

PhD Lessons in Molecular Medicine, 2025

Pisa, DAY 1, Tuesday, 8th April 2025

Room C1,* Polo San Rossore, via Risorgimento, 19

10.30-12.30: **Analysis of germline genetic variants: prediction of risk, progression of complex human traits, and development of predictive models.** Dr. Manuel Gentiluomo
(UniPI, Dip. Biologia) **1,5 ECTS**

14.00-16.00: **Small-protein scaffold for targeted therapy in solid tumors.** Dr. Roberto Silvestri
(UniPI, Dip. Biologia) **1,5 ECTS**

Pisa, DAY 2, Thursday, 10th April 2025

Room D1,* Polo San Rossore, via Risorgimento, 19

10.30-12.30: **Advanced Techniques in Neuroscience: optogenetics, magnetogenetics, sonogenetics.**
Prof. Jose' Fernando Maya-Vetencourt (UniPI, Dip. Biologia) **1,5 ECTS**

14.00-16.00: **Of neurons and glucose: an unstable relationship.** Prof. Giovanni Casini
(UniPI, Dip. Biologia) **1,5 ECTS**

Firenze, Day 1, Friday, 11th April 2025

Aula ex biblioteca, Dipartimento Neurofarba, viale Pieraccini 6, primo piano ala est del Cubo (zona Careggi) <https://maps.app.goo.gl/L75VUnWDQEJs8tHA7>

Repair Project Presents: "Florence Heart Day 2025" "Florence Heart Day 2025"

Participation in the entire series of morning sessions = 1.5 ECTS

Participation in the entire series of afternoon sessions = 1.5 ECTS

09.00-09:30: **Elisabetta Cerbai and Leonardo Sacconi - Welcome and meeting overview**

Morning session

09.40-10.20: **Non-genetic optical manipulation of cardiac dynamics**

Prof. Francesco Lodola (Università di Milano Bicocca)

10.20-11.00: **Measuring molecular forces across scales: from single molecules to cell collectives**

Prof. Marco Capitanio (UniFI & European Laboratory for Nonlinear Spectroscopy)

11.00-11.30: **Break**

11.30-12.10: **Cardiac mechano-electric coupling and arrhythmias** Prof. Peter Kohl

(Director of the *Institute for Experimental Cardiovascular Medicine*, University of Freiburg)

Afternoon session

14.30-15.00: - **Liquid crystalline elastomers: State of the art and cardiac applications**

(Introduced by Camilla Parmeggiani)

- Marco Turriani – ***Synthetic strategies to obtain photoresponsive artificial muscles***
- Giovanni Simonetti – ***3D-Printed photoresponsive liquid crystalline elastomers: A new approach to artificial muscles***

15.00-15.30: - **Cardiac multiscale bioimaging: from nano- to mesoscales**

(Introduced by Leonardo Sacconi)

- Valentina Romanelli – ***Panoramic optogenetic manipulation of cardiac dynamics***
- Giulia Arecchi – ***Probing relaxed myosin states in hypertrophic cardiomyopathy by second harmonic generation microscopy***

15.30-16.00: – **LCE-based enhancement of engineered heart tissue maturation**

(Introduced by Cecilia Ferrantini)

- Marianna Langione - ***Long-term effect of mavacamten in a mybpc3 ipsc cardiomyocyte model of hypertrophic cardiomyopathy***
- Natasha Giacomelli - ***Liquid Crystalline Elastomers (LCE) as dynamic cell scaffolds***

16.00-16.30: - **New insights into the link between inflammation and electrogenesis**

(Introduced by Elisabetta Cerbai)

- Giada Allegro – ***From rare to common arrhythmias: a potential role for mir-182***
- Andrea Ninu – ***Impact of the expression of viroporin E from Sars CoV2 on cell calcium handling***

Siena, Day 1, Tuesday, 10th June 2025

Aula 14, Polo Scientifico San Miniato, Via Aldo Moro,2, Siena

- 10.00-12.00 **Human primordial germ cells: Origin and maturation during embryonic development** Prof. João Pedro Alves-Lopes (Dept. of Women's and Children's Health, Karolinska Institutet, Stockholm)
- 14.00-16.00 **Human primordial germ cell-like development in human hindgut organoids** Prof. João Pedro Alves-Lopes (Dept. of Women's and Children's Health, Karolinska Institutet, Stockholm)

Firenze, Day 2, Friday, 20th June 2025

Aula magna della ex Presidenza Facoltà di Medicina, Padiglione 6, Careggi, Largo Brambilla 3. ([How to reach the Aula Magna](#))

- 10.00-13.00 **Practical applications in cardiovascular molecular medicine: research and diagnostics to comprehend complexity**, Dott. Elena Sticchi (UniFI)
Myofibrils as a tool to dissect determinants of striated muscle contraction, Prof. Nicoletta Piroddi (UniFI)
- 14.30-17.30 **Regulation of contraction in striated muscle**, Prof. Marco Linari (UniFI)
High force optical tweezers and biophysical applications, Prof. Pasquale Bianco (UniFI)

Siena, Day 2, Tuesday, 10th October 2025

Aula 18, Polo Scientifico San Miniato, Via Aldo Moro,2, Siena ([how to reach Polo Scientifico San Miniato, Siena](#))

- 10.00-12.00 **Muscle in Conversation: Intercellular Signals in Atrophy and Chronic Fatigue Syndromes**, Prof. Stefano Cagnin (Università di Padova, Dept. Biology)
- 14.00-16.00 **Single-Cell Omics: A Gateway to Multi-Layered Molecular Profiling**, Prof. Gabriele Sales (Università di Padova, Dept. Biology)