



Funding from Swiss National Science Foundation, Horizon Europe, Innosuisse and the ETH Foundation is gratefully acknowledged



ETH zürich

Institute for Biomechanics

# Structured Hydrogels for Tissue Engineering

Prof. Dr. Marcy Zenobi-Wong  
Dept. Health Sciences & Technology  
ETH Zurich, Switzerland

POLISH SOCIETY FOR BIOMATERIALS



ENGINEERING OF BIOMATERIALS

INŻYNIERIA BIOMATERIALÓW

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|                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>European Commission                                                                                                                                                                              | <br>Maria Skłodowska-Curie Actions - Staff Exchanges<br>2023 HORIZON-MSCA-2021-ST-RI-10110841                                                                                                                                                       |
| <h2>Engineering Vascularized Implants for Personalised Osteochondral Tissue Regeneration: From medical imaging to pre-clinical validation</h2>                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                      |
| <br>Dr. Miguel Oliveira                                                                                                                                                                             |                                                                                                                                                                                                                                                     |
| <br>Prof. Nenad Filipovic<br><br><br>Friedrich-Alexander-Universität<br>Erlangen-Nürnberg<br>Prof. Aldo Boccaccini | <br>Prof. Elzbieta Pamula<br><br><br>Prof. Rui L. Reis<br><br><br>Prof. Lequn Yan |

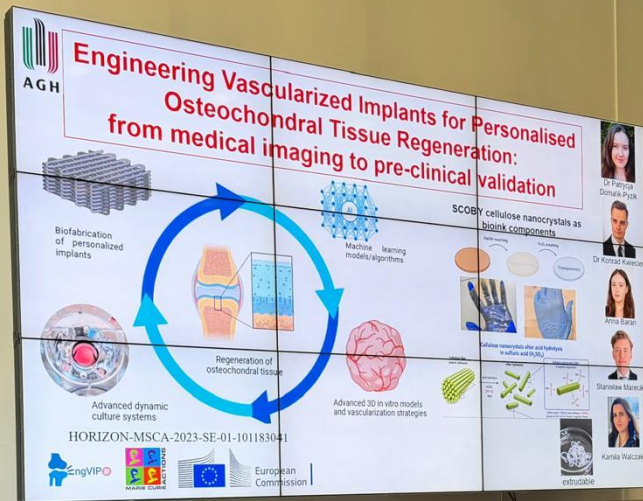
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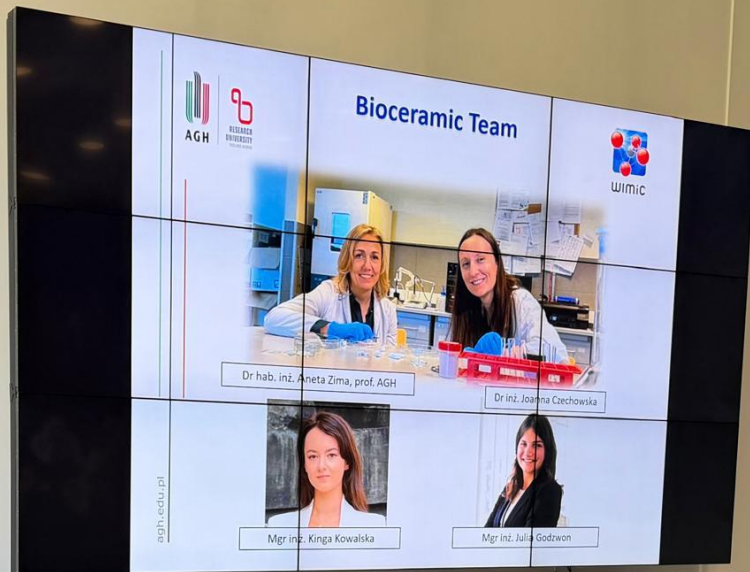
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FROM CELL TO TISSUE











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# Acknowledgement

**ENDOTARGET**

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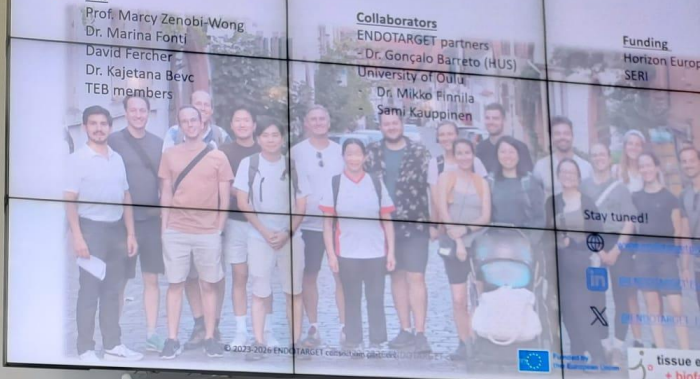
## Lab

Prof. Marcy Zenobi-Wong  
Dr. Marina Fonti  
David Fercher  
Dr. Kajetana Bevc  
TEB members

## Collaborators

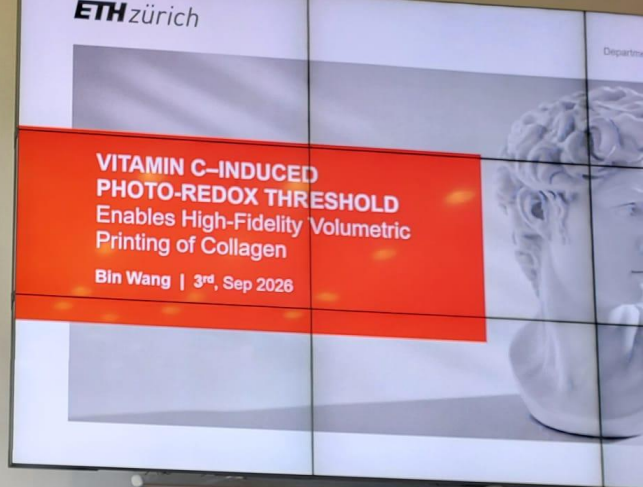
ENDOTARGET partners  
- Dr. Gonçalo Barreto (HUS)  
University of Oulu  
- Dr. Mikko Finnilä  
- Sami Kauppinen

Funding  
Horizon Europe  
SERI



Stay tuned!







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SYMPOSIUM ON  
BIOMATERIALS AND  
BIOFABRICATION



# Gellan Gum Wound Dressings Enriched with Curcumin-Loaded Polymeric and Quercetin-Loaded Lipid Carriers for Chronic Wound Management

Supervisors:  
Prof. dr hab. inż. Elżbieta Pamuła  
Prof. dr hab. Justyna Drukala

Anna Kusibab

03.09.2026







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tissue engineering  
+ biofabrication

# Tissue Engineering of Fast-Maturing Human Knee Synovium Using Light-Printed Collagen-Fibrinogen Scaffold

Siyi Chen, Doctoral Student  
Supervisor: Prof. Marcy Zenobi-Wong  
03.09.2026, Krakow

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AND  
BIOFABRICATION



# Designing Cancer Metastastasis to Bone Model: Novel Approach Combining CQDs/GelMA Bioink, 3D Biofabrication and CFD Modeling

Łukasz Łuśtyk

BioMaterials Group, Materials Design Division, Faculty of Materials Science and Engineering  
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Kraków, 3<sup>rd</sup> September 2026

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Quercetin-loaded solid lipid particles: cytocompatible *in vitro* and enhance skin epithetization in *ex vivo* wound model

Lucja Wieczorek

Lucja Wieczorek<sup>1</sup>, Anna Maria Barań<sup>2</sup>, Lino Ferreira<sup>1</sup>, Elżbieta Pamiuła<sup>1</sup>

<sup>1</sup>Faculty of Materials Science and Ceramics, AGH University of Science and Technology, Kraków, Poland

<sup>2</sup>Center of Neurosciences, Cell Biology, University of Coimbra, Portugal

Kraków, 03.09.2020





# Overcoming Processing Challenges in Direct Ink Writing of $\beta$ -TCP/Phosphate Bioactive Glass Scaffolds

Kinga Kowalska\*, Joanna Czechowska, Marcela Arango-Ospina, P. Syam Prasad, El Sayed Yousef, Aldo R. Boccacchini, Aneta Zima

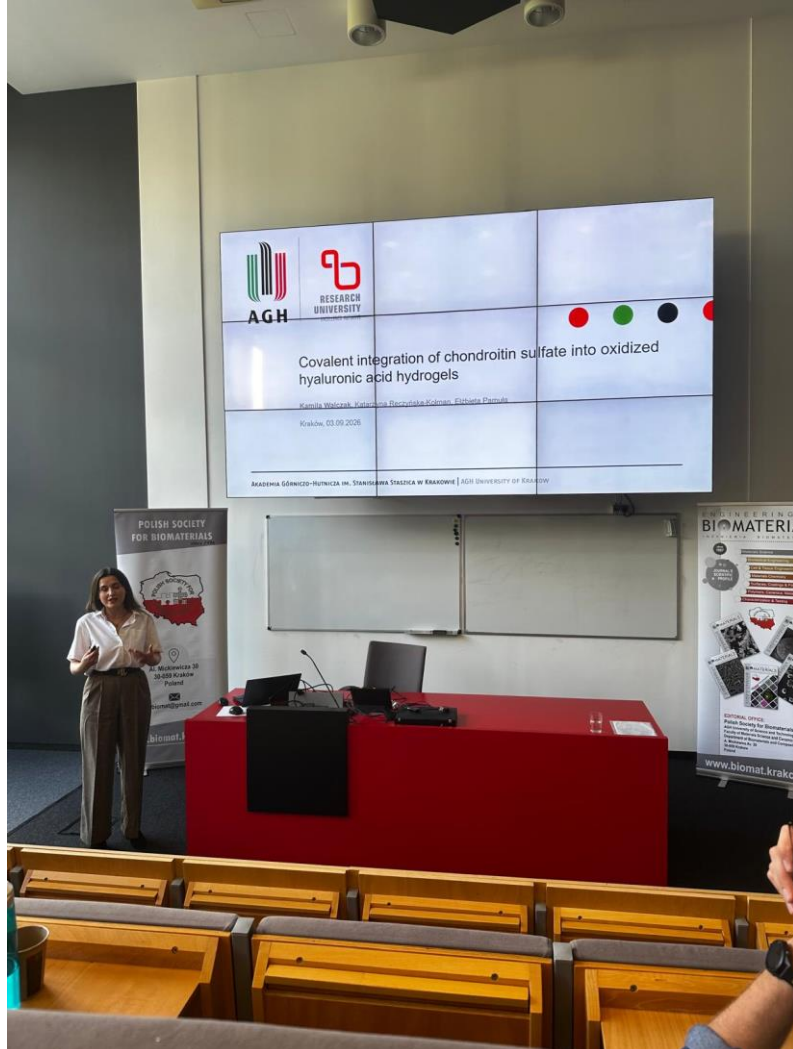
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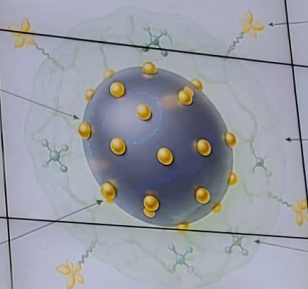


# Architecture and functions of the theranostic nanoplatform



$\text{Fe}_3\text{O}_4$  magnetic core  
Magnetic functionality /  
imaging potential

Surface-nucleated Au  
nanoparticles  
Surface functionalization /  
imaging potential

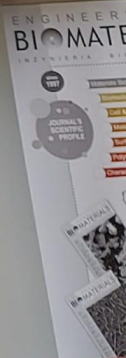


Folate targeting ligand  
Targeted cancer-cell  
recognition

Chitosan coating  
Biocompatible  
drug-carrying layer

Carboplatin cargo  
Therapeutic component

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# In Situ Trabecular Bone Engineering via Phase-Separated Hydrogels

Isabel B. Hul

Polish-Swiss Symposium on Biomaterials and Biofabrication

Krakow, 03.09.2026

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# In-situ FLight Bioprinting for Single-Stage Articular Cartilage Regeneration: an Ex-Vivo Proof-of-Concept Versus Current Orthopaedic Approaches

Flora Chipier, Dr. Theofanis Stampoulitzis, Prof. Dr. Marcy Zenobi-Wong

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Journal of Biomaterials Support

Journal of Biomaterials Training

Journal of Biomaterials Evaluation

Journal of Biomaterials Improvement

Journal of Biomaterials Optimization

Journal of Biomaterials Standardization

Journal of Biomaterials Certification

Journal of Biomaterials Accreditation

Journal of Biomaterials Registration

Journal of Biomaterials Approval

Journal of Biomaterials Authorization

Journal of Biomaterials Recognition

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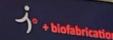
Journal of Biomaterials Recommendation

Journal of Biomaterials Approval

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# Polish-Swiss Symposium on Biomaterials and Biofabrication

Daniel Rodriguez-Pinzon

3rd of September of 2026

Main advisor:  
Prof. Dr. Marcy Zenobi-Wong

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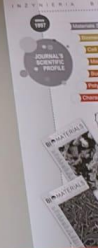


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### Introduction

595M people with OA globally in 2020  
115 projected OA surgeries by 2030

Global prevalence of OA

The following factors

Osteochondral unit: Composite tissue

Clinical Gap

Our Goal

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