

CURRICULUM VITAE

Rossella Tricarico, Ph.D

Current position: Assistant professor (*tenure-track*, RTDb), GSD: 05/BIOS-14 - Genetics- SSD: BIOS-14/A – Genetics

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A. Personal Statement

As an Assistant Professor in Genetics, my research focuses on uncovering the molecular mechanisms driving cancer onset and progression, with a primary emphasis on colorectal and ovarian cancers. My expertise lies in cancer genetics and epigenetics, particularly DNA repair pathway defects, epigenetic regulation, and their clinical applications. I employ a multidisciplinary approach that integrates functional studies in cellular and animal models, high-throughput omics technologies, and computational tools to address pressing challenges in cancer biology and advance public health outcomes.

Throughout my PhD studies, I made significant contributions to the first Mismatch Repair (MMR) InSiGHT variant database and the comprehensive classification of MMR gene Variants of Unknown Significance (VUS). This work improved genetic interpretation, laying the groundwork for enhanced prevention strategies in hereditary colorectal cancer (CRC) (*Tricarico R et al., Hum Mutat. 2017; Thompson BA et al., Nat Genet 2014*).

In my post-doctoral research, I further delved into the role of DNA repair in CRC, I demonstrated the inactivation of *MBD4* and *TDG* as contributors to tumorigenesis and therapy resistance in CRC-prone backgrounds (*Tricarico R et al., Oncotarget 2015; Xu Y et al., Oncotarget 2017*). Furthermore, I uncovered the crucial role for the epigenetic regulator *TDG* in melanomagenesis, resulting in two patents that address *TDG* as a novel epigenetic target for anti-cancer therapy (*Tricarico R et al., Oncogene 2019*). More recently, as a senior research associate and then as an independent Marie-Curie fellow, my research has focused on the active DNA demethylation pathway, as mediated by TET proteins and *TDG* in colorectal cancer. Notably, I revealed that modulating *TET1* and *TDG* enhances immune cell-mediated killing of cancer cells, providing a novel strategy to improve tumor immunotherapy (*Tricarico R et al., Gastroenterology 2023*).

As a direct extension of my previous work in CRC, my team is currently pursuing three interconnected research lines designed to bridge fundamental cancer biology and clinical applications: 1. Dissecting the role of the epigenetic regulator *TET2* in colorectal and ovarian carcinomas. This research aims to elucidate the molecular mechanisms underlying therapy resistance in these aggressive cancers and to establish *TET2* as a novel therapeutic target in colorectal and ovarian carcinomas. We employ a multidisciplinary approach that includes functional studies in 2D and 3D cellular models, multi-omics analyses, and data mining of genomic datasets (*Manai F and Tricarico R, research article in preparation*). In collaboration with Caris Life Sciences (USA), we leverage genomic and transcriptomic datasets from public repositories and over 30,000 CRC cases to identify clinically relevant *TET2* alterations. This project focuses on leveraging *TET2* alterations to uncover actionable biomarkers predictive of therapeutic response and patient outcomes, advancing precision oncology. 2. Development of advanced computational frameworks. My team is creating a robust computational pipeline to integrate Omic and non-Omic (OnO) datasets across multiple cancer types. This pipeline leverages large-scale data from public repositories, emphasizing the importance of repurposing and harmonizing publicly available datasets to maximize their utility in precision oncology. By standardizing data integration and analysis, we aim to streamline biomarker discovery and the identification of therapeutic targets, enabling personalized cancer treatments and advancing early diagnosis. 3. AI-driven tool for oncogenicity prediction of somatic variants. As a direct extension of the computational pipeline developed in line 2, we are creating an AI-driven computational tool to integrate ClinGen-CGC-VICC guidelines (*Peter Horak et al., Genetics in Medicine, 2022*) for assessing the oncogenicity of somatic variants. This tool will consolidate insights from biomarker discovery to address the critical need for precise genetic interpretation, improving prevention strategies and therapeutic targeting for individuals with cancer.

B. Education

2010 PhD in Molecular Genetics, Catholic University of the Sacred Heart, Rome, Italy

2007 Post-graduation in Medical Genetics, University of Florence, Italy (*Grade: 70/70 with honors*)

2004 Licensed to practice as a Biologist, University of Bari "Aldo Moro", Bari, Italy (*Grade: 150/150*)

2003 Master degree in Biological Sciences, Biomolecular curriculum, University of Bari "Aldo Moro", Bari, Italy (*Grade: 110/110 with honors*)

C. Positions, Scientific Appointments, and Honors

Positions

2022-to date	Assistant professor (<i>tenure-track</i>) of Genetics, Department of Biology and Biotechnology "L. Spallanzani", Human and Cancer Genetics unit, University of Pavia, Italy
2022	Visiting scientist, Institute for Diabetes and Cancer (HDC)-Helmholtz Zentrum München (HMGU), Munich, Germany, laboratory of Prof. Natalia S. Pellegata
2020-2022	Marie Skłodowska-Curie postdoctoral fellow, Department of Biology and Biotechnology "L. Spallanzani", Human and Cancer Genetics unit, University of Pavia, Italy, laboratory of Prof. Guglielmina N. Ranzani
2018-2020	Visiting scientist, Molecular Therapeutics Program, Fox Chase Cancer Center, Philadelphia, USA, laboratory of Prof. Erica Golemis
2015-2018	Research Associate, Cancer Epigenetics Program, Fox Chase Cancer Center, Philadelphia, USA, laboratory of Prof. Alfonso Bellacosa
2012-2015	Postdoctoral Associate, Cancer Epigenetics Program, Fox Chase Cancer Center, Philadelphia, USA, laboratory of Prof. Alfonso Bellacosa
2011-2012	Short-term postdoctoral position to finish publication from thesis project at the University of Florence, Department of Clinical Pathophysiology Medical Genetics Unit, Italy, laboratory of Prof. Maurizio Genuardi
2009	Visiting fellow at International Agency for Research on Cancer (IARC), Genetic Cancer Susceptibility Group, Lyon, France, laboratory of Prof. Sean V. Tavtigian
2007-2010	PhD student at Catholic University of Rome, joint program with the University of Florence - Department of Clinical Pathophysiology - Medical Genetics Unit, Italy, laboratory of Prof. Maurizio Genuardi
2004-2007	Training fellow in post-graduation School in Medical Genetics at University of Florence, Department of Clinical Pathophysiology Medical Genetics Unit, Italy, laboratory of Prof. Maurizio Genuardi
2004	Research fellow at University of Bari "Aldo Moro", Department of Pathology and Genetics, Section of Genetics, Bari, Italy, laboratory of Prof. Mariano Rocchi

Academic service in Italy and United States of America:

2025	Faculty member of the PhD defense committee for the PhD course in Translational and Precision Medicine, at the University of Pavia, Italy.
2024	Scientific host for the Visiting Professor Dr. Matthieu Foll, co-team leader of the Rare Cancer Genomics (RCG) team, International Agency for Research on Cancer, Lyon, France.
2024-to date	Elected board member of the Italian Society of Genetics (AGI)
2024	Co-organizer of the Italian Society of Genetics (AGI) School of Genetics in Cortona entitled "Mastering epigenetics: from basics to breakthroughs", Cortona, Italy
2024	Faculty member of the proposing committee for the PhD program in Genetics, Molecular and Cellular Biology at the University of Pavia, Italy
2023-2024	Faculty member of the examination committee for the award of 5 research fellowships (<i>assegni di ricerca</i>) in the scientific-disciplinary sector BIO/18 (Genetics) at the University of Pavia and the University of Bari "Aldo Moro", Italy.
2023	Scientific host for the Visiting Professor Dr. Lynnette Fernandez-Cuesta, co-team leader of the Rare Cancer Genomics (RCG) team, International Agency for Research on Cancer, Lyon, France.
2023	Faculty member of the PhD Defense Committee for the PhD Program in Biodiversity, Agriculture, and Environment, with a specialization in Genetics, Molecular, and Structural Evolution, at the University of Bari "Aldo Moro," Italy.2023
2023	Organizer of the Italian Society of Human Genetics (SIGU) webinar entitled "Spatial chromatin mapping and proteomics techniques: applications for studying epigenetic alterations in pathological conditions".
2022-to date	Faculty member of the thesis committee for the Master's degree in Experimental and Applied Biology and Bachelor in Biological Sciences at University of Pavia, Italy.
2022-to date	Faculty member of the Department Council of Biology and Biotechnology, University of Pavia, Italy.

2022-to date	Faculty member of the Teaching Council of Biological Sciences, University of Pavia, Italy.
2022-to date	Thesis advisor for bachelor's (n=5) and master's degrees (n=3) in Biological Sciences, Experimental and Applied Biology, Molecular Genetics and Biology and Biotechnologies at the University of Pavia, Italy
2021-to date	Member of the Working Group for the creation of a Joint Master's degree in Cancer Biology led by the University of Pavia in collaboration with the University of Montpellier (France), the Institute for Research in Immunology and Cancer (IRIC) at the University of Montreal (Canada) (European Erasmus+ project "MAD4CANCER": ERASMUS-EDU-2021-EMJM-DESIGN, Grant agreement no. 101050479)
2021-to date	Member of Italian Society of Human Genetics (SIGU) Epigenetics Working Group
2017-2018	Member of the Inflammation Working Group at Fox Chase Cancer Center, Philadelphia, USA
2015-2017	Member of the committee for the Postdoctoral Distinguished Lecturer Series at Fox Chase Cancer Center, Philadelphia, USA
2015	Member of the committee for the organization of the 20 th Annual Graduate Student and Postdoctoral Fellow Research Symposium at Fox Chase Cancer Center, Philadelphia, USA
2014-2016	Member of the study section of the Immersion Science High School program at Fox Chase Cancer Center, Philadelphia, USA
2012-2014	Member of the Genome Stability Working Group at Fox Chase Cancer Center, Philadelphia, USA
2007-2010	Member of the thesis committee for the Master's degree in Biological Sciences and Medical Biotechnologies at University of Florence, Italy
2005-2012	Supervisor of internship activities (thesis co-advisor) for bachelor's and/or master's degrees Biological Sciences and Medical Biotechnology at the University of Florence, Italy

Honors and awards

2022	1st Cancer Epigenetics Institute Annual Symposium award for the best poster, Philadelphia, USA
2021	National scientific qualification as associate professor of Genetics (scientific-disciplinary sector BIO/18)
2020	National scientific qualification as associate professor of Medical Genetics (scientific-disciplinary sector MED/03)
2020	Subject expert in Human Molecular Genetics, Molecular Biology and Genetics
2018	Fels Trainee Day award – Temple University School of Medicine, Philadelphia, USA
2018	Fox Chase Cancer Center Travel Award, USA
2016	4th Annual Temple University School of Medicine Translational Symposium Award for outstanding achievement in research, USA
2015	SIGU (Italian Society of Human Genetics) award for the best talk in Cancer Genetics, Italy
2015	Fox Chase Cancer Center Travel Awards, USA
2014	Fox Chase Cancer Center Travel Awards, USA
2005	SIGU (Italian Society of Human Genetics) award for the best poster, Italy

Other Experience, Professional Memberships

Peer reviewer for scientific journals: Cancers, Cancer Genetics, Gene, Cancer Biology and Therapy, Frontiers in Oncology, Molecular Therapy-Nucleic Acids

Memberships: American Association for Cancer Research (AACR), Italian Society of Human Genetics (SIGU), Italian Society of Geneticists (AGI), European Society of Human Genetics (ESHG), Italian Association for the Study of Familial and Hereditary Tumors (AIFET, former AIFEG)

Teaching experience:

2022-to date	Lecturer for the course in Pharmacogenomics, Cancer Genomics and Epigenomics (6 CFU/ECTS credits) in the Master's degree program in Molecular Biology and Genetics, curriculum in Molecular and Digital Biology, University of Pavia, Italy
2022-to date	Lecturer for the course in Basic Genetics and Cell Biology (6 CFU/ECTS credits) in the Master's degree program in Molecular Biology and Genetics, curriculum in Molecular and Digital Biology, University of Pavia, Italy
2022-2023	Lecturer for a teaching module (2 CFU/ECTS credits) in the course "Human and Molecular Genetics" in the Master's degree program in Experimental and Applied Biology, University of Pavia, Italy
2005-2007	Lecturer for the course in Informatics applications and Genomics in the bachelor's in Medical Biotechnology, University of Florence, Italy

Fellowships:

- 2022-2022 Marie Skłodowska-Curie Individual postdoctoral fellowship (MSCA-IF-2019-Grant agreement no. 896865 - TETCOLON)
- 2015-2018 Postdoctoral fellowship endowed by the William J. Avery Foundation in Cancer Biology, USA
- 2011-2012 Research fellowship (*assegno di ricerca*) endowed based on scientific qualifications and interview by the University of Florence, Italy
- 2005-2007 Research fellowships (*assegni di ricerca*) endowed based on scientific qualifications and interview by the University of Florence, Italy
- 2004-2005 Research fellowship endowed by the Istituto Giuseppe Toniolo di Studi Superiori, Italy

Ongoing funded projects:

- 2025-2026 Umberto Veronesi Foundation. *Dissecting the Role of the Epigenetic Regulator TET2 in Cisplatin Resistance of High-Grade Serous Ovarian Carcinomas (THOR)*. Role: PI and Supervisor of a Veronesi Postdoctoral Fellowship awarded to Dr. Federico Manai.
- 2023-2025 PRIN 2022-PNRR - ERC LS4 (Italian Ministry of University and Research, GRANT_NUMBER P20223Y5AX_003). Title: "CO-taRgeting REspiratory Complex I and the epigenetic regulator TET2: a novel anticancer strategy (CORRECT)": Role: PI of the local unit

Completed funded projects

- 2020-2022 Marie Skłodowska-Curie Individual Fellowship (Horizon 2020 Framework Programme-European Union, IT GRANT_NUMBER: 896865). Title: *Dissecting the role of the epigenetic regulator TET2 in colorectal cancer (TETCOLON)*, Role: PI
- 2015-2017 Fox Chase Cancer Center pilot grant. Title: *Hereditary colorectal cancer gene discovery via exome sequencing of high-risk families* (PIs Bellacosa A, Hall M), Role: collaborator
- 2015-2018 William J. Avery Foundation postdoctoral fellowship. Title: *Role of TDG-mediated active DNA demethylation in cancer*, Role: PI

D. Contributions to science

Scientific communications

Selected abstract for oral presentation at national and international conferences (17): IV AIFEG (Italian Association for the Study of Familial and Hereditary Gastrointestinal tumors) conference, 2005 (Pavia, Italy); IV AIFEG conference, 2006, (Padua, Italy); VIII AIFEG conference, 2009 (Rome, Italy); XVIII SIGU (Human Society of Genetics) conference, 2015 (Rimini, Italy); 49th ESHG (European Society of Human Genetics) Conference, 2016, (Barcellona, Spain); 21st Annual Research Day Fox Chase Cancer Center, 2016, (Philadelphia, USA); 4th Annual Temple University School of Medicine Translational Symposium, 2016, (Philadelphia, USA); Fels Trainee Day-Temple University School of Medicine, 2018, (Philadelphia, USA); 51st ESHG Conference, 2018, (Milan, Italy); XXIV SIGU conference, virtual edition, 2021; 56th ESHG Conference, 2023, (Glasgow, Scotland)

Invited speaker (3): Webinar on DNA methylation in human disease organized by SIGU, 2020; MAD4CANCER scientific meeting, 2023 (Montpellier, France); Second-level Master's in "Clinical Cytogenomics and Cytogenetics Laboratory", 2024 University of Bari "Aldo Moro" (Bari, Italy); Advanced course in clinical genetics, epigenetics, and functional medicine, 2024 Biomolecular Academy (Italy).

Selected abstract for oral presentation at national conferences as PI (last author) (2): XXVII SIGU (Human Society of Genetics) conference, 2024 (Padua, Italy); XVII FISV (Federazione Italiana Scienze della Vita) Congress, 2024 (Padua, Italy).

Patent applications (3): 1. U.S. and Foreign Patent No. 61/617,427 "Combination of DNA Repair Inhibition with Bendamustine or Gemcitabine in the Treatment of Cancer" (Inventors: A. Bellacosa, V. Bhattacharjee, N. Beeharry, M. Smith, P. Mancuso, **R. Tricarico** and T. Yen); 2. U.S. and Foreign Patent No. 61/884,478 "Inhibition of Thymine DNA Glycosylase in the Treatment of Cancer" (Inventors: A. Bellacosa, V. Bhattacharjee, I. Davidson, L. Larue, P. Mancuso, **R. Tricarico** and T. Yen) 3. Italian patent for industrial invention No. 102022000021564 "Method for assessing risk associated with Vitamin D deficiency" (Inventors: M. Passafaro, **R. Tricarico**, F. Bombardiere).

Scientific outreach activities

- 2024 Organizer of the event "Ora con il ricercatore" held as part of the European Researchers 'Night organized by the University of Pavia in collaboration with the Cardano Scientific High School, Pavia, Italy.
- 2024 Participation in the FISV Days, a series of study sessions specifically designed for students and teachers of the final two years of secondary school, organized by the Italian Federation of Life Sciences (FISV) (<https://shorturl.at/ttZzD>; [FISV](#))

[DAYS 2024 - YouTube](#); [FISV Days 2024: Scienziati e studenti per tre mattine insieme](#))

- 2023 Organizer of the event "*Ora con il ricercatore*" held as part of the European Researchers 'Night organized by the University of Pavia in collaboration in collaboration with the G. Gandini Scientific High School and P. Verri Classical High School in Lodi, Italy.
- 2023 Popular science article published on *ilfattoquotidiano.it* (<https://shorturl.at/85gsw>)
- 2021 Organizer of the event "*Ora con il ricercatore*" held as part of the European Researchers 'Night organized by the University of Pavia in collaboration in collaboration with the G. Gandini Scientific High School in Lodi, Italy.
- 2021 Member of the organizing committee for the events "*Memory Game - Women & STEM*" and "*Guess Who?! Researchers in Disguise*", held as part of the European Researchers' Night at the University of Pavia, Italy.
- 2019 Popular science article published on *ilfattoquotidiano.it* (<https://bit.ly/3EAl6gj>)
- 2015 Popular science article published on *ilfattoquotidiano.it* (<https://bit.ly/2XRGAFc>)
- 2015 Popular science article published on *Terlizziviva.it* (<https://shorturl.at/EYLk0>)

Bibliometric indicators (January 2025):

ORCID: 0000-0001-7055-7208

H-index (source: Scopus) = 15;

Total number of citations (source: Scopus): 915

List of publications

[My Bibliography - NCBI](#)

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali" e successive modifiche ed integrazioni.

Pavia, 08-01-2025

Firma



Rossella Tricarico