

BIOGRAPHICAL SKETCH

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NAME: Andrea Aroldi

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POSITION TITLE: Physician Scientist in Hematology

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Milano-Bicocca	MD	10/2013	Medicine and Surgery
University of Pavia	MMSc	11/2019	Hematology
Harvard Medical School	Postdoctoral	10/2020	Cancer Immunotherapy

A. Personal Statement

As a hematologist, my main research expertise focuses on tyrosine kinase inhibitors (TKIs) in chronic myeloid leukemia (CML). I have contributed to studies that defined clinical and molecular predictors of treatment-free remission (TFR) and explored mechanisms of relapse after TKI discontinuation. A central part of my work investigates the persistence of leukemic stem cells (LSCs) under TKI pressure, aiming to identify biomarkers that can distinguish quiescent, drug-insensitive populations from cycling, treatment-sensitive ones. This effort combines functional assays, single-cell transcriptomics, and the analysis of longitudinal patient samples collected during TKI therapy. My clinical activity complements this research, as I directly manage CML patients undergoing TKI treatment and discontinuation, providing a unique translational perspective. Through this integrated approach, my goal is to develop strategies that refine patient selection for TFR, improve long-term outcomes, and ultimately overcome the challenge of TKI resistance.

B. Positions, Scientific Appointments, and Honors**Positions and Scientific Appointments**

2025 - Present Guest Topic Editor, Frontiers in Immunology

2023 – Present Hematologist. Fondazione IRCCS San Gerardo dei Tintori. Monza, Italy.

2022 - Present Physician Scientist. Molecular Oncology Lab. Department of Medicine and Surgery. University of Milano-Bicocca. Monza, Italy.

2021 - Present Peer Reviewer, Frontiers in Immunology

2020 – Present	Hematologist. Hematology Department and Bone Marrow Transplant Unit. Fondazione IRCCS San Gerardo dei Tintori. Monza, Italy.
2020 - Present	Lecturer Department of Medicine and Surgery. University of Milano-Bicocca. Monza, Italy.
2020 – 2022	Post-doctoral Research Fellow. Molecular Oncology Lab. Department of Medicine and Surgery. University of Milano-Bicocca. Monza, Italy.
2019 – 2020	Post-doctoral Research Fellow. Department of Pathology. Children's Hospital Boston. Harvard Medical School. Boston, MA. USA.
2014 – 2019	MD. Fellowship Program in Hematology Department of Hematology and Bone Marrow Transplant Unit. San Gerardo Hospital. Monza, Italy.

Honors

2023	Winner of the first prize for "Best Poster" at the "Under 40 in Hematology" event - year 2023 (Milan, Italy). Title of the presented work: "Effects of blocking CD24 and CD47 'don't eat me' signals in combination with rituximab in mantle-cell lymphoma and chronic lymphocytic leukemia" (2023).
2021	Winner of a public competition for 24-months collaboration as post-doctoral research fellow at the University of Milan-Bicocca, School of Medicine and Surgery (Monza, Italy). Scientific Supervisor: Prof. C. Gambacorti-Passerini. Project Title: 'Don't eat me' signal in hematological malignancies: CD24 as a new target to improve anti-cancer immunity" (2021-2022).

C. Contributions to Science

1. My work bridges clinical practice and translational research, with a specific focus on chronic myeloid leukemia (CML). Over the years, I have been dedicated to investigating the biological and clinical mechanisms that underline treatment response, resistance, and disease persistence in CML patients, with particular attention to the role of tyrosine kinase inhibitors (TKIs). Clinically, TKIs have revolutionized CML prognosis, yet nearly half of patients relapse after treatment discontinuation, reflecting the persistence of leukemic stem cells (LSCs) that evade eradication. My research has therefore aimed to define the determinants of treatment-free remission (TFR) and minimal residual disease, identifying genomic and transcriptomic signatures that anticipate relapse and may guide patient selection for safe discontinuation strategies.

A central aspect of my work has been the study of LSC biology and their contribution to long-term disease maintenance despite continuous TKI exposure. By combining flow cytometry, molecular profiling, and functional assays, we characterized markers and signaling pathways that distinguish quiescent, drug-insensitive LSCs from proliferating leukemic progenitors. These studies not only provided mechanistic insight but also suggested potential biomarkers for monitoring residual disease.

More recently, I contributed to a single-cell multi-omics study of hematopoietic stem and progenitor cells from CML patients, integrating transcriptomic data with functional analyses. This approach revealed novel layers of heterogeneity within the CML stem cell compartment and identified candidate markers of persistence with translational relevance.

My expertise therefore spans from bedside to bench, combining direct patient management—including initiation, monitoring, and discontinuation of TKI therapy—with translational projects addressing the molecular basis of relapses. Ultimately, my goal is to define the drivers of CML stem cell persistence and to translate these findings into innovative therapeutic strategies that improve durable remission and increase the number of patients who can safely achieve TFR.

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- Gambacorti-Passerini C, Nicolini FE, Larson RA, **Aroldi A**, Fontana D, Piazza R, le Coutre P, Antolini L, Assouline S. Caution in using second generation tyrosine kinase inhibitor, especially for first line therapy of chronic myeloid leukemia. *Am J Hematol*. 2022 Aug;97(8):E296-E298. doi: 10.1002/ajh.26618.
- Inzoli E, **Aroldi A**, Piazza R, Gambacorti-Passerini C. Tyrosine Kinase Inhibitor discontinuation in Chronic Myeloid Leukemia: eligibility criteria and predictors of success. *Am J Hematol*. 2022 Aug;97(8):1075-1085. doi: 10.1002/ajh.26556.
- Fontana D, Ramazzotti D, **Aroldi A**, Redaelli S, Magistrini V, Pirola A, Niro A, Massimino L, Mastini C, Brambilla V, Bombelli S, Bungaro S, Morotti A, Rea D, Stagno F, Martino B, Campiotti L, Caocci G, Usala E, Merli M, Onida F, Bregni M, Elli EM, Fumagalli M, Ciceri F, Perego RA, Pagni F, Mologni L, Piazza R, Gambacorti-Passerini C. Integrated Genomic, Functional, and Prognostic Characterization of Atypical Chronic Myeloid Leukemia. *Hemasphere*. 2020 Nov 6;4(6):e497.
- Gambacorti-Passerini C, **Aroldi A**, Cordani N, Piazza R. Chronic myeloid leukemia: Second-line drugs of choice. *Am J Hematol*. 2016 Jan;91(1):67-75.

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/1-gez2N7uR2Uj6/bibliography/public/>