

AVAILABLE POSITIONS

Principal Investigator	ALBERTO BARDELLI
Institute of Affiliation	IFOM

PROJECT INFO	
Title of the proposed project:	Harnessing nonsense-mediated RNA decay in immune refractory colorectal cancers
Short description of the project	This project investigates the role of nonsense-mediated mRNA decay (NMD) as a key post-transcriptional mechanism suppressing the expression of mutant transcripts and their derived neoantigens. Through genetic and pharmacological NMD inhibition in preclinical models of CRC, the project aims to restore neoantigen expression, enhance immune surveillance, and evaluate the synergistic potential of combining NMD inhibition with standard-of-care chemotherapy and anti-PD1 immunotherapy. The goal is to identify genomic biomarkers predicting immunogenic benefit from NMD inhibition, paving the way for novel therapeutic strategies in immune-refractory CRC.
Main research area for the project	Cancer genomics and immunotherapy
Second research area for the project	RNA biology
3 key words for the project	Nonsense-mediated mRNA decay (NMD), Tumor Neoantigens, Colorectal cancer

LAB INFO	
Main topic/s of the lab	1) Conversion of immune refractory CRCs into immune sensitive states 2) Liquid biopsy and multi-omics profiling (genomics, transcriptomics, epigenomics, proteomics) to monitor tumor evolution and minimal residual disease. 3) Mechanisms of sensitivity and resistance to cytotoxic and targeted therapies in colorectal cancer
Short description of the lab activity	The Genomics of Cancer and Targeted Therapies program investigates how the genetic and multi-omic landscape of solid tumors—particularly colorectal cancer—shapes response and resistance to targeted agents and immunotherapy. By integrating patient-derived models, next-generation sequencing and liquid biopsy approaches, the lab dissects tumor heterogeneity and clonal evolution during treatment, identifies mechanisms of primary and acquired resistance, and defines molecular biomarkers to guide patient selection, therapeutic sequencing and rechallenge strategies. The overarching goal is to translate these insights into precision oncology interventions that improve survival and reduce unnecessary toxicity for patients with advanced solid tumors.
Recent bibliography	1) Cattaneo CM, Scardellato S, Mauri G, Matafora V, Ojala VK, Cannariato C, Chila R, Magnani ZI, Scheper W, Lazzari L, Voest EE, Bonini MC, Bachi A, Siena S, Marsoni S, Germano

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 - 7) Rousseau B, Patel M, Artz O, Vlachos G, Patel S, Hayatt O, Argilés G, Foote MB, Luo L, Shah R, Mehta S, Rangavajhula K, Stewart CM, Gerber D, Bhattacharya R, Stephens D, Mieleles D, Randrian V, Abdelfattah S, Zhang L, Membreno-Berganza N, Lamendola-Essel MF, Piastra-Facon F, Vidal J, Johannet P, Lu S, White JR, Maron SB, Barlas A, Weipert CM, Rosiek E, Zhang T, He B, Monette S, Qu R, Fidele D, Bowker S, Kahn A, Vitiello PP, Germano G, **Bardelli A**, Mandal R, Ma X, Chan TA, Lu S, Cercek A, Abdel-Wahab O, de Stanchina E, Segal NH, Diaz LA Jr. *Induction of a mismatch repair deficient genotype by tailored chemical mutagenesis in experimental models of cancer.* Cancer Cell 2025 Jul 14;43(7):1313-1327.e10. doi: 10.1016/j.ccell.2025.05.010.
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Group composition	Main group members at IFOM: 1 Associate Professor, 2 Staff Scientist, 5 Postdoctoral Fellows, 5 PhD students, 1 Research Technician. Main group members at the University of Torino: 1 Associate Professor and co-PI, 4 Postdoctoral Fellows, 2 PhD students, 2 Research Technicians, 1 Administrative Staff
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