Mechanisms of Multi-Signal Integration in Macrophage Gene Regulation

Master's Thesis Opportunity - European Institute of Oncology IEO, Milan

We offer a one-year master's thesis focused on uncovering the molecular mechanisms that govern how macrophages integrate diverse inflammatory signals to shape gene expression programs.

Macrophages are key innate immune cells that play essential roles in tissue development, homeostasis, and defense against pathogens, as well as being critical players in cancer development and therapy outcomes. In response to microenvironmental cues, they undergo dynamic and reversible transcriptional reprogramming, activating or repressing hundreds of genes to acquire distinct functional states. Despite significant progress, the mechanisms by which macrophages integrate multiple concurrent signals to establish specific gene expression programs remain poorly understood.

Building on recent functional genomics data generated in our lab, this project will combine genomics, proteomics, and advanced imaging approaches to dissect the molecular logic and functional consequences of multi-signal integration in macrophages. The goal is to gain a deeper understanding of how complex inflammatory environments shape macrophage identity and function.

To apply, please send a short motivation letter and your academic CV (including grades) to **Gioacchino Natoli** at gioacchino.natoli@ieo.it

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