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# Summer School on Metabolic Modeling

## From Constraints, to Kinetics and Machine Learning

September 17–19, 2025

University of Milano-Bicocca, Italy

The Summer School on Metabolic Modeling offers an in-depth, hands-on overview of current methods in computational systems biology, with a focus on metabolic networks. Participants will explore:

- Constraint-based modeling and data integration
- Kinetic and multiscale models of central metabolism
- Applications of machine learning to metabolic systems

The school is designed for PhD students, postdocs and researchers interested in learning both the theoretical foundations and practical tools for modeling metabolism across biological scales.

**Scientific and organizing committee:** Marco Vanoni, Chiara Damiani, Pasquale Palumbo and Valentina Pasquale



## Speakers and Contributors

Name	Institution
Chiara Damiani	University of Milano-Bicocca
Bas Teusink	Vrije Universiteit Amsterdam
Annalisa Occhipinti	Teesside University
Claudio Angione	Teesside University
Pasquale Palumbo	University of Milano-Bicocca
Daniela Gaglio	Italian National Research Council
Marco Vanoni	University of Milano-Bicocca
Lilia Alberghina	University of Milano-Bicocca

## Application Information

The course does not include a fee. **To apply for the Summer School on Metabolic Modeling, please fill the [form](#).**

For any inquiries, feel free to contact the organizers at the following email address:

 [metabolicschool@gmail.com](mailto:metabolicschool@gmail.com)

Seats Available: Limited to 40 participants

Application Deadline: 25th August 2025. Selected participants will be notified by the 29th of August 2025.

## Venue

The course will be held at the Department of Biotechnologies and Biosciences of University of Milano located in Piazza della Scienza 2, Milan, Building Bios (U3), room U3-Q8, ground floor.

## Program

### Wednesday, September 17th

Time	Title	Speaker	Type	Institution
14:30–15:00	Welcome and Opening Remarks	Marco Vanoni	Intro	University of Milano-Bicocca
15:00–16:00	Metabolomics in Action: Tools, Techniques and Applications	Daniela Gaglio	Intro Lecture	Italian National Research Council
16:00–17:30	Introduction to Constraint-Based Modeling and Data Integration	Chiara Damiani	Tutorial	University of Milano-Bicocca
17:30–18:30	Flash Talk Session 1			
18:30	Welcome Aperitif		Social Event	

### Thursday, September 18th

Time	Title	Speaker	Type	Institution
09:00–10:30	Introduction to Machine Learning	Annalisa Occhipinti	Tutorial	Teesside University
10:30–11:00	Coffee Break		Break	
11:00–12:30	Integration of Clinical Data into Metabolic networks	Chiara Damiani	Hands-on	University of Milano-Bicocca
12:30–13:30	Lunch Break		Break	
13:30–15:00	Machine Learning Meets Metabolic Modeling	Claudio Angione	Lecture	Teesside University
15:00–15:30	Coffee Break		Break	
15:30–17:00	Fundamentals of Metabolism: from Steady State to Dynamical Behaviour	Bas Teusink	Lecture	Vrije Universiteit Amsterdam
17:00–18:30	Flash Talk Session 2	Students	Flash Talks	

### Friday, September 19th

Time	Title	Speaker	Type	Institution
09:00–10:30	Multi-scale Modeling	Pasquale Palumbo	Tutorial	University of Milano-Bicocca
10:30–11:00	Coffee Break		Break	
11:00–12:30	Flash Talk Session 3	Students	Flash Talks	
12:30–13:00	Has the Warburg effect finally been explained?	Lilia Alberghina	Lectio magistralis	University of Milano-Bicocca