

# INVITED SPEAKERS

**Yusril Yusuf (Universitas Gadjah Mada)** - Scaffolds Fabrication from Biogenic Resources

**Bidhari Pidhatika (National Research and Innovation Agency)** - Click Reactions and Their Biomedical Applications

**Manuel Salmeron-Sanchez (University of Glasgow)** - Growth Factor Microenvironments in Stem Cell Engineering

**Matthew Dalby (University of Glasgow)** - Nanoscale control of stem cell fate

**Bo Su (University of Bristol)** - Development of Micro- and Nano-patterned Surfaces for the Modulation of Cells and Bacteria

**Vasif Hasirci (Acibadem University)** - Role of Biomaterials and Tissue Engineering in Future Viral Outbreaks

**Carles Mas Moruno (University Politecnica de Catalunya)** - The Use of Multifunctional Peptides in Biomaterials

**Diego Pallarola (Universidad Nacional de San Martin)** - Development of Biofunctionalized and Patterned Biosensors

**Nihal Engin Vrana (Institut National de la Santé et de la Recherche Médicale)** - Development of Multifunctional Coatings and Study of Immunomodulation on Medical Implants

**Siti Hawa Ngalim (University Sains Malaysia)** - Nano and Micro Highways for cells in Biomedical Applications

**Roberto Spurio (University of Camerino)** - Staphylococcus aureus: Concepts of Microbiology, Proof of Concept in Production of Antibacterial Compounds

**Philippe Lavalle (Institut National de la Santé et de la Recherche Médicale)** - Biomimetic Bilayered Scaffolds for Tissue Engineering: From Current Design Strategies to Medical Applications

**Ada Calvanti-Adam (Max Planck Gesellschaft)** - Matrix-bound Growth Factors to Activate Signaling and Stem Cell Differentiation

**Natalia Beshchasna & Dmitry Belyaev (Fraunhofer Institute for Ceramic Technologies and Systems)** - Microfluidic-based Organ-on-a-Chip as a New Platform for Biomedical Research Translation

## COURSE ACTIVITIES:

Welcome Remarks  
Summer Course Introduction  
Lectures & Campus Tour  
Laboratory & Innovation Centre Visits  
Workshops  
Outdoor Learning & City Tour



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Bio-TUNE



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 872869

[www.s3ikg.fkg.ugm.ac.id](http://www.s3ikg.fkg.ugm.ac.id)

[www.biotune.upc.edu](http://www.biotune.upc.edu)

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<https://admission.ugm.ac.id/registration/>

Choose Program Number 12

## SEA-EUROPE BIO-TUNE SUMMER COURSE

**Strategies to Develop New Generation of Multifunctional Scaffolds and Implants with Cell Instructive and Antibacterial Properties**

Hosted by:

**Doctoral Study Program, Faculty of Dentistry  
Universitas Gadjah Mada (UGM)**

**July, 10 - 14 2023 (Hybrid)**

## CONTACT US:

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## COURSE DESCRIPTION

Tissue engineering is increasingly viewed as the future of medicine. As evidenced in both the scientific and popular press, considerable excitement exists surrounding the strategy of regenerative medicine. Inside the tissue engineering field, scaffolds and implants play important roles in regenerative therapies in diverse areas, including orthopedics, spinal and maxillofacial surgery, drug delivery technology, vaccine administration and cell delivery. Thus, the clinical success of these strategies depends on intensive research to optimize the scaffolds and implants-based systems and understand their interactions with biological entities.

As a part of the Bio-TUNE Consortium (a project funded by MSCA-RISE Horizon 2020) and as a National Research Collaboration Center for Biomedical Scaffolds, we aim to educate young scientists in a course that brings together researchers and clinicians from around the world and of different disciplines to strengthen knowledge (while developing networking) to learn about fundamental concepts, novel methods and the latest advancements in the field of biomaterials and biomedical research. This 2023 Summer Course will embrace the major objective of the Bio-TUNE Project: **Strategies to Develop a New Generation of Multifunctional Scaffolds and Implants with Cell Instructive and Antibacterial Properties**. At the end of the course, participants are also expected to define a research and publication action plan to contribute in the respected areas of tissue engineering and regenerative medicine.

This course is targeted for Undergraduate, Master and PhD students, young and established researchers, as well as scientist and managers from industrial sectors, who will be able to apply the principles and approaches introduced during the course in the fields of tissue engineering, translational research, and clinical applications.

The course will be jointly organized with several activities, "Travel with Bio-TUNE Scholars", wherein participants will have a journey to beautiful places in Indonesia rich with natural resources and discuss about the potential of the natural resources to be explored for education, research and other scientific purposes.

The course will be transferable and equivalent to 3 credit units. During the course, participants will also be introduced to the richness of Indonesian culture.

## LEARNING OUTCOME

1. Understand fundamentals and principles of tissue engineering, including the importance of scaffolds and implants.
2. Understand enabling technologies to develop multifunctional materials with cell instructive and antibacterial properties including synthesis, bioprinting technology, coating, biofunctionalization, and controlled release technology.
3. Identify and analyze animal and human trials relevant for the development of new generation of multifunctional scaffolds and implants with cell instructive and antibacterial.
4. Identify translational process needed and application of new multifunctional biomaterials, including ethics and standardization aspects.
5. Formulate future challenges in the field of biomaterials, as well as exploring the basic technologies needed for research development and application.
6. Moreover, to be able to collaboratively learn and work in an international, transdisciplinary, and intercultural setting.

## METHOD AND OUTPUT

1. The lectures will be delivered in a blended learning method involving in person seminars, discussion, and assignments in a Workshop Model combined by Online Zoom System.
2. Besides, joint capstone research design relevant to new generation of multifunctional scaffolds and implants with cell instructive and antibacterial properties will be developed interculturally as the starting point for joint works.
3. Also, during the traveling with Bio-TUNE scholars, participants will also learn together the potential of natural resources in relation with the relevant topic of the summer course for clinical applications.

## TIME AND PLACE

The course will be done in **Universitas Gadjah Mada, Yogyakarta, Indonesia**.

Yogyakarta is a center for Javanese culture, where the biggest Buddhist temple in the world is located and where Javanese culture was originated. It is known as a student city as well as a heart of Indonesia.

Gadjah Mada University, officially named Universitas Gadjah Mada (UGM), is Indonesian leading university, established on December 19th, 1949. It is also the oldest and largest state university.

Besides having programs in Yogyakarta, students/ course participants will have time to enjoy other attraction spots, Indonesian cultures, food, music, etc.

The course will be held during the summer in Indonesia (Dry Season) in **10-14 July 2023**



## TECHNICALITIES

1. **Bio-TUNE students and members:** Course Fee Waiver and Meals. Free Accommodation is still in the confirmation.
2. **Online Participants Students:** Students will be eligible for Course Fee Waiver by doing admission through the academic system.
3. **Offline Participants Students:** Students will be eligible for Course Fee Waiver by doing admission through the academic system. Participants in the course are provided with free accommodation (including food and beverages) and a course fee waiver, but they must pay for the airfare tickets if they want to join the course offline.
4. **Other participants** (professionals, clinicians, industrial researchers, etc.) may join the course and pay for the course fee and travel during the course. The course fee (including meals and travel) is USD850 (without hotel accommodation) or USD1200 (with hotel accommodation)