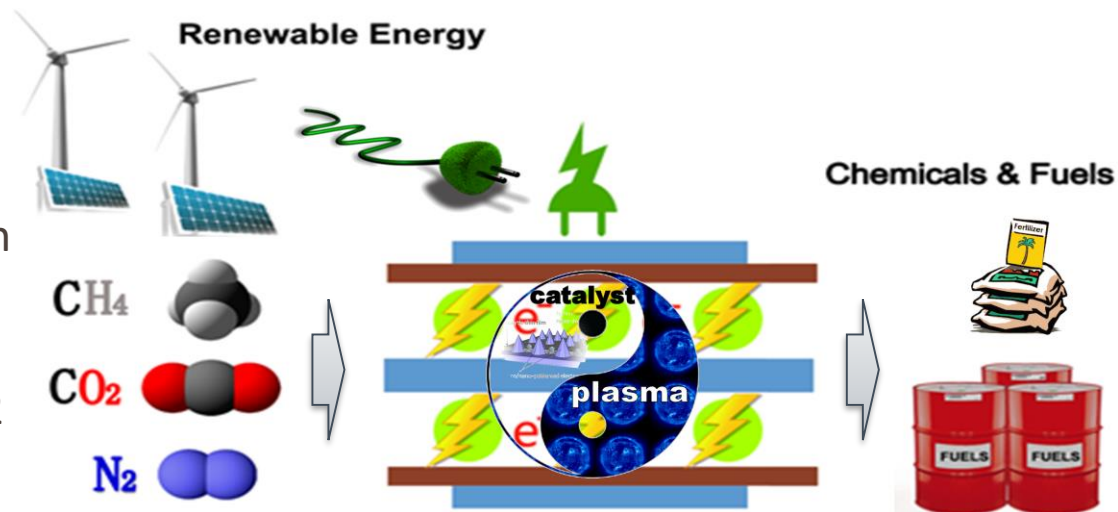
Scope – "Surface-COnfined fast-modulated Plasma for process and Energy intensification in small molecules conversion"

Gabriele CENTI (IT)	University of Messina	IT
Annemie BOGAERTS (BE)	University of Antwerp	BE
Volker HESSEL (DE)	Technische Universiteit Eindhoven	DE
Evgeny REBROV (RU)	The University of Warwick	UK

Aim:

Change the way to provide energy for chemical transformations → electrified chemical processes

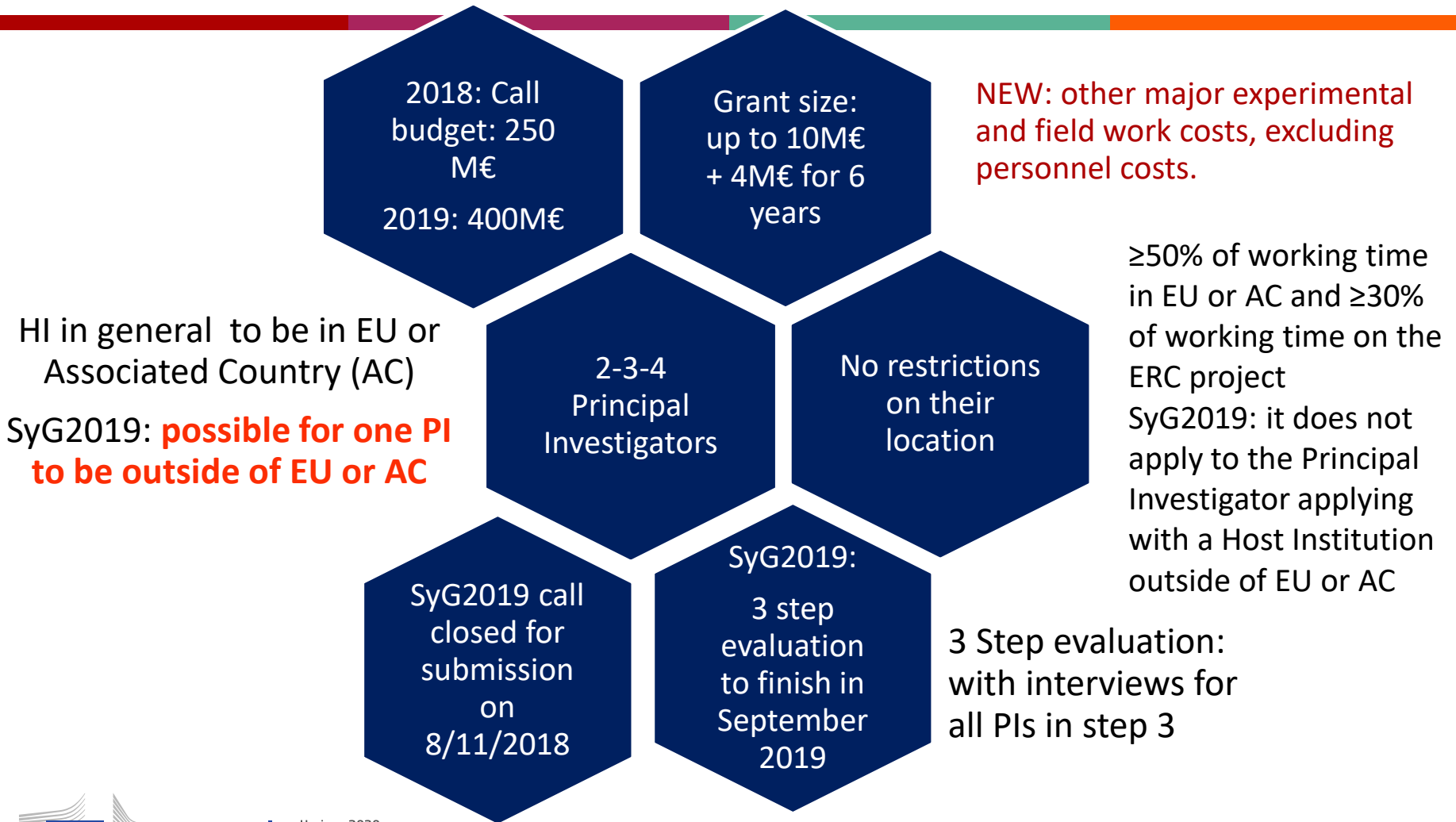
Approach using renewable energy, with a drastically lower carbon footprint in three major industrial reactions: 1) N₂ fixation, 2) CH₄ valorization and 3) CO₂ conversion to liquid solar fuels.



Design of the Synergy call in a nutshell



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ERC Synergy 2019 – Key features

What to look for in a SyG proposal?

AMBITIOUS RESEARCH PROBLEM

- To promote substantial advances at the frontiers of knowledge,
- To cross-fertilize scientific fields,
- To encourage new productive lines of enquiry and new methods and techniques, including unconventional approaches and investigations at the interface between established disciplines,
- To enable transformative research not only at the forefront of European science but also to become a benchmark on a global scale.

SYNERGETIC ASPECT

- PIs must demonstrate the synergies, complementarities and added value that could lead to **breakthroughs that would not be possible by the individual Principal Investigators working alone.**

ERC Synergy 2019

What to look for in a SyG proposal?

EQUALITY AMONG PIs

- With a designated corresponding PI (cPI) and corresponding HI (cHI) who will be the administrative contacts for the duration of the project

STRONG COMMITMENT

- PIs to engage genuinely in the collaboration
- $\geq 50\%$ of working time in EU or Associated Countries (AC) and
- $\geq 30\%$ of working time on the ERC project
- SyG2019: 50% commitment requirement to stay in EU or AC does not apply to the PI outside of EU or AC

PIs' TRACK RECORDS

- Either an early achievement track-record (Starting or Consolidator stage) or
- A 10-year track-record (Advanced grant stage), **whichever the applicants consider most appropriate** for their career stage

COMPLEMENTARY EXPERTISE

- Complementarity of the PIs is essential

JOINT EFFORT

- To foster research at intellectual frontiers
- To allow for new combination of skills and disciplines
- To bring together researchers be that from the same institution or different institutions in the country or EU and Associated Countries wide

SYNERGY

A major scientific question of pressing significance with a transformative scientific potential

Involves teams with exceptional combinations of knowledge and skills with the PIs holding a central role

Tackles bold new research themes that require novel approaches and unique collaborations of researchers

ERC SyG 2019

Grant features - Synergy aspects

**NOT
SYNERGY**

Loose cooperation or networking between PIs

Simple passing of data or information from one team to another

Note: The proposed work does not need to cover more than one discipline or field to be considered for the Synergy grants

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ERC Synergy 2019 - Proposal Structure



In step 1 only part B1 is reviewed.

Administrative data and eligibility are checked by ERC staff.

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Administrative forms (Part A)

- 1 – General information
- 2 – Administrative data of participating organisations
- 3 – Budget
- 4 – Ethics
- 5 – Call specific questions

4-6 ERC keywords are selected, panels are not defined at submission

New SYG2020: each Host Institution has to submit their support letter for the PI(s) hosted by them.

Commitment
correspondence
ethics doc

Part B1 (submitted as pdf)

Evaluated in Step 1 & Step 2 & Step 3

Text box - Cross-domain nature explanation

- a – Extended synopsis 5 pages
- b – Curriculum vitae 2 pages ***per PI!***
- Appendix – Funding ID
- c - Track-record 2 pages ***per PI!***

Part B2 (submitted as pdf)

NOT evaluated in Step 1 (only in Step 2 & 3)

- Scientific proposal 15 pages
- a – State-of-the-art and objectives
- b – Methodology
- c – Resources (***budget breakdown per PI + a joint one***)

ERC Synergy 2020

Intended restrictions for the ERC 2020 calls

Note: pending on the adoption of the ERC Work Programme in July 2019!



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Call to which the Principal Investigator applied under <u>previous</u> ERC Work Programmes and score received		Calls under the <u>2020</u> ERC Work Programme to which a Principal Investigator is eligible to apply
2018 and 2019 all calls	Rejected on the grounds of a breach of research integrity	none of the calls
2018 Starting, Consolidator, or Advanced Grant	C at Step 1	Synergy Grant
2018 Synergy Grant	A or B at Step 3	all calls
	B at Step 1 or 2	all calls
	C at Step 1	Starting and Consolidator Grants (not eligible for AdG2020 and SyG2020)
2019 Starting, Consolidator, or Advanced Grant	A or B at Step 2	all calls
	B or C at Step 1	Synergy Grant
2019 Synergy Grant	A or B at Step 3	all calls
	B at Step 2	all calls
	B at Step 1	Starting, Consolidator and Advanced Grants (not eligible for SyG2020)
	C at Step 1	Starting and Consolidator Grants (not eligible for AdG2020 and SyG2020)

ERC Synergy 2020

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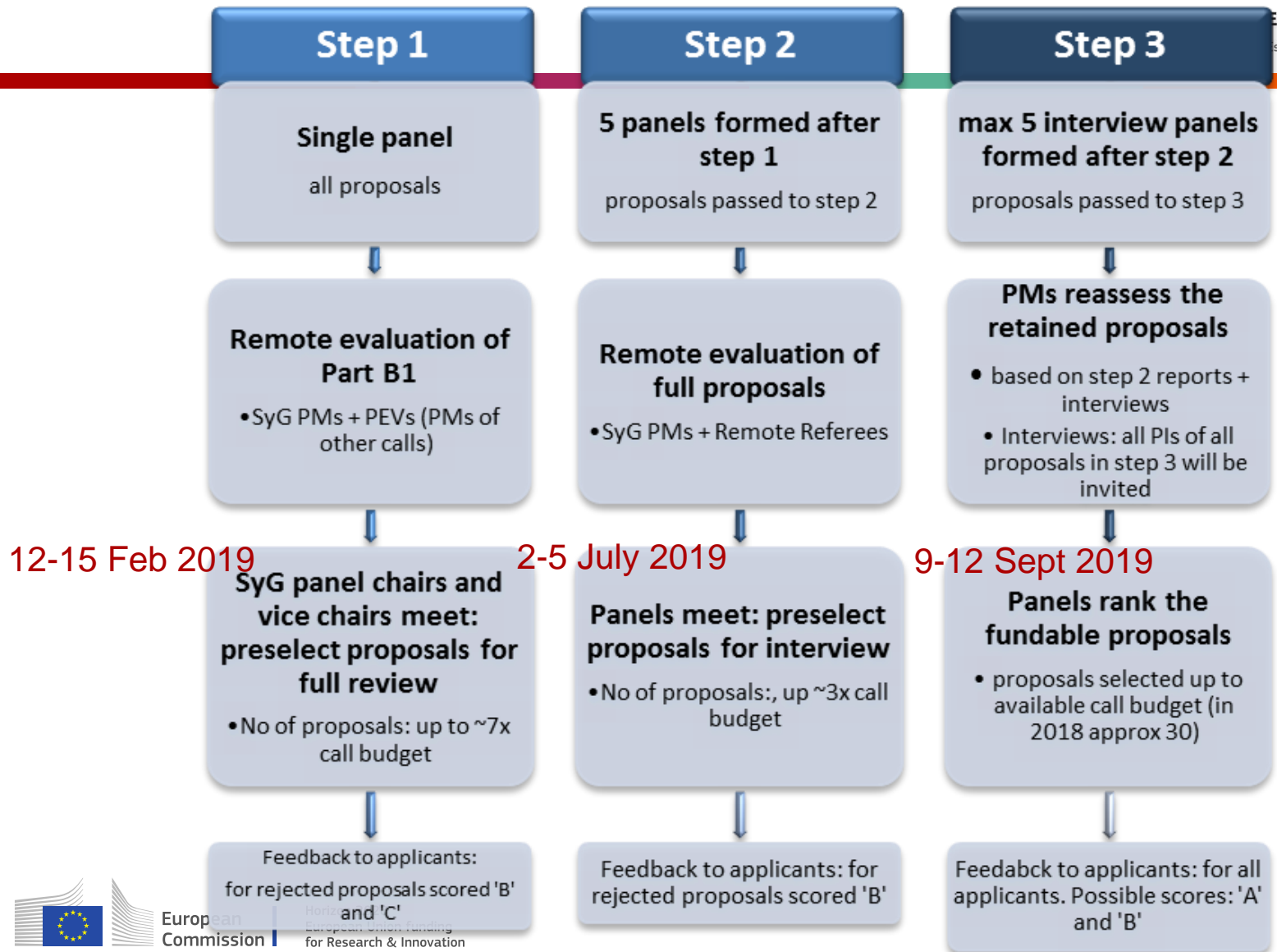
Evaluation		Can a PI apply to			
Result of SyG2019	Step	StG/CoG call in 2020?	AdG call in 2020?	SyG call in 2020?	SyG call in 2021?
C	1	YES*	no	no	no
B	1	yes	yes	no	yes
B	2	yes	yes	YES*	yes
B	3	yes	yes	yes	yes
A	3	yes	yes	yes	yes

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ERC Synergy 2019 - Evaluation process



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SyG 2018 – Step 1- Who are the reviewers?



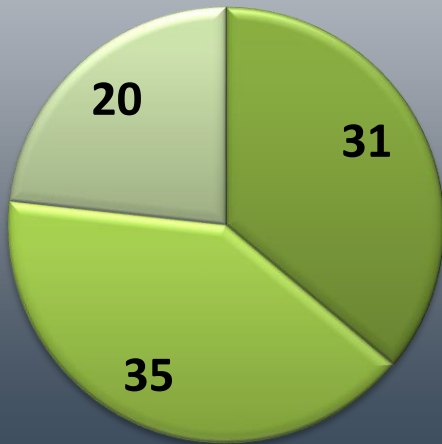
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Overview of number and type of reviewers

186 Reviewers; 27 Nationalities; 59 Men and 28 Women

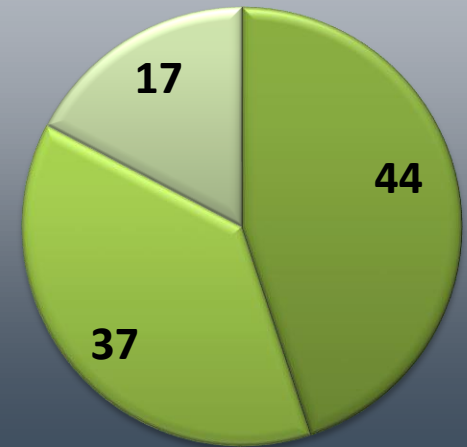
Scientific background

87 Panel Members - PM
(5 chairs and 6 vice chairs)



- Life Sciences (LS)
- Physical Sciences and Engineering (PE)
- Social Sciences and Humanities (SH)

99 Panel Evaluators - PEVs
(Panel members from other ERC Calls)

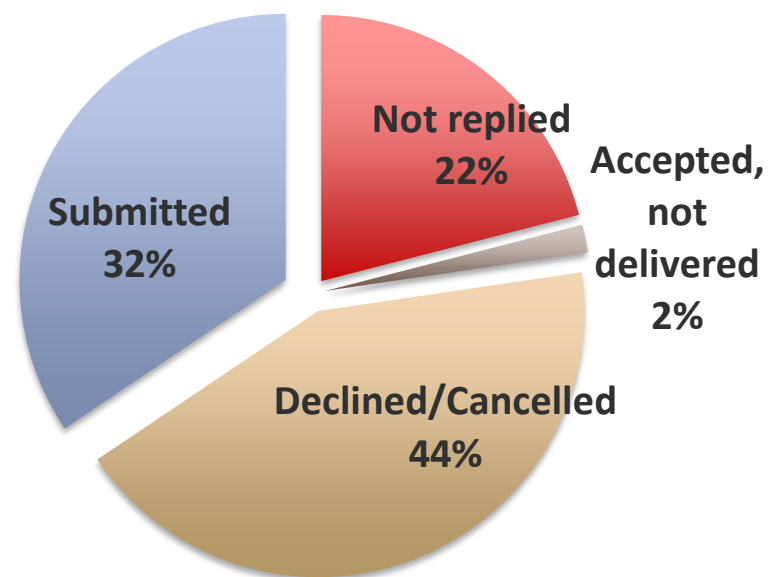


SyG2018 Step 2 & 3 – Who are the reviewers?

Overview of number and type of reviewers

- Panel members:
 - About 85 in 5 panels
- Remote referees (unpaid):
 - 2681 invited – 851 reviews delivered
- Each proposal had 8 to 13 reviews

Remote referees replies to ERC's invitation to review in step 2



Overview

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What are the evaluation criteria?

Excellence is the sole evaluation criterion



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EXCELLENCE OF THE RESEARCH PROJECT

- Ground breaking nature
- Potential impact
- Scientific approach
- Synergetic aspects
- In **step 1** the **feasibility** is assessed only => methodology in step 2
- Resources are not assessed in step 1

EXCELLENCE OF THE PRINCIPAL INVESTIGATORS

- Each PI assessed according to their career benchmarks
- Intellectual capacity
- Creativity
- Commitment => evaluated in step 2 and 3 only

ERC SyG 2019 Evaluation questions



SyG2020: check the ERC Work Programme or Information for Applicants to the SyG2020 call in July 2019 for the evaluation questions (slight modifications)

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STEP 1: Criterion 1 - Research Project -used in STEP 1, 2 and 3. The answers should be found in part B1, as only the short synopsis is evaluated at step 1.

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 higher-than-normal 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?
- To what extent does the proposal go beyond what the individual Principal Investigators could achieve alone?
- **Reformulated question: To what extent is the combination of scientific elements put forward in the proposal crucial to address the scope and complexity of the research question?**

ERC SyG 2019 Evaluation questions step 1- SyG2020 call

in July 2019 for the evaluation continued

SyG2020: check the ERC Work Programme or Information for Applicants to the questions (slight modifications)



Further questions on Scientific Approach - only in STEP 2 and 3: used from STEP 2 and 3, the reviewers have access to both part B1 and B2

- 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)?

ERC SyG 2020 Evaluation questions - continued

SyG2020: check the ERC Work Programme or Information for Applicants to the SyG2020 call in July 2019 for the evaluation questions (slight modifications)

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Criterion 2 – Principal Investigators – used in all steps

Intellectual capacity, creativity and commitment

- To what extent have the PIs demonstrated the ability to conduct ground-breaking research?
- To what extent do the PIs have the required scientific expertise and capacity to successfully execute the project?

New question used only in STEP 2 and 3:

- To what extent does the Synergy Grant Group successfully demonstrate in the proposal that it brings together the elements – such as skills, knowledge, experience, expertise, disciplines, methods, approaches, teams – necessary to address the proposed research question (based on the full Scientific Proposal)?

Evaluation reports (ER) sent to the applicants



After the proposals are discussed in the panel meeting, a final score is awarded and the decision summarised in a panel comment

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STEP 1 REJECTED PROPOSALS

- Predefined standard panel comment based on the score, summarizing the decision taken by the panel
- Individual assessments, without names and grades
- Possible scores given by the panel: 'A', 'B', 'C'
- For 'A' score (passed to step 2) ERs are not provided

STEP 2 REJECTED PROPOSALS

- Carefully drafted panel comments for each rejected proposal
- Individual assessments, without names and grades
- Possible scores: 'A', 'B'
- For 'A' score (passed to step 3) ERs are not provided

STEP 3 ALL PROPOSALS

- Carefully drafted panel comments for each proposal
- Individual assessments, without names and grades
- Possible scores: 'A', 'B'
- Outcome based on ranking: 'A' –(funded; reserve; not funded, but excellent quality) 'B'- not fundable

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Hints and tips

How to prepare an ERC SyG proposal?

THINK BIG



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Hints and tips

How to prepare an ERC SyG proposal?

- Have an **original and exciting idea** that requires the **joint effort** of 2 or 3 or 4 PIs
- **Design a research project** to implement the idea
 - It is not about a consortium, but about a tight-knit small group of PIs and their teams. The PIs are equal and indispensable for the project!
- Get a letter of support from your **Host Institution**- **note a change for SyG2020** (in Syg2019, only the corresponding HI provided a letter)
 - **SyG2020: each HI has to provide a support letter for the PI(s) hosted by them***
- **Write** the research proposal (carefully plan the resources)
 - Choose carefully the 4-6 keywords: applications are not submitted to a StG/CoG/AdG type of the panel
- **Get feedback** from your peers
- **Submit** your research proposal **before the deadline** -> fully electronic/web based submission system

* Pending on the approval of the ERC Work Programme 2020)

Hints and tips

Questions to ask yourself as an applicant



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Principal Investigators

- Is each of the PIs internationally competitive as a researcher at each of their career stage and in each of their discipline?
- Is each of the PIs able to work independently, and to manage a 6-year project with a substantial budget?
- How strong is the group of PIs as a whole?
- Does the proposal demonstrate that the PIs bring together the necessary elements to address the research question?

Hints and tips

Questions to ask yourself as an applicant

Research Project

- Why is the proposed project important?
- Does it promise to go substantially beyond the state of the art?
- Has it the chance to cross-fertilize disciplines?
- What is the scientific transformative potential?
- Does it have a grand challenge that can boost European research?
- Why are we the best/only persons to carry it out?
- Why is this particular combination of the PIs the best for the project?
- Is the other person(s) really needed as a PI or only as a team member?
- Is it timely? (Why wasn't it done in the past? Is it feasible now?)
- What's the risk? Is it justified by a substantial potential gain? Do we have a plan for managing the risk?

Typical reasons for rejection

Principal investigators

- Insufficient track-record
- Insufficient (potential for) independence (StG and CoG)
- Insufficient experience in leading projects (AdG)
- Complementarity of PIs not evident enough
- Not evident that the necessary elements can be successfully brought together (skills, knowledge, experience, expertise, disciplines, methods, approaches, teams)

Proposed project

- Scope: Too narrow \leftrightarrow too broad/unfocussed
- Not synergetic enough
- Incremental research
- Work plan not detailed enough/unclear
- Insufficient risk management

Poor interview: prepare well! (all PIs in step 3 are invited to Brussels)

Hints and tips

Preparing an application



Differences in Part B1 and Part B2

In **Step 1: Panel members (act as generalists)** they see **only Part B1** of your proposal: Prepare it accordingly!

- Pay particular attention to the **ground-breaking nature** of the research project – no incremental research. State-of-the-art is not enough. Think big!
- For SyG: Synergetic aspects crucial (complementarity and possibly interdisciplinary to be emphasised)
- 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 (**Outline** of the **methodological approach** – feasibility is assessed)
- Show , if applicable for StG and CoG profiles, the **scientific independence** in the CVs, the scientific leadership in the AdG profile
- **Funding ID** to be filled in carefully

Hints and tips

Preparing an application

Differences in Part B1 and Part B2

- In **Step 2** : Both **Part B1 and B2** are sent to specialists around the world (**specialised external referees**)
 - Do not just repeat the synopsis
 - Provide **sufficient detail** on methodology, work plan, selection of case studies etc. (15 pages) (references do not count towards page limit)
 - Check coherency of figures, **justify requested resources** (outside of 15 pages)
 - Explain **involvement of additional team members** (it is possible to have further beneficiaries/partners in the project)
 - Provide alternative strategies to **mitigate risk**

In Step 3: no new reviews are written, but part B1 and B2 are re-assessed



Explain the budget properly!



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- Budget analysis carried out in Step 3 evaluation.
- Panels have the 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).

Not explained costs are often cut!

- Panels 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.
- Ask for funding for Open Access in case needed– this is obligatory in Horizon2020!

Rumour : *Ask for more money, the reviewers will anyhow cut it down.*

✗ NOT true: however, unexplained or non-motivated requests can be cut, so if you artificially inflate your budget, it will be reduced.

When writing the CVs

- Remember that the CVs/Track Records are as important as the project!
- Explain what has been each PI's own contribution to their key publications.
- Explain publishing habits in the field and country if needed.
- If the PI knows that he/she has gaps or other issues in the CV (e.g. co-authored publications), explain them.
- Describe activities which can indicate scientific maturity.
- Use the CV template provided by the ERC in the submission system
- No need to provide PhD supporting documents

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

✗ NOT true: in addition note: for StG profiles: publishing with senior scientists (former supervisors) raises doubts about maturity/scientific independence.

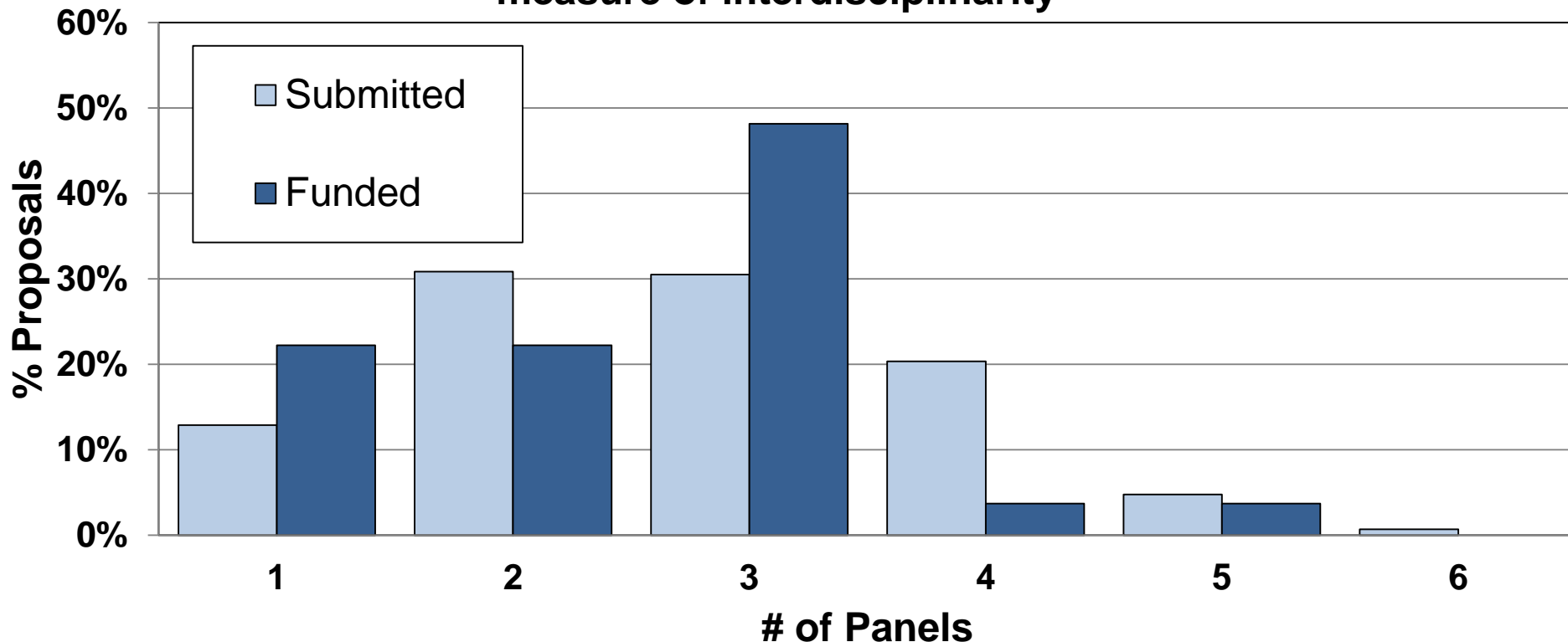
Overview

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Observations: SyG 2018 funded proposals

Majority are interdisciplinary, across multiple 'regular' ERC panels

Number of panels spanned by using keywords selected by the applicants in the submitted and funded proposals – one possible measure of interdisciplinarity



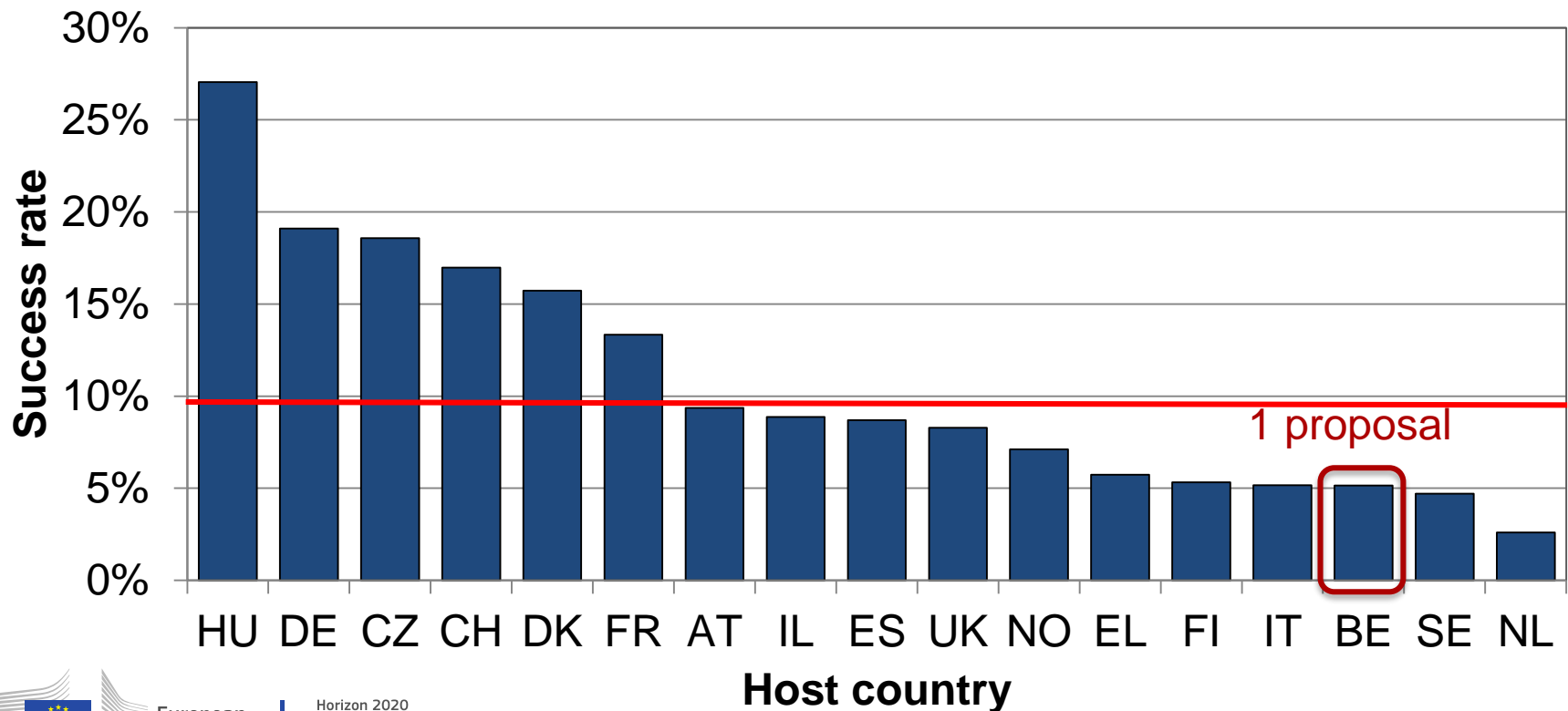
SyG 2018 Results

Success rates by amount awarded / amount requested



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SYG 2018 Success rate (SR) by HI country
calculated by total awarded / total requested budget
Overall SR = 9.6



SYG 2018 results

Conclusions




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- Projects funded appear to be very high quality
- Profile of the PI: predominantly AdG type
- Median age 50 yrs
 - vs ADG 2017 @ 52 yrs
- Average grant size 9.5 M €
- 70 % funded proposals have at least 1 ERC grantee
- 73 % of funded proposals can be considered interdisciplinary
- Evaluation is robust
- Procedures worked well
- Scalable for increase in submissions and increase in budget in 2019

ERC SyG 2019

Evaluation Timeline

	SyG2019
Submission Deadline	8 Nov
Initial Panel Chairs' meeting	6 Dec
Step 1 Meeting	12-15 Feb 2019
 Step 2 Meeting	2 -5 July 2019
Step 3 Meeting	9 - 13 Sept 2019
Expected feedback to applicants	12 April 2019
	30 Aug 2019
	31 Oct 2019
Final Panel Chairs' meeting	13 Feb 2020

SYG 2019 – 2018

Overview of the proposals received



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	2018	2019
Proposals	299	288
PIs	980	951
Men	772	728
Women	208	223
% F	21%	24%
HIs	465	454
HIs country	38	44
Beneficiary countries	44	45

	2018	2019
Av. Duration (months)	69	69
Av. # PIs	3.3	3.3
Av. budget requested	8.4 M€	8.6 M€
Av. # beneficiaries	3.0	3.1
Av. # HIs	2.8	2.8
# proposals with partners	68	47
% submissions including partner organisations	23	16

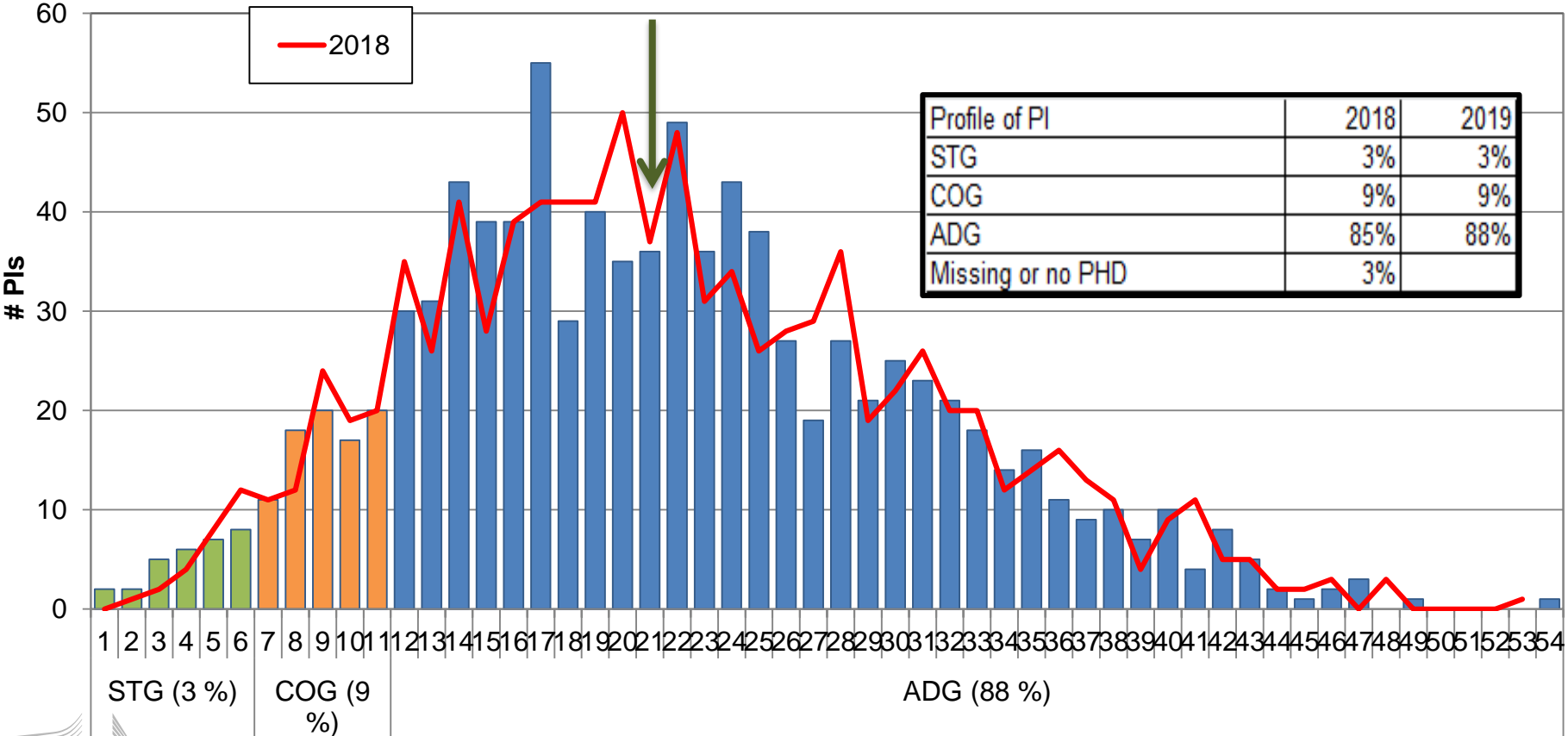
SYG 2019 PIs' Profile



SyG2020: intended relaxation of resubmission rules for early career scientists in an effort to encourage their applications to the SyG call

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SYG 2019 PIs: # years since PhD
88 % "ADG" profile, median = 21 years

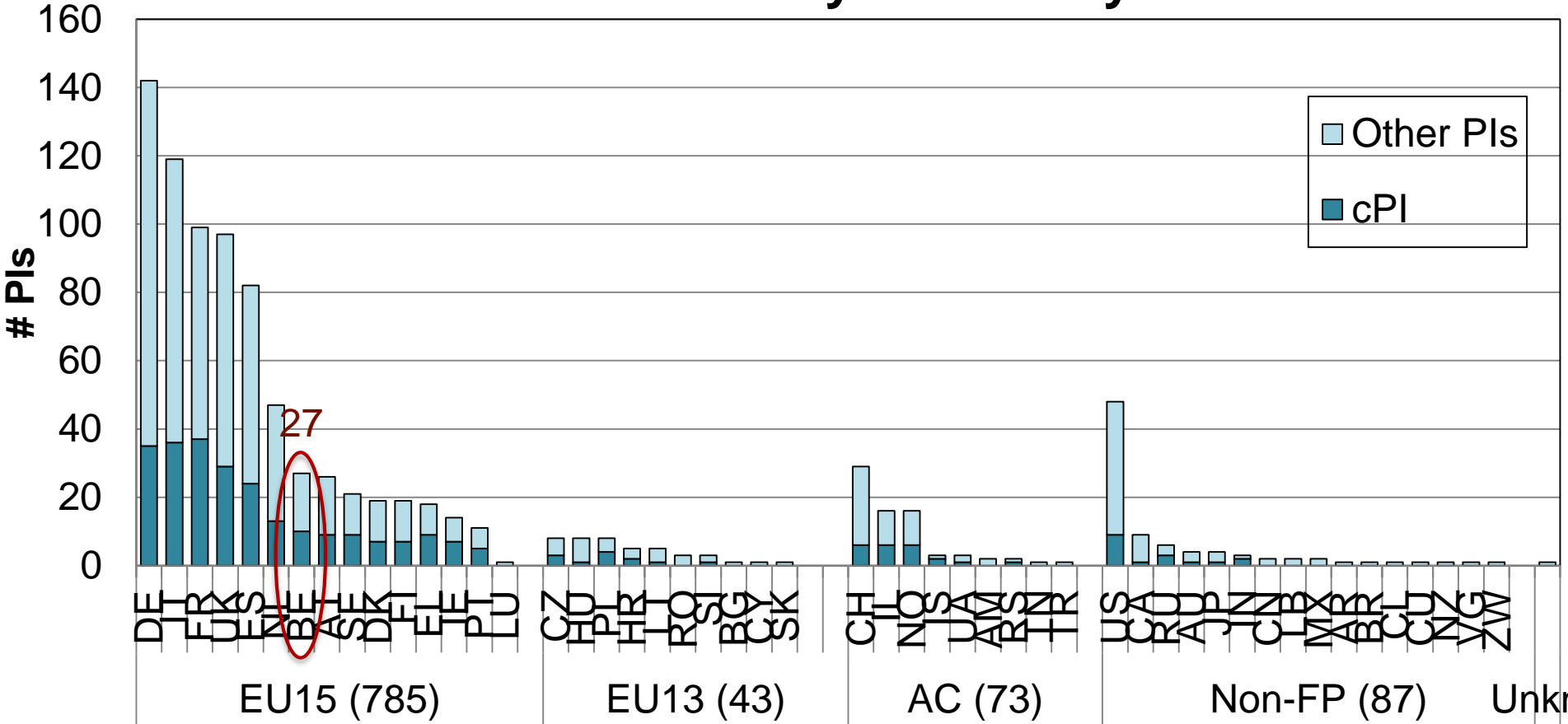


SYG 2019 PIs' Nationality



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SYG 2019 PIs by nationality

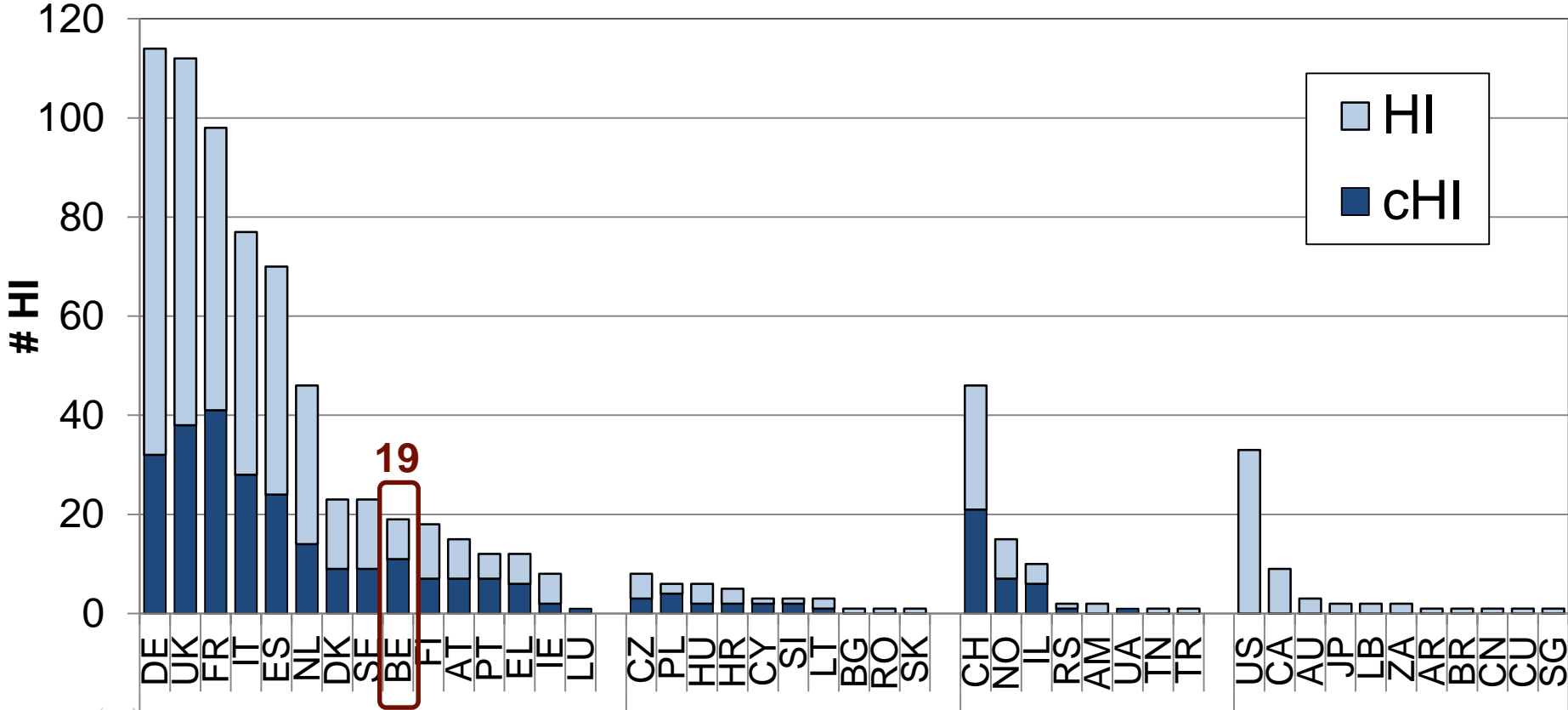


SYG 2019 Details on Host Institutions (1)

ex.: there are 70 Spanish HIs in all the submitted proposals

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SYG 2019 # submissions by country of HI



Take home messages



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- Competitive call
 - only exceptional proposals are likely to be funded that will demonstrate that the **truly ambitious** research questions could lead to breakthroughs **only through the joint effort** of the complementary and synergistic group of PIs.
- ‘Synergy’ does not mean a loose consortium
 - The interaction would yield something more than just the sum of the individual parts.
 - To yield possibly either unforeseen, completely new science, to cross fertilize disciplines or to solve important research problems that until now could not be dreamt of solving.
- Early career applicants are encouraged to apply
 - Regardless of the score received in SyG2019, applicants will be to apply to the StG and CoG calls under the ERC Work Programme 2020



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Preparing your application

Information sources

- Check the **ERC website** for latest funding opportunities: <https://erc.europa.eu/>
 - **3 videos about ongoing Synergy grants are published**
- **Register early**, get familiar with the European Commission's Participant Portal system, download the templates and start filling in the forms
<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>
- View the **step-by-step video** Introduction to application process, including tips & tricks for the interview: <https://vimeo.com/94179654>
- Use the **help tools and call documents** (**Information for Applicants**, Work Programme, Frequently Asked Questions) to prepare your proposal
 - 💡 Read the guidelines carefully!
 - 💡 Find out about the formatting rules and page limits to respect!
 - 💡 Check statistics on ERC website
- **Talk to your Institution's grant office and other ERC grantees**
- **Contact your National Contact Point if you have questions**

SyG 2013: Proposals selected for funding **erc**



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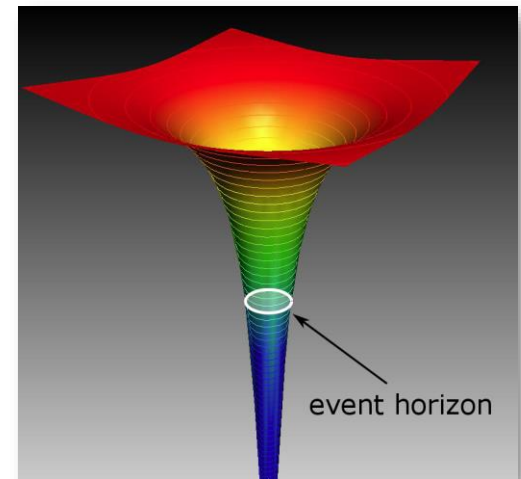
- BlackHoleCam – "Imaging the Event Horizon of Black Holes"

Heino Falcke	Stichting Katholieke Universiteit / Radboud University Nijmegen	NL
Micheal Kramer	Max-Planck-Institut für Radioastronomie	DE
Luciano Rezzolla	Max Planck Institute for Gravitational Physics/Albert Einstein Institute	DE

'Are **black holes** just a theorist's dream?'

'Prove the existence of **event horizons**, one of the **cornerstones of general relativity** '

13 975 744 €





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Thank you!

Don't hesitate to contact us:
ERC-SYG-APPLICANTS@ec.europa.eu

ERC 2020 WP Planning



Call Opens	Call closes (cut-off dates for PoC)	Budget million EUR (estimated number of grants)
18/07/2019	05/11/2019	350 (39)



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Extra slides



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ERC Work Programme 2020

Anticipations

ERC Synergy 2019

Based on core ERC principles



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EXCELLENCE AS SOLE CRITERIUM

At project and at Principal Investigator level
Encompasses the synergetic aspects

'BOTTOM-UP'

- Research priorities and the configuration of the group determined by the individual investigators

NO DISCIPLINARY PRIORITIES

- Projects expected to cover more than one discipline or research field, but not obligatory

NOT 'CONSORTIA' TYPE

- Not loose collaborative projects
- With adequate working arrangements to suit the objectives of the project

Example of Synergy projects

video available on the ERC website

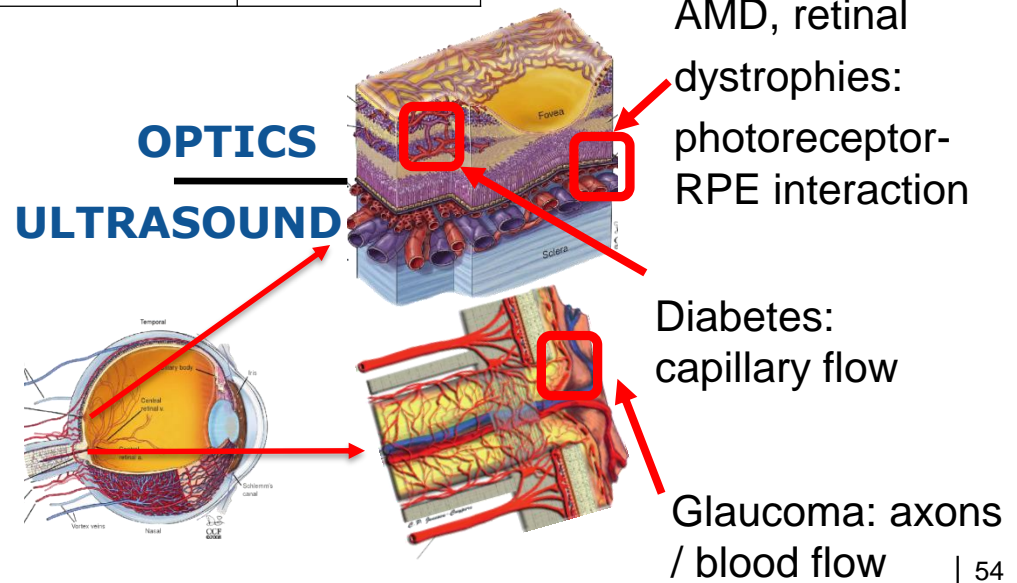


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- **HELMHOLTZ** – *"Holistic evaluation of light and multiwave applications to high resolution imaging in ophthalmic translational research revisiting the helmholtzian synergies"*

José-Alain SAHEL	Fondation Voir et Entendre	FR
Mathias FINK	Fondation Pierre-Gilles de Gennes	FR

"The eye, a 'small brain' with easily accessible structures, at the crossroad of human diseases"



SyG 2013: Proposals selected for funding

video available on the ERC website



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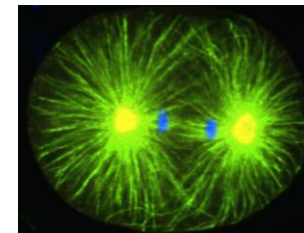
- **MODELCELL** – *" Building a Model Cell to Achieve Control of Cellular Organization "*

Marileen Dogterom	Stichting Fundamenteel Onderzoek der Materie (FOM)	NL
Anna Akhmanova	Universiteit Utrecht	NL

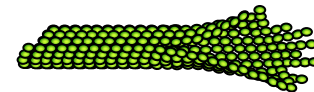
'Understand the **self-organizing principles** of cells'



'Reconstitute, understand, and control the self-organization of **functional cytoskeletal systems**'



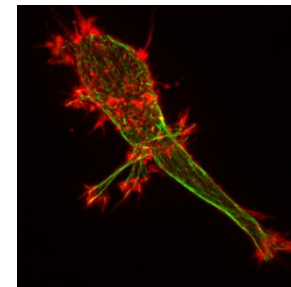
Dividing cell



Microtubule



Actin



Moving cell

SyG 2018: Proposal selected for funding

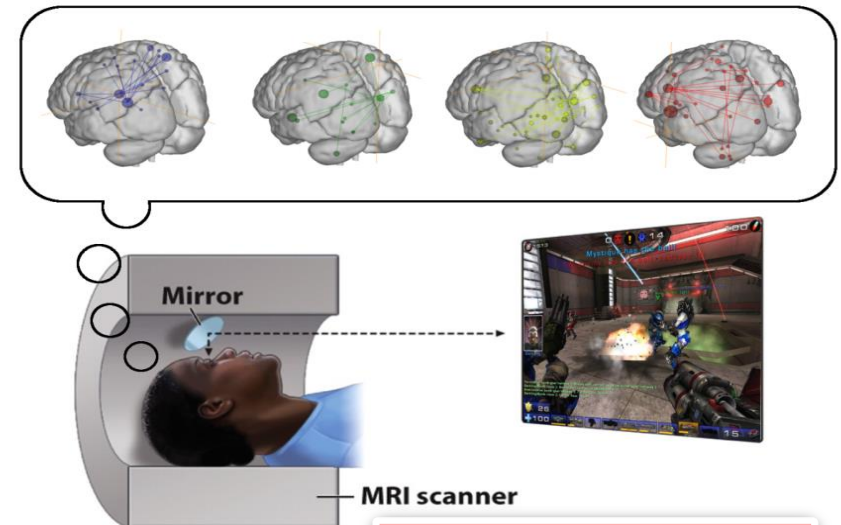


European Research Council
Established by the European Commission

• BrainPlay: *The self-teaching brain*

Michael BRECHT (DE)	HUMBOLDT-UNIVERSITAET ZU BERLIN	DE
Daphne BAVELIER (FR)	UNIVERSITY OF GENEVA	CH
Robert GÜTIG (DE)	MAX PLANCK INSTITUTE FOR EXPERIMENTAL MEDICINE	DE
Dietmar SCHMITZ (DE)	CHARITÉ – UNIVERSITÄTSMEDIZIN BERLIN	DE

- What are the objective functions that govern **synaptic plasticity**?
- What behavioral mechanisms are involved in **self-teaching**?
- What is the **brain state of play** and how does it **influence learning**?



Budget: 9 781 250 €

SyG 2018: Proposal selected for funding

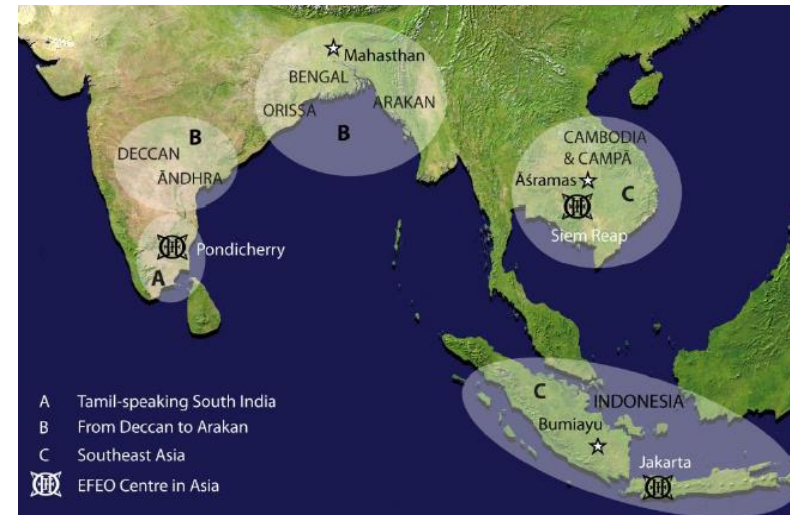


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Established by the European Commission

DHARMA - The Domestication of 'Hindu' Asceticism and the Religious Making of South and Southeast Asia

Emmanuel FRANCIS (BE)	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FR
Arlo GRIFFITHS (NL)	ÉCOLE FRANÇAISE D'EXTRÊME-ORIENT	FR
Annette SCHMIEDCHEN (DE)	HUMBOLDT UNIVERSITÄT	DE

- An investigation of Hinduism in a broad range of regional contexts in South and South East Asia to uncover the complex **interplay of religion, state and society** in between the 6th and 13th centuries.



Budget: 9 820 868 €

SyG 2018: Proposal selected for funding



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EXPLO - Exploring the dynamics and causes of prehistoric land use change in the cradle of European farming

Albert HAFNER (CH)	UNIVERSITY OF BERN	CH
Willy TINNER (CH)		
Amy BOGAARD (CA)	UNIVERSITY OF OXFORD	UK
Kostas KOSTAKIS (EL)	ARISTOTLE UNIVERSITY OF THESSALONIKI	HL

EXPLO aims to understand the **introduction, evolution and environmental** context of early agriculture in the southern Balkans and northern Greece by **combining archaeological, bioarchaeological, palaeoecological and palaeoenvironmental approaches** within the context of Neolithic and Bronze Age wetland sites.



SyG 2018: Proposal selected for funding



European Research Council
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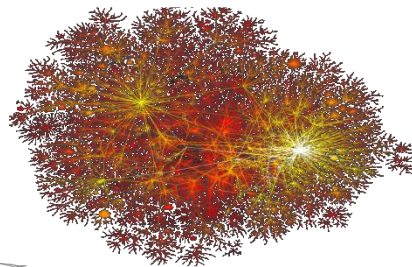
• DYNASNET – "Dynamics and Structure of Networks"

Laszlo LOVASZ (HU)	HUNGARIAN ACADEMY OF SCIENCES (RENYI ALFRED MATEMATIKAI KUTATOINTEZET)	HU
Laszlo BARABASI (HU)	CEU (KOZEP-EUROPAI EGYETEM);	HU
Jarsolav NESETRIL (CZ)	UNIVERZITA KARLOVA	CZ

**Networks
are
ubiquitous**



Brain
(mouse)



Main math goals

Classification of network dynamics

conservative (traffic, energy, abelian sandpiles)

diffusive (load balancing, spread of information, infectious diseases)

sudden changes (phase transitions, traffic jams, epilepsy)

control & controllability

Dream math result: **Regularity principle for dynamic networks**
(a compact description of dynamical networks)

SyG 2018: Proposal selected for funding



European Research Council
Established by the European Commission

- Natural BionicsS – "Natural Integration of Bionic Limbs via Spinal Interfacing"**

Dario FARINA (IT)	Imperial College of Science, Technology and Medicine	UK
Antonio BICCHI (IT)	Fondazione Istituto Italiano di Tecnologia	IT
Oskar ASZMANN (AT)	Medizinische Universitaet Wien	AT

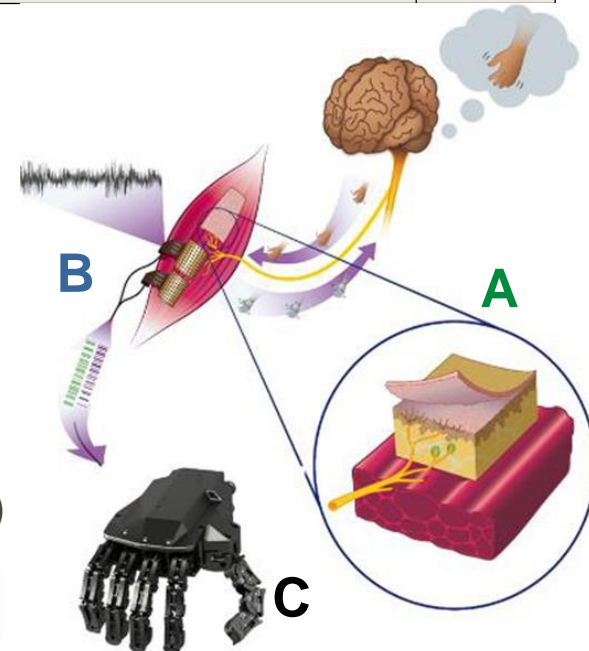
Design of **artificial limbs** that the patient will not only **control** but also **feel**



Creation of bio-connectors to access the spinal cord circuitries



Surgery (A) - **Neural interfacing (B)** – **Robotics(C)**



SyG 2018: Proposal with a DK Host Institution



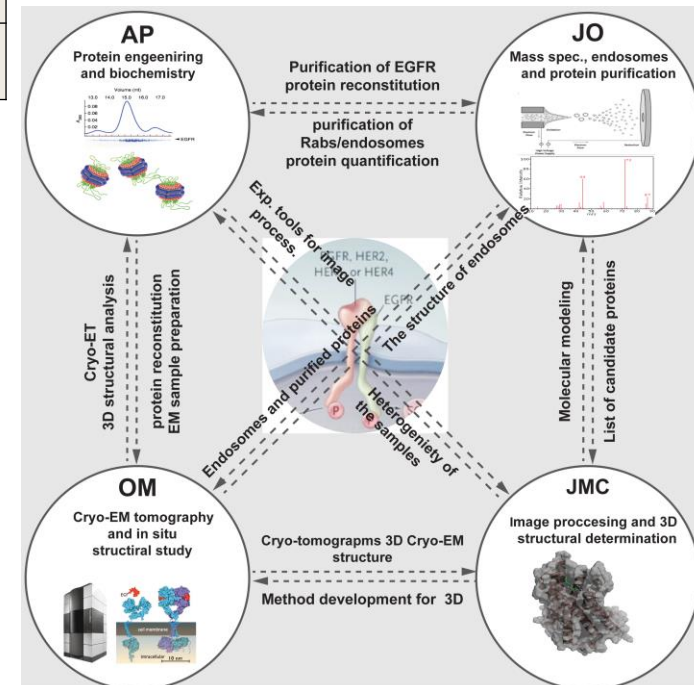
European Research Council
Established by the European Commission

HighResCells – "A synergistic approach toward understanding receptor signaling in the cell at very high resolution "

Andreas LUECKTHUN (DK)	University of Zurich	CH
Ohad MEDALIA (IL)	University of Zurich	CH
Jesper Velgaard OLSEN (DK)	University of Copenhagen	DK
Jose Maria CARAZO (ES)	CSIC	ES

- A fundamental improvement of structural and functional understanding of receptors in the cellular context
- Developing the technologies to solve such problems for *any* receptor
- Creating the conceptual understanding for constructing more powerful therapeutic reagents

Budget: 8.273.457 €



ERC SyG 2018

Proposal with a SE Host Institution

Hero – "Hidden, entangled and resonating orders"

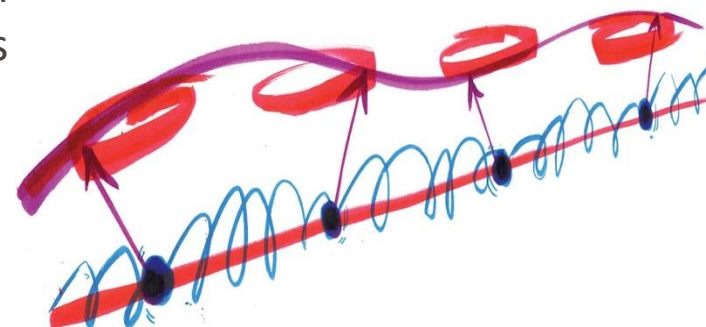
Gabriel AEPPLI (CH)	PAUL SCHERRER INSTITUT (PSI)	CH
Nicola SPALDIN (UK)	ETH Zürich	CH
Henrik RONNOW (DK)	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE (EPFL)	CH
Alexander BALATSKY (SE)	STOCKHOLMS UNIVERSITET	SE

Aim:

Electronic band structure and a key low energy degree of freedom, characterizes most, but not all crystalline solids with astonishing success.

HERO aims to go beyond the state of the art in accounting for systems with multiple correlated order parameters.

Will be applied to condensed matter physics , fundamental quantum physics, etc.



Lattice-phonons and spin-magnons as two delocalized degrees of freedom