
BIOGRAPHICAL SKETCH

NAME: Gaia Chiara MANNINO

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

POSITION TITLE: Assistant Professor of Medical Biotechnologies (RTD-B Meds-26/A)

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of Pavia, Pavia, Italy	BSc	07/2007	Biology
University of Pavia, Pavia, Italy	MSc	09/2009	Experimental and applied biology
University Magna Graecia of Catanzaro, Catanzaro, Italy	PhD	11/2014	Medical biotechnologies
University Magna Graecia of Catanzaro, Catanzaro, Italy	Postdoctoral	04/2025	Clinical nutrition

A. Personal Statement

I am a researcher and assistant professor at the University Magna Graecia of Catanzaro, with extensive experience in translational medicine, genetics, and bioinformatics. My research focuses on identifying biomolecular markers for type 2 diabetes (T2DM) and its complications, including cardiovascular disease and obesity. My scientific independence is reflected in my extensive track record as Corresponding Author on high-impact publications, where I have provided the conceptual framework and supervised the research teams. My expertise is particularly suited for the current proposal as I have a long-standing track record in the functional study of rare missense variants identified in family pedigrees with early-onset T2DM. I have successfully integrated *in vivo*, *in vitro*, and *in silico* models to characterize molecular mechanisms of insulin resistance and complex metabolic phenotypes. In the context of the proposed study, my background in pharmacogenetics and deep phenotyping of metabolic cohorts (such as the CATAMERIS study) provides the necessary foundation to isolate genetic drivers of extreme pharmacological resistance to incretin-based therapies. I have the technical and leadership skills required to oversee the integration of genomic data with clinical outcomes, ensuring the successful completion of the project's aims. Currently, I serve as a sub-investigator for the national project **PRIN PNRR 2022** (P2022E5WSF_003) focused on the epigenetics of obesity, further strengthening my expertise in high-throughput genomics.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2025-present Editorial board of "Journal of Translational Medicine"
BMC ISSN: 1479-5876"

2025-present Member, European Society of Human Genetics (ESHG)

2025-present Member, Italian Society of Nutraceutics (SINUT)
 2024-present Editorial Board of "Diabetology & Metabolic Syndrome"
 SpringerNatureISSN:1758-5996
 2024-present Member, Italian Society of Translational Research and Healthcare Professionals
 (SIRTEPS)
 2024-present **Aggregate Professor (RTD-B)**, Dpt. of Medical and Surgical Sciences, University
 Magna Graecia of Catanzaro, Italy
 2023-2023 International reviewer for the 2023 Annual Funding Round - Health Research Council
 (HRC), New Zealand
 2019-2024 **Early-stage Researcher (RTD-A)**, Dpt. of Medical and Surgical Sciences, University
 Magna Graecia of Catanzaro, Italy
 2017-present Member, European Association for the Study of Diabetes (EASD)
 2017-2019 **Post-doc Research Fellow**, Dpt. of Medical and Surgical Sciences, University
 Magna Graecia of Catanzaro, Italy
 2017-2017 Guest editor of the special issue "Insulin Resistance, Obesity, and Metabolic
 Syndrome: Common Inflammatory Pathways Leading to Type 2 Diabetes" for the
 International Journal of Endocrinology ISSN:1687-8345
 2015-2017 **MSD Research Fellow**, (1st and 2nd eds) awarded by the Diabetes Research
 Foundation of the Italian Society of Diabetology (SID), 2014 and 2015
 2014-present Member, Italian Society of Diabetology (SID)
 2011-2013 **Visiting Researcher**, Dpt. of Genetics and Epidemiology, Joslin Diabetes Center,
 Harvard Medical School, Boston, MA, USA

Honors

2025 7th award premio "ALCMEONE E PITAGORA" – category "basic research", Crotone, Italy
 2022 XXXV Award of the Cultural Association Anassilaos 'Ρήγιον, Reggio Calabria, Italy
 2018 Eli Lilly Travel Grant for EASD 2018 Conference, awarded by the Italian Society of
 Diabetology
 2017 Young Researcher Award of the Italian Society of Diabetology, Parma, Italy
 2015 Scholarship for young researchers in diabetology, Panorama Diabete, Italian Society of
 Diabetology, Riccione, Italy

C. Contributions to Science

In the following contributions, **underlined bold text** indicates my role as Corresponding Author, reflecting my responsibility for study design, data integrity, and project coordination.

1. Pharmacogenetics of Type 2 Diabetes (T2DM) and Precision Medicine. My primary scientific contribution focused on identifying genetic variants that modulate individual responses to anti-diabetic therapies. I have systematically analyzed how polymorphisms in candidate genes (e.g., *TCF7L2*, *IRS1*, *KCNJ11*) influence drug efficacy and the risk of secondary treatment failure. My work has provided critical evidence for the transition toward a precision medicine paradigm in diabetology, offering tools for patient stratification based on genomic profiles. My review and original research papers in this field are widely cited as benchmarks for tailoring therapies to individual genetic backgrounds.

- **Mannino GC**, Andreozzi F, Sesti G. Pharmacogenetics of type 2 diabetes mellitus, the route toward tailored medicine. *Diabetes Metab Res Rev.* 2019 Mar;35(3):e3109. doi: 10.1002/dmrr.3109.

- Prudente S, Di Paola R, Pezzilli S, Garofolo M, Lamacchia O, Filardi T, Mannino GC, et al. Pharmacogenetics of oral antidiabetes drugs: evidence for diverse signals at the IRS1 locus. *Pharmacogenomics J.* 2018 May 22;18(3):431-435. doi: 10.1038/tpj.2017.32.
- **Mannino GC**, Sesti G. Individualized therapy for type 2 diabetes: clinical implications of pharmacogenetic data. *Mol Diagn Ther.* 2012 Oct;16(5):285-302. doi: 10.1007/s40291-012-0002-7.

2. Computational Genetics and Discovery of Rare Variants in Metabolic Diseases.

During my extensive collaboration with the Joslin Diabetes Center (Harvard Medical School) in the group of Prof. Alessandro Doria, I played a key role in the application of bioinformatics pipelines for the analysis of large-scale genomic datasets. I was responsible for the computational processing and association analysis of genomic data aimed at identifying rare and common variants associated with T2DM and its complications. This experience allowed me to master high-throughput data management and complex statistical genetics. I have since translated these skills to my home institution, leading the meta-genomic characterization of the CATAMERIS cohort and utilizing mathematical modelling to prioritize novel molecular drivers of metabolic dysfunction.

- de Sire A, ..., **Mannino GC**, Ammendolia A, Andreozzi F. Association between gut microbiota composition and physical functioning in patients with knee osteoarthritis: a machine learning study. *Sci Rep.* 2025 Nov 19;15(1):40826. doi: 10.1038/s41598-025-24500-y.
- Andreozzi F, Mancuso E, ..., **Mannino GC**, Tura A. Glucagon kinetics assessed by mathematical modelling during oral glucose administration in people spanning from normal glucose tolerance to type 2 diabetes. *Front Endocrinol (Lausanne).* 2024 Apr 12;15:1376530. doi: 10.3389/fendo.2024.1376530.
- Shah HS, Gao H, Morieri ML, Skupien J, Marvel S, Paré G, Mannino GC, et al. Genetic Predictors of Cardiovascular Mortality During Intensive Glycemic Control in Type 2 Diabetes: Findings From the ACCORD Clinical Trial. *Diabetes Care.* 2016 Nov;39(11):1915-1924. doi: 10.2337/dc16-0285.
- Qi L, Qi Q, Prudente S, Mendonca C, Andreozzi F, ... Mannino GC, et al. Association between a genetic variant related to glutamic acid metabolism and coronary heart disease in individuals with type 2 diabetes. *JAMA.* 2013 Aug 28;310(8):821-8. doi: 10.1001/jama.2013.276305.

3. Translational Research on Insulin Resistance and Multi-systemic Complications.

My research has explored the molecular underpinnings of insulin resistance and its associated systemic complications, including obesity, non-alcoholic fatty liver disease, and cardiovascular decay. By integrating in vivo, in vitro, and in silico models, I have investigated how specific biomolecular markers drive the pathogenesis of metabolic diseases. This holistic approach is essential for my current research on the incretin-brain-adipose axis, as it provides a mechanistic framework to understand how central satiety and reward circuits may override peripheral pharmacological signals in patients resistant to incretin-based therapies.

- Averta C, Rubino M, ..., **Mannino GC**, Sesti G, Andreozzi F. Cathepsin K: a novel association with glucose intolerance, insulin resistance, and subclinical atherosclerosis in T2DM. *J Transl Med.* 2025 Oct 2;23(1):1046. doi: 10.1186/s12967-025-07079-w.

- Andreozzi F, Di Fatta C, Spiga R, **Mannino GC**, et al. Glucagon induces the hepatic expression of inflammatory markers in vitro and in vivo. *Diabetes Obes Metab*. 2023 Feb;25(2):556-569. doi: 10.1111/dom.14902.
- Averta C, ..., **Mannino GC**, Thamtarana PJ, Sciacqua A, Sesti G, Andreozzi F. The Functional Polymorphism of DDAH2 rs9267551 Is an Independent Determinant of Arterial Stiffness. *Front Cardiovasc Med*. 2022 Jan 3;8:811431. doi: 10.3389/fcvm.2021.811431.
- Mannino GC, Averta C, Fiorentino TV, et al. The TRIB3 R84 variant is associated with increased left ventricular mass in a sample of 2426 White individuals. *Cardiovasc Diabetol*. 2021 May 29;20(1):115. doi: 10.1186/s12933-021-01308-4.

Complete list of publications

<https://www.ncbi.nlm.nih.gov/sites/myncbi/1diWzu98wpPQV/collections/66500512/public/>

ORCID ID: orcid.org/0000-0002-6341-4572

Scopus Author ID: 36990228000

Scopus H-index: 20

Number of citations (Scopus): 1526

Research ID: K-1580-2016