

## Dipartimento di Biotecnologie e Bioscienze – UNIMIB

Monday, March 11, 2024, 4:00 p.m., U3-BIOS building, room U3-09 / Webex

# Closing the circle: from gene fusions to ecDNAs. Cancer models in the age of CRISPR

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**Abstract:** Oncogene amplification mediated by extrachromosomal circular DNAs is (ecDNAs) commonly observed in some of the most aggressive human cancers, where it is associated with worse prognosis, rapid tumor evolution, and the development of drug resistance. Despite its relevance, this class of cancer associated mutation has proven challenging to model in cells and in whole organisms. In fact, no mouse models of human cancers driven by oncogene amplification have ever been generated and this has impaired our ability to study the roles of gene amplification in tumor initiation and in tumor evolution in an immunocompetent context.

To overcome this major limitation, my laboratory has developed a novel general strategy to engineer and track megabase-sized oncogenic ecDNAs harboring any oncogene of interest in primary cells and in mice. In this seminar I will discuss how we are applying this novel genome engineering strategy to study ecDNAs dynamic in cells and to develop the first mouse models of human cancers driven by focal oncogene amplifications.

Host: **Ferdinando Chiaradonna**

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