

BIOGRAPHICAL SKETCH

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NAME: Cosmeri Rizzato

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Associate Professor in Genetics

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 Pisa	"Laurea" equivalent to Master Degree	10/2003	Biology
Dept. of Human and Environmental Sciences, Section of Genetics and Environmental Mutagenesis University of Pisa, Pisa, Italy	Research Fellowship	01/2004- 11/2004	Genetics
Faculty of Sciences, University of Pisa, Pisa, Italy	PhD	01/2005- 03/2008	Microbiology and Genetics
School of specialization in Microbiology and Virology, University of Pisa, Pisa Italy	Postgraduate title equivalent to residency	06/2009 to 06/2015	Microbiology

A. Personal Statement

I am an Associate Professor in Genetics at the University of Pisa with a broad background in genetic epidemiology and microbiology. Since 2003, my research has focused on the genetic susceptibility to cancer and complex diseases, specifically examining the interaction between genetic and environmental factors. I have extensive experience in human genetics and genetic association studies, having collaborated with international institutions such as the National Cancer Institute (USA), Wayne State University (USA), and the German Cancer Research Center (DKFZ). My recent work has expanded to the genetics of microorganisms and host-pathogen genetic interactions, including testing antimicrobial peptides and resistance mechanisms. I have authored 77 peer-reviewed publications with an H-index of 26 and over 2300 citations. My unique combination of training in both human genetics and microbiology qualifies me to contribute significantly to multidisciplinary genomic studies.

B. Positions, Scientific Appointments, and Honors

- 2023 – Present: Associate Professor in Genetics, Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa.
- 2015 – 2023: Graduate Technician (Category D) / Research Assistant, Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa.
- 2014 – 2015: Research Grant Recipient / Post-doctoral scientist, Department of Biology, University of Pisa.
- 2008 – 2014: Postdoctoral research contract, Genomic Epidemiology Group, German Cancer Research Center (DKFZ), Heidelberg, Germany.
- 2007 – 2008: Internship, Tumor Genetics Division, German Cancer Research Center (DKFZ), Heidelberg, Germany.

- 2005 – 2007: PhD Fellowship in Microbiology and Genetics, University of Pisa.
 - 2004 – 2004: Research Fellowship, Department of Human and Environmental Sciences, University of Pisa (EU-funded project "RET as dependence receptor").
 - 2004 – 2006: Contracts for teaching activity in Genetics, University of Pisa.
- Honors
- 2021: Obtained Italian National Scientific Qualification for Associate Professor in sector 05/11 Genetics.

C. Contributions to Science

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1. Genetic architecture and risk stratification of pancreatic cancer and its precursor lesions

- My work has substantially contributed to defining the germline genetic basis of pancreatic ductal adenocarcinoma (PDAC) and its precursor lesions, with the aim of improving risk stratification and early detection. I have participated in and led large international efforts using genome-wide association studies (GWAS), pleiotropy scans, and polygenic risk approaches to identify susceptibility loci for PDAC and progression markers for intraductal papillary mucinous neoplasms (IPMNs). These studies demonstrated that inherited variants involved in inflammatory and DNA damage-related pathways contribute to interindividual differences in disease risk and progression, supporting the clinical potential of polygenic and hazard scores for patient stratification.
- **Selected publications:**
- Gentiluomo M, **Rizzato C**, et al. *Cancer*. 2025.
- Giaccherini M, **Rizzato C**, et al. *Mutagenesis*. 2025.
- Corradi C, **Rizzato C**, et al. *International Journal of Cancer*. 2024.
- Campa D, Gentiluomo M, **Rizzato C**. *Best Practice & Research: Clinical Gastroenterology*. 2025.

2. Integration of genetics, exposome, and epidemiology in pancreatic cancer susceptibility

- I have contributed to advancing an integrative framework that combines genetic susceptibility with lifestyle, environmental, hormonal, and metabolic exposures (the exposome) to better understand pancreatic cancer etiology. Using large prospective cohorts and advanced analytical approaches, including machine learning, my work clarified sex-specific risk determinants, hormonal influences, and gene–environment interactions. This body of work highlighted that pancreatic cancer risk is shaped by the interplay between inherited susceptibility and long-term exposures, providing a more comprehensive model of disease development.
- **Selected publications:**
- Peduzzi G, **Rizzato C**, et al. *United European Gastroenterology Journal*. 2025.
- Peduzzi G, **Rizzato C**, et al. *Seminars in Cancer Biology*. 2025.
- Murray K, **Rizzato C**, et al. *Seminars in Cancer Biology*. 2025.

3. Microbiome, host–pathogen interactions, and infection-related carcinogenesis

- A significant component of my research addresses the role of the microbiome and host–pathogen interactions in cancer and complex diseases. I have contributed to studies using Mendelian randomization, multi-omics integration, and epidemiological approaches to investigate causal relationships between gut microbiota, microbiome-associated metabolites, and pancreatic cancer risk. In parallel, I have investigated microbial genetic variability and antifungal resistance in clinically relevant pathogens, providing insights into infection dynamics, resistance mechanisms, and translational implications for patient management.
- **Selected publications:**
- Daniel N, **Rizzato C**, et al. *Scientific Reports*. 2024.
- Daniel N, **Rizzato C**, et al. *Seminars in Cancer Biology*. 2025.
- Franconi I, **Rizzato C**, et al. *JAC–Antimicrobial Resistance*. 2025.
- Franconi I, **Rizzato C**, et al. *Journal of Fungi*. 2023.

4. Translational genomics and personalized approaches to therapy and prevention

- My research has contributed to translational applications of genomics, spanning cancer pharmacogenetics, early detection strategies, and personalized interventions. I have co-authored comprehensive reviews on therapeutic biomarkers, pharmacogenomics, and artificial intelligence–

driven early detection of pancreatic cancer, as well as original studies demonstrating how host genetic variability influences treatment response in non-oncologic settings. This work supports the broader goal of precision medicine by linking genetic profiles to prevention, diagnosis, and therapeutic decision-making.

- **Selected publications:**

- Langer A, **Rizzato C**, et al. *Seminars in Cancer Biology*. 2025.
- Murray K, **Rizzato C**, et al. *Seminars in Cancer Biology*. 2025.
- Farinella R, **Rizzato C**, et al. *Pain*. 2024.