BIOGRAPHICAL SKETCH

Name: Dr. Sara Bruzzaniti	Position/Title: Phd student, Research fellow

Education

Institution and Location	Degree	Year Conferred	Field of Study
Liceo Scientifico (High School), G. Mazzini, Naples, Italy.	Baccalaureate	2006	
Biology Degree, University of Naples "Federico II", Naples, Italy.	Bachelor Degree	2016	Immunology
Research fellow at Institute of Endocrinology and Experimental Oncology (IEOS-CNR), Naples, Italy		2017-present	Immunology
PhD student, Biology, University of Naples "Federico II", Naples, Italy.		2019-present	Biology

Research and Professional Experience

Positions and Employment:

17/11/2016	Degree in "Biology", defending her thesis in Immunology. Supervisor: Prof. O. Picariello and Dr. M. Galgani
2017-present	Research fellow at Institute of Endocrinology and Experimental Oncology (IEOS-CNR), Naples, Italy. Supervisor: Dr. Mario Galgani
2019-present	PhD program in Biology, University of Naples "Federico II", Naples, Italy.

Research Experience:

(2015 - present)

Dr. Bruzzaniti Sara started her training in 2015 as internal student in Immunology, School of "Biology", University of Naples "Federico II", working in the Laboratory of Immunology, at the Institute of Endocrinology and Experimental Oncology, (IEOS-CNR), Naples, Italy, under the supervision of Dr. Mario Galgani. During that period of training, Dr. Bruzzaniti worked on her graduation thesis in Immunology entitled *"$CD3^+CD56^+$ lymphocytes: novel regulatory cells in the immunopathogenesis of Type 1 Diabetes"*. The research field of the study has been the dysregulation of the immune tolerance in autoimmune disease, such as Type 1 Diabetes (T1D). Specifically, she investigated on the immune-regulatory role of a novel regulatory T cell subset ($CD3^+CD56^+$) in T1D pathogenesis.

Furthermore, Dr. Bruzzaniti studied also the role of $CD4^+CD25^+FoxP3^+$ regulatory T cells (Treg) in the maintenance of peripheral immune tolerance and in the control of human diseases, such as T1D, MS and chronic obstructive pulmonary disease (COPD). In particular, she studied the expression of the transcription factor FoxP3 and its splicing variant containing Exon 2 (FoxP3E2), necessary for the suppressive function of Treg cells, both in healthy, T1D and multiple sclerosis (MS) subjects. In May 2017, she won a research fellow at IEOS-CNR, as part of the EFSD-funded project "*$CD3^+CD56^+$ cells a*

novel human regulatory population: function and molecular mechanism in Type 1 Diabetes" (Supervisor Dr. Mario Galgani). The aim of the research was to study the regulatory role of $CD3^+CD56^+$ lymphocytes in relation to the cytotoxic functions of $CD8^+$ T lymphocytes in children affect by T1D compared to healthy subjects. During this period, she also began to study the role of $CD3^+CD56^+$ cells in another autoimmune condition, such as MS. In May 2018 and May 2019, the research fellow at IEOS-CNR was renewed, funded by JDRF-funded project "*The novel $CD3^+CD56^+$ lymphocyte population: from T1D biomarkers to disease pathogenesis*" (Supervisor Dr. Mario Galgani), continuing the study of the regulatory $CD3^+CD56^+$ cells and their involvement in the progression of autoimmune disorders. In October 2019, Dr. Bruzzaniti started her PhD program in Biology at the University of Naples "Federico II". She continued to investigated on the phenotypical and molecular alterations of $CD3^+CD56^+$ cells in T1D and MS subjects; at the same time she also began to study the molecular modifications of the FoxP3 in COPD subjects. In May 2020, she won a research fellow at IEOS-CNR, as part of the EFSD-funded project.

Professional Memberships:

- Associazione Italiana NeuroImmunologia (AINI), 2018-present
- Società Italiana di Immunologia Clinica e Allergologica (SIICA), 2018-present
- European Association for the Study of Diabetes (EASD), 2017-present.

Meetings:

- Cancer Metastasis: The Role of Metabolism, Immunity and the Microenvironment. Keystone Symposia, Florence, Italy. (2019). Poster Presentation.
- 5th European Congress of Immunology (ECI), Amsterdam, Netherland (2018). Poster Presentation.
- 27 th AINI Meeting, Trieste, Italy. (2018). Oral Presentation.
- 54th EASD Annual Meeting, Lisbon, Portugal (2017). Poster Presentation.

Awards:

- Best abstract: Franzese E.*, **Bruzzaniti S.***, Fattorusso V., Casertano A., Franzese A., Ludvigsson J., Galgani M. - Linfociti T $CD3^+CD56^+$: un nuovo biomarcatore con funzione regolatoria nel diabete mellito tipo 1, XXII National Meeting SIEDP (Società Italiana di Endocrinologia e Diabetologia Pediatrica (2019). *these authors equally contributed.

Publications:

De Vito F., Musella A., Fresegna D., Rizzo F.R., Gentile A., Bassi M.S., Gilio L., Buttari F., Procaccini C., Colamatteo A., Bullitta S., Guadalupi L., Caioli S., Vanni V., Balletta S., Sanna K., Bruno A., Dolcetti E., Furlan R., Finardi A., Licursi V., Drulovic J., Pekmezovic T., Fusco C., **Bruzzaniti S.**, Hornstein E., Uccelli A., Salvetti M., Matarese G., Centonze D., Mandolesi G. MiR-142-3p regulates synaptopathy-driven disease progression in multiple sclerosis. *Neuropathol. Appl. Neurobiol.* (2021).

Carbone F., **Bruzzaniti S.**, Fusco C., Colamatteo A., Micillo T., de Candia P., Bonacina F., Norata G.D., Matarese G. Metabolomics, Lipidomics, and Immunometabolism. *Methods Mol. Biol.* (2021)

Proto M.C., Fiore D., Piscopo C., Pagano C., Galgani M., **Bruzzaniti S.**, Laezza C., Gazzerro P., Bifulco M. Lipid homeostasis and mevalonate pathway in COVID-19: Basic concepts and potential therapeutic targets. *Prog. Lipid Res.* (2021).

Perna F., **Bruzzaniti S.**, Piemonte E., Maddaloni V., Atripaldi L., Sale S., Sanduzzi A., Nicastro C., Pepe N., Bifulco M., Matarese G., Galgani M., Atripaldi L. Serum levels of SARS-CoV-2 nucleocapsid antigen associate with inflammatory status and disease severity in COVID-19 patients. *Clin Immunol.* (2021).

Palma C., La Rocca C., Gigantino V., Aquino G., Piccaro G., Di Silvestre D., Brambilla F., Rossi R., Bonacina F., Lepore M.T., Audano M., Mitro N., Botti G., **Bruzzaniti S.**, Fusco C., Procaccini C., De Rosa V., Galgani M., Alviggi C., Puca A., Grassi F., Rezzonico-Jost T., Norata G.D., Mauri P., Netea M.G., de Candia P., Matarese G. Caloric Restriction Promotes Immunometabolic Reprogramming Leading to Protection from Tuberculosis. *Cell Metab.* (2021).

Galgani M., **Bruzzaniti S.**, La Rocca C., Micillo T., de Candia P., Bifulco M., Matarese G. Immunometabolism of regulatory T cells in cancer. *Mol. Aspects Med.* (2021).

Bruzzaniti S., Cirillo E., Prencipe R., Giardino G., Lepore M.T., Garziano F., Perna F., Procaccini C., Mascolo L., Pagano C., Fattorusso V., Mozzillo E., Bifulco M., Matarese G., Franzese A., Pignata C., Galgani M. $CD4^+$ T Cell Defects in a Mulibrey Patient With Specific *TRIM37* Mutations. *Front. Immunol.* (2020).

Galgani M., **Bruzzaniti S.**, Matarese G. Immunometabolism and autoimmunity. *Curr. Opin. Immunol.* (2020).

Garavelli S., **Bruzzaniti S.**, Tagliabue E., Di Silvestre D., Prattichizzo F., Mozzillo E., Fattorusso V., La Sala L., Ceriello A., Puca A.A., Mauri P., Strollo R., Marigliano M., Maffeis C., Petrelli A., Bosi E., Franzese A., Galgani M., Matarese G., de Candia P. Plasma circulating miR-23~27~24 clusters correlate with the immunometabolic derangement and predict C-peptide loss in children with type 1 diabetes. *Diabetologia* (2020).

Barisciano G., Colangelo T., Rosato V., Muccillo L., Taddei M.L., Ippolito L., Chiarugi P., Galgani M., **Bruzzaniti S**., Matarese G., Fassan M., Agostini M., Bergamo F., Pucciarelli S., Carbone A., Mazzoccoli G., Colantuoni V., Bianchi F. & Sabatino L. miR-27a is a master regulator of metabolic reprogramming and chemoresistance in colorectal cancer. *Br. J. Cancer* (2020).

Terrazzano G.*, **Bruzzaniti S.***, Rubino V.*, Santopaolo M., Palatucci A.T., Giovazzino A., La Rocca C., de Candia P., Puca A., Perna F., Procaccini C., De Rosa V., Porcellini C., De Simone S., Fattorusso V., Porcellini A., Mozzillo E., Troncone R., Franzese A., Ludvigsson J., Matarese G., Ruggiero G. & Galgani M. Type 1 diabetes progression is associated with loss of $CD3^+CD56^+$ regulatory T cells that control $CD8^+$ T-cell effector functions. *Nat. Metab.* 2:142-152 (2020). *these authors equally contributed.

Colamatteo A., Carbone F., **Bruzzaniti S.**, Galgani M., Fusco C., Maniscalco G.T., Di Rella F., de Candia P. & De Rosa V. Molecular Mechanisms Controlling Foxp3Expression in Health and Autoimmunity: From Epigenetic to Post-translational Regulation. *Front. Immunol.* 10:3136 (2020).

Garavelli S.*, **Bruzzaniti S.***, Tagliabue E., Prattichizzo F., Di Silvestre D., Perna F., La Sala L., Ceriello A., Mozzillo E., Fattorusso V., Mauri P., Puca A.A., Franzese A., Matarese G., Galgani M. & de Candia P. Blood Co-Circulating Extracellular microRNAs and Immune Cell Subsets Associate with Type 1 Diabetes Severity. *Int. J. Mol. Sci.* 21: pii: E477 (2020). *these authors equally contributed.

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obstructive pulmonary disease. *Proc. Natl. Acad. Sci. U.S.A*. pii:201906303 (2019).

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Laudati G., Mascolo L., Guida N., Sirabella R., Pizzorusso V., **Bruzzaniti S.**, Serani A., Di Renzo G., Canzoniero L.M.T. & Formisano L. Resveratrol treatment reduces the vulnerability of SH-SY5Y cells and cortical neurons overexpressing SOD1-G93A to Thimerosal toxicity through SIRT1/DREAM/PDYN pathway. *Neurotoxicology* 71:6-15 (2019).

Capo A., Sepe R., Pellino G., Milone M., Malapelle U., Pellecchia S., Pepe F., Cacciola N.A., Manigrasso M., **Bruzzaniti S**., Sciaudone G., De Palma G.D., Galgani M., Selvaggi F., Troncone G., Fusco A., D'Auria S. & Pallante P. Setting up and exploitation of a nano/technological platform for the evaluation of HMGA1b protein in peripheral blood of cancer patients. *Nanomedicine* 15:231-242 (2019).