Dr. Matteo Biolatti
Assistant Professor of Microbiology and Clinical Microbiology
Department of Public Health and Pediatric Sciences
University of Turin, Italy

PERSONAL INFORMATION

Family name, First name: Biolatti Matteo
Scopus Id: 56158067500
ORCID ID: 0000-0001-7675-0762
RESEARCH ID: AAU-6647-2020
Date of birth: 10/01/1988
Nationality: Italian

PERSONAL STATEMENT

I have a degree in Cellular and Molecular Biology. I obtained my Ph.D. in Molecular Medicine and now I'm an Assistant Professor of Microbiology at the University of Turin in Italy. As demonstrated by publications, I gained considerable expertise over the last years in the field of Virology, particularly on Herpesviruses infections, cellular metabolism reprogramming after infection, screening and characterization of new antiviral agents, and host factors that may act as restriction factors for virus replication. I strengthened my scientific independence over time by proving to be the principal investigator of several publications and by participating in various scientific congresses that have allowed me to create an interdisciplinary extensive international network of collaborations. I'm a coinventor of two international patents and consultant for NoToVir, a biotech start-up, active in the screening of innovative antiviral molecules. My expertise was also awarded the prestigious "Cecilia Cioffrese - Viral Diseases Award" in 2019 by the Carlo Erba Foundation.

EDUCATION

- 28/05/2022 National Scientific qualification as associate in the Italian higher education system, in the call 2021/2023 (Ministerial Decree n. 553/2021 and 589/2021) for the disciplinary field 06/A3 (Microbiology and clinical microbiology).
- 10/02/2017 Ph.D. in Molecular Medicine, University of Turin, Italy. Supervisor: Prof. Santo Landolfo
- 01/07/2015 Qualification as a Professional Biologist.
- 19/10/2012 Master's degree in Cellular and Molecular Biology, University of Turin, Italy. Supervisor: Prof. Giorgio Gribaudo.
- 7/12/2010 Bachelor's degree in Biology, University of Turin, Italy. Supervisor: Prof. Michele De Bortoli/Dott. Mario Abrate.

CURRENT POSITION(S)

- 01/07/2021 – To date Assistant Professor of Microbiology and Clinical Microbiology (RTDB), Department of Public Health and Pediatric Sciences, University of Turin, Italy.
- 01/01/2019 – To date Consultant for Notovir S.r.l.s. (https://notovir.com/team-2).

PREVIOUS POSITIONS

- 01/06/2018 – 30/06/2021 Research fellow (RTDA) at the Department of Public Health and Pediatric Sciences, University of Turin, Italy.
- 11/02/2017 – 31/05/2018 Postdoc fellow at the Department of Public Health and Pediatric Sciences, University of Turin, Italy.
- 05/05/2014 – 30/05/2014 Visiting fellow at the Institute of Virology, University of Ulm, Germany.

AWARDS

- 2022. Best Poster presentation in virology during the 50th Congresso Nazionale della Società Italiana di Microbiologia, SIM (Napoli, Italy).
- 2021. Co-author of the article "Human cytomegalovirus-induced host protein citrullination is crucial for viral replication" (Griffante et al., *Nat Commun* 2021) featured in Nature Communications Editors' Highlights.
- 2019. "Cecilia Cioffrese" Award - Viral Diseases (granted by Fondazione Carlo Erba).
- 2018. Travel Grant (granted by Federation of European Microbiologists Society, FEMS), for attending the 4th Innovative Approaches for Identification of Antiviral Agents Summer School (IAAASS) (Cagliari, Italy).

- 2016. First author of the article “Regulatory Interaction between the Cellular Restriction Factor IFI16 and Viral pp65 (pUL83) Modulates Viral Gene Expression and IFI16 Protein Stability” selected by the editors of the Journal of Virology for inclusion in “Spotlight”, a feature in the Journal that highlights five especially meritorious research articles from the current issue.

TEACHING ACTIVITIES

- 2021 – 2023 Teacher of Virology, Medical School, University of Turin Italy.
- 2020 – 2023 Teacher of Microbiology and Clinical Microbiology, Dental School course, University of Turin Italy.
- 2020 – 2023 Teacher of Virology, Biomedical Laboratory Techniques School course, University of Turin Italy.
- 2019 – 2023 Teacher of Microbiology, Obstetrics School course, University of Turin Italy.
- 2019 – 2023 Teacher of Microbiology and Clinical Microbiology, Pediatric Nursing School course, University of Turin, Italy.
- 2018 – 2023 Teacher of Microbiology and Clinical Microbiology, Nursing School course, University of Turin Italy.
- 2015 – 2018 Teaching Assistant: Food Microbiology, Biomedical Laboratory Techniques School course, Medical School, University of Turin Italy.
- 2013 – 2018 Teaching Assistant: General Microbiology, Biomedical Laboratory Techniques School course, Medical School, University of Turin Italy.

SUPERVISION OF GRADUATE STUDENTS

- 2018 – To date Supervision of Bachelor's and Master’s students during their Internship in the Laboratory of Viral Pathogenesis, University of Turin, Italy

INSTITUTIONAL RESPONSIBILITIES

- 2021 – 2024 Representative of the Researchers’ category in the Board of the Department of Public Health and Pediatric Sciences, University of Turin, Italy.

RESEARCH FUNDINGS

- 2022. Research Project funded by the University of Turin (ex 60%). "Il metabolismo lipidico come punto di connessione tra l'herpes simplex virus di tipo 1 e la malattia di Alzheimer"; amount: 2741.41 €; PI
- 2022. Coordinator of the project “Lipid metabolism at the interface between HSV-1 infection and Alzheimer's disease progression” supported by iNEXT-Discovery, funded by the Horizon 2020 program of the European Commission for Technology Tracks. iNEXT-Discovery (https://inext-discovery.eu/) is a grant that provides reimbursement to access to European structural biology equipment/facilities and for traveling to the host institute; PI.
- 2022. Coordinator of the project financed by the Fondazione Cassa di Risparmio di Torino (CRT). “Strigolactones: natural antiviral molecules?”; contribution to support the project amount: 34000 €; PI.
- 2021. Research Project funded by the University of Turin (formerly 60%). “Il ruolo di IFI16 nella modulazione del metabolismo cellulare in seguito ad infezione da HCMV"; amount: 3041.44 €; PI.
- 2020. “PADDLE - Inhibitors of peptidyl-arginine deiminase (PAD) as a new antiviral device”, funded by the project Proof of Concept (PoC) - TOINPROVE / 2020 of the University of Turin; contribution to support the project amount: 39173.22 €; Collaborator.
- 2020. Research Project funded by the University of Turin (ex 60%). "Caratterizzazione dell’attività antierpetica degli strigolattoni"; amount: 3001 €; PI.
- 2019. Research Project funded by the University of Turin (ex 60%). “Ruolo di IFI16 nella modulazione del metabolismo cellulare in seguito ad infezione da HCMV"; amount: 3080.05 €; PI.

CONTRIBUTIONS TO SCIENCE

My current interest is focusing on the metabolomic reprogramming after human cytomegalovirus as recently published in mBio (Griffante et al. mBio 2022), thanks also to a big international network of collaborations that have been established over different years to improve my scientific independence. Moreover, I had also the opportunity to work in the field of innate immune response to human cytomegalovirus (HCMV) and antivirals agent for different viruses (i.e., HCMV, HSV, and coronavirus). Hereby, a shortlist of the most relevant projects in the last years is reported:

1) Metabolomic reprogramming after human cytomegalovirus infection.
2) Screening and characterization of new antiviral agents for HCMV, HSV-1, HSV-2, and coronavirus.
3) Analysis of post-translational modifications and epigenetic mechanisms induced by HCMV infection. In particular, calcium-dependent protein arginine deiminase 2 (PAD2)-mediated citrullination as a novel mechanism of host viral

adaptation in HCMV-infected cells has been exploited. An important application of this project is to ascertain whether currently available amidine-derived compounds (e.g., Cl-amidine) could be useful in the treatment of HCMVinduced infections, in both in vitro and in vivo models of congenital HCMV infection.
4) Characterization of innate immunity players during human cytomegalovirus (HCMV) infection, focusing on the role of the interferon-inducible protein IFI16 as a restriction factor. Viral evasion mechanisms, such as those exploited by the HCMV tegument protein pp65, have also been defined.
5) Description of HCMV clinical isolates obtained from a cohort of newborn infants diagnosed with congenital or postnatal HCMV infection for: i) the genomic variability of specific genes encoding potential virulence factors, antiviral drug resistance, and viral escape mechanism from the immune system; ii) correlations between viral genotypes, phylogeny, in vitro growth properties and clinical sequels; iii) functional analysis of the clinical isolates for their capability to modulate the immune response, such as NK cells.
6) The implication of human papillomaviruses in the onset of head and neck tumors.

PUBLICATIONS

1) IFI16 Impacts Metabolic Reprogramming During Human Cytomegalovirus Infection. Griffante G, Hewelt-Belka W, Albano C, Gugliesi F, Pasquero S, Castillo Pacheco SF, Bajetto G, Porporato PE, Mina E, Vallino M, Krapp C, Jakobsen M, Purdy J, von Einem J, Landolfo S, Dell'Oste V, **Biolatti M**. mBio. 2022 Jun 28;13(3):e0043522. doi: 10.1128/mbio.00435-22.

2) Novel antiviral activity of PAD inhibitors against human beta-coronaviruses HCoV-OC43 and SARS-CoV-2. Pasquero S, Gugliesi F, Griffante G, Dell'Oste V, **Biolatti M**, Albano C, Bajetto G, Delbue S, Signorini L, Dolci M, Landolfo S, De Andrea M. Antiviral Res. 2022 Apr;200:105278. doi: 10.1016/j.antiviral.2022.105278.

3) Synthesis and Biological Evaluation of Amidinourea Derivatives against Herpes Simplex Viruses. Toscani A, Denaro R, Pacheco SFC, **Biolatti M**, Anselmi S, Dell'Oste V, Castagnolo D. Molecules. 2021 Aug 14;26(16):4927. doi: 10.3390/molecules26164927.

4) Human cytomegalovirus-induced host protein citrullination is crucial for viral replication. Griffante G, Gugliesi F, Pasquero S, Dell'Oste V, **Biolatti M**, Salinger AJ, Mondal S, Thompson PR, Weerapana E, Lebbink RJ, Soppe JA, Stamminger T, Girault V, Pichlmair A, Oroszlán G, Coen DM, De Andrea M, Landolfo S. Nat Commun. 2021 Jun 23;12(1):3910. doi: 10.1038/s41467-021-24178-6.

5) Genetic Variability of Human Cytomegalovirus Clinical Isolates Correlates With Altered Expression of Natural Killer Cell-Activating Ligands and IFN-γ. Galitska G, Coscia A, Forni D, Steinbrueck L, De Meo S, **Biolatti M**, De Andrea M, Cagliani R, Leone A, Bertino E, Schulz T, Santoni A, Landolfo S, Sironi M, Cerboni C, Dell'Oste V. Front Immunol. 2021 Apr 9;12:532484. doi: 10.3389/fimmu.2021.532484.

6) HPV Meets APOBEC: New Players in Head and Neck Cancer. Riva G, Albano C, Gugliesi F, Pasquero S, Pacheco SFC, Pecorari G, Landolfo S, **Biolatti M***, Dell'Oste V* (*co-corresponding). Int J Mol Sci. 2021 Jan 30;22(3):1402. doi: 10.3390/ijms22031402.

7) Human Cytomegalovirus and Autoimmune Diseases: Where Are We? Gugliesi F, Pasquero S, Griffante G, Scutera S, Albano C, Pacheco SFC, Riva G, Dell'Oste V, **Biolatti M**. Viruses. 2021 Feb 8;13(2):260. doi: 10.3390/v13020260.

8) SAMHD1 phosphorylation and cytoplasmic relocalization after human cytomegalovirus infection limits its antiviral activity. De Meo S, Dell'Oste V, Molfetta R, Tassinari V, Lotti LV, Vespa S, Pignoloni B, Covino DA, Fantuzzi L, Bona R, Zingoni A, Nardone I, **Biolatti M**, Coscia A, Paolini R, Benkirane M, Edfors F, Sandalova T, Achour A, Hiscott J, Landolfo S, Santoni A, Cerboni C. PLoS Pathog. 2020 Sep 28;16(9):e1008855. doi: 10.1371/journal.ppat.1008855.

9) Risk of Symptomatic Infection after Non-Primary Congenital Cytomegalovirus Infection. Coscia A, Leone A, Rubino C, Galitska G, **Biolatti M**, Bertino E, Peila C, Cresi F. Microorganisms. 2020 May 25;8(5):786. doi: 10.3390/microorganisms8050786.

10) Strigolactone Analogs Are Promising Antiviral Agents for the Treatment of Human Cytomegalovirus Infection. **Biolatti M**, Blangetti M, D'Arrigo G, Spyrakis F, Cappello P, Albano C, Ravanini P, Landolfo S, De Andrea M, Prandi C, Dell'Oste V. Microorganisms. 2020 May 10;8(5):703. doi: 10.3390/microorganisms8050703.

11) Where do we Stand after Decades of Studying Human Cytomegalovirus? Gugliesi F, Coscia A, Griffante G, Galitska G, Pasquero S, Albano C, **Biolatti M**. Microorganisms. 2020 May 8;8(5):685. doi: 10.3390/microorganisms8050685.

12) Past and ongoing adaptation of human cytomegalovirus to its host. Mozzi A, **Biolatti M**, Cagliani R, Forni D, Dell'Oste V, Pontremoli C, Vantaggiato C, Pozzoli U, Clerici M, Landolfo S, Sironi M. PLoS Pathog. 2020 May 8;16(5):e1008476. doi: 10.1371/journal.ppat.1008476.

13) Tuning the Orchestra: HCMV vs. Innate Immunity. Dell'Oste V, **Biolatti M**, Galitska G, Griffante G, Gugliesi F, Pasquero S, Zingoni A, Cerboni C, De Andrea M. Front Microbiol. 2020 Apr 15;11:661. doi: 10.3389/fmicb.2020.00661.

14) PYHIN Proteins and HPV: Role in the Pathogenesis of Head and Neck Squamous Cell Carcinoma. Riva G, **Biolatti M**, Pecorari G, Dell'Oste V, Landolfo S. Microorganisms. 2019 Dec 20;8(1):14. doi: 10.3390/microorganisms8010014.

15) A Conserved Mechanism of APOBEC3 Relocalization by Herpesviral Ribonucleotide Reductase Large Subunits. Cheng AZ, Moraes SN, Attarian C, Yockteng-Melgar J, Jarvis MC, **Biolatti M**, Galitska G, Dell'Oste V, Frappier L, Bierle CJ, Rice SA, Harris RS. J Virol. 2019 Nov 13;93(23):e01539-19. doi: 10.1128/JVI.01539-19.

16) Galitska G*, **Biolatti M***, Griffante G, Gugliesi F, Pasquero S, Dell'Oste V, Landolfo S. 2019. Catch me if you can: the arms race between human cytomegalovirus and the innate immune system. (*co-first) Future Medicine, doi: 10.2217/fvl-2018-0189.

17) PYHIN genes as potential biomarkers for prognosis of human papillomavirus-positive or -negative head and neck squamous cell carcinomas. Riva G, Pecorari G, **Biolatti M**, Pautasso S, Lo Cigno I, Garzaro M, Dell'Oste V, Landolfo S. Mol Biol Rep. 2019 Jun;46(3):3333-3347. doi: 10.1007/s11033-019-04795-7.

18) The Viral Tegument Protein pp65 Impairs Transcriptional Upregulation of IL-1β by Human Cytomegalovirus through Inhibition of NF-kB Activity. **Biolatti M**, Dell'Oste V, Scutera S, Gugliesi F, Griffante G, De Andrea M, Musso T, Landolfo S. Viruses. 2018 Oct 16;10(10):567. doi: 10.3390/v10100567.

19) Biological relevance of Cytomegalovirus genetic variability in congenitally and postnatally infected children. Galitska G, **Biolatti M**, De Andrea M, Leone A, Coscia A, Bertolotti L, Ala U, Bertino E, Dell'Oste V, Landolfo S. J Clin Virol. 2018 Nov;108:132-140. doi: 10.1016/j.jcv.2018.09.019.

20) Strategy of Human Cytomegalovirus To Escape Interferon Beta-Induced APOBEC3G Editing Activity. Pautasso S, Galitska G, Dell'Oste V, **Biolatti M**, Cagliani R, Forni D, De Andrea M, Gariglio M, Sironi M, Landolfo S. J Virol. 2018 Sep 12;92(19):e01224-18. doi: 10.1128/JVI.01224-18.

21) Modulation of the innate immune response by human cytomegalovirus. **Biolatti M**, Gugliesi F, Dell'Oste V, Landolfo S. Infect Genet Evol. 2018 Oct;64:105-114. doi: 10.1016/j.meegid.2018.06.025.

22) The human cytomegalovirus tegument protein pp65 (pUL83): a key player in innate immune evasion. **Biolatti M**, Dell'Oste V, De Andrea M, Landolfo S. New Microbiol. 2018 Apr;41(2):87-94.

23) Human Cytomegalovirus Tegument Protein pp65 (pUL83) Dampens Type I Interferon Production by Inactivating the DNA Sensor cGAS without Affecting STING. **Biolatti M**, Dell'Oste V, Pautasso S, Gugliesi F, von Einem J, Krapp C, Jakobsen MR, Borgogna C, Gariglio M, De Andrea M, Landolfo S. J Virol. 2018 Feb 26;92(6):e01774-17. doi: 10.1128/JVI.01774-17.

24) Regulatory interaction between the cellular restriction factor IFI16 and viral pp65 (pUL83) modulates viral gene expression and IFI16 protein stability. **Biolatti M**, Dell'Oste V, Pautasso S, von Einem J, Marschall M, Plachter B, Gariglio M, De Andrea M, Landolfo S. J Virol. 2016 Aug 26;90(18):8238-50. doi: 10.1128/JVI.00923-16.

25) Innate nuclear sensor IFI16 translocates into the cytoplasm during the early stage of in vitro human cytomegalovirus infection and is entrapped in the egressing virions during the late stage. Dell'Oste V, Gatti D, Gugliesi F, De Andrea M, Bawadekar M, Lo Cigno I, **Biolatti M**, Vallino M, Marschall M, Gariglio M and Landolfo S. J Virol. 2014 Jun;88(12):6970-82. doi: 10.1128/JVI.00384-14.

26) Differential expression of HER2, STAT3, SOX2, IFI16 and cell markers during HPV-related head and neck carcinogenesis. Mazibrada J, Longo L, Vatrano S, Cappia S, Giorcelli J, Pentenero M, Gandolfo S, Volante M, Dell'Oste V, Lo Cigno I, **Biolatti M**, Landolfo S, Papotti M. New Microbiol
. 2014 Apr;37(2):129-43.

PATENTS

- 2018: "Strigolattoni per uso nella prevenzione e/o trattamento di infezioni da virus della famiglia Herpesviridae" (PCT/IB2019/059611, E7527/19-EW, University of Turin, Italy).
- 2017: "PAD2 per uso nella prevenzione e/o trattamento o diagnosi di infezioni da virus della famiglia Herpesviridae" (E6132/18-EW, PCT/IB2018/052204, University of Turin, Italy).

Turin, 29/02/2023