



July 6-9, 2025, in Frascati (Rome) Italy

International Symposium on Macromolecular Bioscience and Biomaterials

We are excited to invite you to the International Symposium on Macromolecular Science and Biomaterials taking place on July 6-9, 2025, at the “Scuderie Aldobrandini Museum” in Frascati.

The symposium will feature seven keynote speakers, and opportunities for oral presentations from the participants of the Marie Skłodowska-Curie Research and Innovation Staff Exchange programs PEPSA-MATE and BIOCOCOMER, funded by the European Union’s Horizon 2020 and Horizon Europe Research and Innovation programmes.

The goal of this Symposium is to gather scholars from all over the world to present advances in the fields of biomacromolecule-based nanomaterials, drug delivery and tissue engineering and to foster an environment conducive to exchanging ideas and information. This Symposium will also provide an ideal environment to engage with long-term collaborators and develop new international and multidisciplinary collaborations with peers and young researchers.

TOPICS

- Drug delivery and Theranostics
- Tissue Engineering
- Biomacromolecule-based nanomaterials
- Colloids, Modelling and Advanced Technologies

SCIENTIFIC COMMITTEE

- Francesca Cavalieri
- Frank Caruso
- Margherita Morpurgo
- Giancarlo Forte
- Verónica Salgueiriño

ORGANIZERS

- Francesca Cavalieri
- Marco Polese
- Soraia Fernandes
- Antonio Rinaldi
- Mariano Venanzi
- Gianfranco Bocchinfuso

KEYNOTE SPEAKERS

- BRUNO DE GEEST | Ghent University.
- PAOLA LUCIANI | University of Bern.
- LORENZO ALBERTAZZI | Eindhoven University
- NEVENA TODOROVA | RMIT University
- JIWEI CUI | Shandong University
- LORENZO DI MICHELE | University of Cambridge
- ANDREAS FERY | Leibniz Institut für Polymerforschung Dresden

VENUE

Museum Scuderie Aldobrandini, Frascati (Rome) Italy

International Symposium on Macromolecular Bioscience and Biomaterials

PROGRAM 6th of July

16.00-18.00 Welcome Drink&Coffee and visit of the Museum Scuderie Aldobrandini | Frascati

PROGRAM 7th of July

9.10-09.30 Welcome to the **PEPSA-MATE** and **BIOCOCOMER** Networks
FRANCESCA CAVALIERI | University of Rome “Tor Vergata”

MORNING SESSION I. DRUG DELIVERY, THERANOSTICS AND TISSUE ENGINEERING

CHAIR: Frank Caruso, The University of Melbourne.

- 9.30-10.10** **KEYNOTE SPEAKER**
BRUNO DE GEEST | Ghent University | *Tumor acidosis targeted delivery of immunotherapy by Marker-Agnostic Tumor-Anchoring Chimeras*
- 10.10-10.30** MARGHERITA MORPURGO | University of Padova | *The Avidin-Nucleic Acids interaction. investigation on the molecular bases.*
- 10.30-11.00** **Morning Tea**
- 11.00-11.40** **E-KEYNOTE SPEAKER**
LORENZO ALBERTAZZI | Eindhoven University | *Super-resolution imaging of nanomaterials.*
- 11.40-12.00** MANUEL BANOBRE | International Iberian Nanotechnology Laboratory, Portugal | *A targetless theranostic strategy for precise combinatorial treatment of solid tumors using smart magnetic nanocomposites*
- 12.00-12.20** MARIA KITSARA | Bioemtech | *Radio-theranostics. combining targeted radiopharmaceuticals and molecular imaging in preclinical studies.*
- 12.30-14.00** **LUNCH**

AFTERNOON SESSION I. DRUG DELIVERY, THERANOSTICS AND TISSUE ENGINEERING

CHAIR: Margherita Morpurgo | University of Padova.

14.00-14.40 **E-KEYNOTE SPEAKER**

JIWEI CUI | Shandong University | *Circumvention of Biological Barriers for Improved Therapeutic Delivery.*

14.40-15.00 FRANK CARUSO | The University of Melbourne | *Nanoparticle Engineering for Organ Deposition.*

15.00-15.20 GIANCARLO FORTE | King's College London | *The different layers of pathological mechanosensing.*

15.30-16.00 **Afternoon Tea**

16.00 -16.20 SORAIA FERNANDES | The University of Melbourne | *Antibody-Free Glycogen Nanoparticles Engage Human Immune T Cells for Intracellular Delivery of Small Drugs or mRNA*

16.20-16.40 MARIET WIUM | International Centre for Genetic Engineering and Biotechnology, Cape Town | *The role Axl tyrosine kinase in Cancer resistance. E-Young speaker*

16.40-17.00 VERÓNICA SALGUEIRIÑO | University of Vigo | *Manipulation and guiding of magnetic biodevices*

17.00-18.00 **POSTER SESSION**

1. Patrizia Nadia Hanieh | Nanofaber

Advanced u-Sponge Platform Enabling Sustained Delivery for Rheumatic Disease Therapies.

2. Ana Aguilera Barreto | CIGB

Hyaluronic acid low and high molecular weight microsponges and nanoparticles with GHRP-6 as delivery system.

3. Matilde Lopez Abad | CIGB

Pharmaceutical Development of Heberprovac, a therapeutic vaccine for the treatment of prostate cancer.

4. Yordanka Masforrol González | CIGB

Different magnetic nanoparticles functionalized with biomolecules for use as biotechnological tools and nanomedicine. chemical synthesis, characterization, stability and applications.

5. Yanet Tambara Hernandez | CIGB

Process impurities in recombinant protein and synthetic peptide production processes, complying with regulatory standards.

6. Raj Paul | University of Rome “Tor Vergata”

DNA Condensates as a Platform for Biosensing and Therapeutic Delivery

7. Martina Stocco | University of Padova

Avidin-Nucleic-Acid-NanoASsembly platform for targeted delivery of oligonucleotides

8. Simone Bernardotto | University of Padova

Counteracting emerging pandemics: self assembling nanotools for prevention

MORNING SESSION II. BIOMACROMOLECULES- BASED NANOMATERIALS

CHAIR: Giancarlo Forte, King's College London, UK

- 9.30 –10.10** **KEYNOTE SPEAKER**
LORENZO DI MICHELE | University of Cambridge-*Genetically encoded designer RNA condensates and organelles.*
- 10.10-10.30** PIETRO MATRICARDI | University of Rome La Sapienza | *Polysaccharide nanohydrogels and drug delivery. an effective combination*
- 10.30-11.00** **Morning tea**
- 11.00-11.20** SUKHVIR KAUR BHANGU | The University of Melbourne | *Machine Learning for Antimicrobial Peptide Discovery. Advancing AI-Driven Drug Innovation.*
- 11.20-11.40** NITIN MANTRI | RMIT University | *Hyaluronic Acid-Based Nanohydrogel as Effective Carrier for Transdermal Delivery of CBD for Melanoma Cancer Therapy.*
- 11.40-12.00** QUINN BESFORD | Leibniz Institut für Polymerforschung Dresden | *Exerting Control over Biomolecular Corona Formation at the Nano-Bio Interface*
- 12.00-12.20** NOEMI FIASCHINI | Nanofaber | *Advanced u-Sponge Platform Enabling Sustained Delivery for Rheumatic Disease Therapies. Young speaker.*
- 12.30-14.00** **LUNCH**

AFTERNOON SESSION II. BIOMACROMOLECULES- BASED NANOMATERIALS

CHAIR: Verónica Salgueiriño, University of Vigo.

- 14.00-14.40** **E-KEYNOTE SPEAKER**
PAOLA LUCIANI | University of Bern | *Bioderived and bioinspired drug delivery systems.*
- 14.40-15.00** ALESSANDRO PORCHETTA | University of Rome Tor Vergata | *Input-responsive CRISPR-Cas systems for sensing applications*
- 15.00-15.20** MIRIAM QUATTROCIOCCHI | University of Rome Tor Vergata | *DNA-based dimerization Networks. Young speaker*

15.20-15.50	Afternoon Tea
15.50-16.10	HILDA GARAY PEREZ, Center for Genetic Engineering and Biotechnology-CIGB-552. <i>Development of an anticancer peptide candidate from research to the clinic.</i>
16.10-16.30	NADIHA DAVYDIUK Leibniz Institut für Polymerforschung Dresden <i>Glycogen Nanoparticles for Thrombolytic Therapy</i> , Young speaker.
16.30-16.50	WENDEL ALVES UFABC University <i>Conductive Microneedle Platforms for Electrochemical Biosensing Applications.</i>
16.50-17.00	EMANUELA GATTO Splastica <i>Innovation and Female Leadership. The Role of Women Researchers in Shaping the Future.</i>
17:00-18:00	Round Table PEPSA-MATE and BIOCOCOMER lead PI
19.30	SOCIAL DINNER

SESSION III. COLLOIDS, MODELLING AND ADVANCED TECHNOLOGIES

CHAIR: Francesca Cavalieri, University of Rome "Tor Vergata"

9.00-9.40

KEYNOTE SPEAKER

ANDREAS FERY | Leibniz Institut für Polymerforschung Dresden | *From Hairy Particles to Particle-based Metamaterials*

9.40-10.00

CHAN-JIN KIM | Gyeongsang National University | *Supramolecular Assembly of Macroscopic Functional Building Blocks via Organic-Inorganic Networks.*

10.00-10.20

GERARDO ENRIQUE GUILLEN NIETO | Center for Genetic Engineering and Biotechnology | *Formulation strategies to enhance the immunogenicity of the therapeutic vaccine "HeberNasvac" against chronic hepatitis B.*

10.20-10.50

Morning Tea

CHAIR: Gianfranco Bocchini, University of Rome "Tor Vergata"

10.50-11.30

KEYNOTE SPEAKER

NEVENA TODOROVA | RMIT University | *Interfacial Interactions Enhancing Biomaterial Stability. Insights from Molecular Modelling.*

11.30-11.50

MUTHUPANDIAN ASHOKKUMAR | The University of Melbourne | *Ultrasonics in Bioprocessing*

11.50-12.10

MARCO LATTUADA | Fribourg University | *Using Molecular Dynamics simulations to predict surfactants micellization and micelles-drug interactions*

12.10-12.30

DOMITILLA VANNI | Novo Nordisk Foundation Center for Biosustainability | *Engineering Microbes for Health. Innovative Solutions for Diverse Diseases*

12.30-14.00

LUNCH

14.00-14.20

GAETANO BARBATO | Innosol | *High frequency ultrasound impact on drug loaded nanoparticles release kinetics.*

14.20-14.40

BEN McLEAN | RMIT University | *Computational insights into self-assembly and modulation of biomaterial properties.*

14.40 -15.00

CONCLUSIONS

Participants list

ALESSANDRO PORCHETTA | University of Rome “Tor Vergata”, Italy
ANA AGUILERA BARRETO | CIGB, Havana, Cuba
ANDREAS FERY | Leibniz Institut für Polymerforschung Dresden, Germany
ANTONIO RINALDI | Nanofaber, Rome, Italy
BEN McLEAN | RMIT University, Melbourne, Australia
BRUNO DE GEEST | Ghent University, Belgium
CHAN-JIN KIM | Gyeongsang National University, South Korea
DOMITILLA VANNI | Novo Nordisk Foundation Center for Biosustainability, Lyngby, Denmark
ELISA SCHIAVON | University o Padova, Italy
EMANUELA GATTO | Splastica, University of Rome “Tor Vergata”, Italy
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FRANK CARUSO | The University of Melbourne, Australia
GAETANO BARBATO | Inno-Sol, Rome, Italy
GERARDO ENRIQUE GUILLEN NIETO | CIGB, Havana, Cuba
GIANCARLO FORTE | King’s College London, UK
GIANFRANCO BOCCHINFUSO | University of Rome “Tor Vergata”, Italy
HILDA GARAY PEREZ |CIGB, Havana Cuba.
JIWEI CUI |Shandong University, China
LORENA GARCIA HEVIA | University of Vigo, Spain
LORENZO ALBERTAZZI | Eindhoven University, Netherlands
LORENZO DI MICHELE | University of Cambridge, UK
MANUEL BANOBRE | International Iberian Nanotechnology Laboratory, Braga, Portugal
MARCO LATTUADA | Fribourg University, Switzerland
MARCO POLESE | Inno-Sol, Rome, Italy
MARGHERITA MORPURGO | University o Padova, Italy
MARIA KITSARA | Bioemtech, Gerakas, Greece
MARIANO VENANZI | University of Rome “Tor Vergata”, Italy
MARTINA STOCCO| University of Padova
MARIET WIUM | ICGEB, Cape Town, South Africa
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