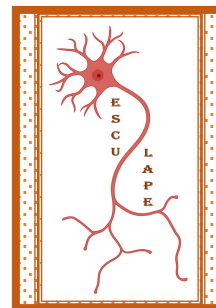


# Funding opportunities for research in the European Union: The Horizon Europe program





# Biomedical Research Center



**Cell culture  
laboratory**

**Bacteriological  
laboratory**



**ELISA  
laboratory**

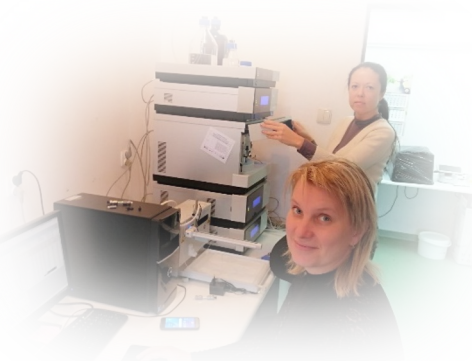


**Electrospinning  
laboratory**

**Animal Facility**

**Chemical  
laboratory**

**Fluorescent  
microscopy**



**Atomic Force  
Microscopy**







# Our team



Silesian  
University  
of Technology



Universitätsklinikum  
**Essen**



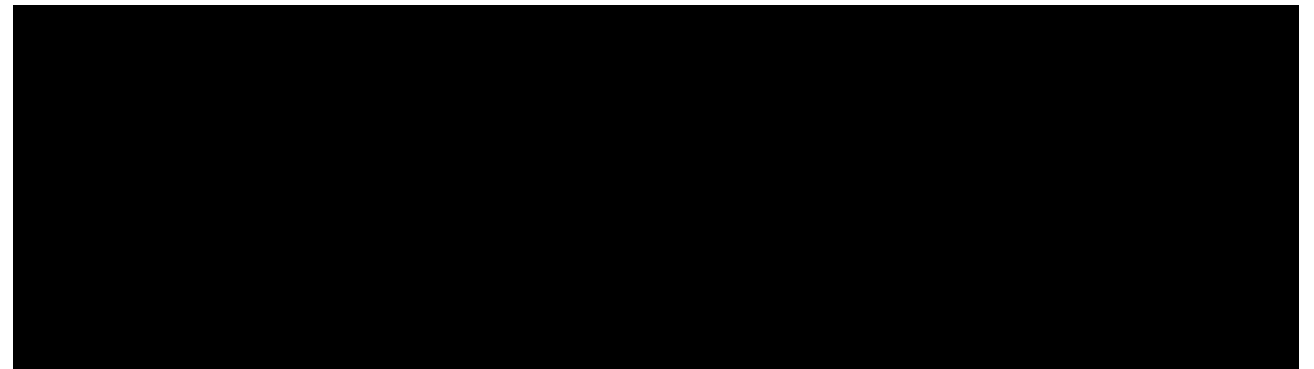
- Polymeric tissue substitutes;
- Hemostatic sponges and membranes;
- Membranes for skin replacement;
- Patches for hernia surgery;
- Kidney and liver surgery patches;
- Antibacterial patches;
- Drug delivery system.



**Figure** PLA polymer membrane with high porosity

## Publications

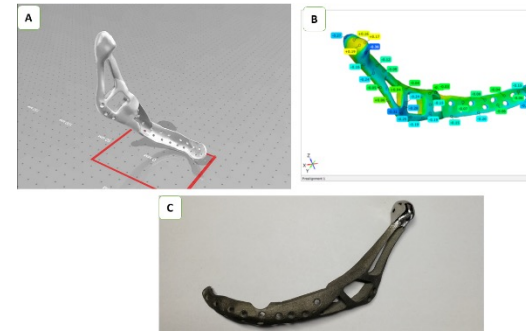
- <https://doi.org/10.1557/s43578-021-00358-4>
- <https://doi.org/10.3390/biomedicines9060588>
- <https://doi.org/10.1007/s13204-021-01808-5>
- <https://doi.org/10.1016/j.msec.2020.111740>
- [https://doi.org/10.1007/978-981-15-3996-1\\_10](https://doi.org/10.1007/978-981-15-3996-1_10)
- <https://doi.org/10.3390/molecules24142629>



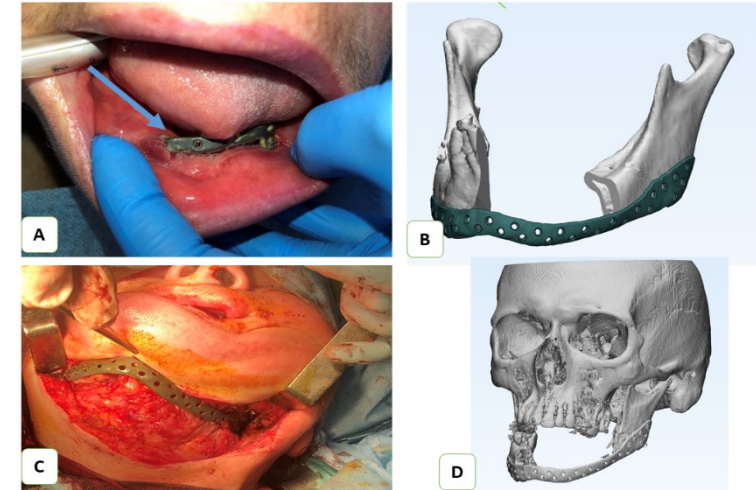
**Figure** Procedure of punch biopsy liver trauma (a), liver bleeding (b), hemostatic application (c) and stopped bleeding (d).



- Development of new osteoinductive implant surface
- Personalized implant modification
- Bone cement composites
- Antibacterial implant surface

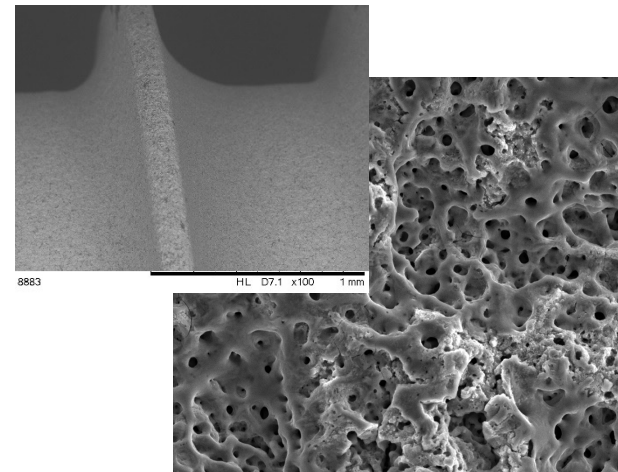


**Figure** Personalized implants with modified surface

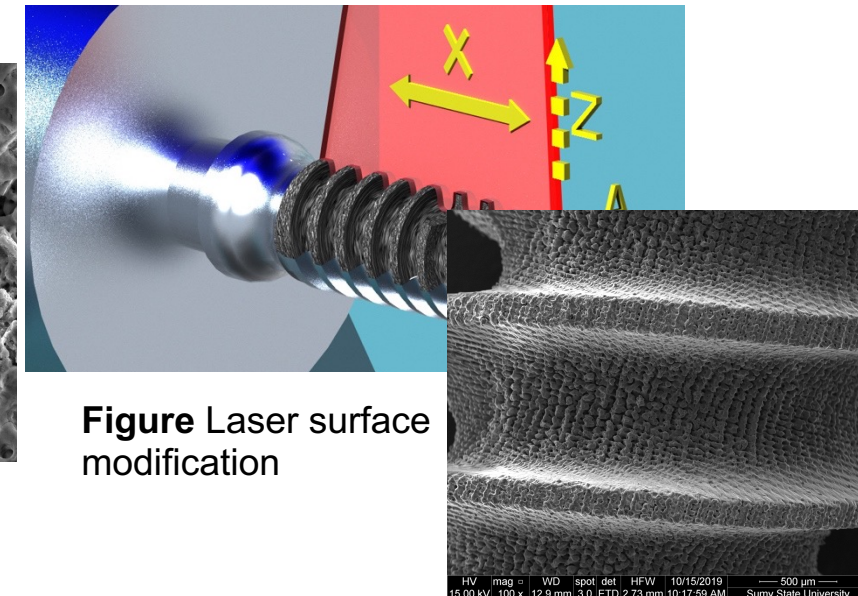


## Publications

- <https://doi.org/10.1016/j.msec.2021.111870>
- <https://doi.org/10.1016/j.msec.2020.111607>
- [https://doi.org/10.1007/978-3-030-51905-6\\_19](https://doi.org/10.1007/978-3-030-51905-6_19)
- <https://doi.org/10.1016/j.nano.2019.102036>
- <https://doi.org/10.1016/j.cirp.2020.04.065>
- [https://doi.org/10.1007/978-981-15-3996-1\\_9](https://doi.org/10.1007/978-981-15-3996-1_9)
- [https://doi.org/10.21272/jnep.12\(6\).06038](https://doi.org/10.21272/jnep.12(6).06038)
- <https://doi.org/10.3390/ma13061306>



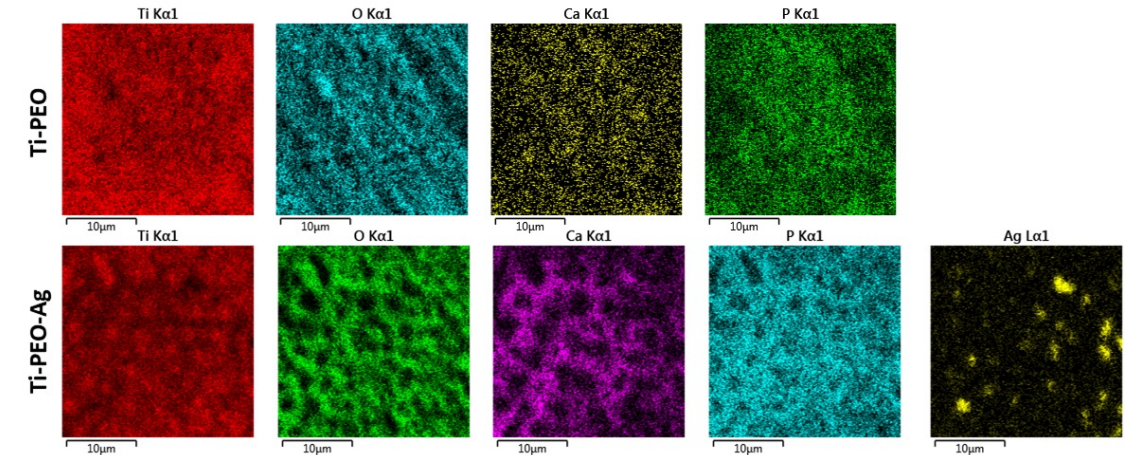
**Figure** Implant with Plasma electrolytic oxidation surface



**Figure** Laser surface modification

# Antibacterial implant surface

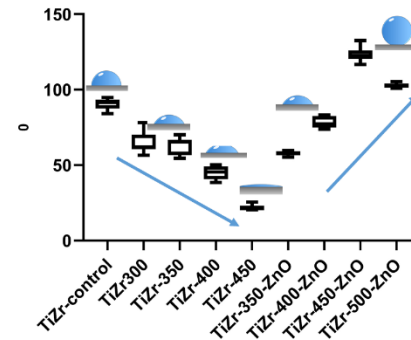
- Ag, Cu and ZnO nanoparticles used
- High biocompatibility and low toxicity
- Hydrophobic surface  
(should used for medical equipment)
- High reproducibility and scaling to different surfaces



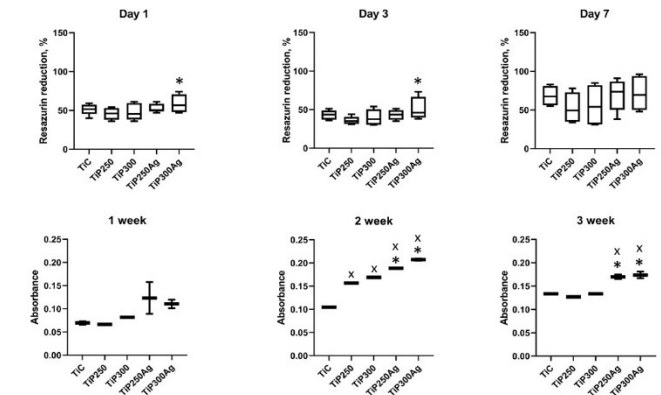
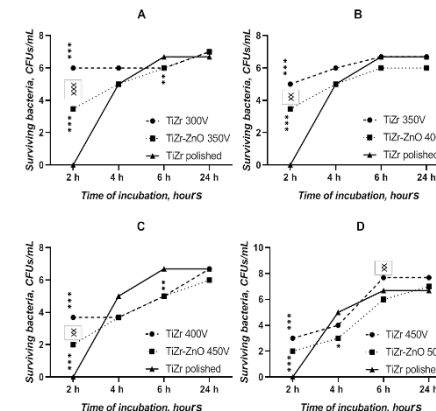
**Figure** Silver nanoparticles distribution within the implant surface

## Publications

- <https://doi.org/10.1557/s43578-021-00358-4>
- <https://doi.org/10.3390/ma13183913>
- <https://doi.org/10.3390/ma13194359>
- <https://doi.org/10.3390/nano10122401>
- <https://doi.org/10.3390/ma12223742>



**Figure** Hydrophobic surface and bacteria inhibition



**Figure** Cell viability and collagen deposition on Ag-surface

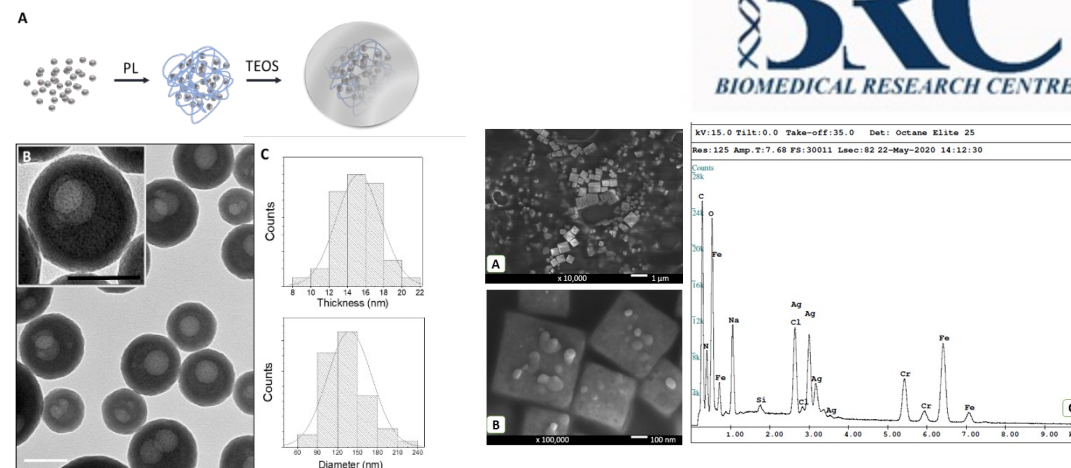


# Antiseptics and antibacterial nanoparticles

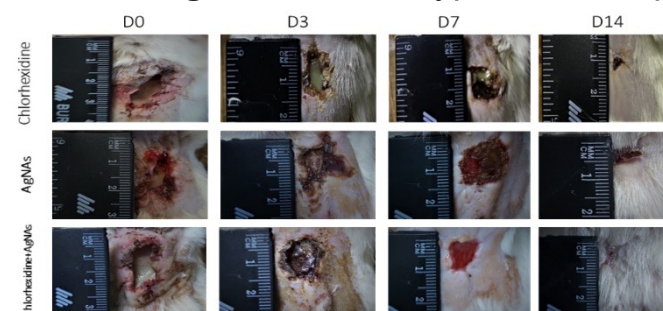
- Antibacterial nanoparticles (Ag, Cu, ZnO)
- Effectiveness in low concentrations (2-10  $\mu\text{g/ml}$ )
- Biocompatibility
- High effectiveness against MRSA and biofilms
- Application for medical environment treatment

## Publications

- <https://doi.org/10.3390/biomedicines9091215>
- <https://doi.org/10.1007/s12668-021-00834-5>
- <https://doi.org/10.1007/s13534-020-00174-5>
- <https://doi.org/10.1109/NAP.2018.8914849>



**Figure** Different types of Nanoparticles



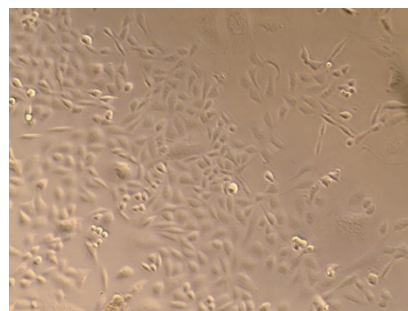
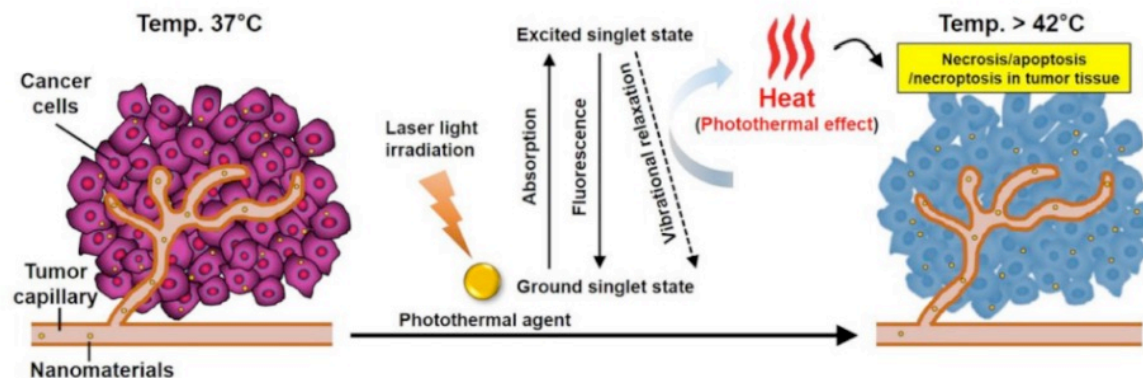
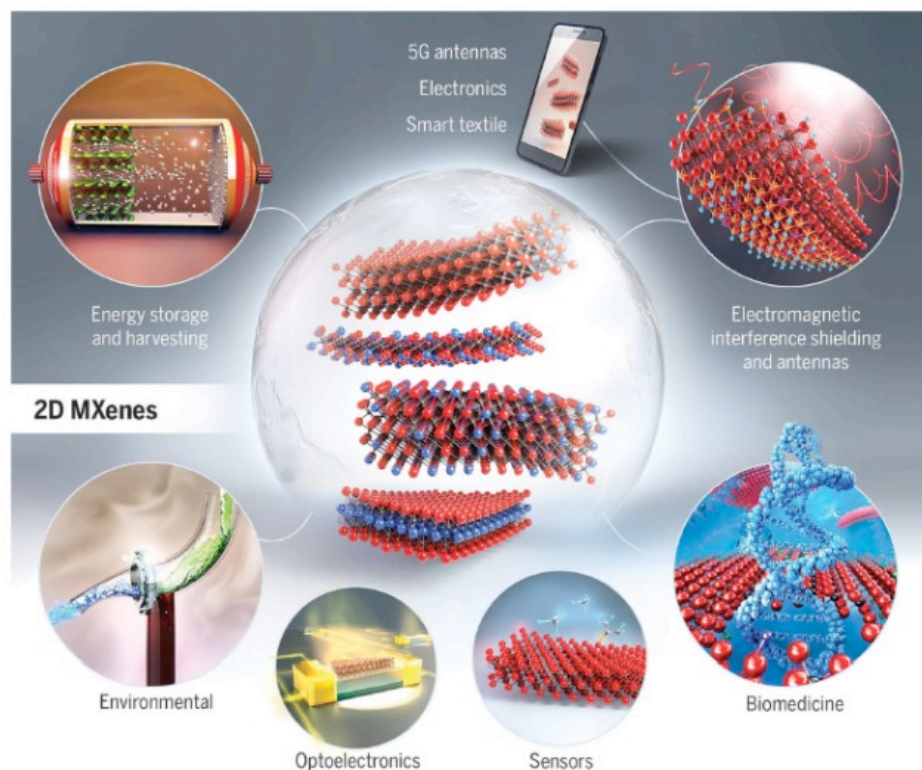
**Figure** Effectiveness of wound treatment



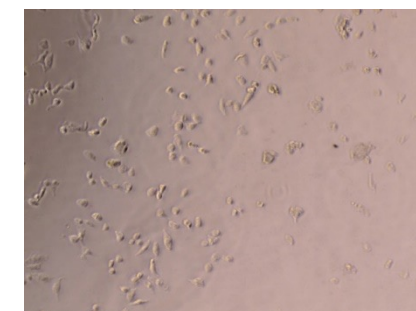


# Photo-thermal therapy of cancer

Our approach is based on application of new 2D nanolaminates - MXenes



Before treatment

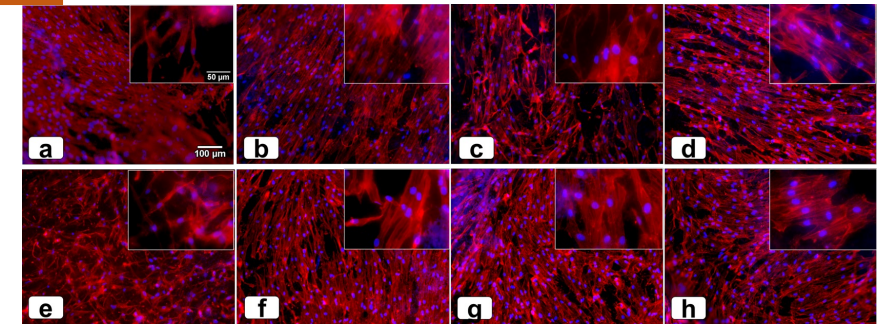
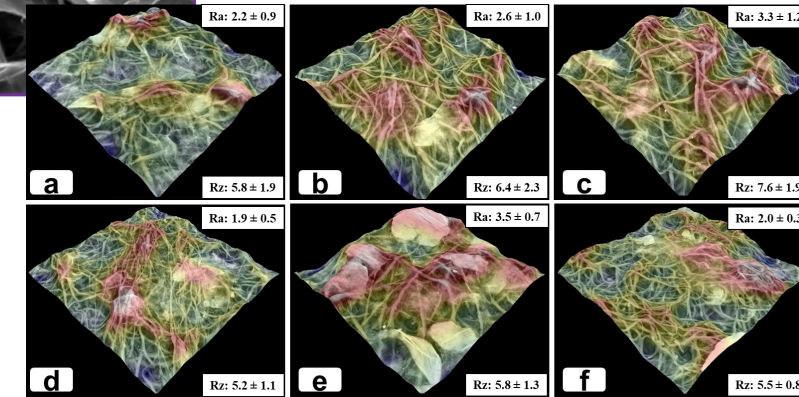
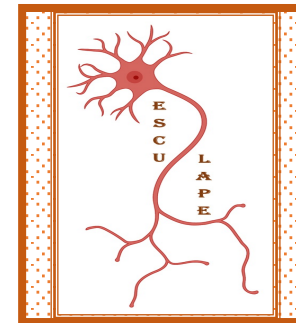
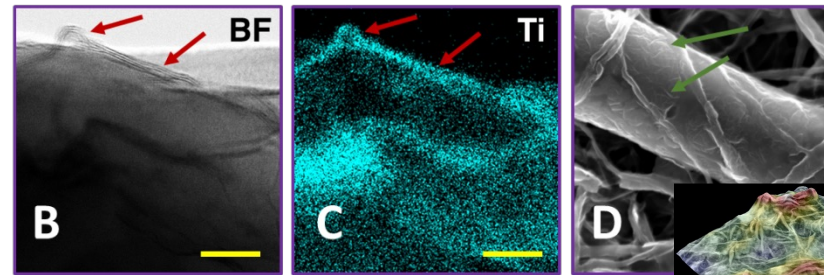
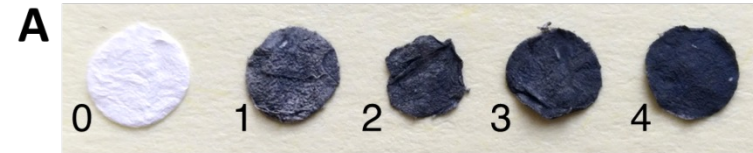
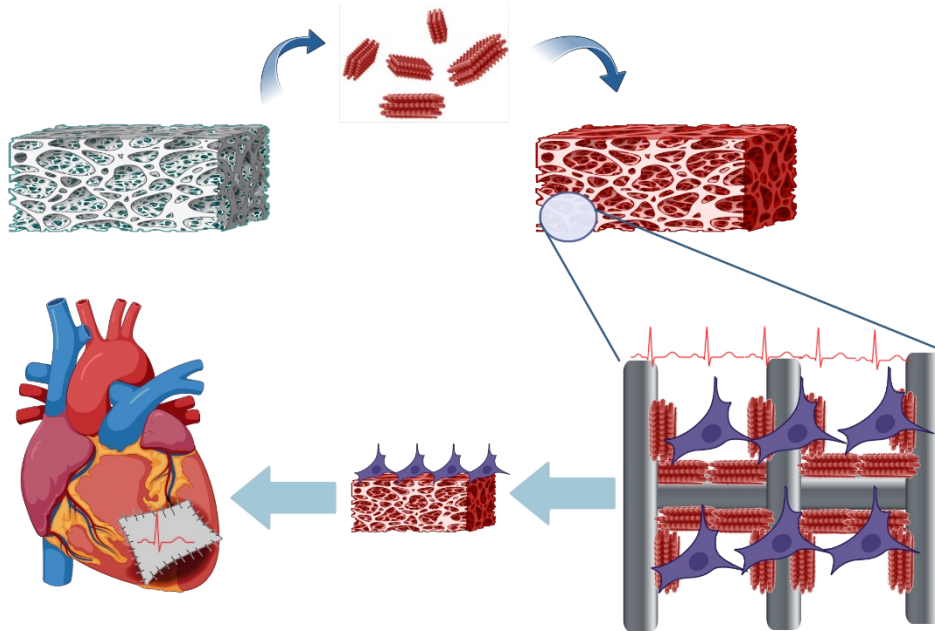


After treatment

MX-MAP



# Electrically conductive polymers



- Diedkova, K. *et al.* Novel Electrically Conductive Electrospun PCL-MXene Scaffolds for Cardiac Tissue Regeneration. *Graphene and 2D materials*. *Accepted*
- Diedkova, K. *et al.* Polycaprolactone-MXene Nanofibrous Scaffolds for Tissue Engineering. *ACS Appl. Mater. Interfaces* (2022) doi:10.1021/ACSAMI.2C22780.
- Diedkova, K. *et al.* The Multistep Process of Coating PCL Membranes with MXene Solution. *Proc. 2022 IEEE 12th Int. Conf. "Nanomaterials Appl. Prop. N. 2022* (2022)





# Our collaboration



UNIVERSITÀ DI PISA



UNIMORE  
UNIVERSITÀ DEGLI STUDI DI  
MODENA E REGGIO EMILIA



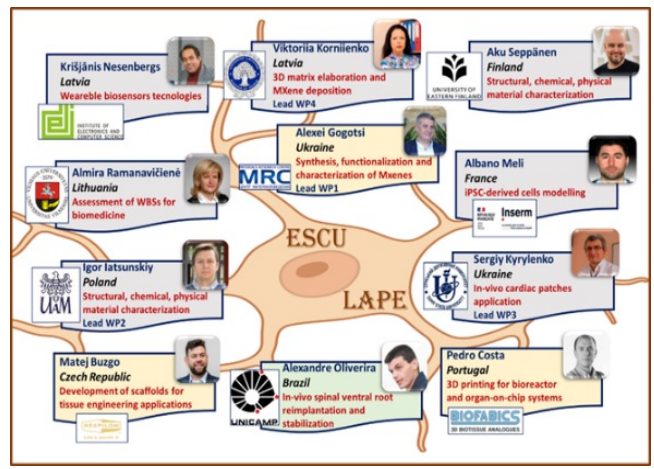
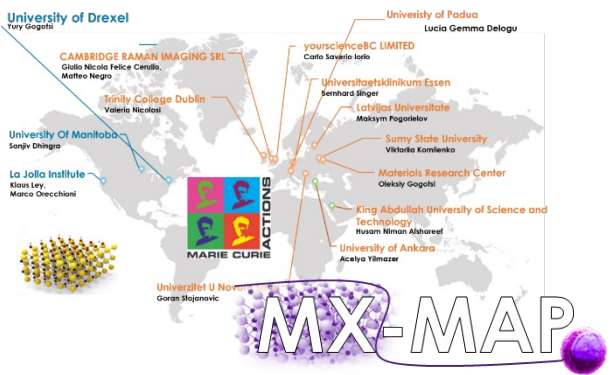
The  
University  
Of  
Sheffield.







# Our projects



**Innovative two-dimensional nanomaterials for photo-thermal therapy of melanoma**

**Novel copper-loaded wound healing patches with advanced regeneration capacity and antibacterial effect**

**Implementation of 2D bi-layered nano-membranes for guided tissue regeneration in endo-perio lesions and periimplantitis**

**Nanoparticle synthesis and evaluation**

**In vitro mechanistic studies**

# Who bring all these projects?







# This is a time for grant application!



## Why we need a projects?

- Financial support of research and networking;
- Way to the excellence science;
- Career development;
- Independence;
- International recognition;
- Research team growth.

## Why we do not apply for the projects?

All the listed reasons are subjective!!!

We do not apply due to lazy 😊

- Low level of research idea;
- Not enough equipment (low quality of equipment);
- Low qualification of the team;
- Not enough experience;
- Our country is not in target in grant schemes.





# Horizon Europe



Horizon Europe is the EU's key funding programme for research and innovation

- It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth.
- The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges.
- It supports creating and better dispersing of excellent knowledge and technologies.
- It creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.



fuel EU's **scientific and technological excellence** and the strengthen the European Research Area (ERA)

**Science  
& technology**



tackle policy priorities, including **green and digital transitions** and Sustainable Development Goals

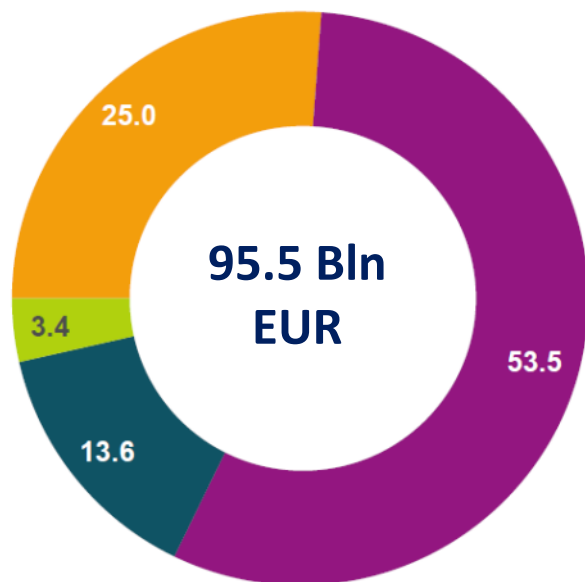
**Society**



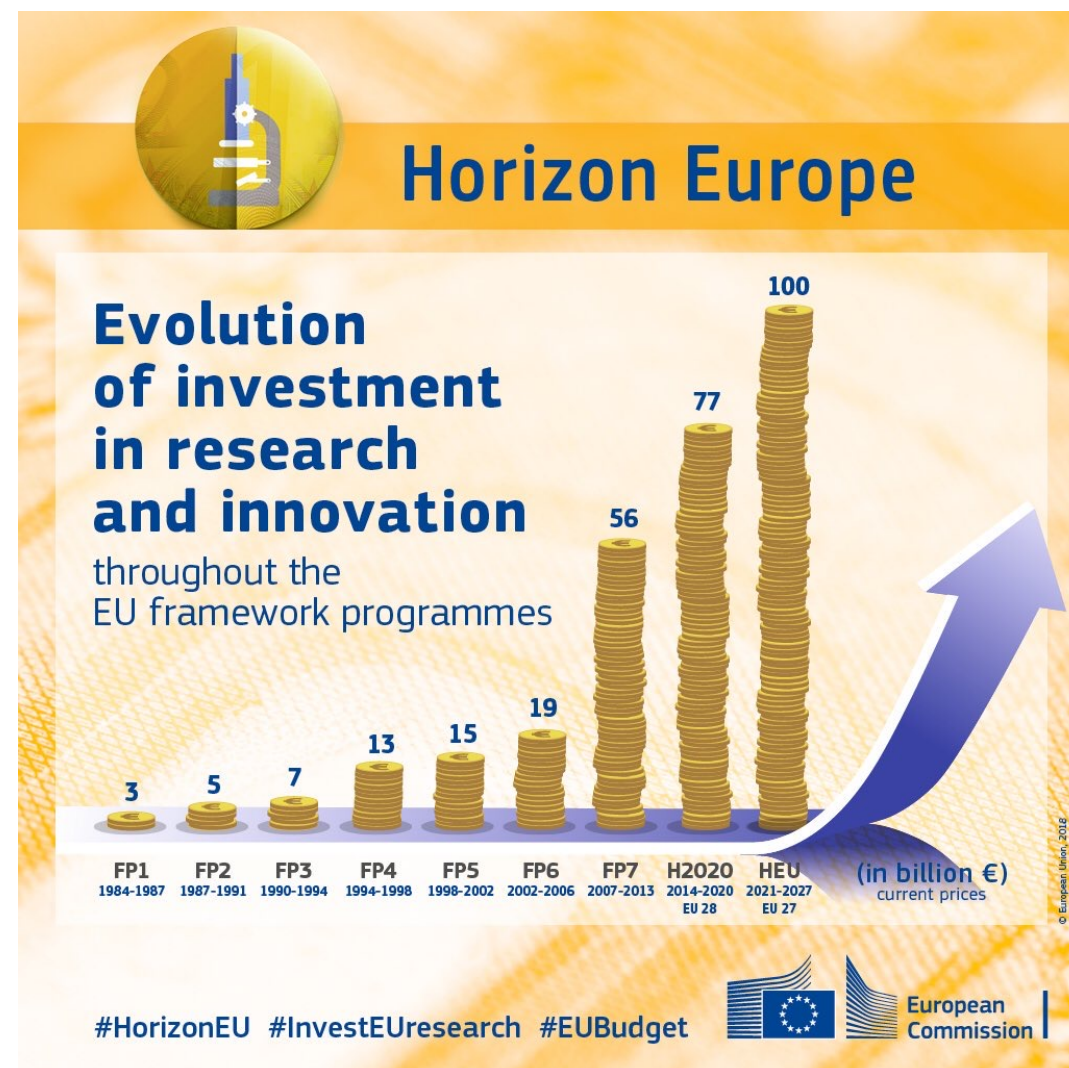
boost Europe's **innovation uptake, competitiveness and jobs**

**Economy**

# Horizon Europe Budget (2021-2027)



- Excellent Science
- Global challenges and European ind. comp.
- Innovative Europe
- Widening Part and ERA



# Who are eligible?



HORIZON EUROPE

EU Member States and  
countries associated to  
Horizon 2020

■ EU Member States  
■ H2020 Associated Countries

## ANY TYPE OF ENTITIES:

- Private for profit;
- HEIs;
- Research organizations;
- NGOs;
- Individuals (for some types of call)



# Structure of Horizon Europe

## HORIZON EUROPE

### SPECIFIC PROGRAMME: EUROPEAN DEFENCE FUND

*Exclusive focus on  
defence research  
& development*

Research  
actions

Development  
actions

### SPECIFIC PROGRAMME IMPLEMENTING HORIZON EUROPE & EIT\*

*Exclusive focus on civil applications*



#### Pillar I EXCELLENT SCIENCE

European Research Council

Marie Skłodowska-Curie

Research Infrastructures



#### Pillar II GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS

Clusters

- Health
- Culture, Creativity & Inclusive Society
- Civil Security for Society
- Digital, Industry & Space
- Climate, Energy & Mobility
- Food, Bioeconomy, Natural Resources, Agriculture & Environment

Joint Research Centre



#### Pillar III INNOVATIVE EUROPE

European Innovation  
Council

European Innovation  
Ecosystems

European Institute of  
Innovation & Technology\*

### WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA

Widening participation & spreading excellence

Reforming & Enhancing the European R&I system

# Project types (my version) and basic rule

## Individual projects

MSCA-IF



ERC Grant

## Consortium projects



Innovation Actions (IA)

Research and Innovation Actions (RIA)

Coordination and Support Action (CSA)

MSCA-SE; MSCA-DN



Researcher



Host organization



Minimum 3 entities,  
from 3 different MS/ASC,  
often SME(industry) required





# How to be involved?



HORIZON EUROPE

Funding & tenders

ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home

European Commission

Funding & tender opportunities

Single Electronic Data Interchange Area (SEDIA)

English EN

Register Login

SEARCH FUNDING & TENDERS

HOW TO PARTICIPATE

PROJECTS & RESULTS

WORK AS AN EXPERT

SUPPORT

Get started

Grant & Audit Management Services will be unavailable on Monday, 24.10.2022, between 07:30 and 08:10 CET.

Find calls for proposals and tenders

Search calls for proposals and tenders by keywords, programmes... Search

EU Programmes

Asylum, Migration and Integration Fund (AMIF)	Border Management and Visa Instrument (BMVI)	Citizens, Equality, Rights and Values Programme (CERV)	Connecting Europe Facility (CEF)	Creative Europe Programme (CREA)	Customs Control Equipment Instrument (CCEI)
Customs Programme (CUST)	Digital Europe Programme (DIGITAL)	Erasmus+ Programme (ERASMUS)	EU Anti-fraud Programme (EUAF)	EU External Action (RELEX)	EU4Health Programme (EU4H)

News

19 Oct, 2022

European Week of Regions & Cities Side Events 2022

Do you want to learn more about the #research & #innovation performance of your region? Curious about the organisations that are receiving EU funding for ...

18 Oct, 2022

New version of EDF DA detailed budget table (v1.20)

Macro error in the detailed budget table for EDF DA for users of Excel in another language

05 Oct, 2022

We are on a mission for 2030! Explore the new Research & Innovation Exhibition on the EU Missions

The EU Missions aims to bring concrete solutions to some of our greatest challenges by 2030, by putting research and innovation into a new role,

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6°C Cloudy

0:26

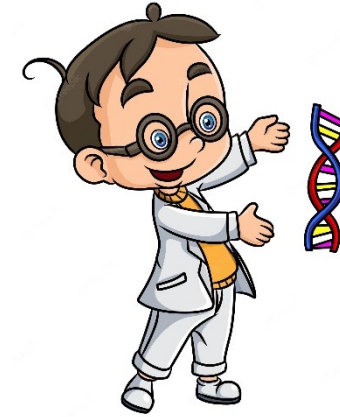
23.10.2022



# The first steps: what you need?



- Science first! You must be a researcher
- Clear research expertise
- Get registered on F&T Portal



- Find a relevant call
- Collaboration/host organization
- No pain, no gain

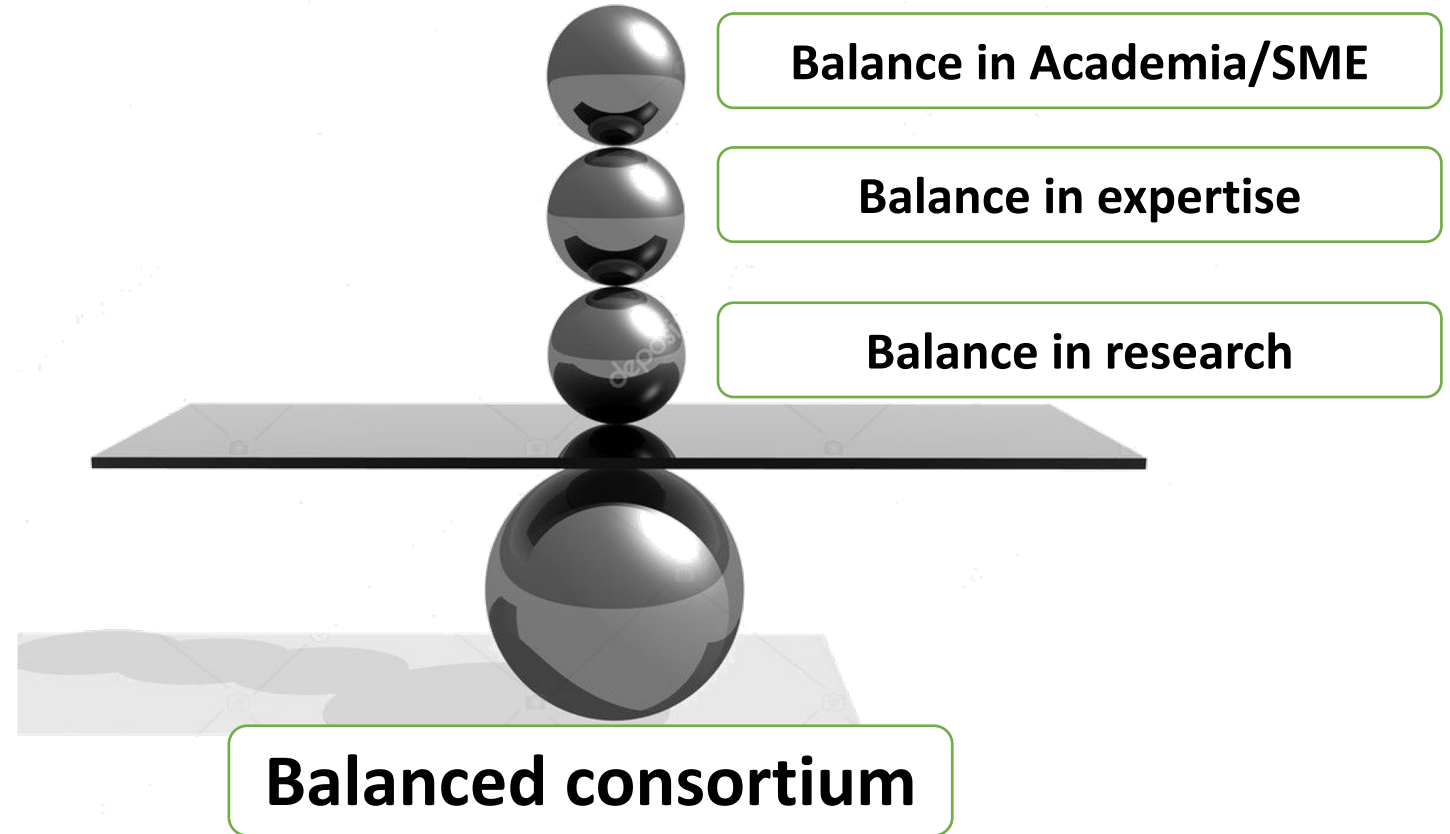




# Collaboration is a keys for successful projects



**Project research idea**



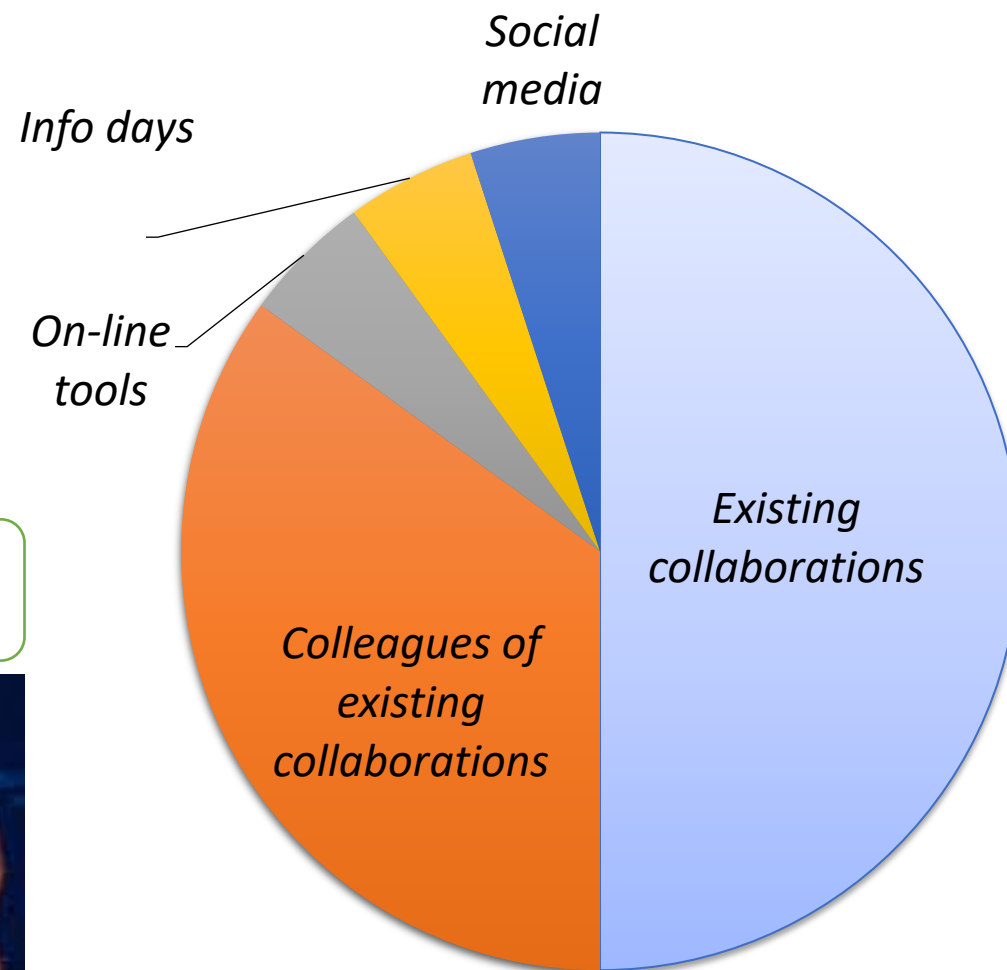


# How to be involved in consortium?



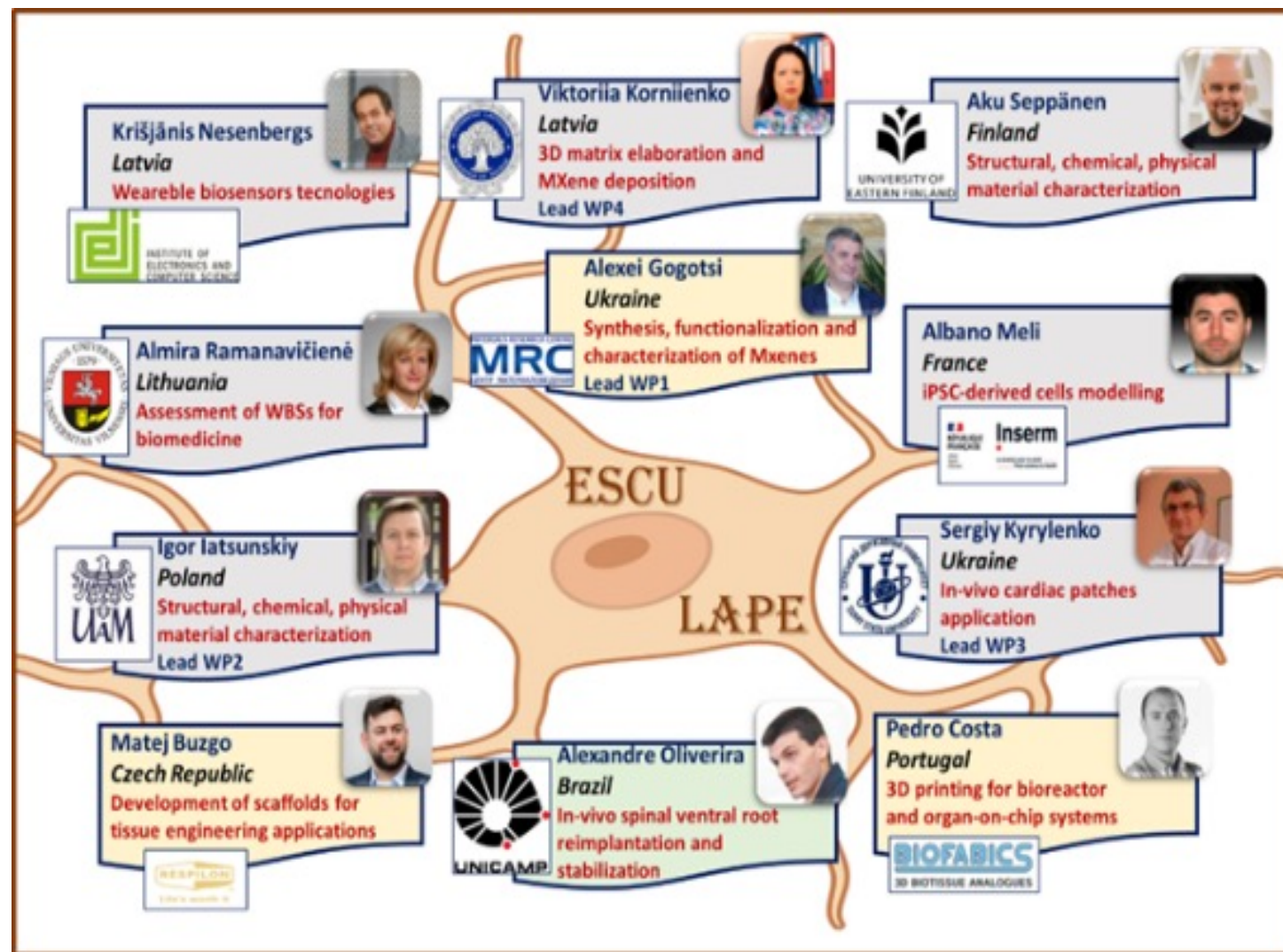
**Ask your partners to  
join.  
“Sell your expertise”**

**Be pro-active: put the consortium  
together!**





# Success story with Brazil





# Non-Horizon EU opportunities



M-ERA.NET is an EU funded network which has been established to support and increase the coordination of European research programmes and related funding in materials science and engineering.

**Annex 3: Funding organisations participating in the M-ERA.NET Call 2024**

Country	National / regional coverage	Funding organisation	Contact person:
Austria	national	Austrian Research Promotion Agency (FFG)	Name: Fabienne Nikowitz Phone: +43 57755 5081 e-mail: fabienne.nikowitz@ffg.at
			Name: Johannes Fritzer Phone: --- E-mail: Johannes.fritzer@ffg.at
Belgium	regional: Flanders	Flanders Innovation & Entrepreneurship (VLAIO)	Name: Maarten Rockele Phone: +32 2 432 43 27 e-mail: maarten.rockele@vlaio.be
	regional: French-Speaking Community	Fund for Scientific Research – FNRS (F.R.S.-FNRS)	Name: Elsie De Clercq Phone: +32 2 432 42 78 e-mail: elsie.declercq@vlaio.be
	regional: Wallonia	Service public de Wallonie (SPW)	Name: Florence Quist Phone: +32 2 504 93 51 e-mail: international@frs-fnrs.be
Brazil	regional: Sao Paulo	São Paulo Research Foundation (FAPESP)	Name: Joël Groeneveld Phone: +32 2 504 92 70 e-mail: international@frs-fnrs.be
			Name: Pierre Demoitié Phone: +32 81 33 45 40 e-mail: pierre.demoitie@spw.wallonie.be
			Name: Virginia Sanches Subinas Phone: + 55 11 3838 4000 e-mail: chamada_meranet@fapesp.br



Just one advise

MX-MAP



Never ever give up!



Dear Applicant,

I am writing in connection with your proposal for the above-mentioned call.

August, 28

As mentioned in our previous letter, your proposal was put on the reserve list. We are pleased to inform you that we are now in a position to propose your proposal for grant preparation.

Invitation to grant preparation

# Let's write project together!



**WHO SAID SCIENCE IS NOT FUN**

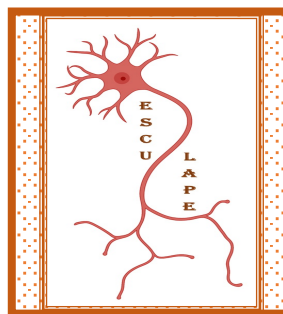
[memegenerator.net](http://memegenerator.net)



# Acknowledgement



Jean Monnet  
Programme



**Funded by  
the European Union**

