

PERSONAL DATA

Name and Surname: Fabia Filipello

Date and place of birth: October 4th, 1984, Parma, Italy

Nationality: Italian

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SUMMARY

Highly motivate and creative scientist, a neuroimmunologist by training, with extensive cross-disciplinary experience in microglia and macrophages biology in neurodevelopmental disorders and neurodegenerative diseases. Proven track record in leading and contributing to diverse research programs in the areas of neurodegeneration, autoimmunity, and neuroimmunology, managing people and resources, implementing creative technical approaches, and actively participating in academic and industry collaborations. Eager to continually broaden knowledge and scope of impact. I believe that integrating our current knowledge of mouse models with human studies will be crucial in finding better answers and treatments to psychiatric and neurodegenerative diseases.

EDUCATION

- 2014** Postgraduate: PhD in Biotechnology Applied to Medical Sciences, University of Milan, Italy
- 2009** Professional qualification in Biology, University of Genoa, Italy
- 2009** Graduate: Master's degree in Biological Sciences 110/110 *summa cum laude*. University of Genoa, Italy
- 2006** Graduation in Biological Sciences 110/110 *summa cum laude*. University of Parma, Italy
- 2003** Undergraduate: Classical High School Diploma

PROFESSIONAL EXPERIENCE

- 2023- present** Senior researcher at **Humanitas Clinical and Research Center, Milan, Italy**. My research focuses on human and mouse models of neurodegeneration and neurodevelopmental diseases.
- 2023- present** Affiliated with the Laboratory of Dr. Celeste Karch, **Psychiatry Department, Washington University in St. Louis, Missouri (USA)**.
- 2018-2022** Post-doctoral Researcher Associate at **Neurology Department, Psychiatry Department, Washington University in St. Louis, Missouri (USA)**. My research focused on microglial receptor TREM2 in neuroimmune and neurodegenerative diseases and on the generation of patient-derived induced pluripotent stem cells (iPSCs) models. Advisors: Dr. Celeste Karch and Dr. Laura Piccio.
- 2019- 2022** Collaboration with the **pharmaceutical company Alector, Inc. (South San Francisco, CA 94080)** on anti-TREM2 antibodies treatment in models of demyelination and neurodegeneration.
- 2016–2018** Post-doctoral researcher at **Humanitas Clinical and Research Center, Milan, Italy**. My research focused on microglia in neurodevelopment and on mouse models of neurodegeneration. Advisor: Prof. Michela Matteoli.
- 2014-2016** Research fellowship (assigned by Italian Multiple Sclerosis Foundation –FISM-) at the **Institute for Research in Biomedicine (IRB), Bellinzona, Switzerland** and at **Humanitas Clinical and Research Center, Milan, Italy**.
- 2011–2014** PhD student. Experimental work at the **University of Milan Pharmacology Department** and at **Institute for Research in Biomedicine (IRB), Bellinzona**, laboratory of T cell development. Advisor: Dr. Fabio Grassi. During my PhD, my research focused on the characterization of astrocytes and lymphocytes interaction in

multiple sclerosis. *Qualification awarded: PhD in Biotechnology Applied to Medical Sciences, University of Milan, 19th February 2014.*

- 2010** Visiting scientist with a training fellowship at the **Institute for Research in Biomedicine (IRB), Bellinzona, Switzerland.**
- 2010** Research fellowship at the Department of Neurophysiology and Experimental medicine, **University of Genoa, Italy.** My research focused on brain inflammation and epilepsy.
- 2009** Summer fellowship at the Italian Institute of Technology (IIT), Genoa, Italy.
- 2007- 2009** Master student of Molecular Biology at University of Genoa, Italy. The work of my master thesis was performed under the supervision of Prof. Fabio Benfenati. Degree's thesis: "Role of Synapsin's epileptogenic mutations: morphological and functional aspects". *Qualification awarded: Master of Science in Molecular Biology, summa cum laude, University of Genoa, 18th March 2009.*
- 2006** Bachelor student of Biological Science at the University of Parma. I performed my experimental project for the bachelor's degree under the supervision of Prof. Carlo Rossi. Degree's thesis: "Valuation of mutagenic effects of nitro heterocyclic compounds, possible drugs against African Trypanosomiasis". *Qualification awarded: Bachelor Science in Biology, summa cum laude, University of Parma*

FELLOWSHIPS AND RESEARCH GRANT

- 2019** Postdoctoral fellowship award from the McDonnell Center for Cellular and Molecular Neurobiology, Washington University in St Louis (USA). Principal Investigator: Fabia Filipello
- 2018** 2018-0364- CARIPO Grant- Young researchers (2 years)- "Microglial immune receptor TREM2 in neurodevelopmental diseases". Principal Investigator: Fabia Filipello
- 2017** Post-Doctoral Fellowship Travel Grant assigned by Fondazione Veronesi on a project entitled "Modeling the effects of Alzheimer's disease risk variants on TREM2 and microglia function in human iPSCs models". Principal Investigator: Fabia Filipello
- 2014-2016** Research training fellowship (2 years) assigned by Italian Multiple Sclerosis Foundation (FISM), project entitled "Astrocyte-T cell interaction in multiple sclerosis". Principal Investigator: Fabia Filipello

AWARDS

- 2023** Abilitazione scientifica nazionale in Patologia Generale e Patologia Clinica II Fascia, MED 06/A2
- 2020** Selected as a finalist for the 2020 O'Leary Prize, Washington University in St Louis.
- 2019** BrightFocus Alzheimer's Fast Track, Chicago, US. "Mock" Grant Proposal Presentation.
- 2019** Award for the 144th Annual Meeting of the American Neurological Association (October 13-15, 2019, St Louis, MO)
- 2019** Fondazione Umberto Veronesi Award 2019
- 2016** Best poster at Italian Multiple Sclerosis Foundation Congress (FISM), 25-27 May 2016, Rome, (Italy)
- 2012** Best poster AINI at the Meeting Italian Neuroimmunology Association, 26-29/09 2012 Catania, (Italy)

PATENTS

Application No. PCT/US2021/019260. Corresponding to US Provisional Application No.: 62/980,929. Title: METHODS OF USE OF ANTI-TREM2 ANTIBODIES. Applicant: Alector LLC and Washington University. Inventor: Francesca Cignarella; Fabia Filipello; Laura Piccio. "A new methods of use of anti-TREM2 antibodies in Multiple Sclerosis".

EDITORIAL RESPONSIBILITIES

Review Editor in *Frontiers in Immunology -Multiple Sclerosis and Neuroimmunology*
<https://www.frontiersin.org/journals/immunology/editors>

Ad hoc reviewer for: *Cell Reports*, *Journal of Alzheimer's disease*; *Nature Communications*; *Journal of Leukocytes Biology*; *European Journal of Pharmacology*;

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

Italian cytometry society (GIC) 2016-2018

Italian Neuroimmunology Society (AINI) 2012

American Neurological Association (ANA Neurology) 2019-2021

DIDACTIC ACTIVITIES

2022-2023/ 2023-2024: Teaching activity: Instructor, course of Neuropharmacology (Corso di Laurea in Infermieristica, Hunimed, sedi di Pieve Emanuele (MI), Bergamo e Castellanza (VR)); course of Neurology (Corso di Laurea in Fisioterapia, Hunimed).

2014-today: Training of undergraduate and PhD students at the University of Milan, Istituto Clinico Humanitas, and at Washington University in St Louis (USA).

2011-2014: Teaching activity: ad hoc tutor, course of Biology and genetics (Bio/13 - experimental biology), University of Milan

PRESENTATIONS

Oral communications

- **2022**: "Microglial immune receptor TREM2 in human and mouse models of neurodegeneration". Neurometing, Humanitas University, November 22, 2022.
- **2021**: "iPSCs-derived cells to model the brain of patients affected by Nasu-Hakola disease". AAIC Neuroscience Next, Alzheimer's association. Virtual conference, Selected lightening talk.
- **2021**: "iPSCs-derived cells to model the brain of patients affected by Nasu-Hakola disease". Neurodegeneration Challenge Network (NDCD) annual meeting 2021, Chan Zuckerberg Initiative. Virtual conference, Selected lightening talk.
- **2020**: "Microglial immune receptor TREM2 in neurodegenerative diseases" Glial cells- neuron crosstalk in CNS health and disease. Invited speaker, University of Turin, (Italy), October 2, 2020.
- **2020**: "The MS4A gene cluster is a key modulator of soluble TREM2 and Alzheimer's disease risk". O'Leary Prize competition, Washington University, St Louis, MO (US), March 3, 2020.
- **2019**: "Microglial innate immune receptor TREM2 in neurodevelopmental diseases". Invited speaker to Research Day, Humanitas University, Milan, Italy, 28 November 2019.
- **2019**: "The MS4A gene cluster is a key modulator of soluble TREM2 and Alzheimer's disease risk". Ninth Annual Hope Center Retreat, Washington University, St Louis, MO (US). April 16, 2019.
- **2018**: "Microglia innate immune receptor TREM2 in neurodevelopment". Invited speaker to Meet the microglia. Milan, Italy, 19 December 2018.
- **2018**: "Microglia innate immune receptor TREM2 in neurodevelopment". Invited speaker to Research Day, Humanitas University, Milan, Italy, 23 November 2018.

- **2018:** “Microglia innate immune receptor TREM2 in neurodevelopment”. Selected abstract. Glia in Health and Disease, Cold Spring Harbor Meeting, CSH, New York (US). 19-23 July 2018.
- **2017:** “Astrocyte-T cell interaction in multiple sclerosis”. Annual Scientific Meeting – Associazione Italiana Sclerosi Multipla e la sua Fondazione, 29-31 May 2017, Rome, (Italy).
- **2015:** “Synaptic effects of amyloid beta 1-42 and microglia mediated amyloid beta activity”. Institute of Neuroscience, CNR, Pisa retreat 13-15 May 2015, Pisa, Italy.
- **2013:** “ATP- mediated Interaction Between Astrocytes and T Cells”. Italian German Purine Club meeting, 20 September 2013, Rimini, Italy.
- **2012:** “ATP-mediated interaction between astrocytes and T cell”. Purine Club annual meeting, 13-14 September 2012, Pisa, Italy.
- **2012:** “Astrocytes/T cells cross-talk in the pathogenesis of multiple sclerosis”. International Astrocytes School, 25-31 March 2012, Bertinoro, Italy.
- **2011:** “Astrocytes and T cells interaction”. Brief communication. IV congresso monotematico SIF, “Immunità e Infiammazione nelle malattie del cervello”, 14 November 2011, Milan, Italy.

LANGUAGE AND COMMUNICATION SKILLS

Languages: Italian (native language) - English (excellent written and spoken)

Communication skills: Successfully completed the Course “*Presentation skill for academic and professional settings*” at Washington University in St Louis (2019).

Informatics: Mac, Windows. Excellent use of data bases for bibliographic search.

Software: Microsoft Office, PowerPoint, Excel, Adobe Photoshop, Adobe illustrator, ImageJ, Origin, Graph Pad, CellR, Metafluor, BD DIVA, FlowJo.

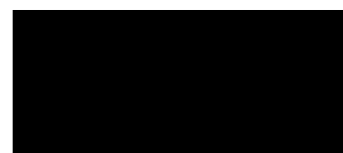
PUBLICATIONS

<https://pubmed.ncbi.nlm.nih.gov/?term=Filipello+F&sort=date> h-index= 11

1. Tagliatti E, Desiato G, Mancinelli S, Bizzotto M, Gagliani MC, Faggiani E, Hernández-Soto R, Cugurra A, Polisenio P, Miotto M, Argüello RJ, **Filipello F**, Cortese K, Morini R, Lodato S, Matteoli M. Trem2 expression in microglia is required to maintain normal neuronal bioenergetics during development. *Immunity*. 2024 Jan 9;57(1):86-105.e9.
2. Holloman JP, Dimas SH, Archambault AS, **Filipello F**, Du L, Feng J, Zhao Y, Bollman B, Piccio L, Steelman AJ, Hu H, Wu GF. Transient Receptor Potential Vanilloid 4-Dependent Microglial Function in Myelin Injury and Repair. *Int J Mol Sci*. 2023 Dec 4;24(23):17097.
3. You SF, Brase L, **Filipello F**, Del-Aguila J, Mihindukulasuriya K, Benitez B, Cruchaga C, Harari O, Karch CM. MS4A4A modifies the risk of Alzheimer’s disease and relates cholesterol metabolism and immune response. *medRxiv Feb 8;2023.02.06.23285545*. doi: 10.1101/2023.02.06.23285545. Preprint
4. **Filipello F**, You SF, Martinez R, Korvatska O, Raskind WH, Mahali S, Ghezzi L, Wandy B, Cella M, Piccio L, Karch CM, Defect in lysosomal activity and lipid metabolism in human iPSCs-derived microglia harboring a TREM2 loss of function mutation. *Acta Neuropathol*. 2023 Jun;145(6):749-772.
5. **Filipello F**, Goldsbury C, You S F, Locca A, Karch C, Piccio L; Soluble TREM2: innocent bystander or real player in neurological diseases? *Neurobiol Dis*. 2022 Jan 15;165:105630.
6. Morini R, Bizzotto M, Perrucci F, **Filipello F***, Matteoli M*, Strategies and tools for studying microglial-mediated synapse elimination and refinement. *Frontiers in Immunology*, 2021 Feb 23; ***corresponding authors**
7. Cignarella F*, **Filipello F***, Bollman B, Cantoni C, Locca A, Mikesell R, Adiljan I, Deng L, Benitez BA, Cruchaga C, Licastro D, Mihindukulasuriya K, Harari O, Buckland M, Rosenthal A, Schwabe T, Tassi I, Piccio L, TREM2 activation on microglia promotes myelin debris clearance and remyelination in a model of CNS demyelination. *Acta Neuropathol*. 2020 Oct;140(4):513-534. ***equal contributors**

8. Scott-Hewitt N, Perrucci F, Morini R, Erreni M, Mahoney M, Witkowska A, Carey A, Faggiani E, Schuetz L T, Mason S, Tamborini M, Bizzotto M, Passoni L, **Filipello F**, Jahn R, Stevens B and Matteoli M. Local externalization of phosphatidylserine mediates developmental synaptic pruning by microglia, *EMBO J*. 2020 Jul 13
9. **Filipello F**, Martinez R, Marsh J, Karch C. Differentiation of iPSC into Microglia-Like Cells (iMGL). May 09, 202, Protocols.io, dx.doi.org/10.17504/protocols.io.bkrvk66
10. Deming Y1*, **Filipello F***, Cignarella F*, Cantoni C, Hsu S, Mikesell R, Li Z, L Del-Aguila J, Dube U, Geraldo Farias F, ... Haass C, Brett T J, Karch C M, Piccio L, Cruchaga C. The MS4A gene cluster is a key regulator of soluble TREM2 and Alzheimer disease risk. *Science Translational Medicine*. 2019 Aug 14. ***equal contributors**
11. Vinuesa A, Bentivegna M, Calfa G, **Filipello F**, Pomilio C, Bonaventura MM, Lux-Lantos V, Matzkin ME, Gregosa A, Presa J, Matteoli M, Beauquis J, Saravia F. Early Exposure to a High-Fat Diet Impacts on Hippocampal Plasticity: Implication of Microglia-Derived Exosome-like Extracellular Vesicles. *Mol Neurobiol*. 2018 Nov 24.
12. Fossati G, Pozzi D, Canzi A, Mirabella F, Valentino S, Morini R, Ghirardini E, **Filipello F**, Moretti M, Gotti C, Annis DS, Mosher DF, Garlanda C, Bottazzi B, Taraboletti G, Mantovani A, Matteoli M, Menna E. Pentraxin 3 regulates synaptic function by inducing AMPA receptor clustering via ECM remodeling and β 1-integrin. *EMBO J*. 2018 Nov 5.
13. **Filipello F***, Morini R*, Corradini I, Zerbi V, Canzi A, Michalski B, Erreni M, Markicevic M, Starvaggi-Cucuzza C, Otero K, Piccio L, Cignarella F, Perrucci F, Tamborini M, Genua M, Rajendran L, Menna E, Vetrano S, Fahnestock M, Paolicelli RC, Matteoli M. The Microglial Innate Immune Receptor TREM2 Is Required for Synapse Elimination and Normal Brain Connectivity. *Immunity* 48, 1–13, May 15, 2018 ***equal contributors**.
14. Báez-Becerra C, **Filipello F**, Sandoval-Hernández A, Arboleda H, Arboleda G. Liver X Receptor Agonist GW3965 Regulates Synaptic Function upon Amyloid Beta Exposure in Hippocampal Neurons. *Neurotox Res*. 2018 Jan 3.
15. Mazzitelli S*, **Filipello F***, Rasile M*, Lauranzano E, Starvaggi-Cucuzza C, Tamborini M, Pozzi D, Barajon I, Giorgino T, Natalello A and Matteoli M. Amyloid- β 1–24 C-terminal truncated fragment promotes amyloid- β 1–42 aggregate formation in the healthy brain. *Acta Neuropathologica Commun* 2016 October 10. ***equal contributors**
16. **Filipello F**, Pozzi D, Proietti M, Romagnani A, Mazzitelli S, Matteoli M, Verderio C, Grassi F. Ectonucleotidase activity and immunosuppression in astrocyte- CD4 T cell bidirectional signaling. *Oncotarget* 2016 January 13.
17. Falace A, **Filipello F**, La Padula V, Vanni N, Madia F, De Petri Tonelli D, de Falco FA, Striano P, Dagna Bricarelli F, Minetti C, Benfenati F, Fassio A, Zara F. TBC1D24, a novel ARF6- interacting protein, is mutated in familial infantile myoclonic epilepsy. *The American Journal of Human Genetics* 2010 September 10.

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