



RETREAT OF THE Ph.D. PROGRAM

May 23th-26th, 2022

Park Hotel Olimpia, Fraz. Pregola, Brallo di Pregola (PV)

Organizers: Professors Maria Grazia Bottone, Sergio Comincini, Francesco Lescai, Valeria Merico, Natalia Simona Pellegata, Paola Rebuzzini
Department of Biology and Biotechnology "L. Spallanzani", University of Pavia

The program of the retreat includes a main course on **"New emerging technologies in cell biology"**, a day on **"data visualization"** and time for leisure and socialization between students.

Aim of the **Frontiers in cellular biology** course **"New emerging technologies in cell biology"** is to give the Ph.D. students an overview of some of the new emerging and innovative technologies, recently applied to different cellular systems.

Technology is an inseparable part of science because science without technology is incomplete and unapplicable. The integration of modern-day technologies in cell biology studies has completely revolutionized biology and health care. The course will cover a set of topics and examples to help understanding the most recent developments in this field.

From the first microscopes, the world of imaging has come a long way developing 3D images, overcoming the limits of optical microscopy. Also, 3D cell cultures and the use of biomaterials play, up to date, an important role to create the proper environment for tissue development, organisation and function. In parallel, the employment of "omics" technologies, combined with artificial intelligence and bioinformatic tools improves the knowledge of biological systems.

Extracellular vesicles (EVs) are biologically active membrane vesicles secreted by many cells in the body. A variety of nucleic acids, proteins, and other biologically active substances in EVs can be used to exchange and transmit information between cells, thereby affecting the progression of various diseases. An ever increasing number of scientific works reports the importance of EVs in the understanding of various physio-pathological conditions, also focusing on their innovative therapeutic use. All together these new emerging technologies will allow the opening of new clinical applications.

One day of the retreat will be dedicated to a course on data visualisation, to teach how to design and create effective data visualisations for presentations and manuscripts. **Bring your laptop!**

Programme of the retreat

May 23th

10.00

bus leaves from the parking in via Ferrata, Pavia

12.00

arrival at the hotel

13.00

lunch

14.00-17.00

Prof. Graziano Martello (Department of Biology of the University of Padova)

Pluripotent stem cells: a long journey from embryos to embryo-like models

May 24th

9.00-11.00

Prof. Michele Mauri (Scientific Director of DensityDesign Lab)

Principles of data visualisation

coffee break at 11.00

11.30-13.00

Prof. Michele Mauri (Scientific Director of DensityDesign Lab)

Examples of effective visualisations and applications to figure design

13.00

lunch

14.00-17.00

Prof. Francesco Lescai (Department of Biology and Biotechnology "L. Spallanzani", University of Pavia)

From data to visualisations: creating your own figure in R

Exercises and applications

15.30

coffee break

14.00-17.00

Prof. Francesco Lescai (Department of Biology and Biotechnology "L. Spallanzani", University of Pavia)

Exercises and applications

May 25th

10.00-12.00

Prof. Marco Peviani (Department of Biology and Biotechnology "L. Spallanzani", University of Pavia)

Correlative MRI/ex-vivo high fluorescence microscopy to investigate cancer cells invasiveness and vascular alterations in glioblastoma... and beyond

12.00-13.00

Round table of PhD students

14.00-16.00

Prof. Sergio Comincini (Department of Biology and Biotechnology "L. Spallanzani", University of Pavia)

Integrative biology of Extracellular vesicles (EVs): present and future perspectives

16.00-19.00

Trekking with Prof. Maria Grazia Bottone (beginner level, **bring good shoes**)

May 26th

9.00-10.45

Prof. Cristina Belgiovine (Humanitas Research Hospital, Rozzano)

Immune system: friend or foe in cancer progression and therapy?

10.45

coffee break

11.15-13.00

Prof. Alessandra Balduini (Department of Molecular Medicine, University of Pavia)

3D bone marrow modelling for platelet production

14.30-16.30

Dr. Francesco Lodola (Department of Biotechnologies e Biosciences, University of Milano-Bicocca)

Non genetic optostimulation of living cells: Novel approaches and perspectives

17.00

bus leaves for the parking in via Ferrata, Pavia