

## **Engineering the nano bio interface of biomimetic nanovesicles**

*Dr. Ennio Tasciotti, PhD*

*Director Human Longevity Program, IRCCS San Raffaele, Rome  
Professor Biotechnology, San Raffaele University, Rome*

Recent advances in the field of material science have shown that biomaterials and biomimetic approaches can be employed to improve the functional properties of biomedical technologies. In particular, the seminar will focus on the design and development of nanocarriers endowed with a biological identity to autologous biological entities (immune cells, exosomes, apoptotic bodies). All these approaches benefit from advantageous properties that make their functions superior to those of previous generations of nanoparticles.

The seminar will describe the molecular composition, the biochemistry of the nano-bio interface, the pharmacology and the interaction with the cells of the circulatory and immune system. Overall, this new class of nanovesicles showed improved circulation time, targeting, and drug delivery capabilities and promising therapeutic effects in preclinical models of inflammatory based pathologies (sepsis, auto-immune, cardiovascular, cancer). By creating innovative biomedical platforms able to better interact with the different cell populations of the surrounding microenvironment, it is possible to ameliorate the function of drug delivery nanoparticles, to improve the accumulation of a therapeutic payload at the target site, and to develop inherently therapeutic biomimetic nanovesicles.