

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: MARA BIASIN

eRA COMMONS USER NAME (credential, e.g., agency login): mara.biasin

POSITION TITLE: Associate Professor in Applied and cellular Biology

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Milan	Master degree in Biology	05/1996	Molecular Biology
Department of Biomedical and Clinical Science (University of Milan)	Post doctoral training	01/1999	Immuno-Biology
Department of Biomedical and Clinical Science (University of Milan)	Researcher	02/2015	Immune response to viral infections
Department of Biomedical and Clinical Science (University of Milan)	Associate Professor	ongoing	Immune and cellular response to viral infections

A. Personal Statement

I am an Associate Professor of Applied and Cellular Biology at the University of Milan with over 25 years of experience in the fields of immunology, infectious diseases, and host-pathogen interactions. My research has consistently focused on understanding the molecular and genetic correlates of protection and susceptibility in infectious and neurodegenerative diseases, with a particular emphasis on HIV-1 pathogenesis and host resistance mechanisms.

Throughout my career, I have led and contributed to numerous nationally and internationally funded research projects, including studies on the immunological impact of SARS-CoV-2, the role of inflammasomes and autophagy in aging-related conditions, and the therapeutic modulation of dendritic cell function in cancer. I have been Principal Investigator or Unit Leader in several

competitive grants from entities such as Regione Lombardia, Fondazione Cariplo, and the Italian Ministry of Health.

My laboratory has a longstanding record of international collaboration, including work in India and Uganda, and my scientific output includes over 150 publications with more than 4,200 citations (h-index 35). I am also actively engaged in peer review and editorial work, currently serving on the editorial boards of *Frontiers in Immunology* and *Virology*.

Teaching and mentorship are integral to my academic mission. I have consistently taught core biology courses across undergraduate and graduate programs in medicine and the life sciences, while also mentoring doctoral students and postdoctoral researchers in cellular immunology and translational medicine.

My multidisciplinary expertise, international perspective, and commitment to translational research uniquely position me to contribute to and lead collaborative projects

B. Positions, Scientific Appointments, and Honors

2015–present: Associate Professor, Applied and Cellular Biology (BIO/10A), Department of Biomedical and Clinical Sciences, University of Milan, Italy

1999–2015: Assistant Professor (Ricercatore Universitario), Applied Biology (BIO/13), University of Milan, Italy

1996–1998: Research Fellow, Chair of Immunobiology, University of Milan, as part of the “Uganda Project” in collaboration with Istituto Superiore di Sanità

2002: Visiting Scientist, J.J. Hospital, Mumbai, India – Host immune response in HIV-infected individuals

2024: Visiting Professor, R.P. Inderprastha Institute of Technology, India – Lecturer for cell biology course

2022–present: National Scientific Qualification as Full Professor (I Fascia), MED/50 – Applied Medical Sciences, Italy

2021: *Best Scientific Research Article Award*, American Society for Histocompatibility & Immunogenetics (ASHI)

Multiple Travel Grants: Awarded for international conferences by AIDS Vaccine, International AIDS Society, and HIV Research for Prevention (2003, 2004, 2014, 2020)

Member, Editorial Boards: *Virology* (Frontiers in Microbiology), *Viral Immunology* (Frontiers in Immunology), and Guest Editor for *Cells*

Scientific Director, Biomedical Libraries, University of Milan (2021–2024); previously Director of the Alberto Malliani Library (2016–2021)

Peer Reviewer: Numerous journals including *Plos One*, *Cells*, *Frontiers in Immunology*, *Infection*, *Genetics and Evolution*

Evaluator, Fundação para a Ciência e a Tecnologia (FCT), Portugal – International research grant review panel

C. Contributions to Science

I have led research in the fields of immunology, infectious diseases, and host-pathogen interactions for over two decades. In this section, I present only some significant contributions to science, supported by key publications in which I served as first, last/corresponding author.

Innate and Mucosal Immunity in HIV-1 Resistance

My early work investigated the mechanisms underlying resistance to HIV-1 infection in exposed but uninfected individuals. This research highlighted the role of mucosal and systemic immune activation in protective immunity, providing a foundation for future studies on mucosal vaccines and microbicides.

-Biasin M, Trabattoni D, Rossignol JF, Clerici M. Immune correlates of protection against HIV infection and how to elicit them. *Mucosal Immunol.* 2017;10(3):827-828. doi: 10.1038/mi.2016.134.

-Biasin M, Lo Caputo S, Speciale L, et al. Mucosal and systemic immune activation is present in HIV-exposed seronegative women. *J Infect Dis.* 2000;182(5):1365–1374.

- Mazzoli S, Trabattoni D, Lo Caputo S, et al. HIV-specific mucosal and cellular immunity in HIV-seronegative partners of HIV-seropositive individuals. *Nat Med.* 1997;3(11):1250-7. doi: 10.1038/nm1197-1250

Genetic Determinants of HIV Susceptibility and Immune Response

I contributed to elucidating how host genetic variability influences susceptibility to infection and disease progression. My studies demonstrated the relevance of specific polymorphisms in innate immunity genes—such as TLR3 and ERAPs—and their association with HIV-1 resistance or disease outcomes.

-Biasin M, Sironi M, Cagliani R, et al. A common polymorphism in TLR3 confers natural resistance to HIV-1 infection. *J Immunol.* 2012;188(2):818-23. doi: 10.4049/jimmunol.1102179.

- Saulle I, Vicentini C, Clerici M, Biasin M. Antigen presentation in SARS-CoV-2 infection: the role of class I HLA and ERAP polymorphisms. *Hum Immunol* 2021;82(8):551-560. doi: 10.1016/j.humimm.2021.05.003.

-Saulle I, Limanaqi F, Garziano M, et al. Impact of endoplasmic reticulum aminopeptidases 1 (ERAP1) and 2 (ERAP2) on neutrophil cellular functions. *Front Cell Dev Biol.* 2025;12:1506216. doi: 10.3389/fcell.2024.1506216.

Immunopathogenesis and Therapeutic Targets in COVID-19

During the COVID-19 pandemic, I led studies investigating immune responses to SARS-CoV-2 infection and host-pathogen interactions. My work demonstrated the efficacy of immunomodulatory

treatments in reducing inflammation and revealed novel mechanistic insights into spike protein-induced cellular dysfunction using organoid models.

-Cappelletti G, Brambilla L, Strizzi S. et al. iPSC-derived human cortical organoids display profound alterations of cellular homeostasis following SARS-CoV-2 infection and Spike protein exposure. *FASEB J.* 2025;39(4):e70396. doi: 10.1096/fj.202401604RRR.

-Cappelletti G, Colombrita C, Limanaqi F. et al. Human motor neurons derived from induced pluripotent stem cells are susceptible to SARS-CoV-2 infection. *Front Cell Neurosci.* 2023;17:1285836. doi: 10.3389/fncel.2023.1285836.

-Fenizia C, Biasin M, Cetin I, et al. Analysis of SARS-CoV-2 vertical transmission during pregnancy. *Nat Commun.* 2020;11(1):5128. doi: 10.1038/s41467-020-18933-4.

Environmental Disinfection and SARS-CoV-2 Inactivation

I investigated infection control strategies using UV-C irradiation. Our study demonstrated the high efficacy of UV-C light in inactivating SARS-CoV-2, offering practical recommendations for hospital disinfection protocols during the pandemic.

-Biasin M, Bianco A, Pareschi G, et al. UV-C irradiation is highly effective in inactivating SARS-CoV-2 replication. *Sci Rep.* 2021;11(1):6260.

-Strizzi S, Bernardo L, D'Ursi P. et al. An innovative strategy to investigate microbial protein modifications in a reliable fast and sensitive way: A therapy oriented proof of concept based on UV-C irradiation of SARS-CoV-2 spike protein. *Pharmacol Res.* 2023;194:106862. doi: 10.1016/j.phrs.2023.106862

- Biasin M, Strizzi S, Bianco A et al. UV and violet light can Neutralize SARS-CoV-2 Infectivity. *J Photochem Photobiol.* 2022;10:100107. doi: 10.1016/j.jpap.2021.100107.

Overall, I have authored over 123 peer-reviewed publications, with an h-index of 35 and more than 4,270 citations, reflecting the impact of my work on the scientific community. My publications are available on Scopus (Author ID: 35495965200) and the Institutional Research Archive (AIR) of the University of Milan.

In addition to my publications, I am the co-inventor of a patent titled “Dispositivo e metodo per il campionamento e la rilevazione di agenti patogeni nell’aria” (#102020000018409), granted on 29/08/2022. This invention represents a significant advancement in pathogen detection technologies, with potential applications in public health and environmental monitoring.

Moreover, I have actively contributed to the scientific community as a member of editorial boards, guest editor for special issues, and reviewer for high-impact journals. My commitment to advancing science is further demonstrated by my mentorship of students and early-career researchers, fostering the next generation of scientists in molecular biology and immunology.