

CHEMISTRY FOR A BETTER LIFE: SOLUTIONS TO HEALTH CHALLENGES

27th – 28th November 2025

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AVOGADRO
Colloquia 2025
6th edition



Consiglio Nazionale
delle Ricerche



09:30 – 09:45 Opening and Welcome

Gianluca Maria Farinola, SCI President
Lidia Armelao, CNR DSCTM Director
Maria Careri, SCI Scientific Commission Coordinator

09:45 – 10:15 Chinese Chemical Society, Welcome Ceremony

10:15 – 11:00 The Avogadro Medal

Award Lecture

Paolo Samorì, Full Professor, Strasbourg University

Session 1. Molecular Imaging for Therapeutics and Diagnostics

CHAIRS: Maria Careri, Claudio Sangregorio

11.00 Multimodal imaging across scales to develop novel diagnostic and therapeutic strategies (**Frauke Alves**, Max Planck Institute for Multidisciplinary Sciences di Gottingen, Germany)

11.45 Route to molecular Magnetic Resonance Imaging (**Silvio Aime**, University of Turin)

12.10 Inorganic nanoparticles for tackling tumor therapy and Imaging (**Teresa Pellegrino**, Italian Institute of Technology, Genoa)

12.35 Proteins and phages nanobiovectors: the "Trojan Horse" approach in theranostics (**Matteo Calvaresi**, University of Bologna)

13.00 Harnessing molecular imaging agents for precision diagnostics (**Alessandro Maiocchi**, Bracco SpA)

13.30 – 14.30 **Lunch**

Session 2. Innovative Strategies for Successful Drug Development

CHAIRS: Gianluca Sbardella, Marcella Chiari

14.30 Assembling a new generation of theranostics via supramolecular design (**Angela Casini**, Technical University of Munich, Germany)

14.55 The emerging importance of small molecules in innate immunity and immunotherapy (**Angelo Fontana**, CNR ICB, Naples)

15.20 Functional synthetic platforms for nucleic acid delivery (**Paolo Caliceti**, University of Padua)

15.45 Nanomedicines and drug repurposing (**Ruggero Bettini**, University of Parma)

16.10 From the laboratory to the clinic: challenges and solutions to accelerate the development of new drugs (**Mauro Serraton**, Novartis)

16.30 – 17.00 **Coffee Break**

17.00 – 18.00 **Round Table Discussion**

DISCUSSION LEADERS: Maria Careri, Gianluca Sbardella

Alberto Auricchio (The Telethon Institute of Genetics and Medicine),
Marcella Chiari (CNR SCITEC), **Andrea Chiesi** (Chiesi Group), **Alessandro Maiocchi** (Bracco), **Mauro Serraton** (Novartis)

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CHAIRS: Gianluca Maria Farinola, Matteo Bonomo

09.00 – 09.30 The Bertini Medal

Session 3. Artificial Intelligence-methods and Computational Modeling

CHAIRS: Benedetta Mennucci, Angela Casini

09.30 AI-driven transformations to precision medicine and care (Sara Colantonio, CNR ISTI, Pisa)

09.55 Turbocharging the search for new drugs with AI: the PyRMD approach (Sandro Cosconati, University of Campania Studies "Luigi Vanvitelli")

10.20 Role of computational methods in the era of precision medicine (Andrea Cavalli, CECAM-EPFL, Lausanne)

10.45 – 11.15 **Coffee Break**

Session 4. DNA and RNA-Based Technologies: the Potential of Genomics for Human Health

CHAIRS: Luisa De Cola, Paolo Melchiorre

11.15 Long non-coding RNAs regulate genome activity (Piero Carninci, Human Technopole, Milan)

11.40 CRISPR-based systems controlled by DNA-based molecular devices (Alessandro Porchetta, Tor Vergata University of Rome)

12.05 Engineering biomolecular communication and enhanced biosensing by DNA nanotechnology (Alessandro Bertucci, University of Parma)

12.30 – 13.30 **Lunch**

Session 5. From Molecular Assembling to Artificial Organs

CHAIRS: Lucia Toniolo, Alessandra Sanson

13.30 Advanced biomaterials for a better life using sustainable ingredients and green chemical tools (João Mano, University of Aveiro, Portugal)

14.15 From organs-on-a-chip to organisms-on-a-chip (Manuela Raimondi, Polytechnic University of Milan)

14.40 Minimalistic peptide self-assembly: a versatile toolbox for hydrogels for health (Silvia Marchesan, University of Trieste)

CHAIRS: Gianluca Maria Farinola, Luisa De Cola

15.15 Innovation by evolution: bringing new Chemistry to Life (Frances H. Arnold, Nobel Laureate, California Institute of Technology, USA)

16.00 **Conclusions**

Andrea Lenzi, CNR President
Gianluca Maria Farinola, SCI President



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COMMISSIONE SCIENTIFICA:

- **Maria Careri**, Università degli Studi di Parma
- **Luisa De Cola**, Università degli Studi Statale di Milano
- **Paolo Melchiorre**, Università degli Studi di Bologna
- **Benedetta Mennucci**, Università degli Studi di Pisa
- **Claudio Sangregorio**, CNR ICCOM
- **Alessandra Sanson**, CNR ISSMC
- **Gianluca Sbardella**, Università degli Studi di Salerno
- **Lucia Toniolo**, Politecnico di Milano
- **Matteo Bonomo**, Sapienza Università di Roma



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