

**Program**  
(March 28, 2024)

# **Nanotechnology in Medicine IV: Physical Triggers and Advanced Materials for Translation**

**May 12-16, 2024**  
**Tomar, Portugal**

## **Chairs**

**Shyni Varghese**

Duke University, USA

**Stefaan De Smedt**

Ghent University, Belgium

**Kaushal Rege**

Arizona State University, USA

## **Co-Chairs**

**Milica Radisic**

University of Toronto, Canada

**Victor Shahin**

University of Münster, Germany



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**Previous conferences in this series:**

***Nanotechnology in Medicine III: Enabling Next Generation Therapies***

**May 15-20, 2022**

**Grand Hotel San Michele, Cetraro (Calabria), Italy**

*Conference Chairs:*

Millicent Sullivan, Department of Chemical & Biomolecular Engineering, University of Delaware, USA

Josué Sznitman, Department of Biomedical Engineering, Technion-Israel Institute of Technology, Israel

***Nanotechnology in Medicine II: Bridging Translational in vitro and in vivo Interfaces***

**June 5-9, 2018**

**Grande Real Santa Eulalia Hotel, Albufeira, Portugal**

*Conference Chairs:*

Millicent Sullivan, Department of Chemical & Biomolecular Engineering, University of Delaware, USA

Josué Sznitman, Department of Biomedical Engineering, Technion-Israel Institute of Technology, Israel

***Nanotechnology in Medicine: From Molecules to Humans***

**July 3-7, 2016**

**Hernstein, Austria**

*Conference Chairs:*

Lola Eniola-Adefeso, Department of Chemical Engineering, University of Michigan, USA  
Paolo Decuzzi, Italian Institute of Technology, Italy

## **NOTES**

- Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.
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- After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.

**Sunday, May 12, 2024**

16:00 – 17:45 Conference check-in

17:45 – 18:00 Conference Introduction  
**Chair: Prof. Kaushal Rege**

**TRANSLATIONAL NANOTECHNOLOGIES**

18:00 – 18:30 **KEYNOTE**  
**Translating Biomedical Nanotechnologies across the NIH**  
David Rampulla NIBIB, NIH, USA

18:30 – 19:00 **KEYNOTE**  
**Bench to Bedside in Nanoworld: A roadmap to breakthroughs that change patients' lives"**  
Ramin Darvir, Pfizer, Inc., USA

19:00 – 19:50 **OPENING PLENARY**  
**Optically-activated Nano constructs provide Microenvironment Priming, Imaging and Therapy**  
Tayyaba Hasan, Harvard Medical School, USA

20:00 – 21:30 **DINNER AND SOCIAL**

**Monday, May 13, 2024**

07:30 – 08:30            **BREAKFAST**

**SESSION 1: ADVANCED DRUG DELIVERY**

08:45 – 08:50            Introduction by **Session Chair Prof. Rohan Fernandes**

08:50 – 09:20            **KEYNOTE**  
**Unlocking the Potential: Molecular Fine-Tuning of (Live) Biotherapeutics for Enhanced Oral and Systemic Drug Delivery**  
Juliane Nguyen, University of North Carolina, USA

09:20 – 09:45            **Invited Talk**  
**Brain-targeted Nanoparticles for Treating Parkinsons Disease: From MAbs to Synthetic Cells**  
Avi Schroeder, Technion, Haifa, Israel

09:45 – 10:15            **KEYNOTE**  
**Photoporation for Drug Delivery**  
Kevin Braeckmans, U. Ghent, Belgium

10:15 – 10:40            Coffee break

10:40 – 11:10            **KEYNOTE**  
**Katharina Ribbeck, MIT, USA**  
**TBD**

11:10 – 11:35            **Invited Talk**  
**Nanoinformatics: Using AI to Optimize Cancer Nanomedicines**  
Yossi Shamay, Technion, Haifa, Israel

11:35 – 11:50            **Selected Talk**  
**Logic-Gated Uptake of Protein Nanoassemblies to Triple Negative Breast Cancer Cells using Colocalization-dependent Latching Orthogonal Cage-key Proteins (Co-LOCKR)**  
Antonio Goncalves, U Delaware, USA

12:00 – 13:30            **LUNCH**

**SESSION 2: ADVANCED IMAGING**

13:30 – 13:40            Introduction by **Session Chair: Prof. Milica Radisic**

13:40 – 14:10            **KEYNOTE**  
**Micromechanical Imaging of the Tumor Landscape**  
Seemantini Nadkarni, Harvard Medical School, USA

14:10 – 14:35            **Invited Talk**  
**Fluorinated nanoparticles as powerful bioimaging tools and delivery agents**  
Francesca Baldelli Bombelli, Politecnico di Milano, Italy

**Monday, May 13, 2024 (continued)**

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|---------------|---|
| 14:35 – 15:00 | <b>Selected Talk</b><br><b>Switchable multimodal imaging and synergistic therapy with sequential PTT/PDT using J-aggregated porphyrin nanoparticles</b><br>Nahyun Kwon, University Health Network, Canada |
| 15:00 – 15:30 | Coffee break  |
| 15:30 – 15:55 | <b>Invited Talk</b><br><b>Implications of Nuclear Pore Complexes for Cancer</b><br>Victor Shahin, University of Münster, Germany  |
| 15:55 - 16:10 | Selected Talk from Submissions  |
| 16:10 - 16:25 | Selected Talk from Submissions  |
| 17:00 – 19:45 | Poster Session / Social Hour  |
| 20:00 – 21:30 | <b>DINNER</b>   |



**Tuesday, May 14, 2024**

07:30 – 08:45

**BREAKFAST**

**SESSION 3: BIOFABRICATION AND TISSUE MODELS**

08:45 – 08:50

**Introduction by Chair, Prof. Aereas Aung**

08:50 – 09:20

**KEYNOTE**

**Geometric and cellular control of tissue vascularization**

Milica Radisic, University of Toronto, Canada

09:20 – 09:50

**KEYNOTE**

**Dynamic hydrogels through hierarchical assembly: bioinspiration and beyond**

Kris Kilian, University of New South Wales, Sydney

09:50 – 10:15

**Selected talk**

**A Rapid device for iPSC-based autologous cell production**

Yuguo Lei, Penn State University

10:15 – 10:30

**Selected talk**

**Modeling Neuroinflammation with Human Brain Organoids**

Paris Brown, Duke University

10:30 – 11:00

**Coffee Break**

11:00 – 12:30

**SESSION 4: JUSTICE, EQUITY, DIVERSITY, AND INCLUSION**

**Chair: Prof. Shyni Varghese**

**Opening Remarks:** David Rampulla, NIBIB (10 min)

**Opening Remarks:** Avi Schroeder, Technion, Haifa, Israel (10 min)

**Opening Remarks:** Millicent Sullivan, U. Delaware (10 min)

**Opening Remarks:** Treena Arenzei, Columbia U. (10 min)

**Panelists for Discussion Session:** (30 min)

Avi Schroeder, Technion, Haifa, Israel.

David Rampulla, NIBIB.

Millicent Sullivan, U. Delaware.

Treena Arenzei, Columbia University

12:30 – 14:00

**LUNCH AT THE HOTEL**

14:00 – 18:00

**Excursion - Guided tour of the Convento de Cristo**

18:00

**DINNER “ON YOUR OWN”**

**Wednesday, May 15, 2024**

07:30 – 08:30

**BREAKFAST**

**SESSION 5: TISSUE REPAIR & REGENERATION**

08:30 – 08:35

Introduction by Session **Chair Prof. Juliane Nguyen**

08:40 – 09:10

**KEYNOTE**

**Stimuli-responsive nanofibers for tissue regeneration**

Treena Arenzei, Columbia University, USA

09:10 – 09:35

**Invited Talk**

**Title TBD**

Felix Sauvage, Ghent University, Belgium

09:35 – 09:50

**Antioxidant Potential Assessment of Biosynthesized AgNPs and Characterization of Hepatoprotective Phytoconstituents from Vitis Vinifera Extract using LC-MS/MS**

Mazhar Abbas, University of Veterinary and Animal Sciences Lahore, Pakistan

09:55 – 10:30

**Coffee Break**

10:30 – 11:00

**KEYNOTE**

**Collagen Repair-driven Gene Therapy for Treatment of Chronic Wounds**

Millicent Sullivan, U. Delaware, USA

11:00 – 11:25

**Invited Talk**

**Enzyme Powered nanobots with photothermal and magnetic properties for biomedical applications**

Juan Fraire, Institute for Bioengineering of Catalonia, Spain

11:25 – 11:50

**Invited talk**

**Eco-friendly Bioinks for 3D Bioprinting of Soft Tissues**

Vijayavenkataraman Sanjairaj, NYU Abu Dhabi, Saadiyat Campus

12:00 – 13:30

**LUNCH**

**SESSION 6: IMMUNOENGINEERING**

13:30 – 13:35

Introduction by **Session Chair Victor Shahin**

13:35 – 14:05

**KEYNOTE**

**Supramolecular Peptide Immunotherapies for Inflammatory Diseases**

Joel Collier, Duke University, USA

14:05 – 14:30

**Invited Talk**

**Photothermal Nanoparticles Immune Engineer Potent Tumor-specific T cells for Adoptive Cell Therapy**

Rohan Fernandes, George Washington University, USA

14:30 – 14:55

**Invited Talk**

**Targeted Delivery of Antigen for Enhancing Humoral Immunity**

Aereas Aung, University of Toronto, Canada

15:00 – 15:40

**Coffee Break**

**Wednesday, May 15, 2024 (continued)**

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|---------------|---|
| 15:40 - 16:05 | <b>Invited Talk</b><br><b>Identifying targets for engineering self-tolerance after traumatic injury</b><br>Kaitlyn Sadtler, NIBIB/NIH, USA  |
| 16:05 - 16:20 | Selected Talk from Submissions  |
| 17:00 – 18:45 | Poster Session / Social Hour  |
| 19:00 – 19:50 | <b>Closing Summary and Plenary</b><br>Chair: Prof. Stefaan De Smedt<br><br><b>CONFERENCE PLENARY</b><br><b>Overcoming barriers in tumor targeted drug delivery</b><br>Fabian Kiessling, RWTH Aachen University, Germany |
| 20:00 – 22:00 | Conference Banquet and Presentation Awards  |

**Thursday, May 16, 2024**

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| 07.30 | Breakfast and Departures |
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