



Course "Genome Manipulation"

"Translation of basic science research into applications: lessons from gene and cell therapies"

Organizers:

Prof. Alma Balestrazzi and Prof. Mariangela Bonizzoni, Dep. Biology and Biotechnology (DBB), University of Pavia.

Dr. Donata Orioli and Dr. Carla Tribioli, Institute of Molecular Genetics (IGM), CNR, Pavia.

This course will present the most advanced approaches of genome manipulation for gene therapy, cell therapy, insect control and plant disease resistance. Thus, examples of basic science achievements translated into applications to improve human health.

The course will include seminars from world-wide experts on:

- Basic aspects of Gene and Cell Therapy
- Recent strategies of Gene therapy and Genome manipulation
- Stem cell biology and phenotypic plasticity in homeostasis and cancer
- Stem cell therapy for tissue repair.
- Gene and Cell therapy successfully used for the treatment of specific diseases
- Genetically modified mosquitoes to fight malaria
- Molecular networks promoting plant pathogen resistance against foreign invaders

Besides seminars, informal discussions on critical issues, current limitations, challenges and future methodologies will be promoted.

The seminars will be held on February 2020 in the A. Falaschi conference room at IGM.

Seminar Schedule

- **Dr. Alessio Cantore**, San Raffaele Telethon Institute for Gene Therapy and Vita-Salute San Raffaele University, Milano.

Tuesday February 4

First lesson: "*Gene therapy: principles and applications*" (10:30 AM-12:30 PM)

Second lesson: "*Liver-directed gene therapy for Hemophilia and beyond*" (2:30 PM-4:30 PM)

- **Prof. Riccardo Fodde**, Department of Pathology, Erasmus University Medical Center, Rotterdam-The Netherlands.

"Phenotypic plasticity in homeostasis and cancer"

Thursday February 6 (2:30 PM-4:30 PM)

- **Prof. Graziella Pellegrini**, Center for Regenerative Medicine "Stefano Ferrari", Department of Surgery, Medicine, Dentistry and Morphological Sciences, University of Modena and Reggio Emilia, Modena.

"Epithelial stem cells: a real tool for effective regenerative medicine treatments"

Monday February 10 (11:30 AM-12:30 PM)

- **Prof. Michele De Luca**, Center for Regenerative Medicine "Stefano Ferrari", Department of Life Sciences, University of Modena and Reggio Emilia, Modena.

"Cell and gene therapy by somatic stem cells: the paradigm of epithelial stem cells"

Monday February 10 (2:00 PM-3:00 PM)

- **Prof. Elena Cattaneo**, Senator for life; University of Milan, Department of Biosciences, Laboratory of Stem Cell Biology and Pharmacology of Neurodegenerative Diseases, Milano; National Institute of Molecular Genetics (INGM) Romeo and Enrica Invernizzi, Milano.

"Stem cells for Huntington's disease: past, present and future"

Thursday February 13 (2:30 PM-4:30 PM)

- **Prof. Franco Locatelli**, Laboratory of Immunogenetics and Transplant, Department of Oncohematology and Cell and Gene Therapy, IRCCS Bambin Gesù Pediatric Hospital, Rome.

"Engineering somatic cells to cure genetic disorders and cancer"

Friday February 14 (2:30 PM-4:30 PM)

- **Dr. Patrizia Comoli**, Pediatric Hematology/Oncology & Cell Factory, Fondazione IRCCS Policlinico S. Matteo, Pavia.

"T cell therapy to treat malignancy and infections"

Monday February 17 (3:00 PM-5:00 PM)

- **Prof. Maurilio Sampaolesi**, Stem Cell Institute Leuven, Dept. of Development and Regeneration, KU Leuven, Leuven, Belgium; Translational Cardiomyology Lab, Stem Cell Biology and Embryology Unit, KU Leuven, Leuven, Belgium; Human Anatomy Unit Department of Public Health, Experimental and Forensic Medicine, Pavia.

"Single cell OMICS, cell reprogramming and gene editing to challenge muscular dystrophies"

Tuesday February 18 (3:00 PM-5:00 PM)

- **Prof. Andrea Chini**, Department of Plant Molecular Genetics, National Center for Biotechnology (CNB/CSIC), Madrid.

"When chemistry meets biology: the JA-Ile plant hormone biosynthetic and signalling pathway"

Friday February 28 (10:30 AM-12:30 PM)

- **Prof. Andrea Crisanti**, Department of Life Sciences, Imperial College, South Kensington, London.

“Gene drive based unnatural selection for malaria vector control”

Friday February 28 (2:30 PM-4:30 PM)