

Alberto Puliafito

Associate professor of Biochemistry, Department of Oncology, University of Turin

Personal details

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Education

- 2003-2006** PhD at Institut Nonlinéaire de Nice (INLN-CNRS). University of Nice-Sophia Antipolis and University of Genoa
- 1998-2003** Undergraduate studies in Physics. University of Genoa, Final mark 110/110 *cum laude*.

Professional experience

- 2021-current** Associate professor
- 2018-2021** Assistant professor (RTDB)
- 2017 and 2018** Fondazione Umberto Veronesi Postdoctoral Fellowship
- 2015** Visiting scholar in Di Talia lab, Dept. of Cell Biology, Duke University
- 2010-2016** Postdoc, IRCC, Unit: Physical Biology of the cancer cell and Cell Migration.
- 2009-2010** Postdoctoral Fellowship from ANR, Institut Pasteur, France
- 2006-2009** Postdoctoral Fellowship from Kavli Institute for theoretical physics, UCSB
- 2003-2006** Doctoral Fellowship from University of Nice

Teaching activity

- Biochemistry for nursing school
- Preparatory Biochemistry for medical school
- PhD course on introductory cell biology
- PhD course on Quantitative imaging and image analysis

Research interests

Quantitative cancer biology and biophysics, mathematical modeling of biological systems, growth regulation, collective and directional migration, quantitative biological imaging and image analysis

Current projects

- Population dynamics in colorectal cancer
 - Branching processes and inference in cell population models
 - Dynamics of recruitment and cytotoxicity of NK and cytokine induced killer cells in solid and liquid tumors
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Publications

- [1] Miriam Palmiero, Isabel Cantarosso, Laura di Blasio, Valentina Monica, Barbara Peracino, Luca Primo, and Alberto Puliafito. Collective directional migration drives the formation of heteroclonal cancer cell clusters. *Molecular oncology*, January 2023.
- [2] Mariangela Russo, Simone Pompei, Alberto Sogari, Mattia Corigliano, Giovanni Crisafulli, Alberto Puliafito, Simona Lamba, Jessica Erriquez, Andrea Bertotti, Marco Gherardi, Federica Di Nicolantonio, Alberto Bardelli, and Marco Cosentino Lagomarsino. A modified fluctuation-test framework characterizes the population dynamics and mutation rate of colorectal cancer persister cells. *Nature genetics*, 54:976–984, July 2022.
- [3] Luke Hayden, Anna Chao, Victoria E. Deneke, Massimo Vergassola, Alberto Puliafito, and Stefano Di Talia. Cullin-5 mutants reveal collective sensing of the nucleocytoplasmic ratio in drosophila embryogenesis. *Current biology : CB*, 32:2084–2092.e4, May 2022.
- [4] Ilenia Iaia, Loretta Gammaitoni, Giulia Cattaneo, Lidia Giraud, Chiara Donini, Erika Fiorino, Luca Primo, Fabrizio Carnevale-Schianca, Massimo Aglietta, Alberto Puliafito, and Dario Sangiolo. Recruitment, infiltration, and cytotoxicity of hla-independent killer lymphocytes in three-dimensional melanoma models. *Cancers*, 13, May 2021.
- [5] Desiana Somale, Giovanna Di Nardo, Laura di Blasio, Alberto Puliafito, Marianela Vara-Messler, Giulia Chiaverina, Miriam Palmiero, Valentina Monica, Gianfranco Gilardi, Luca Primo, and Paolo Armando Gagliardi. Activation of rsk by phosphomimetic substitution in the activation loop is prevented by structural constraints. *Scientific reports*, 10:591, January 2020.
- [6] Barbara Lupo, Francesco Sassi, Marika Pinnelli, Francesco Galimi, Eugenia R. Zanella, Valentina Vurchio, Giorgia Migliardi, Paolo Armando Gagliardi, Alberto Puliafito, Daria Mangano, Paolo Luraghi, Michael Kragh, Mikkel W. Pedersen, Ivan D. Horak, Carla Boccaccio, Enzo Medico, Luca Primo, Daniel Nichol, Inmaculada Spiteri, Timon Heide, Alexandra Vatsiou, Trevor A. Graham, Elena Élez, Guillem Argiles, Paolo Nuciforo, Andrea Sottoriva, Rodrigo Diestmann, Diego Pasini, Elena Grassi, Claudio Isella, Andrea Bertotti, and Livio Trusolino. Colorectal cancer residual disease at maximal response to egfr blockade displays a druggable paneth cell-like phenotype. *Science translational medicine*, 12, August 2020.
- [7] Alberto Puliafito, Serena Ricciardi, Federica Pirani, Viktorie Čermochová, Luca Boarino, Natascia De Leo, Luca Primo, and Emiliano Descrovi. Driving cells with light-controlled topographies. *Advanced science (Weinheim, Baden-Wurttemberg, Germany)*, 6:1801826, July 2019.
- [8] Gabriella Doronzo, Elena Astanina, Davide Corá, Giulia Chiabotto, Valentina Comunanza, Alessio Noghero, Francesco Neri, Alberto Puliafito, Luca Primo, Carmine Spampanato, Carmine Settembre, Andrea Ballabio, Giovanni Camussi, Salvatore Oliviero, and Federico Bussolino. Tfeb controls vascular development by regulating the proliferation of endothelial cells. *The EMBO journal*, 38, February 2019.
- [9] Victoria E. Deneke, Alberto Puliafito, Daniel Krueger, Avaneesh V. Narla, Alessandro De Simone, Luca Primo, Massimo Vergassola, Stefano De Renzis, and Stefano Di Talia. Self-organized nuclear positioning synchronizes the cell cycle in drosophila embryos. *Cell*, 177:925–941.e17, May 2019.
- [10] Giulia Chiaverina, Laura di Blasio, Valentina Monica, Massimo Accardo, Miriam Palmiero, Barbara Peracino, Marianela Vara-Messler, Alberto Puliafito, and Luca Primo. Dynamic interplay between pericytes and endothelial cells during sprouting angiogenesis. *Cells*, 8, September 2019.
- [11] Paolo Armando Gagliardi, Desiana Somale, Alberto Puliafito, Giulia Chiaverina, Laura di Blasio, Michele Oneto, Paolo Bianchini, Federico Bussolino, and Luca Primo. Mrck α is activated by caspase cleavage to assemble an apical actin ring for epithelial cell extrusion. *The Journal of cell biology*, 217:231–249, January 2018.
- [12] Laura di Blasio, Alberto Puliafito, Paolo Armando Gagliardi, Valentina Comunanza, Desiana Somale, Giulia Chiaverina, Federico Bussolino, and Luca Primo. Pi3k/mtor inhibition promotes the regression of experimental vascular malformations driven by pik3ca-activating mutations. *Cell death & disease*, 9:45, January 2018.
- [13] Alberto Puliafito, Luca Primo, and Antonio Celani. Cell-size distribution in epithelial tissue formation and homeostasis. *J R Soc Interface*, 14(128), Mar 2017.

- [14] S. L. Marasso, A. Puliafito, D. Mombello, S. Benetto, L. Primo, F. Bussolino, C. F. Pirri, and M. Cocuzza. Optimized design and fabrication of a microfluidic platform to study single cells and multicellular aggregates in 3d. *Microfluidics and Nanofluidics*, 21(2):29, 2017.
- [15] Paolo Armando Gagliardi, Alberto Puliafito, and Luca Primo. Pdk1: At the crossroad of cancer signaling pathways. *Semin Cancer Biol*, May 2017.
- [16] Laura Di Blasio, Paolo A Gagliardi, Alberto Puliafito, and Luca Primo. Serine/threonine kinase 3-phosphoinositide-dependent protein kinase-1 (pdk1) as a key regulator of cell migration and cancer dissemination. *Cancers (Basel)*, 9(3), Mar 2017.
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- [21] Alberto Puliafito, Alessandro De Simone, Giorgio Seano, Paolo Armando Gagliardi, Laura Di Blasio, Federica Chianale, Andrea Gamba, Luca Primo, and Antonio Celani. Three-dimensional chemotaxis-driven aggregation of tumor cells. *Sci Rep*, 5:15205, 2015.
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- [27] Alberto Puliafito, Lars Hufnagel, Pierre Neveu, Sebastian Streichan, Alex Sigal, D. Kuchmir Fyngenson, and Boris I Shraiman. Collective and single cell behavior in epithelial contact inhibition. *Proc Natl Acad Sci U S A*, 109(3):739–744, Jan 2012.
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