Role of Polycomb complexes in stem cells and cancer

Lluis Morey, Ph.D.
Assistant Professor

Sylvester Comprehensive Cancer Center
Cancer Epigenetics Program
Human Genetics Department, University of Miami Miller School of Medicine
Miami, USA, 33136

Polycomb-group (PcG) proteins play essential roles in regulating genes required for cell lineage specification and embryonic development. Alterations in the expression, and mutations of Polycomb genes have long been linked to the occurrence of different cancer types. PcG proteins from at least two distinct complexes, the Polycomb-repressive complexes 1 and 2 (PRC1 and PRC2). Traditionally, PcG complexes have been associated with maintenance of gene repression mainly via histone-modifying activities. However, during the last years, increasing evidence indicate the PcG complexes can also positively regulate gene transcription in multiple biological processes, cellular stages and in cancer. We recently showed we show that RNF2, encoding RING1B, and other PRC1 genes are overexpressed in breast cancer. While PRC1 still exerts its repressive function, it is also recruited to oncogenic active enhancers. Mechanistically, we found that PRC1 complexes functionally associate with ERα and its pioneer factor FOXA1 in ER+ breast cancer cells, and with BRD4 in triple-negative breast cancer cells (TNBC). I will discuss our progress towards understanding the RING1B-mediated molecular mechanisms in ER+ breast cancer and in metastatic endocrine-resistant breast cancer.

Biography
Dr. Morey received his B.S degree in Biology from the Universitat de Barcelona in 2003. He received his Ph.D. in Molecular biology from the Universitat Pompeu Fabra (Spain) under the supervision of Dr. Di Croce at the Center for Genomic Regulation in 2008. He was a post-doctoral fellow in the laboratory of Dr. Helin at BRIC (Denmark) until 2010. He then joined the laboratory of Dr. Di Croce as a Staff Scientist until 2015. Dr. Morey was recruited to the Sylvester Comprehensive Cancer Center as an Assistant Professor in the Department of Human Genetics at the University of Miami in 2015.