

Biomimetic Nanoparticles for Personalized Medicine

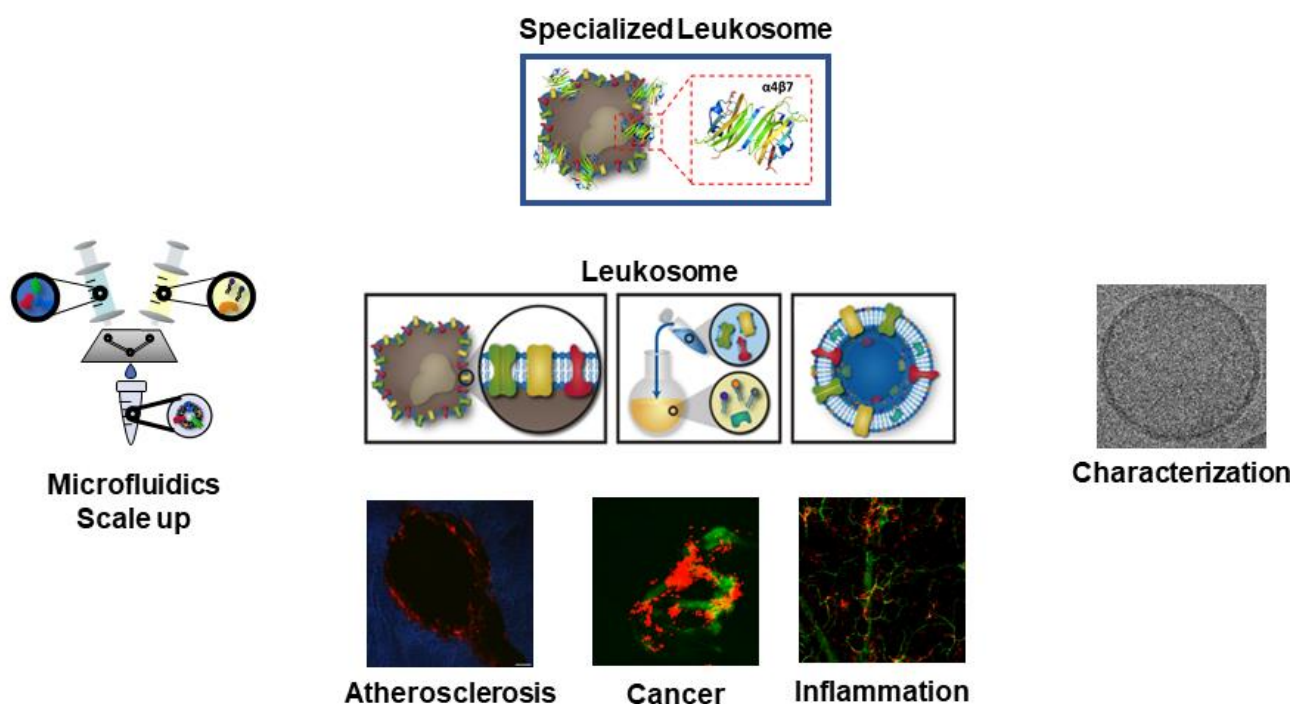
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Graphical Abstract



Abstract

In the past decade, the development of biomimetic nanocarriers opened new scenarios in the field of nanotechnology related to the development of drug delivery systems. Particularly, we are witnessing the shift from the original concept of the nanocarrier as inert material with the only function of protection and delivery of the payload, to a more sophisticated entity that combines synthetic and biologic properties in the same nanoparticle. In this talk I will introduce the design and development of bio-hybrid liposome-like nanovesicles, called Leukosomes, by formulating the membrane proteins of circulating leukocytes with synthetic biocompatible lipids, of which we showed both their innate targeting and drug delivery properties in different mouse models, i.e., atherosclerosis and cancer.

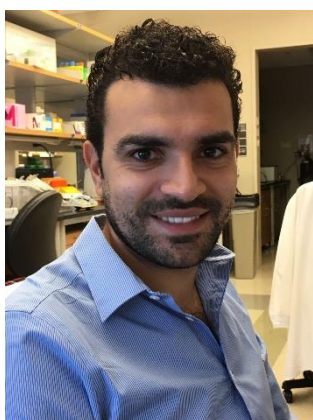
Besides the drug delivery activity typical of nanomedicines, interestingly we could observe also an intrinsic anti-inflammatory effect, which suggested us of their potential role in the treatment of inflammatory diseases like sepsis-like LPS-induced endotoxicosis and inflamed bowel disease.

Keywords: Nanomedicine; nanotechnology; biomimicry, inflammation, theranostics.

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Biography of Presenting Author



Roberto Molinaro is an intellectual property manager at San Raffaele Hospital, Milan, Italy. Prior coming to San Raffaele Hospital, he was assistant professor in Pharmaceutical Technology at the University of Urbino Carlo Bo, Italy. He received several multidisciplinary trainings in nanotechnology, nanomedicine and cardiovascular research from the Harvard Medical School (Boston, Massachusetts) and the Houston Methodist Research Institute (Houston, Texas). His research focuses on the design and development of biomimetic drug delivery systems for targeting inflamed endothelium and selective delivery of therapeutics for the treatment of pathologies that have an inflammatory background. His research interests include drug delivery, personalized nanomedicine, theranostics, cancer therapy and cardiovascular diseases.

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