



RESEARCH TOPIC MEM15

Definition of cellular identity modification in the human myocardium during disease

Curriculum MEM Standard

Laboratory name

Molecular Cardiology, Humanitas University

Pre-clinical Supervisor

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Abstract

Recent advances in sequencing technologies have led to the identification of a plethora of new types of cells in the myocardium. In particular, the complexity and diversity of inflammatory cell types and endothelial cells in the myocardium have emerged. Whether the modification of cellular identities and what is the role of different cell types composing the myocardium in the pathogenesis of heart failure are not known. The PhD student is expected to work on this topic, taking advantage of the technologies available at Humanitas University, which include Single Cell Sequencing and spatial transcriptomics as well as tissue mass spectrometry, coupled with bioinformatics.

Main technical approaches

Molecular and cellular biology approaches, mostly single cell sequencing, visual transcriptomics and tissue mass spectrometry, together with bioinformatics

Scientific references

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2. Papait R, Serio S and Condorelli G: The role of the epigenome in heart failure, *Physiol Rev*, Oct 1;100(4):1753-1777. doi: 10.1152/physrev.00037.2019.
3. Hall I, Climent M, Quintavalle M, Farina FM, Schorn T, Zani S, Carullo P, Kunderfranco P, Civilini, E., Condorelli G*, and Elia L: Circ_Lrp6, a circular RNA enriched in vascular smooth muscle cells, acts as a sponge regulating miRNA-145 function *Circ Res*, 2019 Feb 15;124(4):498-510.



4. Kallikourdis M, Martini E, Carullo P, Sardi C, Roselli G, Greco CM, Vignali D, Riva, F, Ormbostad Berre AM, Stolen TO, Fumero A, Faggian G, Di Pasquale E, Elia L, Rumio C, Catalucci D, Papait R, Condorelli G: T cell costimulation blockade blunts pressure overload-induced heart failure: Nature Comm, 8:14680.

5. Papait,S, Serio, S., Pagiatakis, C., Rusconi, F., Carullo, P., Mazzola, M., Salvarani, N., Miragoli, M., Condorelli, G (2017): Histone methyltransferase G9a is required for cardiomyocyte homeostasis and hypertrophy, Circulation, 2017 Aug 4. pii: CIRCULATIONAHA.117.028561, 136(13):1233-1246

Type of contract

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