InnoRenew CoE

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How to write successful ERC proposal – hints and tips

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InnoRenew CoE
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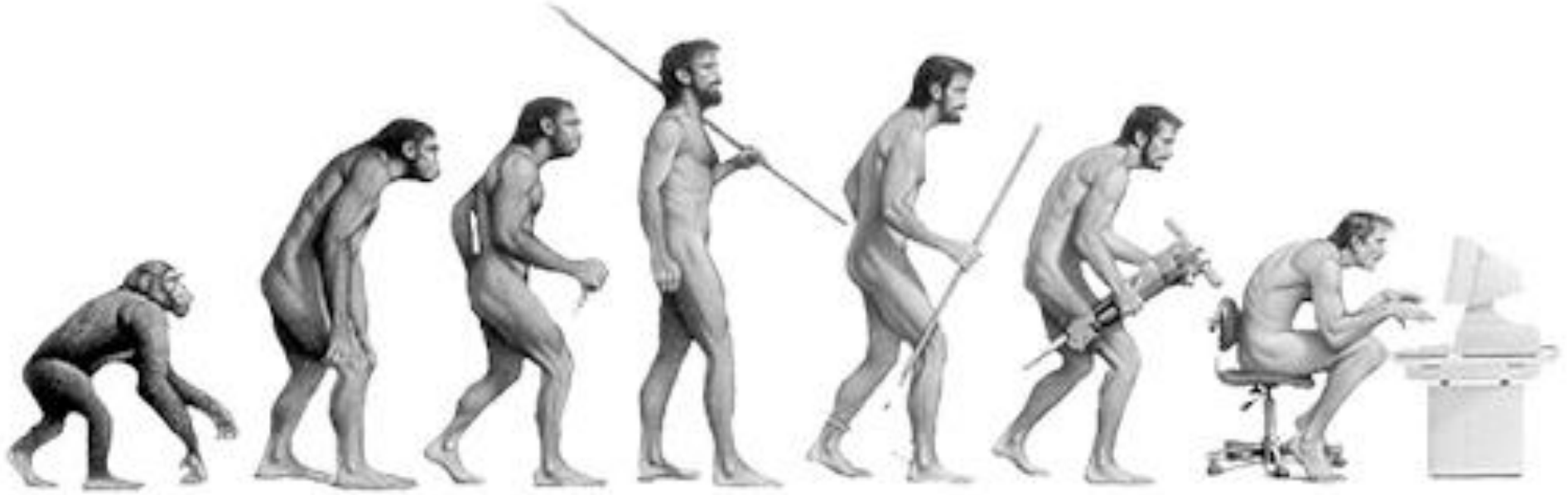
Associate prof. FAMNIT, University of Primorska

my research interests…



NIR spectroscopy – wood provenance – NMR & genetics – wood degradation – wood appearance & aesthetics – measurement of beauty – physiological responses – service life performance – wood modification & functionalization – biomimetic and bioinspiration – materiomics - engineered living materials

Horizon 2020 Framework Programme of the European Union; H2020 WIDESPREAD-2-Teaming: #739574

ARCHI-SKIN

The beauty of the ERC

The ERC's mission is to encourage the **highest quality research** in Europe through competitive funding and to support investigator-driven frontier research across all fields, based on **scientific excellence**.

What was my idea?

A new generation of active architectonic coatings

coatings offering long-lasting performance, able to repair themselves, capable of bioremediation, and entirely biobased

because they are alive

Horizon 2020 Framework Programme of the European Union; H2020 WIDESPREAD-2-Teaming: #739574

ERC panels

For each call there are 27 panels, each covering a sub-section of one of three domains:

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

Each ERC panel consists of a chair and 10-16 members. The Panel Chair and the Panel Members are selected by the ERC Scientific Council on the basis of their scientific reputation.

Annex I
ERC panel structure 2021

European Research Council
Established by the European Commission

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

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

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

European Commission

Proposal submission

Proposal Submission

Starting, Consolidator and Advanced Grant proposals are submitted by the Principal Investigator who has scientific responsibility for the project, on behalf of the host institution.

Proposal submission is made electronically. ***Early registration and submission is strongly recommended and should be done as early as possible in advance of the call deadline.***

For each call, Information for Applicants[34] is published on the ERC website and EU Funding & Tenders Portal, which describes in detail how the electronic forms should be completed.

Extended Synopsis: 5 pages

Curriculum Vitae: 2 pages

Track Record: 2 pages

Scientific Proposal: 14 pages

Resources and Time Commitment: 2 pages

Host Institution Binding Statement of Support

Ethics Review Table

PhD record and supporting documentation for eligibility checking (for Starting and Consolidator Grants only).

Only the material that is presented within these limits will be evaluated (peer reviewers will only be asked to read, and will be under no obligation to read beyond, the material presented within the page limits).

Part B1 – extended synopsis (5 pages)

The Extended Synopsis should give a concise presentation of the scientific proposal, with particular attention to the **ground-breaking nature of the research project**, which will allow evaluation panels to assess, in Step 1 of the evaluation, the feasibility of the outlined scientific approach.
Describe the proposed work in the context of the state of the art of the field. References to literature should also be included

B1 is your ticket to the second stage

- Make it clear also for non-experts
  - What is your main goal?
  - Present it in a way that will be relevant also for reviewers
- Make it attractive
  - Use graphics, colors, icons, tables, frames
- “Be different” - in a positive way ;)

Fig.1. ARCHI-SKINS project concept

Curriculum Vitae (2 pages)

The CV should include the standard academic and research record as well as a succinct "**funding ID**“ which must specify any current research grants and their subject, and any on-going application for work related to the proposal.

Any research career gaps and/or unconventional paths should be clearly explained so that they can be fairly assessed by the evaluation panels.

Early achievements track record

In the Track Record (see "Proposal description") the applicant Principal Investigator should list (if applicable):

1. ***Up to ten publications*** *in* ***major international peer-reviewed multi-disciplinary scientific journals*** *and/or in the* ***leading international peer-reviewed journals, peer-reviewed conferences proceedings and/or monographs*** *of their respective research fields, highlighting those as main author or without the presence as co-author of their PhD supervisor (properly referenced, field relevant bibliometric indicators may also be included); preprints may be included, if freely available from a preprint server (preprints should be properly referenced and either a link to the preprint or a DOI should be provided);*

2. ***Research monographs and any translations thereof****;*

3. ***Granted patent(s)****;*

4. ***Invited presentations to internationally established conferences*** *and/or* ***international advanced schools****;*

5. ***Prizes, awards, academy memberships.***

CV and track record

- Select and highlight aspects relevant to your proposal
- Make it attractive and readable
- Some parts can be narrative

Section b: Curriculum vitae (max. 2 pages)

PERSONAL INFORMATION

Family name, First name: SANDAK, ANNA
Researcher unique identifier(s): orcid.org/0000-0002-2515-0991, ID: B-5957-2015
Date of birth: 08.06.1975
Nationality: POLISH
URL for web site: https://innorenew.eu/employee/anna-sandak/

- **EDUCATION**

2007 – 2010 PhD degree in Forestry / Wood Science; Faculty of Wood Technology, University of Life Sciences, PL, PhD Supervisor: prof. Włodzimierz Prądzyński
1994 – 1999 Master of Science in Biology; Faculty of Biology, Adam Mickiewicz University, PL
1996 – 1998 Student of Forestry, University of Life Sciences, PL

- **CURRENT POSITION(S)**

2018 – 2024 Full Professor (ASN fascia 1), Ministry of Education, University and Research, IT
2018 – date Researcher Group Leader – Wood Modification, InnoRenew CoE, SI
2016 – date Assistant Professor and Research Associate, FAMNIT, University of Primorska (UP), SI

Awards:

2019 Gareth Williams Award for best scientific presentation, IRG50, Quebec, CA
2018 Gareth Williams Award for best innovation presentation, IRG49, Johannesburg, SA
2013 best poster award, 6th International Conference on Near Infrared Spectroscopy La Grande-Motte, FR
2012 best poster award, IUFRO All Division 5 Conference, Lisbon, PT

Mentoring and team building

I live and work in an international context (Japan, Italy and recently Slovenia) for the last 22 years. I am passionate about scientific work; therefore, I continuously educate myself (training courses in EU, AU, SA, and TH). During my work in Italy, where I coordinated the Laboratory of Surface Characterization, I hosted and conducted research with over 40 invited scientists from all over the world. I successfully mentored young scientists at a different level of their carrier (master, PhD, postdocs). Recently, I am a scientific mentor of a newly established start-up company LignoBasque in Spain. Since 2018, I am leading the Wood Modification research group at InnoRenew CoE, a new and multidisciplinary institute funded by the

Scientific Proposal (14 pages)

Description of the **scientific and technical aspects** of the project, demonstrating the **groundbreaking nature** of the research, its **potential impact** and **research methodology**

Part B2

- instructions

ERC Consolidator Grant 2021
Part B2[1]
(not evaluated in Step 1)

Sections (a) and (b) of Part B2 should not exceed 14 pages. References do not count towards the page limits.

Text highlighted in grey should be deleted.
Please respect the following formatting constraints: Times New Roman, Arial or similar, at least font size 11, margins (2.0 cm side and 1.5 cm top and bottom), single line spacing.

Section a. State-of-the-art and objectives

Section b. Methodology

Do NOT include any description of resources or budget table here (Part B2). The Resources section and the detailed budget table are now part of the online submission form (Part A, Section 3 - Budget). This section 3 will be extracted and provided to the peer reviewers.

Examples

- While describing the problem

Figure 1. Deterioration of architectonic coatings

Examples

- While talking about the project objectives

  - *SPO2. To advance laboratory routines, develop new methodology and prototype equipment to assess and monitor dynamic living systems in-situ (associated with WP 2,3,4,5)*

Materiomics approach will be used for the investigation of biofilm, considering the complexity of its structure, properties, and functional relations. The novel high throughput methodology based on time-lapse microscopy (fluorescence and optical) and VIS-NIR-SWIR hyperspectral imaging merged with chemometrics will be used for monitoring and understanding dynamic living systems. Computational models will be used as bridges between materials' description and real-life performance. Advanced in-silico methods (computational docking, molecular dynamics simulation) will be implemented for modelling and optimisation of the best nutrient source for selected fungal strains.

KPI2: Novel methodology capable to characterize and evaluate dynamic living systems.

Examples

- While explaining the project ambitions

1.4. ARCHI-SKIN challenges

ARCHI-SKIN is proposing a novel concept for materials protection. The main challenges addressed by the proposal are summarized below:

- *ARCHI-SKIN CH1: To push the boundaries and frontiers of materials engineering, biology, computational modelling, high throughput screening and sustainable design toward the development of engineering living materials (ELM) (associated with SPO 1,5,7 and WP 2,3,4,5)*

ELM are defined as engineered materials composed of living cells that form or assemble the material itself or modulate the functional performance of the material in some manner[29]. Classical materials science concerns the fundamental study of process-structure-property relationships of natural and engineered materials. ARCHI-SKIN will use design-build-test-learn approach to understand and create man-made living materials' surfaces based on engineered and optimized fungal biofilm.

Examples

- While talking about the project concept

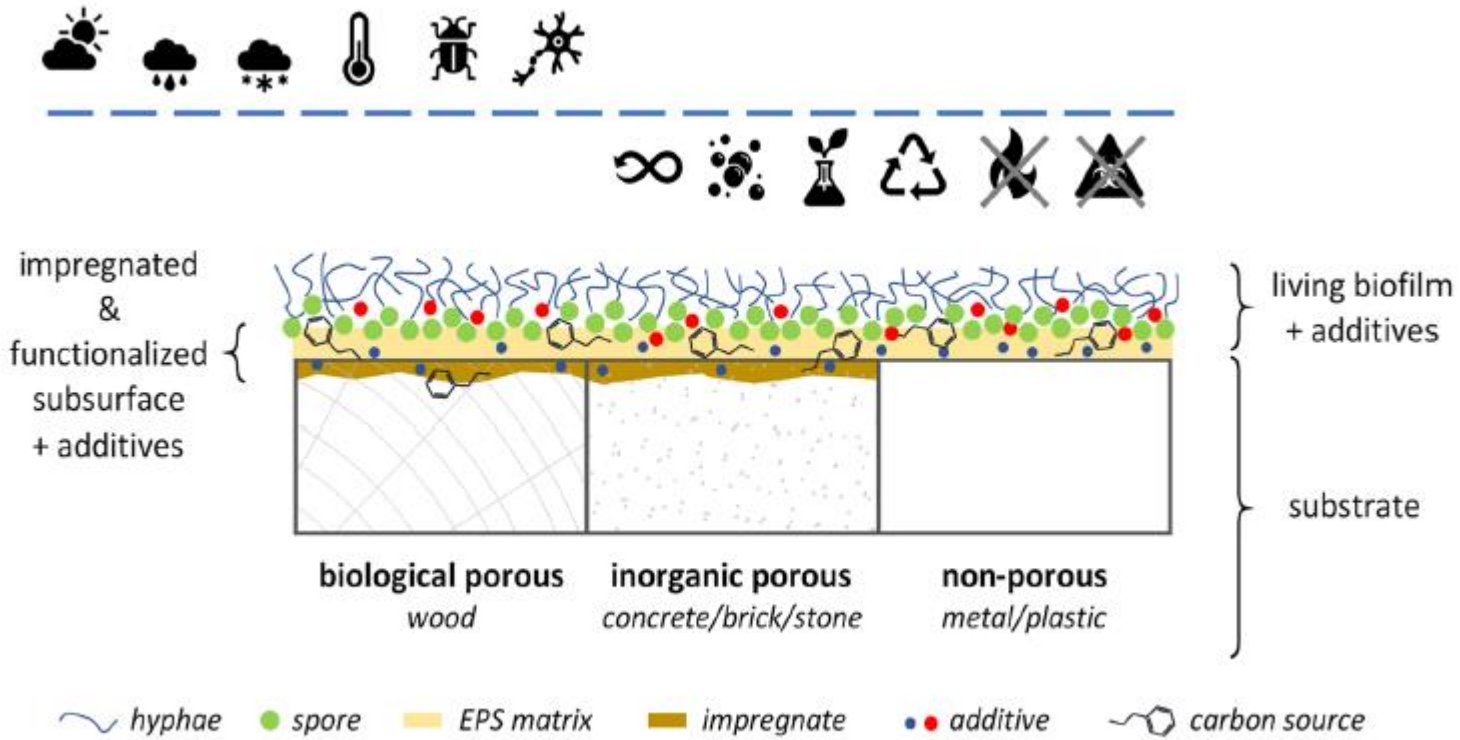


Figure 2. The bio-inspired concept for the ARCHI-SKIN coating system

Examples

- While talking about the project implementation

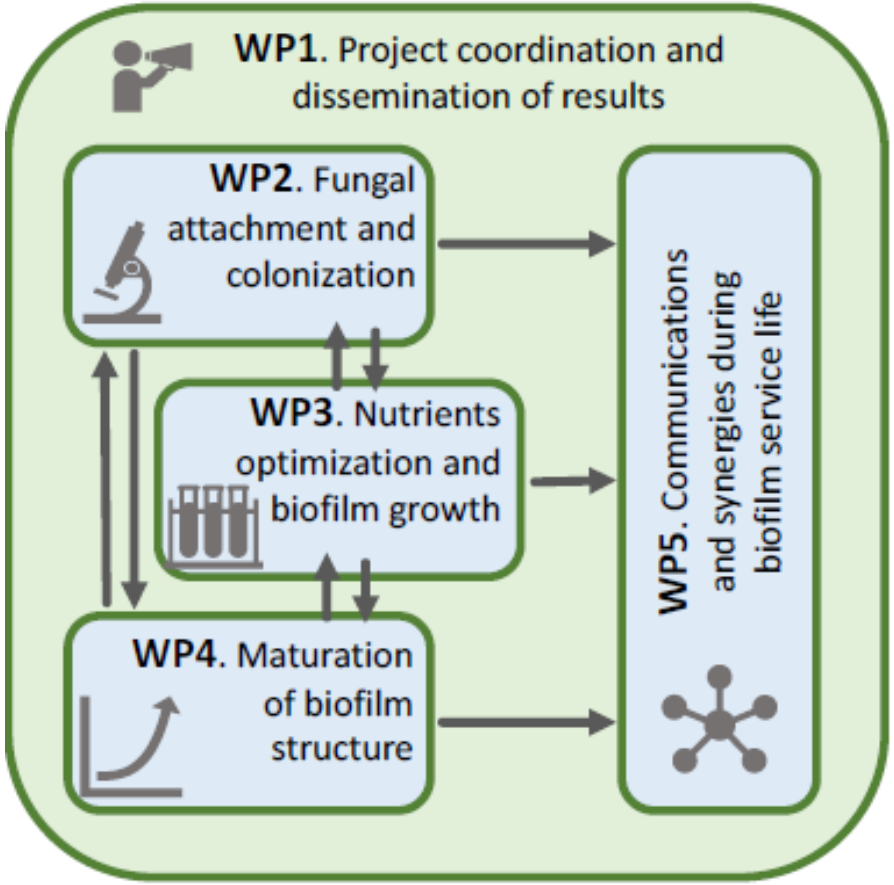


Figure 3. Implementation of ARCHI-SKIN project

Examples

- While talking about the risk assessment

Table 3. Critical risks for implementation, their level of probability (P) and impact (I): Low (L), Medium (M), High (H) and mitigation measures

Description of risk	P	I	WP	Proposed risk-mitigation measures
Disruption to project due to global pandemic	M	M	All	Deploy learning from COVID-19 experiences
Low effectiveness of selected methods for assessment of biofilm structure, functions	M	H	2-5	Consultation with external experts, use of alternative techniques
Incompatibility of foreseen carbon source and raw ingredients with *A. pullulans*	L	H	3	Use of in-silico methods, search for the alternative nutrient source, use of different additives
Contamination of the fermentation process, low antagonism against other fungi	M	M	4 5	Evaluation of several fungal strains and selection of the most robust
Low coatings adhesion and growth	M	H	2	Evaluation of different substrates pre-treatments
Low fungal viability during coating application and use phase	H	H	4 5	Modification of curing methods, change of formulations
Inferior performance on some substrates	H	H	5	Modification of formulation, different additives
Difficulties in assessing new functionalities	L	M	5	Alternative to standard evaluation methodology

Examples

I also proposed the Scientific Advisory Board

- ***Coatings***: *dr. Michael Sailer - researcher at Saxion University of Applied Sciences, director of Xylotrade BV and Biofinish International BV, Netherlands*
- ***Biomimetic materials design***: *prof. Ingo Burgert - head of Wood Materials Science ETH and group leader at EMPA, Switzerland*
- ***Mycology***: *prof. Jeff Morell - Director of National Centre for Timber Durability and Design Life, Australia*
- ***Sustainable architecture***: *prof. Mieke Oostra - head of research group New Energy in the City at HU University of Applied Sciences Utrecht, Netherlands*
- ***Toxicology***: *prof. Michał Woźniakiewicz - head of the Laboratory for Forensic Chemistry, Jagiellonian University, Poland*

My suggestions when writing (any) project proposal

- Check the evaluation criteria before starting

- Write in a clear way that is easy to follow and easy to assess

- Write it in a way that reviewers will be curious to read more

Evaluation procedure and criteria

- **For all ERC frontier research grants, scientific excellence is the sole criterion of evaluation**.
- It will be applied in conjunction to the evaluation of both: the ground-breaking nature, ambition and feasibility of the research project; and the intellectual capacity, creativity and commitment of the Principal Investigator.
- 2 step evaluation + interview with panel members

Research project

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 fulfill its aims)?

Research project

Scientific Approach

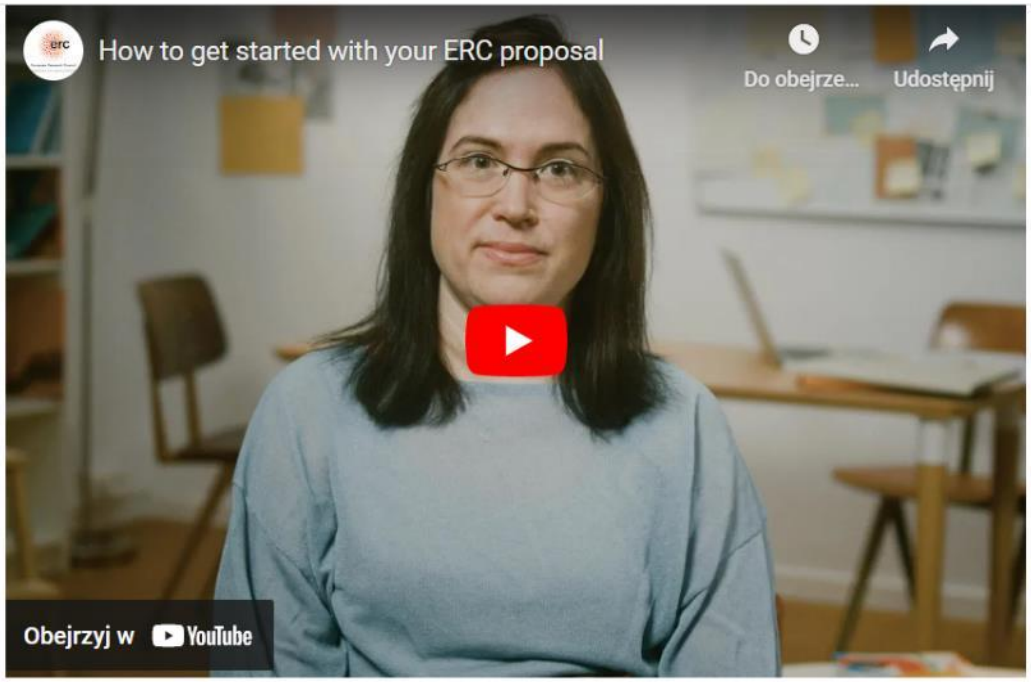
- To what extent is the outlined **scientific approach feasible** bearing in mind the extent that the proposed research is high risk/high gain (based on the Extended Synopsis)?
- To what extent are the proposed **research methodology** and working arrangements appropriate to achieve the goals of the 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)?

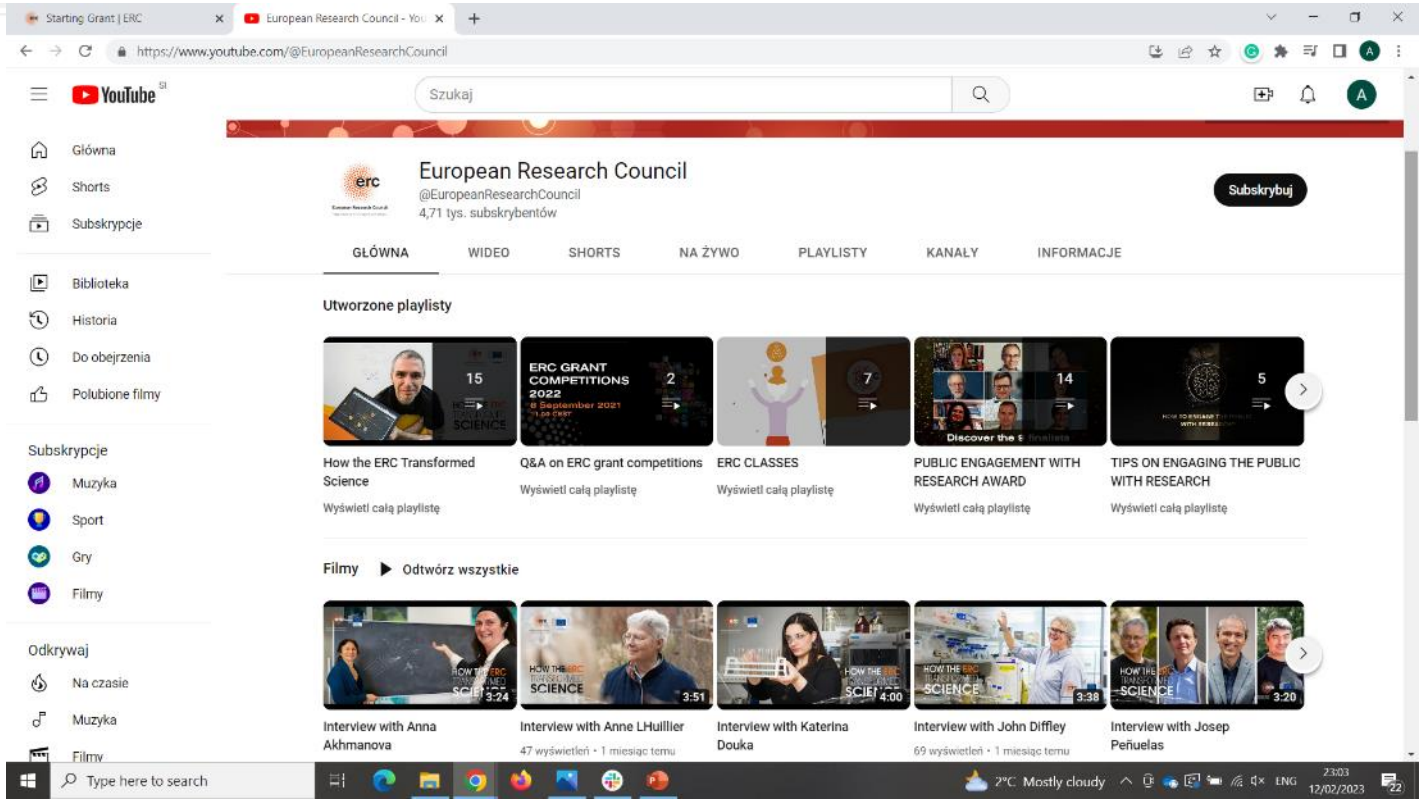
Principal Investigator

Intellectual capacity and creativity

- To what extent has the PI demonstrated the **ability to conduct ground-breaking research**?
- To what extent does the PI provide evidence of **creative independent thinking**?
- To what extent does the PI have the required **scientific expertise** and capacity to successfully execute the project?

Instructional videos





Interview (info ~ 3 months before)

Dear Dr. SANDAK,

Subject: Additional information on the interview

As announced in our previous communication, please find below additional information regarding your interview.

Applicant name	Anna SANDAK
Applicant address	Livade 6 6310 Izola Slovenia
Evaluation panel:	PE11
Interview date:	17 January 2022
Interview slot:	10:40 - 11:50 Brussels time

The panel will ask you to make a **5 minutes presentation** of yourself and your proposal, followed by **20 minutes of questions and answers**.

Interview rules

PANEL - ID	PE11		
PRESENTATION MEANS:	Electronic Presentation		
	- PowerPoint animations are allowed	Yes ☒	No ☐
	- Movie clips allowed in the presentation (avi., mpg, mpeg.). See technical details above for the back-up pdf. file	Yes ☐	No ☒
	- Maximum number of slides allowed (cover page is not counted towards this limit)	5	

BACK-UP SLIDES FOR Q&A [Back-up slides are slides that you will **not** show in your presentation but would like to display in case you want to underline a point during the questions and answers session]	- Back-up slides allowed	Yes ☒	No ☐
	- Maximum number of back-up slides (indicate if there is a restriction)	No restriction	

Received instructions

“In order to make best use of the allotted time, you should balance the description of your past achievements and the presentation of your project. Remember that the panel members have studied the written documents that you submitted. You should give a brief overview of your CV. The bulk of the presentation should be devoted to the research project: its innovative aspects, the research team, the methodology, the expected results and the potential contribution to the current state of the science in your field. The panel may also have questions about the budget you requested”.

Interview

- I had only 5 min to prepare my talk… and only 5 slides
- I started my talk a bit different
- I used a lot of images, not much text
- I practiced a lot to fit into 5 minutes

Questions after my 5 min talk

- Around 15 questions (in 20 min) - all were technical in my case
- Several of them were from external reviewers
- Not all who were present asked question
- Time was really crucial – try to answer short and to the point!
- Smile, be enthusiastic - you should –

  - it is about your dream project ;)

Results

Dear Applicant,

Thank you for your application for an ERC Consolidator Grant.

Over 2600 proposals were submitted to this call and the evaluation panels were impressed with the high quality of the projects received.

Having to narrow down the large pool of high quality proposals to the few that we will be able to fund is challenging. I am pleased to inform you that your proposal was ranked at a sufficiently high position to allow it to be funded. I congratulate you on this success. I would like to note that for Host Institutions based in countries in the process of association to Horizon Europe, the funding is conditional to the relevant association agreement having legal effects either through provisional application or entry into force at the time of signature of the grant agreement.

I am confident that this grant will help you to develop your research at the highest possible level and to achieve ground–breaking results in the spirit of the ERC. We hope that just as the review of your proposal relied on the dedication of external reviewers, so we may rely on your help as remote referee in the future, should your particular expertise be needed.

I wish you all the best in your career and future research.

Yours sincerely,

Step 2 Evaluation Report

CONFIDENTIAL

Call reference	ERC-2021-COG
Activity	HORIZON ERC Grants
Funding scheme	ERC CONSOLIDATOR GRANTS
Panel name	PE11
Proposal No.	101044468
Acronym	ARCHI-SKIN
Applicant Name	Anna SANDAK
Title	Bioinspired living skin for architecture

PANEL SCORE AND RANKING RANGE

Final panel score: A (fully meets the ERC's excellence criterion and is recommended for funding if sufficient funds are available)	**Ranking range*:** 1%-34% For your information, only the top 34% of the proposals evaluated in panel PE11 in Step 2 were funded.

PANEL COMMENT

This evaluation report contains the final recommendations and score awarded by the ERC review panel during the second step of the ERC Consolidator Grant review and the ranking range. The discussion of the panel was conducted within the context of prior reviews submitted by ERC panel members and external referees and the interview with the applicant.

The panel closely examined all the individual review reports and, while not necessarily subscribing to each and every opinion expressed, found that they provide a fair overall assessment. The comments of the individual reviewers are included in this report.

The presentation given by the applicant during the interview and the answers to the questions that were addressed greatly contributed to build the panel's view about the proposal's strengths and weaknesses.

Both the individual reviews and the interview were the basis for the discussion and the final recommendation of the panel.

The panel finds the scope of this proposal to be extremely interesting and novel, the idea of using fungal films to protect building surfaces represents a true breakthrough. The panel is convinced that the PI has the needed understanding of the problem to address it in a complete and satisfactory way. The panel finds the PI's scientific career to be solid and clearly sees potential for significant professional growth.

The panel therefore recommends the proposal to be retained for funding with a grant not exceeding 1,999,000 Euro.

+ opinions (written evaluations) and assessments from 8 external reviewers

Principal Investigator	
To what extent has the PI demonstrated the ability to conduct ground-breaking research?	Very good
To what extent does the PI provide evidence of creative independent thinking?	Excellent
To what extent does the PI have the required scientific expertise and capacity to successfully execute the project?	Excellent

Comments (Optional for reviewers)
Researcher has an excellent record in acquiring 3rd-party funds. The expertise is in wood research with a number of very good technical papers.

Keys aspects to success

- To have a great idea
- To have a convincing track record
- To understand the call needs
- To discuss your concept with people whom you trust
- To benefit from external support (reading days etc.)
- To prepare the proposal in an excellent way
- To defend your idea during the interview
- To have good luck

In case you need to know more

- My proposal (both parts) as well as ppt slides are available during ERC reading days
- Feel free to contact me for further details

anna.sandak@innorenew.eu

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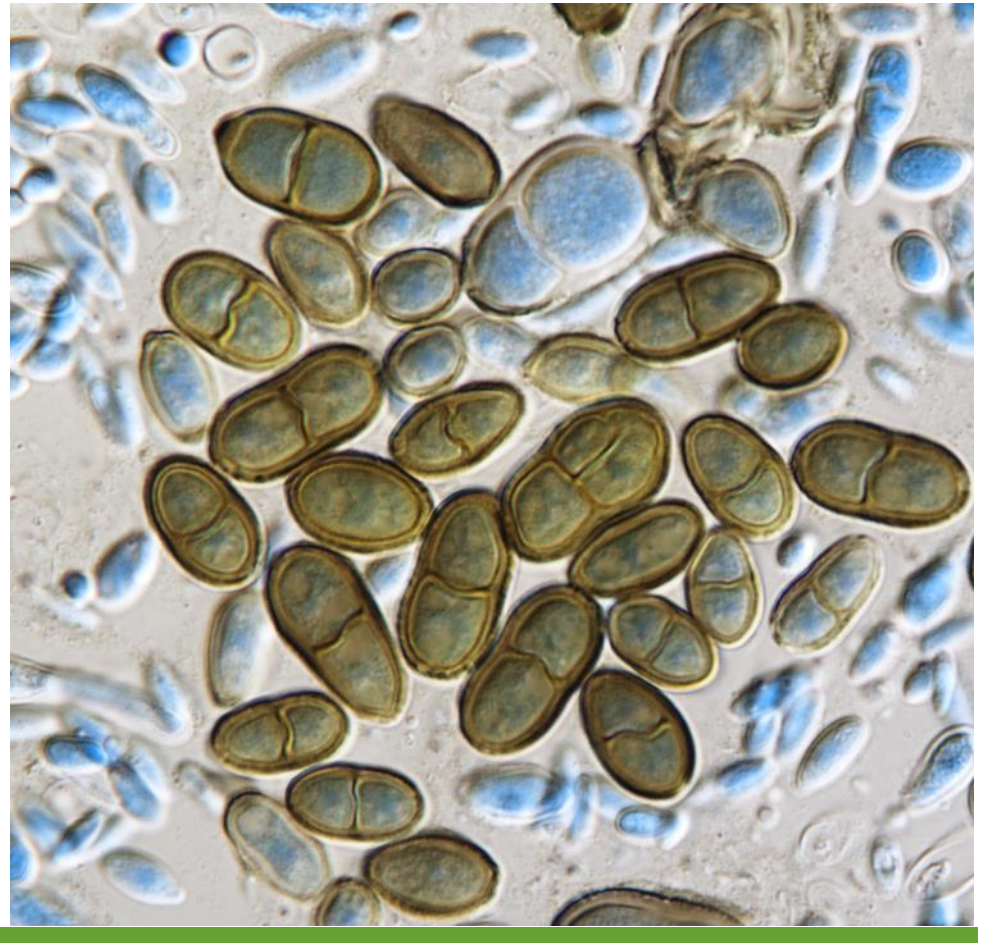

Thank you

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