

## PERSONAL INFORMATION

## Laura Nigi

✉ [Laura.nigi@unisi.it](mailto:Laura.nigi@unisi.it)

🌐 <https://orcid.org/0000-0002-6251-3069>

Nationality Italian

## POSITION

Senior Researcher in Endocrinology, *Department of Medicine, Surgery and Neurosciences, University of Siena*  
Physician at **Diabetes and Metabolic Diseases**, *University Siena Hospital*

## WORK EXPERIENCE

- 
- 2022 – now Senior Researcher in Endocrinology, *Department of Medicine, Surgery and Neurosciences, University of Siena*
- 2019 - 2022 Senior Researcher in Endocrinology, *Department of Medicine, Surgery and Neurosciences, University of Siena*
- 2017 - 2019 *Research Fellow, Department of Medicine, Surgery and Neurosciences, University of Siena*
- 2013 - 2016 *PhD Student in “Molecular Medicine”, Department of Sperimental Medicine, Sapienza University, Rome*
- 2008 - 2015 Specializzazione in Endocrinologia e Malattie del Metabolismo, c/o Dipartimento di Scienze Mediche, Chirurgiche e Neuroscienze, Università di Siena.
- 2008 - 2013 *Resident Doctor of Endocrinology and Metabolism Diseases, Department of Medicine, Surgery and Neuroscience, University of Siena*

## EDUCATION AND TRAINING

- 
- 2021 *National Scientific Qualification for the role of second-tier University Professor in the competition section 06/D2, Endocrinology SSD MED/13 (valid until 12 may 2030)*
- 2013-2016 *PhD in “Molecular Medicine”, Department of Sperimental Medicine, Sapienza University, Rome*
- 2008-2013 *Post-graduation in Endocrinology and Metabolism diseases, University of Siena*
- 2000-2006 *Medical Degree, University of Siena*

## PERSONAL SKILLS

- 
- Mother tongue(s) Italian
- Other language English
- Job-related skills Clinical experience in Endocrinology and metabolic diseases; particularly diabetes mellitus. With reference to the latter, specific expertise in the management of type

1 diabetes and the use of technology applied to diabetes. Experience as co-investigator in clinical trials (phase 2, 3, 4) for innovative drugs for the treatment of diabetes mellitus. Experience in biomedical research applied to diabetes mellitus and endocrine-metabolic disorders (with particular focus on the study of mechanisms of beta-cellular damage, characterization of inflammatory phenomena affecting the endocrine pancreas, and to the characterization of the autoimmune response in type 1 diabetes). Knowledge of the following laboratory techniques: tissue processing and cutting (by microtome/criostat) for the preparation of histological preparations. Immunohistochemistry and immunofluorescence techniques. Image analysis by fluorescence, bright field and confocal microscopy. ELISA assays for the assay of specific autoantibodies in the setting of diabetes mellitus. Purification of nucleic acids, RNA retrotranscription and Real Time PCR, Stem-loop RT-Real Time PCR for analysis of intracellular and circulating microRNAs, expression profiling analysis of genes and microRNAs by Real Time PCR Taqman Array cards, bioinformatic analysis of gene and microRNA expression profiling with specific software, computational analysis of microRNA targets by predictive algorithms. Basic cell culture techniques. Esperienza come revisore (Peer Review) per riviste scientifiche (Acta Diabetologica, Annals of Medicine, Diabetic Medicine, Diabetologia, Endocrine - International Journal of Basic and Clinical Endocrinology, Frontiers in Endocrinology, International Journal of Molecular Sciences, Journal of Endocrinological Investigation, Nutrition Metabolism and Cardiovascular Diseases, Pediatric Diabetes, Virchows Archiv).

## ADDITIONAL INFORMATION

### Publications

Author or co-author of 40 scientific papers. Among the most important:

Brusco N, Sebastiani G, Di Giuseppe G, Licata G, Grieco GE, Fignani D, **Nigi L**, Formichi C, Aiello E, Auddino S, Quero G, Cefalo CMA, Cinti F, Mari A, Ferraro PM, Pontecorvi A, Alfieri S, Giaccari A, Francesco Dotta F, Mezza T. Intra-islet insulin synthesis defects are associated with endoplasmic reticulum stress and loss of beta cell identity in human diabetes. *Diabetologia* 2023; 66(2): 354-366. doi: 10.1007/s00125-022-05814-2.

Grieco GE, Brusco N, Fignani D, **Nigi L**, Formichi C, Licata G, Marselli L, Marchetti P, Salvini L, Tinti L, Po A, Elisabetta Ferretti E, Sebastiani G, Dotta F. Reduced miR-184-3p expression protects pancreatic  $\beta$ -cells from lipotoxic and proinflammatory apoptosis in type 2 diabetes via CRTCL1 upregulation. *Cell Death Discov* 2022 Jul 29;8(1):340. doi: 10.1038/s41420-022-01142-x.

**Nigi L**, Formichi C, Dotta F. La prevenzione del diabete mellito di tipo 1. *L'Endocrinologo* 2022. 10.1007/s40619-022-01126-0.

Grieco GE, Besharat ZM, Licata G, Fignani D, Brusco N, **Nigi L**, Formichi C, Po A, Sabato C, Dardano A, Natali A, Dotta F, Sebastiani G, Ferretti E. Circulating microRNAs as clinically useful biomarkers for Type 2 Diabetes Mellitus: miRNomics from bench to bedside. *Transl Res.* 2022; 247:137-157. doi: 10.1016/j.trsl.2022.03.008.

**Nigi L**, Brusco N, Grieco GE, Fignani D, Licata G, Formichi C, Aiello E, Marselli M, Marchetti P, Kroghold L, Dahl Jorgensen K, Sebastiani G, Dotta F. Increased expression of viral sensor MDA5 in pancreatic islets and in hormone-negative endocrine cells in recent onset type 1 diabetic donors. *Front. Immunol.* 2022. DOI: 10.3389/fimmu.2022.833141.

Azoury ME, Samassa F, Buitinga M, **Nigi L**, Brusco N, Callebaut A, Giraud M, Irla M, Lalanne AI, Carré A, Afonso G, Zhou Z, Brandao B, Colli ML, Sebastiani G, Dotta F, Nakayama M, Eizirik DL, You S, Pinto S, Mamula MJ, Verdier Y, Vinh J, Buus S, Mathieu C, Overbergh L, Mallone R. CD8+ T cells variably recognize native versus citrullinated GRP78 epitopes in type 1 diabetes. *Diabetes* 2021; 70:2879–2891 DOI: 10.2337/db21-0259

Formichi C, Fignani D, **Nigi L**, Grieco GE, Brusco N, Licata G, Sabato C, Ferretti E, Sebastiani G, Dotta F. Circulating microRNAs Signature for Predicting Response to GLP1-RA Therapy in Type 2 Diabetic Patients: A Pilot Study. *Int. J. Mol. Sci.* 2021; 22(17): 9454. DOI: 10.3390/ijms22179454.

Formichi C\*, **Nigi L\***, (\*shared first authorship), Grieco GE, Maccora C, Fignani D, Brusco N, Licata G, Sebastiani G, Dotta F Non-Coding RNAs: Novel Players in Insulin Resistance and Related Diseases. *Int J Mol Sci*; 22(14):7716. DOI: 10.3390/ijms22147716.

Grieco GE, Sebastiani G, Fignani D, Brusco N, **Nigi L**, Formichi C, Licata G, Bruttini M, D'Aurizio R, Mathieu C, Gysemans C, Dotta F. Protocol to analyze circulating small non-coding RNAs by high-throughput RNA sequencing from human plasma samples. *STAR Protoc.* 2021; 2(3):100606. DOI: 10.1016/j.xpro.2021.100606.

Grieco GE, Fignani D, Formichi C, **Nigi L**, Licata G, Maccora C, Brusco N, Sebastiani G, Dotta F. Extracellular Vesicles in Immune System Regulation and Type 1 Diabetes: Cell-to-Cell Communication Mediators, Disease Biomarkers, and Promising Therapeutic Tools. *Front Immunol.* 2021; 12:682948. DOI: 10.3389/fimmu.2021.682948.

Grieco GE, Brusco N, Licata G, Fignani D, Formichi C, **Nigi L**, Sebastiani G, Dotta F. The Landscape of microRNAs in  $\beta$ Cell: Between Phenotype Maintenance and Protection. *Int J Mol Sci.* 2021; 22(2): E803. DOI: 10.3390/ijms22020803.

Fignani D, Licata G, Brusco N, **Nigi L**, Grieco GE, Marselli L, Overbergh L, Gysemans C, Colli ML, Marchetti P, Mathieu C, Eizirik DL, Sebastiani G, Dotta F. SARS-CoV-2 Receptor Angiotensin I-Converting Enzyme Type 2 (ACE2) Is Expressed in Human Pancreatic  $\beta$ -Cells and in the Human Pancreas Microvasculature. *Front Endocrinol* 2020; 11:596898. DOI: 10.3389/fendo.2020.596898.

Grieco GE, Sebastiani G, Landi CM, Neri G, **Nigi L**, Brusco N, D'aurizio R, Posarelli M, Bacci T, De Benedetto E, Fruschelli M, Orlandini M, Galvagni F, Dotta F, Tosi GM. MicroRNA expression in the aqueous humor of patients with diabetic macular edema. *Int J Mol Sci* 2020; 21: 1-19. DOI: 10.3390/ijms21197328

**Nigi L**, Brusco N, Grieco GE, Licata G, Krogvold L, Marselli L, Gysemans C, Overbergh L, Marchetti P, Mathieu C, Dahl Jorgensen K, Sebastiani G, Dotta F. Pancreatic Alpha-Cells Contribute Together With Beta-Cells to CXCL10 Expression in Type 1 Diabetes. *Front Endocrinol* 2020; 11: 630. DOI: 10.3389/fendo.2020.00630.

Zampieri R, Brozzetti A, Pericolini E, Bartoloni E, Gabrielli E, Roselletti E, Lomonosoff G, Meshcheriakova Y, Santi L, Imperatori F, Merlin M, Tinazzi E, Dotta F, **Nigi L**, Sebastiani G, Pezzotti M, Falorni A, Avesani L. Prevention and treatment of autoimmune diseases with plant virus nanoparticles. *Science Advances* 2020, 6(19): eaaz0295. DOI: 10.1126/sciadv.aaz0295

Grieco GE, Brusco N, Licata G, **Nigi L**, Formichi C, Dotta F, Sebastiani G. Targeting microRNAs as a Therapeutic Strategy to Reduce Oxidative Stress in Diabetes. *Int J Mol Sci* 2019; 20 (24). DOI: 10.3390/ijms20246358.

**Nigi L**, Maccora C, Dotta F, Sebastiani G. From Immunohistological to Anatomical Alterations of Human Pancreas in Type 1 Diabetes: New Concepts on the Stage. *Diabetes Metab Res Rev* 2019; e3264 [Online ahead of print]. DOI: 10.1002/dmrr.3264.

Grieco GE, Cataldo D, Ceccarelli E, **Nigi L**, Catalano G, Brusco N, Mancarella F, Ventriglia G, Fondelli C, Guarino E, Crisci I, Sebastiani G, Dotta F. Serum Levels of miR-148a and miR-21-5p Are Increased in Type 1 Diabetic Patients and Correlated with Markers of Bone Strength and Metabolism. *Noncoding RNA.* 2018; 4(4). pii: E37. DOI: 10.3390/ncrna4040037

**Nigi L**, Grieco GE, Ventriglia G, Brusco N, Mancarella F, Formichi C, Dotta F, Sebastiani G. MicroRNAs as Regulators of Insulin Signaling: Research Updates and Potential Therapeutic Perspectives in Type 2 Diabetes. *Int J Mol Sci.* 2018; 19(12). pii: E3705. DOI: 10.3390/ijms19123705.

Vecchio F, Lo Buono N, Stabilini A, **Nigi L**, Dufort MJ, Geyer S, Rancoita PM, Cugnata F, Mandelli A, Valle A, Leete P, Mancarella F, Linsley PS, Krogvold L, Herold KC, Larsson HE, Richardson SJ, Morgan NG, Dahl-Jørgensen K, Sebastiani G, Dotta F, Bosi E; DRI\_Biorepository Group; Type 1 Diabetes TrialNet Study Group, Battaglia M. Abnormal neutrophil signature in the blood and pancreas of presymptomatic and symptomatic type 1 diabetes. *JCI Insight.* 2018; 3(18). pii: 122146. DOI: 10.1172/jci.insight.122146.

Gonzalez-Duque S, Azoury ME, Colli ML, Afonso G, Turatsinze JV, **Nigi L**, Lalanne AI, Sebastiani G, Carré A, Pinto S, Culina S, Corcos N, Bugliani M, Marchetti P, Armanet M, Diedisheim M, Kyewski B, Steinmetz LM, Buus S, You S, Dubois-Laforgue D, Larger E, Beressi JP, Bruno G, Dotta F, Scharfmann R, Eizirik DL, Verdier Y, Vinh J, Mallone R. Conventional and Neo-antigenic Peptides Presented by  $\beta$  Cells Are Targeted by Circulating Naïve CD8<sup>+</sup> T Cells in Type 1 Diabetic and Healthy Donors. *Cell Metab.* 2018; 28(6): 946-960.e6. DOI: 10.1016/j.cmet.2018.07.007.

Ifie E, Russell MA, Dhayal S, Leete P, Sebastiani G, **Nigi L**, Dotta F, Marjomäki V, Eizirik DL, Morgan NG, Richardson SJ. Unexpected subcellular distribution of a specific isoform of the CoxSackie and adenovirus receptor, CAR-SIV, in human pancreatic beta cells. *Diabetologia.* 2018; 61(11): 2344-2355. DOI: 10.1007/s00125-018-4704-1.

Culina S, Lalanne AI, Afonso G, Cerosaletti K, Pinto S, Sebastiani G, Kuranda K, **Nigi L**, Eugster A, Østerbye T, Maugein A, McLaren JE, Ladell K, Larger E, Beressi JP, Lissina A, Appay V, Davidson HW, Buus S, Price DA, Kuhun M, Bonifacio E, Battaglia M, Caillat-Zucman S, Dotta F, Scharfmann R, Kyewski B, Mallone R and the ImMaDiab Study Group. Islet-reactive CD8<sup>+</sup> T-cell frequencies in the pancreas but not blood distinguish type 1 diabetes from healthy donors. *Sci Immunol.* 2018; 3(20). pii: eaao4013. DOI: 10.1126/sciimmunol.aao4013.

**Nigi L**, Fondelli C, de Donato G, Palasciano G, Setacci C, Dotta F. Fighting diabetic foot ulcers-The diabetologist: A king maker of the fight. *Semin Vasc Surg.* 2018; 31(2-4): 49-55. DOI: 10.1053/j.semvascsurg.2018.12.003.

Sebastiani G, Ventriglia G, Stabilini A, Soggi C, Morsiani C, Laurenzi A, **Nigi L**, Formichi C, Mfarrej B, Petrelli A,

Fousteri G, Brusko TM, Dotta F, Battaglia M. Regulatory T-cells from pancreatic lymphnodes of patients with type-1 diabetes express increased levels of microRNA miR-125a-5p that limits CCR2 expression. *Sci Rep* 2017; 7(1): 6897. DOI: 10.1038/s41598-017-07172-1.

Solini A, Sebastiani G, **Nigi L**, Santini E, Rossi C, Dotta F. Dapagliflozin modulates glucagon secretion in an SGLT-2 independent manner in murine alpha cells. *Diabetes Metab.* 2017; 43(6): 512-520. DOI: 10.1016/j.diabet.2017.04.002. DOI: 10.1016/j.diabet.2017.04.002.

Sebastiani G, **Nigi L**, Grieco GE, Mancarella F, Ventriglia G, Dotta F. Circulating microRNAs and diabetes mellitus: a novel tool for disease prediction, diagnosis, and staging? *J Endocrinol Invest.* 2017; 40(6): 591-610. DOI: 10.1007/s40618-017-0611-4.

Sebastiani G, Valentini M, Grieco GE, Ventriglia G, **Nigi L**, Mancarella F, Pellegrini S, Martino G, Sordi V, Piemonti L, Dotta F. MicroRNA expression profiles of human iPSCs differentiation into insulin-producing cells. *Acta Diabetologica* 2017; 54(3): 265-281. DOI: 10.1007/s00592-016-0955-9.

Belba A, Cortelazzo A, Andrea G, Durante J, **Nigi L**, Dotta F, Timperio AM, Zolla L, Leoncini R, Guerranti R, Ponchietti R. Erectile dysfunction and diabetes: association with the impairment of lipid metabolism and oxidative stress. *Clin Biochem* 2016; 49(1-2): 70-78. DOI: 10.1016/j.clinbiochem.2015.10.004.

Battaglia M, **Nigi L**, Dotta F. Towards an earlier and timely diagnosis of type 1 diabetes: is it time to change criteria to define disease onset?. *Current Diabetes Reports* 2015;15(12): 115. DOI: 10.1007/s11892-015-0690-6.

Ventriglia G, **Nigi L**, Sebastiani G, Dotta F. MicroRNAs: novel players in the dialogue between pancreatic islets and immune system in autoimmune diabetes. *BioMed Research International* 2015; 2015: 749734. DOI: 10.1155/2015/749734.

Spagnuolo I, Patti A, Sebastiani G, **Nigi L**, Dotta F. The case for virus-induced type 1 diabetes. *Current Opinion in Endocrinology Diabetes and Obesity* 2013; 20(4): 292-298. DOI: 10.1097/MED.0b013e328362a7d7.

#### Invited Presentations

Presentation “medicina di precisione nel diabete: qual è la tecnologia più utile?” symposium YOSID MEET THE MENTOR CLINICAL SCIENCE: LA MEDICINA DI PRECISIONE NEL DIABETE, Panorama Diabete – Forum Multidisciplinare e Multidimensionale, 27-30 november 2021 (Riccione).

Presentation “L’immunoterapia nel diabete tipo 1” AMD meeting “il diabete tipo 1 a 100 anni dalla scoperta dell’insulina”, Virtual Meeting, 18-19 june 2021.

#### Projects

Participation in National and International Scientific Projects, membership in Research Groups and scientific collaborations. In particular:

7th Frame Programme of the European Union "Persistent virus infection as a cause of pathogenic inflammation in type 1 diabetes - an innovative research program of biobanks and expertise" (PEVNET n. 261441)

HORIZON 2020-JTI-IMI2-2014-01 of the European Unit "Translation approaches to disease modifying therapy of type 1 diabetes: an innovative approach towards understanding and arresting type 1 diabetes" (INNODIA n. 115797)

H2020-JTI-IMI2-2019-19-single-stage, Call topic: IMI2-2019-19-01 - Translational approaches to disease modifying therapy of type 1 diabetes - HARVESTing the fruits of INNODIA (INNODIA HARVEST n. 945268)

Horizon 2020 Framework Programme for Research and Innovation "Human Exposomic Determinants of Immune Mediated Diseases" (HEDIMED n. 874864).

Project GR-2019-12368679 ("INVESTIGATION OF CD8 T CELL MEDIATED MECHANISMS OF INSULIN-RESISTANCE IN HUMAN OBESITY AND TYPE 2 DIABETES"), funded by the Ministry of Health, as a winner of the 2019 Finalized Research Young Investigators Call (Head of Research Unit within the project).

**Honours and awards** TRAVEL GRANT SID (Società Italiana di Diabetologia) per il 51<sup>st</sup> Annual Meeting EASD (European Association for the Study of Diabetes) 2015, Stockholm, Sweden.

TRAVEL GRANT SID (Società Italiana di Diabetologia) per il 52<sup>nd</sup> Congresso Nazionale SID 2018, Rimini.

**Memberships** Member of the Scientific Commission of the Umberto di Mario Foundation ONLUS since 2017.

Member of the Scientific Commission of the Italian Society of Endocrinology since 2019.

Member of the Diabetes Type 1 Study Group of the Association of Diabetes Physicians (AMD) since 2020.

Member of the Board of Editors Journal Club SID (topic: Immunology and Pathogenesis of Type 1 Diabetes) since 2023.

Siena, 5<sup>th</sup> may 2023

Firma

