

CURRICULUM VITAE

Laura Marongiu

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PERSONAL INFORMATION

Date/Place of birth: June 8, 1986 Nuoro (Italy)
Gender: Female
Citizenship: Italian

EDUCATION

- January 2011-December 2013** **PhD** in Cellular and Molecular Biology and Pathology at the Medical School of Verona University, Italy
- September 2008-December 2010** **Master degree** in Molecular Biology at the University of Pavia, Italy. Graduated with 110/110 on December 16th, 2010. Thesis title: "Mechanistic basis of altered expression of the *COL6A1* gene in Trichothiodystrophy".
- September 2005-September 2008** **Bachelor degree** in Biology at the University of Pavia, Italy. Graduated with 104/110 on February 23th 2009. Thesis title "*PRNP* gene silencing induces cell death in human glioblastoma cell lines"
- September 2000-July 2005** **High School** at Liceo Scientifico Enrico Fermi, Nuoro Italy.

RESEARCH EXPERIENCE

- February 2020-present: Assistant professor ("Ricercatore RTDA")** in Cellular and Molecular Immunology lab at Dpt. of Biotechnology and Biosciences at University of Milano Bicocca and at the INGM, National Institute of Molecular Genetics, Romeo e Enrica Invernizzi, Milan Italy. During these months, I took part to an NIEH/NIH educational program in Durham in which I collaborated with Dr. Steve Shears, one of the main experts in the field of Inositols research. Overall, this program greatly improved my cellular biology expertise in the field of inositol metabolism and helped me to understand key aspects of my projects (see next fellow). I am also collaborating with Prof Sergio Abrignani at INGM for the characterization of human dendritic cell (DC) subpopulations and particularly CD14⁺ DCs in the tumor microenvironment using single cell RNAseq technology. Over the last year, I have been working on a project aimed at identifying and functionally characterizing the various human DC populations during Sars-CoV-2 infection. Thanks to the use of scRNAseq approach, I dissected the role of DCs in COVID-19 pathogenesis (manuscript submitted to science and BioRxiv doi: <https://doi.org/10.1101/2021.03.03.433597>).
- January 2015-January 2020** **Post-doc at Dpt.** Research fellow in Cellular and Molecular Immunology lab (Prof Francesca Granucci) at Dpt. of Biotechnology and Biosciences at

University of Milano Bicocca. During this fellow I worked in many projects aimed at understanding the molecular events that leads to NFAT activation in innate immune cells and the role of NFAT in various inflammation contexts namely infection, transplantation and cancer. These projects received important funding by Cariplo foundation, AIRC and FRRB. In these years I acquired a deep experience thanks to the collaboration with leading scientists, such as Prof Francesca Granucci at the University of Milano-Bicocca, Prof Ivan Zanoni at the Harvard Medical School and Prof Sergio Abrignani at INGM. I took advantages on the experience matured in these years to collaborate with other groups. All the collaboration established gave rise to important publications (see list of publications).

Mentor of two undergraduate students and one PhD student.

Teaching assistant for the Immunology laboratory course at Dpt. of Biotechnology and Biosciences, Milano-Bicocca University

January 2014-December 2014

Post-doc Research fellow in Neuroimmunology lab (Prof Gabriela Constantin) at Dpt. of Pathology and Diagnostic University of Verona. During this fellow I worked on an ERC funded project aimed at understanding the molecular basis of neuroinflammation in Alzheimer's disease (AD) in order to uncover new clinical approaches. This study was focused on the investigation of the mechanisms involved in leukocytes recruitment in mouse model of AD.

January 2011-December 2013

PhD fellowship PhD fellowship in dendritic cells lab (Prof. Stefano Dusi) at Dpt. of Pathology and Diagnostic, University of Verona. My research, funded by Cariverona Foundation, was focused on the role of human DCs in mediating immune responses against cancer and bacteria with the goal of discovering an effective strategy to ameliorate DCs based immune response in these specific contexts. In particular, nano-technological tools potentially used for cancer and TB vaccine have been developed.

March 2009-December 2010

Internship Internship at National Research Centre - Institute of Molecular Genetic - (IGM-CNR) Pavia (Italy), in Dr. Miria Stefanini's lab.

During my graduate training, I took part to a project aimed at understanding the molecular mechanism that regulates the altered expression of COL6A1 gene in human primary fibroblasts of patients with Trichothiodystrophy (TTD), that have a mutation in the XPD subunit of TFIIH complex. The results have been published (Orioli et al) and also discussed in my master thesis.

March 2007-February 2009

Internship : Internship at the department of Genetic and Microbiology, University of Pavia, Pavia (Italy) in Dr. Sergio Comincini's lab.

During my graduate training, I worked on a project focus on determined the role of PrPC (cellular prion protein) in the resistance of glial tumors to cell death. The results of this study have been published in 2011 (Barbieri et al) and the in vitro results have been also discussed in my bachelor thesis..

ADVANCED COURSES

October 8-10, 2019	Advanced school of Immunology 'Ruggero Ceppellini': Immunity, microbes and cancer. Anacapri, Capri island.
October 27-28, 2017	AISAL course: latest regulations for animal experimentation and maintenance, Milano-Bicocca University, Italy
October 26-30, 2015	IX Leica-IFOM theoretical-practical advanced microscopy course, IFOM, Milan, Italy
November 18, 2013	Training for mice manipulation and maintenance, Verona University, Italy
May 22-23, 2013	Flow cytometry advances course -application in cancer and immunology, Verona University, Italy
March 2-3, 2013	Science publishing and communication, Trento University, Italy
July 16-21, 2012	Summer School: flow cytometry, Urbino University, Italy

TECHNICAL SKILLS

Animals and surgery: Mouse maintenance, perfusion and organ removal. Basic surgical methods.

Mouse Behavioral tests: Fear conditioning, Y maze.

Cellular Biology: experience in working in biosafety level 2 and level 3 conditions, experience with 3D cultures (organoids and tumoroids), basic methods for cell line maintenance; advanced methods for primary human and mouse cell extraction (gradient and MACS technology) from normal and tumor tissue, and maintenance. Basic methods for cell line maintenance; advanced methods for primary human and mouse cell extraction (gradient and MACS technology) from normal and tumor tissue, and maintenance. Primary human peripheral blood cell purification. Flow cytometry (advanced level). Confocal and optical microscopy: super-resolution microscopy (STED), TIRF, live cell imaging for calcium analysis.

Histology: immunohistochemistry, immunofluorescence.

Biochemistry: WB, Immunoprecipitation, ELISA, static adhesion assay, antibody production and purification from ibridoma. HPLC for inositols measurement

Molecular Biology: single cell RNA sequencing, nucleic acids purification from cells and tissue; qRT-PCR; gene silencing with siRNA technology; lentivirus transfection

Informatics: basic software, Prism, Illustrator, Photoshop, Flowjo, Endnote, imagej.

Language: Italian (native), English (fluent).

PUBLICATIONS

NUMBER OF PUBLICATION: 12 h-index: 8

- 1) **Laura Marongiu**, Francesca Mingozi, Clara Cigni, Roberta Marzi, Marco Di Gioia, Massimiliano Garrè, Dario Parazzoli, Laura Sironi, Maddalena Collini, Reiko Sakaguchi, Takashi Morii, Mariacristina Crosti, Monica Moro, Stéphane Schurmans, Tiziano Catelani, Rany Rotem, Miriam Colombo, Stephen Shears, Davide Prospero, Ivan Zanoni, Francesca Granucci. Inositol-triphosphate 3-kinase B (ITPKB) promotes Ca²⁺ mobilization and the inflammatory activity of dendritic cells. Science signaling IN PRESS (date scheduled for publication: March, 30th 2021)
- 2) Michela Bellini, Benedetta Riva, Veronica Tinelli, Maria Antonietta Rizzuto, Lucia Salvioni, Miriam Colombo, Francesca Mingozi, Alberto Visioli, **Laura Marongiu**, Gianni Frascotti, Michael S. Christodoulou, Daniele

Passarella, Davide Proserpi, Luisa Fiandra. Engineered Ferritin Nanoparticles for the Bioluminescence Tracking of Nanodrug Delivery in Cancer. *Small* 2020

- 3) Diani M*, Casciano F*, **Marongiu L***, Longhi m, Altomare A, Pigatto PD, Secchiero P, Gambari R, Banfi G, Manfredi AA. Increased frequency of activated CD8+ memory T cells in patients with psoriatic arthritis. *Scientific reports* 2019 IF4.525. *equal contribution
- 4) **Marongiu L**, Gornati L, Artuso I, Zanoni, Granucci F. “Below the surface: the inner lives of TLR4 and TLR9”. *Journal of leukocyte biology* IF 4.224 DOI:10.1002/JLB.3MIR1218-483RR
- 5) Radaelli F, D'Alfonso L, Collini M, Mingozzi F, **Marongiu L**, Granucci F, Zanoni I, Chirico G, Sironi L. “ μ MAPPs: a novel phasor approach to second harmonic analysis for in vitro-in vivo investigation of collagen microstructure”. *Scientific report* 2017, 12;7(1):17468. doi: 10.1038/s41598-017-17726-y. IF 4.122
- 6) Grasselli C, Ferrari D, Zalfa C, Soncini M, Mazzoccoli G, Facchini FA, Marongiu L, Granucci F, Copetti M, Vescovi LA, Peri F, De Filippis L. “Toll-like receptor 4 modulation influences human neural stem cell proliferation and differentiation” *cell death and disease* 2018, 15;9(3):280. doi: 10.1038/s41419-017-0139-8. IF 5.638
- 7) Zenaro E, Pietronigro E, Della Bianca V, Piacentino G, **Marongiu L**, Budui S, Turano E, Rossi B, Angiari S, Dusi S, Montresor A, Carlucci T, Nani S, Tosadori G, Calciano L, Catalucci D, Berton G, Bonetti B and Constantin G. “Neutrophils promote Alzheimer’s disease-like pathology and cognitive decline via LFA-1 integrin”. *Nature Medicine* 2015, doi: 10.1038/nm.3913. IF 32,621
- 8) **Marongiu L**, Donini M, Bovi M, Perduca M, Vivian F, Romeo A, Mariotto S, Monaco HL, and Dusi S. “The inclusion into PLGA nanoparticles enables α -bisabolol to efficiently inhibit the human Dendritic Cell pro-inflammatory activity” *J Nanopart Res* 2014, 16:2554 IF 2.127.
- 9) Cantarelli IX, Pedroni M, Piccinelli F, Marzola P, Boschi F, Conti G, Mosconi E, Sbarbati A, Bernardi P, Perbellini L, Sorace L, **Marongiu L**, Donini M, Dusi S, Innocenti C, Fantechi E, Sangregorio C and Speghini A. “Multifunctional nanoprobe based on upconverting lanthanide doped CaF₂: towards biocompatible materials for biomedical imaging”. *Biomaterials Science* 2014, DOI: 10.1039/C4BM00119B. IF 5.831
- 10) Daldosso N, Ghafarinazari A, Cortelletti P, **Marongiu L**, Donini M, Paterlini V, Bettotti P, Guider R, Froner E, Dusi S and Scarpa M. “Orange and Blue Luminescence Emission to track Functionalized Porous Silicon Microparticles inside the cells of the Human Immune System”. *J. Mater. Chem* 2014, IF 9.931
- 11) **Marongiu L**, Donini M, Toffali L, Zenaro E and Dusi S. “ESAT-6 and HspX improve the effectiveness of BCG to induce human Dendritic Cells-dependent Th1 and NK cells activation”. *PlosOne* 2013, e75684. doi:10.1371/journal.pone.0075684. IF 2.766
- 12) Donini M, **Marongiu L**, Fontana E and Dusi S. “Prostate Carcinoma Cells LNCaP and Glucan Cooperate in Induction of Cytokine Synthesis by Dendritic Cells: Effect on Natural Killer Cells and CD4+ Lymphocytes Activation”. *Prostate* 2012, 72(5):566-76. IF 3.347

PRESENTATIONS AT SCIENTIFIC MEETINGS

- 1) **L. Marongiu¹**, M. Di Gioia², V. Poli¹, L. Sironi¹, M. Collini¹, I. Zanoni^{1,2} and F. Granucci^{1,3}E. **Metabolic conversion of IP₃ to IP₄ is required to operate Ca²⁺ entry and NFAT activation in human and mouse dendritic cells in response to LPS.** 44th symposium on hormones and cell regulation-Inositol lipids in health and diseases, October 16-10 2019, Mont ste Odile France. **(poster presentation)**
- 2) **L. Marongiu¹**, M. Di Gioia², V. Poli¹, L. Sironi¹, M. Collini¹, I. Zanoni^{1,2} and F. Granucci^{1,3}E. **Role of IP3R3 in CD14-NFAT pathway activation.** XI national conference of SIICA, 2017 May 28-31 2017, Bari, Italy. **(oral presentation)**

- 3) **L. Marongiu¹**, M. Di Gioia², V. Poli¹, L. Sironi¹, M. Collini¹, I. Zanoni^{1,2} and F. Granucci^{1,3}E. **Role of IP3R3 in CD14-NFAT pathway activation.** X national conference of SIICA, 2016 May 25-28 2016, Padua, Italy. **(oral presentation)**
- 4) **Marongiu L.**, Donini M., Toffali L., Zenaro E. and Dusi S. ESAT-6 and HspX improve the effectiveness of BCG to induce human Dendritic Cells-dependent T cells and NK cells activation. IX national conference of SIICA, 2014 May 28-31 2014, Florence, Italy. **(oral presentation)**
- 5) **Marongiu L.**, Bovi M., Donini M., Perduca M., Vivian F., Romeo A., Monaco H.L. and Dusi S. Inclusion into PLGA nanoparticles greatly improves the effectiveness of α -bisabolol to inhibit human Dendritic Cell pro-inflammatory activity. **Nanotechitaly 2013** November 27-29 2013, Venice, Italy. **(poster presentation)**
- 6) Ghafarinazari A., Cortelletti P., **Marongiu L.**, Donini M., Paterlini V., Bettotti P., Froner E., Daldosso N., Dusi S and Scarpa M. Luminescent porous silicon micro-particles as biocompatible and traceable drug delivery system. **Nanotechitaly 2013** November 27-29 2013, Venice, Italy. **(poster presentation)**
- 7) **Marongiu L.**, Donini M., Toffali L., Zenaro E. and Dusi S. ESAT-6 and HspX improve the effectiveness of BCG to induce human Dendritic Cells-dependent T cells and NK cells activation. **15th ICI 2013** August 22 -27 2013, Milan, Italy. **(poster presentation)**
- 8) **Marongiu L.**, Donini M., Toffali L., Zenaro E. and Dusi S. ESAT-6 and HspX improve the effectiveness of BCG to induce human Dendritic Cells-dependent T cells and NK cells activation. **ESCI 47th Annual scientific meeting**, April 17- 20 2013, Albufeira, Portugal. **(poster presentation)**
- 9) **Marongiu L.**, Donini M. and Dusi S. Prostate carcinoma cells LNCaP differentially regulate cytokine release in dectin-1 and Toll-like receptor-stimulated human monocyte-derived dendritic cells. **2011 Annual Meeting SIICA**, September 28th- October 1st, Riccione, Italy. *Minerva Medica*, vol. 102, suppl. I, n. 5, October 2011; p. 38. **(poster presentation)**
- 10) **Marongiu L.**, Donini M. and Dusi S. Prostate carcinoma cells LNCaP differentially regulate cytokine release in dectin-1 and Toll-like receptor-stimulated human monocyte-derived dendritic cells. **Toll2011**, May 4 -7, 2011, Riva del Garda, Italy. **(poster presentation)**

AWARDS

poster prize: **Best poster prize** at the 44th symposium on hormones and cell regulation. Inositol lipids in health and diseases, October 16-10 2019, Mont ste Odile France

Travel grants: **ESCI** (European Society of Clinical Investigation), 47th Annual scientific meeting ESCI 2013
EFIS (European Federation of Immunological Societies), 15th International Congress of Immunology – ICI 2013

REFERENCES

Prof. Francesca Granucci (present supervisor)

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