

BIOGRAPHICAL SKETCH

NAME: Federica Collino

POSITION TITLE: Assistant Professor MEDS-26/A - Scienze Tecniche di Medicina di Laboratorio

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Turin, Torino	Bachelor's degree in biotechnology	07/2003	Molecular biotechnology
University of Turin, Torino	Master's degree in molecular biotechnology	07/2005	Cellular and Molecular biology
Department of Internal Medicine, University of Turin, Torino	PhD in Medical Pathophysiology	12/2008	Regenerative Medicine /kidney biology
Faculty of Medicine and Surgery, University of Turin, Torino	Specialization in CLINICAL BIOCHEMISTRY	07/2014	Biochemistry, Clinical Biochemistry

A. Personal Statement

Dr. Federica Collino is Assistant Professor of Laboratory Medicine at the Department of Clinical Sciences and Community Health (DISCCO) of the University of Milano. She is a Molecular biotechnologist, and she received her PhD in Renal physiopathology (Department of Internal Medicine, 2008) and her specialization in Clinical Biochemistry (2014) at the University of Turin (UNITO). Dr. Collino professional experience revolves around renal pathophysiology and regenerative medicine. She was previously appointed as Visiting Professor in Regenerative Medicine at the Federal University of Rio de Janeiro (2016-2018) and Assistant Professor in Clinical Pathology at the University of Padova (2019-2020). Since 2020, Dr. Collino coordinated the Translational Research Laboratory in Pediatric Nephro-urology (IRCCS Fondazione Ca 'Granda, Policlinico di Milano). Her Lab research is dedicated to studying the kidney and immune cellular components involved in the onset of immune-related glomerulopathies. Moreover, her team has strong know-how in using extracellular vesicles as therapeutic and diagnostic tools for different paediatric kidney pathologies.

B. Positions, Scientific Appointments, and Honors

Current position: Fixed-term Assistant Professor in MED/46- Technical Sciences of Laboratory Medicine, Dept. of Clinical and Community Sciences, University of Milan, Milan, Italy.

Previous positions

- May 2020-now: Laboratory Coordinator, IRCCS Fondazione Ca' Granda, Laboratory of Translational Research in Paediatric Nephro-urology, Milan Italy.
- 2021-2024: Fixed-term researcher type A SSD MED/46 - Technical Sciences of Laboratory Medicine. Department of Clinical and Community Sciences, University of Milan. Full-time.

Main fields of research during these functions:

Paediatric Nephro-Urology: a study of the molecular mechanisms underlying idiopathic nephrotic syndrome and role of extracellular vesicles present in biofluids as prognostic markers in obstructive uropathies of the newborn.

Laboratory medicine: development of ex vivo models for the study of the pathogenetic mechanisms of glomerular and tubular damage.

Clinical Pathology and Regenerative Medicine: Study of extracellular vesicles and extracellular matrix in growth propagation/arrest in kidney and colorectal cancer.

Official University administrative roles performed:

- **2023/2024:** Member of the Research Committee of the Department of Clinical and Community Sciences, academic period 2023/2024.
- **2022/2023:** Member of the Steering Committee of the Faculty of Medicine and Surgery for the Department of Clinical and Community Sciences, three-year academic period 2020/2023.
- **2018-2020.** Fixed-term researcher type A in MED/04- General Pathology, Dept. of Biomedical Sciences, University of Padova, Padua, Italy.

Main areas: regenerative medicine/ oncology/ laboratory medicine.

-2015-2018: Visiting Professor (2017-2018) and Visiting Researcher (2015-2016) at the Carlos Chagas Filho Institute of Biophysics, Regenerative Medicine Program, Federal University of Rio de Janeiro, Brazil. Full-time.

Main areas: regenerative medicine / renal pathophysiology/laboratory medicine and biochemistry

-Visiting Researcher of the Research Organ Fundação de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ) at the Department of Biophysics, Federal University of Rio de Janeiro, Brazil (Portuguese language). Research program: extracellular vesicles in the development of acute and chronic kidney injury. Full-time. Principal Investigator: Prof. Adalberto Vieyra (01/12/2015 to 28/02/2016).

- Two-year visiting scientist of the Brazilian Research National Council (CNPq) Research Organ at the Department of Biophysics, Federal University of Rio de Janeiro, Brazil. Research program: Role of extracellular vesicles in acute and chronic kidney injury: importance of miRNAs in this process. Full-time. Principal Investigator: Prof. Adalberto Vieyra (01/03/2016-02/03/2017).

-Visiting Professor at the Department of Biophysics, Physiology and Biological Sciences, Federal University of Rio de Janeiro, Brazil. Full-time (2017-2018).

- **2013-2015:** Basic Researcher Coordinator, Translational Center for Regenerative Medicine Fresenius Medical Care Italia, Turin, Italy.

Main areas: Technology transfer and innovation between the University of Turin and Fresenius Medical Care in the field of stem cells / regenerative medicine / oncology.

2011-2012: Full-time research fellowship AIRC, Medical, experimental and clinical sciences, MBC, Turin, Italy. Collaboration grant for research activities of 24 months (03/01/2011-31/12/2012). Disciplinary sector: Medical, experimental, and clinical sciences, at the Interdisciplinary Research Center for Molecular Biotechnology, University of Turin, Italy. Scientific coordinator: Prof. G. Camussi.

2009-2010: Collaboration grant for 24-month research activities co-financed by MIUR. Disciplinary sector: Medical, experimental, and clinical sciences at the Department of Internal Medicine. University of Turin, Italy. Research program: Phenotypic and functional characterization of cancer stem cells in clear cell renal cell carcinoma. Scientific coordinator: Prof. B. Bussolati.

Best abstracts/oral communication in numerous congresses such as World Congress of Nephrology ERA-EDTA, Biochemical Society Workshop, ISEV and ESPN. Marie Curie fellowship. This includes:

- Best 10 Oral Presentations, ESPN2022 (Ljubljana, May 2022) Title: "Deciphering the immunological mechanisms underlying pediatric Idiopathic Nephrotic Syndrome".
- Best oral communication, ISEV 2015 (Boston, April 2015) Title: "Mesenchymal stromal cell-derived extracellular vesicles inhibit in vitro and in vivo tumor cell proliferation". Boston, USA.
- 8th best abstracts of ERA-EDTA (Prague, June 2011) Title: The plasticity of human renal CD133+ progenitors is modulated by hypoxia through oct4/mir-145 balance.

- Best poster for Oral Communication, Biochemical Society Workshop (London, UK, 2010) Title: Microvesicles (MVs) derived from adult human bone marrow and tissue-specific mesenchymal stem cells shuttle selected pattern of miRNAs.
- Best abstracts young authors and top 20% abstracts, World Congress of Nephrology ERA-EDTA (WCN, Milan, May 2009). Title: Human mesenchymal stem cell-derived microvesicles protect from acute tubular injury.

C. Contributions to Science

2020-present: Coordinator of the Translational Research Laboratory in Pediatric Nephro-urology, IRCCS Fondazione Ca' Granda, Policlinico di Milano, Milan.

2021-2024: Assistant Professor of type A SSD MED/46 - Technical Sciences of Laboratory Medicine. Department of Clinical and Community Sciences, University of Milan

Description of the activity:

1. Role of the alteration of the immune system in the development of immune-mediated nephrotic syndrome (Cricri et al., Int. J. Mol. Sci., 2021; Cricri et al. Scientific results, under revision; Bianchi et al. Kidney international, under submission; PI funded project EJP-RD 2023).
2. Interaction between endothelial and glomerular epithelial cells in patients with steroid-resistant idiopathic nephrotic syndrome and its role in the development of proteinuria (Bianchi et al. Scientific reports, under review).
- 3- Urinary extracellular vesicles (EVs) in the prenatal diagnosis of patients with upper and lower urinary tract obstruction (PRIN funded PI project 2022).
4. Development of three-dimensional ex vivo models for the "delivery" of healing molecules by extracellular and engineered vesicles (Bellucci, Tissue Eng Regen Med. 2021; D'angelo et al. Front Bioeng Biotechnol. 2022; Tolomeo et al. Farmaceutica, 2023).
5. The interaction between extracellular vesicles and extracellular matrix in tumor growth and propagation (Tassinari et al. J. of Extr. Biology. 2024; D'Angelo et al. Exp Hematol Oncol, 2024).

Current collaborations:

1. European ErKnet and ESCAPE networks. International collaboration (Collaborator).
2. National Institute of Molecular Genetics (INGM) Foundation, Milan. Italy. Partners: Dr. Renata Grifantini, Prof. Sergio Abrignani and Dr. Elisa Pesce (project leadership).
3. University of Turin. Italian Department of Medical Sciences Partner: Prof. Silvia Deaglio. University of Turin. Italy
4. Department of Molecular Biotechnology and Health Sciences Partner: Prof. Benedetta Bussolati (Collaborator).
5. Institute of Biostructure and Bioimaging (CNR), Turin. Italy "Guido Tarone" Center for Molecular Biotechnology, Turin. Partner Italy: Dr. Shamila Fagoonee (Collaborator).
6. University of Campania "Luigi Vanvitelli", Naples. Italy A.O.R.N. Santobono-Pausilipon, Naples. Italy Partners: Prof. Pierluigi Marzuillo and Dr. Giovanni Di Iorio (Collaborator).
7. University of Milan. Italy Department of Clinical and Community Sciences IRCCS Fondazione Ca' Granda Ospedale Maggiore Policlinico di Milano. Italy SC Urology, Department of Surgical Area, Partners: Prof. Emanuele Montanari, Prof. Giancarlo Albo (project leadership).
8. Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano. Italy SC Paediatric Urology, Department of Maternal and Child Area. Partners: Dr. Alfredo Berrettini and Dr. Michele Gnech (project leadership).
9. University of Milan. Italy Department of Clinical and Community Sciences IRCCS Fondazione Ca' Granda Ospedale Maggiore Policlinico di Milano. Italy SC Nephrology, Dialysis and Kidney Transplantation, Department of Medical Area. Partner: Prof. Giuseppe Castellano (Collaborator).
10. University of Padua. Italy Department of Oncological and Gastroenterological Surgical Sciences Partner: Prof. Marco Agostini (Collaborator).
11. AOU City of Health and Science of Turin. Italy SC Gastroenterology and Department of General and Specialist Surgery Partners: Dr. Alessandro Musso and Prof. Marco Ettore Allaix (project leadership).
12. Città della Speranza Paediatric Research Institute (IRP), Padua. Italian Department of Cardio-Thoraco-Vascular Sciences and Public Health. Partners: Prof. Gino Gerosa and Dr. Annamaria Tolomeo (Collaborator).

2019-2020: Assistant Professor - Letter A, SSD MED/04 - General Pathology. At the Dept. of Biomedical Sciences. University of Padua. Full-time.

Main areas: regenerative medicine/ oncology/ laboratory medicine.

Projects:

- In vivo models of CKD and acute kidney injury (AKI): definition of biomarkers (EV and miRNA) in blood and urine for disease onset and progression. (Collaborator Prof. Vieyra/ Prof. Lindoso, UFRJ).
- - Complex models for the study of the interaction with the tumor microenvironment through IV and possible therapeutic strategies (Collaborators Dr. Agostini, UNIPD/ Prof. Bussolati, UNITO).
- Use of EVs in regenerative medicine in nephropathies and heart diseases, Carlos Chagas Filho Institute of Biophysics, Federal University of Rio de Janeiro (UFRJ), Rio de Janeiro (Brazil) (Collaborator Prof. Campos de Carvalho, UFRJ).
- EV as biomarkers of pathological status in transplanted children Pediatric Research Institute "City of Hope", Padua, Italy (Collaborator Dr. Murer).
- Biodistribution of extracellular vessels in vivo and in vitro/Department of Medicine/University of Padua/UNIPD/Italy (Collaborator Prof. Muraca, UNIPD).

2015-2018: Visiting Researcher (2015-2016) and Visiting Professor (2017-2018). At the Carlos Chagas Filho Institute of Biophysics, Regenerative Medicine Program, Federal University of Rio de Janeiro, Brazil. Full-time.

Principal investigator for the development of:

- preclinical in vivo models of chronic and acute kidney injury in rats;
- molecular analysis using microarray techniques that take into account the pathology state of the different organs,
- screening of molecular markers in renal samples correlated with biochemical parameters,
- evaluation of Na⁺ and K⁺ excretion and blood pressure parameters in models of hypertensive rats affected by cardio-renal diseases;
- determination of the activity of Na⁺-ATPase and Na⁺/K⁺-ATPase in cells and organs;
- Injection of stem cells and supernatant of cell cultures through different routes, efficacy tests, distribution in organs and excretion.

Scientific collaborator in the following projects:

- Determination of mitochondrial chain respiratory activity in young and elderly rats subjected to ischemia reperfusion injury and treated with stem cells and stem cell-related products.
- Definition of blood ncRNAs as biomarkers in patients with cardiometabolic syndrome.

2013-2015: Coordinator of Basic Research. At the Center for Translational Medicine of the University of Turin, Italy. Main areas of implementation: Technology transfer and innovation between the University of Turin and Fresenius Medical Care in the field of stem cells / regenerative medicine / oncology.

Management activities related to:

- design and analysis of preclinical studies;
- management of quarterly reports, milestones and preparation of minutes;
- Gantt chart and budget organization;
- presentation and international funding (NIH Grant and European projects).

Research activity carried out abroad

- 2014: Visiting Researcher: FP7 PEOPLE-2013-IAPP, Marie Curie project, London Metropolitan University, London (Supervisor: Prof. J. Inal)
- 2015: Visiting Researcher: FP7 PEOPLE-2013-IAPP, Marie Curie project, University Medical Center of Utrecht (Supervisor: Prof. R. Schiffelers).
- 2016-2017: Visiting Researcher, Regenerative Medicine Group, Institute of Biophysics Carlos Chagas Filho, Federal University of Rio de Janeiro, Brazil.
- 2017-2018: Visiting Professor Regenerative Medicine Group, Institute of Biophysics Carlos Chagas Filho, Federal University of Rio de Janeiro, Brazil.

Funds and participation in research projects

Year	Project	Duration	Funding agency
2024	EJP-RD Partner.Title: Biomarkers and outcome PREdictors of paediatric nephrotic syndrome: a genetic,	3 years	European Joint call for rare diseases (EJP RD JTC 2023)

	transcriptomic and SEcretome multiomics study. The PRECISE study. € 218,200.00.		
2023	PI of Research Unit. Title: PReocious biOmArkers oF Unilateral ureTero-pelvic jUnction obstRuction in childrEn. The PRO-FUTURE project. € 102.003,00	2 years	PRIN 2023 (2022CT8XKW)
2023	Scientific component. Title: Exploring the molecular landscape of pediatric idiopathic nephrotic syndrome-associated glomerular damage and proteinuria. PI: Prof. Giovanni Montini. € 126,679.00.	2 years	PRIN 2023 (2022B9WC3F)
2023	Scientific component. Titolo: New and old players for therapeutic strategies in nephropathies: cellular, acellular, and pharmacological therapies. PI: Prof. Adalberto Vieyra. \$ 247.277,91	2 years	Universal CNPq 2023, Chamada CNPq/MCTI N° 10/2023 - Faixa B - Grupos Consolidados
2022	PI. Title: Isolation and characterization of kidney tissue biopsies- and urine- derived extracellular vesicles in children with primary glomerular diseases". € 33,000.00.	1 year	Starting Grant PSR 2022, Department of Clinical and Community Sciences, UNIMI
2022	Scientific component. Title: Idiopathic nephrotic syndrome in children: a study of the molecular mechanisms of proteinuria and glomerular damage. PI: Prof. Giovanni Montini.	1 year	CURRENT RESEARCH YEAR 2023, Fondazione Ca' Granda IRCCS Ospedale Maggiore Policlinico
2021	Scientific component. Title: Investigation of cellular and molecular mechanisms associated with the inter-organ impact of malnutrition, obesity, hypertension and diabetes. PI: Prof. Adalberto Vieyra.	2 years	Carlos Chagas Filho Research Support Foundation of the State of Rio de Janeiro (FAPERJ)
2019	PI. Title: Contribution of extracellular vesicles (EVs) from different stem cells sources to the brain-kidney crosstalk in a model of hypertension-induced CKD. € 25,000.00.	2 years	Starting Grant, DBS2020, Department of Medical Bioscience, UNIPD.
2018	Scientific component. Title: Use of extracellular vesicles in regenerative medicine in nephropathies and heart diseases.	4 years	Carlos Chagas Filho Research Support Foundation of the State of Rio de Janeiro (FAPERJ)
2016	PI. Title: Role of extracellular vesicles in the progression of acute and chronic kidney damage: miRNA involvement in the pathology.	2 years	Brazilian Research National Council, CNPq
2015	Scientific component. Title: Targeting renal cancer stem cells with engineered extracellular vesicles. PI: Prof. Giovanni Camussi.	2 years	Italian Association Against Cancer (AIRC), 2015
2014	Scientific component. Title: Regulation of renal and bone marrow injury by extracellular vesicle non-coding RNA. PI: Dr. Peter Quesenberry	3 years	National Institutes of Health, 1UH2TR000880-01
2013	Scientific member and Task Coordinator. Title: Definition of the optimal "RNA-protein Healing" shuttled by stem cell-derived vesicles (EVs) in different murine models of kidney injuries. PI: Dr. Ciro Tetta.	4 years	FP7 European Project PEOPLE-2013-IAPP, Marie Curie project
2011	Scientific component. Title: Role of microvesicles in the modulation of the microenvironment by cancer stem cells. PI: Prof. Giovanni Camussi.	2 years	Italian Association Against Cancer (AIRC)

SCIENTIFIC PUBLICATIONS

Scopus 2026: H-index = 25. Citations: 4094

(<https://www.ncbi.nlm.nih.gov/pubmed/?term=collino+federica>)