

BIOGRAPHICAL SKETCH

Name: Colamatteo Alessandra, PhD	Position/Title: PhD, Post-doc Research Fellow
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EDUCATION

Institution and Location	Degree	Year Conferred	Field of Study
Liceo Classico (High school), D. Cirillo, Aversa (CE), Italy.	Baccalaureate	2003	
Biotechnology Degree, " <i>magna cum laude</i> ", University of Naples "Federico II", Naples, Italy.	Bachelor Degree	2012	Immunology
PhD program in "Clinical and translational medicine", Department of Medicine and Surgery, University of Salerno, Baronissi, Italy.	PhD	2013-2016	NeuroImmunology

RESEARCH AND PROFESSIONAL EXPERIENCE**POSITION AND EMPLOYMENT**

25/07/2012	Degree in "Medical Biotechnology", <i>magna cum laude</i> , defending her thesis in Immunology, Università degli Studi di Napoli "Federico II", Napoli, Italy. Supervisor: Prof. Paola Costanzo.
2011/2012	Research-internship at Laboratory of Hematology and Cellular Immunology, A.O.R.N. Monaldi-Cotugno-C.T.O., Napoli, Italy. Supervisors: Prof. Riccardo Smeraglia and Dr. Antonio di Giacomo.
2013-2016	Research Fellow (Ministero della Salute nr. GR10.104.1) "Role of mTOR in the control of <i>self</i> immune tolerance", IRCCS Fondazione Santa Lucia, Roma, Italy. Supervisor: Dr. Veronica De Rosa.
23/052017	PhD program in "Clinical and Translational Medicine", Dipartimento di Medicina e Chirurgia, University of Salerno, Italy. Supervisor: Prof. Giuseppe Matarese.
2017-2018	Research Fellow (Project Telethon nr. GJT08004) "Correlation between immune and endocrine system: impaired function of the immune system as a cause of disease", Istituto per l'Endocrinologia e l'Oncologia Sperimentale – Consiglio Nazionale delle Ricerche (IEOS-CNR), Napoli, Italy. Supervisor: Prof. G. Matarese.
2018-2020	Research Fellow (Project Telethon nr. GGP17086) "Study of immunoregulatory function in patients with type 1B Glycogenosis", Dipartimento di Medicina

Molecolare e Biotecnologie Mediche (DMMBM), Università degli Studi di Napoli “Federico II”, Napoli, Italy. Supervisor: Prof. G. Matarese.

2020-present Post-Doc Research Contract (PRIN Project nr. 2017 2017K55HLC001) “Integrating metabolism and immunity: cellular and molecular pathways leading to metabolic dysregulation and autoimmunity”, Dipartimento di Medicina Molecolare e Biotecnologie Mediche (DMMBM), Università degli Studi di Napoli “Federico II”, Napoli, Italy. Supervisor: Prof. G. Matarese.

RESEARCH EXPERIENCE

During her PhD in Clinical and Translational Medicine, under the supervision of Prof. Giuseppe Matarese, Dr. Alessandra Colamatteo focused her attention on the study of the regulation of immune tolerance in physiological and pathological conditions, such as Multiple Sclerosis (MS). Specifically, she studied the mechanisms involved in the control of peripheral immune tolerance, mediated by CD4⁺CD25⁺Foxp3⁺ regulatory T cells (Tregs), investigating the role of splicing variants of the transcription factor Forkhead-box-p3 (Foxp3), a key factor in the development and function of Tregs. More specifically, she co-authored a key study on the role of a glycolytic enzyme, Enolase-1, in the modulation of the expression of different Foxp3 splicing variants, thus highlighting a crucial link between metabolism and immune system, even during autoimmunity (*De Rosa V, et al. Nat Immunol. 2015*).

Subsequently, Dr. Colamatteo focused her attention on characterization of the role of two proteins with anti-inflammatory activity such as Annexin-A1 (ANXA-1) and Developmental Endothelial Locus-1 (DEL-1), in the pathogenesis of autoimmune and inflammatory diseases. In the study on ANXA-1, she investigated the ability of ANXA-1 to influence T cell effector function in relapsing/remitting MS (RRMS), an autoimmune disease sustained by proinflammatory Th1/Th17 cells. Circulating expression levels of ANXA-1 in naive-to-treatment RRMS subjects inversely correlated with disease score and progression. At the cellular level, there was an impaired ANXA-1 production by CD4⁺CD25⁻conventional T (Tconv) and CD4⁺RORgt⁺ T (Th17) cells from RRMS subjects that associated with an increased migratory capacity in an *in vitro* model of blood brain barrier.

In the DEL-1 study, Dr. Colamatteo evaluated how its anti-inflammatory function was due to the ability to induce Tregs both numerically and functionally, both *in vivo* in a mouse model of inflammation of the pulmonary and oral mucosa and *in vitro* on lymphocytes isolated from humans and mice. In particular, DEL-1 improves the de-methylation status of the specific demethylated region of Tregs (TSDR) in the Foxp3 gene, favoring the suppressive function of Tregs (*Li X. and Colamatteo A. et al., Journal of Clinical Investigation 2020*).

Both molecules, ANXA-1 and DEL-1 offer the possibility of identifying new therapeutic strategies to modulate inflammatory/autoimmune disorders.

PROFESSIONAL MEMBERSHIP

2012-Present EFIS Superior School of Immunology R. Ceppellini.
2014-Present Italian Association of NeuroImmunology (AINI).

MAJOR INTERNATIONAL COLLABORATORS

- Prof. George Hajishengallis, University of Pennsylvania, Philadelphia, USA.
- Prof. Triantafyllos Chavakis, Technische Universität Dresden, Dresden, Germany.
- Dr. Egle Solito, Queen Mary University of London, London, UK.
- Prof. Federica Marelli-Berg, Queen Mary University of London, London, UK.

TRAINING COURSES

Number pages consecutively throughout the Application. Do NOT use suffixes such as 6a, 6b...

- Roche Operator training COBASE411, 2021, Naples, Italy.
- Thermo Fisher Scientific *qPCR basic training*, 2019, Naples, Italy.
- 12thENII Immunology Summer School, 2017, Porto Cervo, Italy.
- Advanced course of Immunology, Superior School of Immunology R. Ceppellini *Metchnikoff's Legacy: tissue phagocytes and functions*, 2016, Naples, Italy.
- Advanced course of Immunology, Superior School of Immunology R. Ceppellini *Treg cell biology and metabolism*, 2015, Naples, Italy.
- The BD Horizon Tour, New insights for multicolor panel design. CEINGE, 2014, Naples, Italy.
- Advanced course of Immunology, Superior School of Immunology R. Ceppellini *Innate Immunity: from Evolution to Revolution*, 2012, Sorrento, Italy.

INVITED KEY PRESENTATIONS

- 26-27/11/20 Annual FISM Congress, Rome, Italy. *Poster presentation*
- 27-29/05/18 Annual FISM Congress, Rome, Italy. *Poster presentation*
- 28-31/05/17 XI National Congress SIICA, Bari, Italy. *Poster presentation*
- 06-13/05/17 12thENII Immunology Summer School, Porto Cervo, Italy. *Poster presentation*
- 04-06/10/16 33^oCongress SIPMeT, Montesilvano, Italy. *Oral presentation*
- 29/09/16-01/10/16 International retreat of PhD Students in Immunology, SIICA, Seconda Università di Napoli, Naples, Italy. *Poster presentation*
- 25-27/05/16 Annual FISM Congress, Rome, Italy. *Poster presentation*
- 11-14/05/16 XXV AINI Congress, Lecce, Italy. *Oral presentation*
- 13-16/01/16 18thMultiple Sclerosis Lab Retreat-IRCCS Santa Lucia, Dynamo Camp, Pistoia, Italy. *Oral presentation*
- 14-17/01/15 17thMultiple Sclerosis Lab Retreat-IRCCS Santa Lucia, Sinalunga, Italy. *Oral presentation*
- 22-23/05/14 Giornate della Facoltà di Farmacia e Medicina (FarMed), University of Salerno, Fisciano, Italy. *Poster presentation*
- 15-18/01/14 16thMultiple Sclerosis Lab Retreat-IRCCS Santa Lucia, Sinalunga, Italy. *Oral presentation*

TECHNICAL LABORATORY SKILLS

- Lymphocytes extraction from tissues and peripheral organs (human and murine), primary cell cultures, cell purification, *in vitro* functional assays.
- *In vivo* studies in murine models: organ and lymphoid tissues extraction, adoptive transfer of splenocytes or purified lymphocytes, experimental models of autoimmunity (EAE and T1D) and tumor (solid tumors and ascites).
- Seahorse XFAnalyzer.
- Flow cytometry (FACSCanto II; analysis software DIVA and FlowJo).
- Cellular Sorting (FACSJazz).
- Protein extraction and purification, SDS-PAGE, Western Blot.
- Elisa and LUMINEX technology.
- DNA/RNA extraction, PCR and qPCR, siRNA transfection.
- The COBASE411 Analyzer.

PUBLICATIONS

(Impact factor according to Journal of Citation Reports)

- 1) Simula L, Antonucci Y, Cancila V, **Colamatteo A**, Manni S, De Angelis B, Quintarelli C, Procaccini C, Matarese G, Tripodo C, Campello S. PD-1-induced T cell exhaustion is controlled by a Drp1-dependent mechanism. *Molecular Oncology*. 2021 Sep 17. **(I.F. 6.603)**.
- 2) De Vito F, Musella A, Fresegna D, Rizzo FR, Gentile A, Stampanoni Bassi M, 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. *Neuropathology and Applied Neurobiology*. 2021 Sep 17. **(I.F. 8.090)**.
- 3) Procaccini C, Garavelli S, Carbone F, Di Silvestre D, La Rocca C, Greco D, **Colamatteo A**, Lepore MT, Russo C, De Rosa G, Faicchia D, Prattichizzo F, Grossi S, Campomenosi P, Buttari F, Mauri P, Uccelli A, Salvetti M, Brescia Morra V, Vella D, Galgani M, Mottola M, Zuccarelli B, Lanzillo R, Maniscalco GT, Centonze D, de Candia P, Matarese G. Signals of pseudo-starvation unveil the amino acid transporter SLC7A11 as key determinant in the control of Treg cell proliferative potential. *Immunity*. 2021 Jul 13;54(7):1543-1560.e6. **(I.F. 31.745)**.
- 4) **Li X***, **Colamatteo A***, Kalafati L, Kajikawa T, Wang H, Lim JH, Bdeir K, Chung KJ, Yu X, Fusco C, Porcellini A, De Simone S, Matarese G, Chavakis T, De Rosa V, Hajishengallis G. The DEL-1/ β 3 integrin axis promotes regulatory T cell responses during inflammation resolution. *J Clin Invest*. 2020 Dec 1;130(12):6261-6277. **(I.F. 14.808)**. *Co-first authors.
- 5) Sheikh MH, Henson SM, Loiola RA, Mercurio S, **Colamatteo A**, Maniscalco GT, De Rosa V, McArthur S, Solito E. Immuno-metabolic impact of the multiple sclerosis patients' sera on endothelial cells of the blood-brain barrier. *J Neuroinflammation*. 2020 May 9;17(1):153. **(I.F. 8.322)**.
- 6) **Colamatteo A**, Carbone F, Bruzzaniti S, Galgani M, Fusco C, Maniscalco GT, Di Rella F, de Candia P, De Rosa V. Molecular Mechanisms Controlling Foxp3 Expression in Health and Autoimmunity: From Epigenetic to Post-translational Regulation. *Front Immunol*. 2020 Feb 3;10:3136. **(I.F. 7.561)**.
- 7) **Colamatteo A**, Micillo T, Bruzzaniti S, Fusco C, Garavelli S, De Rosa V, Galgani M, Spagnuolo MI, Di Rella F, Puca AA, de Candia P, Matarese G. Metabolism and Autoimmune Responses: The microRNA Connection. *Front Immunol*. 2019 Aug 28;10:1969. **(I.F. 7.561)**.
- 8) de Candia P, Prattichizzo F, Garavelli S, De Rosa V, Galgani M, Di Rella F, Spagnuolo MI, **Colamatteo A**, Fusco C, Micillo T, Bruzzaniti S, Ceriello A, Puca AA, Matarese G. Type 2 Diabetes: How Much of an Autoimmune Disease? *Front Endocrinol. (Lausanne)*. 2019 Jul 4;10:451. **(I.F. 5.555)**.
- 9) **Colamatteo A**, Maggioli E, Azevedo Loiola R, Hamid Sheikh M, Cali G, Bruzzese D, Maniscalco GT, Centonze D, Buttari F, Lanzillo R, Perna F, Zuccarelli B, Mottola M, Cassano S, Galgani M, Solito E, De Rosa V. Reduced Annexin A1 Expression Associates with Disease Severity and Inflammation in Multiple Sclerosis Patients. *J Immunol*. 2019 Oct 1;203(7):1753-1765. **(I.F. 5.422)**.
- 10) Simula L, Pacella I, **Colamatteo A**, Procaccini C, Cancila V, Bordi M, Tregnago C, Corrado M, Pigazzi M, Barnaba V, Tripodo C, Matarese G, Piconese S, Campello S. Drp1 Controls Effective T Cell Immune-Surveillance by Regulating T Cell Migration, Proliferation, and cMyc-Dependent Metabolic Reprogramming. *Cell Rep*. 2018 Dec 11;25(11):3059-3073.e10. **(I.F. 9.423)**.
- 11) La Rocca C, Carbone F, De Rosa V, **Colamatteo A**, Galgani M, Perna F, Lanzillo R, Brescia Morra V, Orefice G, Cerillo I, Florio C, Maniscalco GT, Salvetti M, Centonze D, Uccelli A, Longobardi S, Visconti A, Matarese G. Immunometabolic profiling of T cells from patients with relapsing-remitting multiple sclerosis reveals an impairment in glycolysis and mitochondrial respiration. *Metabolism*. 2017 Dec;77:39-46. **(I.F. 8.694)**.
- 12) Kishore M, Cheung KCP, Fu H, Bonacina F, Wang G, Coe D, Ward EJ, **Colamatteo A**, Jangani M, Baragetti A, Matarese G, Smith DM, Haas R, Mauro C, Wraith DC, Okkenhaug K, Catapano AL, De Rosa V, Norata GD, Marelli-Berg FM. Regulatory T Cell Migration Is Dependent on Glucokinase-Mediated Glycolysis. *Immunity*. 2017 Nov 21;47(5):875-889.e10. **(I.F. 31.745)**.
- 13) Lanzillo R, Carbone F, Quarantelli M, Bruzzese D, Carotenuto A, De Rosa V, **Colamatteo A**, Micillo

T, De Luca Picione C, Saccà F, De Rosa A, Moccia M, Brescia Morra V, Matarese G. Immunometabolic profiling of patients with multiple sclerosis identifies new biomarkers to predict disease activity during treatment with interferon beta-1a. *Clin Immunol.* 2017 Oct;183:249-253. **(I.F. 3.969).**

14) Carbone F, La Rocca C, De Candia P, Procaccini C, **Colamatteo A**, Micillo T, De Rosa V, Matarese G. Metabolic control of immune tolerance in health and autoimmunity. *Semin Immunol.* 2016 Oct;28(5):491-504. **(I.F. 11.130).**

15) Procaccini C, Santopaolo M, Faicchia D, **Colamatteo A**, Formisano L, de Candia P, Galgani M, De Rosa V, Matarese G. Role of metabolism in neurodegenerative disorders. *Metabolism.* 2016 Sep;65(9):1376-90. **(I.F. 8.694).**

16) De Rosa V, Galgani M, Santopaolo M, **Colamatteo A**, Laccetti R, Matarese G. Nutritional control of immunity: Balancing the metabolic requirements with an appropriate immune function. *Semin Immunol.* 2015 Sep;27(5):300-9. **(I.F. 11.130).**

17) De Rosa V, Galgani M, Porcellini A, **Colamatteo A**, Santopaolo M, Zuchegna C, Romano A, De Simone S, Procaccini C, La Rocca C, Carrieri PB, Maniscalco GT, Salvetti M, Buscarinu MC, Franzese A, Mozzillo E, La Cava A, Matarese G. Glycolysis controls the induction of human regulatory T cells by modulating the expression of FOXP3 exon 2 splicing variants. *Nat Immunol.* 2015 Nov;16(11):1174-84. **(I.F. 25.606).**

18) Matarese G, **Colamatteo A**, De Rosa V. Metabolic fuelling of proper T cell functions. *Immunol Lett.* 2014 Oct;161(2):174-8. **(I.F. 3.685).**

BOOK CHAPTER:

1) Carbone F, Bruzzaniti S, Fusco C, **Colamatteo A**, Micillo T, De Candia P, Bonacina F, Norata GD, Matarese G. Metabolomics, Lipidomics, and Immunometabolism. *Methods Mol Biol.* 2021;2285:319-328.