

PERSONAL INFORMATION **Claudio BANDI**



Enterprise	University	EPR
<input type="checkbox"/> Management Level	<input checked="" type="checkbox"/> Full professor	<input type="checkbox"/> Research Director and 1st level Technologist / First Researcher and 2nd level Technologist / Principal Investigator
<input type="checkbox"/> Mid-Management Level	<input type="checkbox"/> Associate Professor	<input type="checkbox"/> Level III Researcher and Technologist
<input type="checkbox"/> Employee / worker level	<input type="checkbox"/> Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	<input type="checkbox"/> Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

October 2019 - Onwards

Full Professor of Microbiology, University of Milan, Department of Biosciences

November 2010 – September 2018

Full Professor of Parasitology and Parasitic Diseases, School of Veterinary Medicine and Department of Biosciences, University of Milan

October 2000-October 2010

Associate Professor of Parasitology and Parasitic Diseases, School of Veterinary Medicine, University of Milan

August 1998 - September 2000

Position: Assistant Professor of Parasitology and Parasitic Diseases, School of Veterinary Medicine, University of Milan

EDUCATION AND TRAINING

Degree: not applicable

Years: 1996-1998

University of Milan

Field of study: Post-Doctoral position, molecular evolution and phylogenetics of uncultured bacteria

Degree: 1995 PhD in Comparative Pathology

Years: November 1991 – December 1994

University of Milan

Field of study: molecular diagnostics and molecular epidemiology of Trichinella spp.

Degree: 1990, Laurea degree in Biology with honor (110/110 e lode)

University Pavia

Years: October 1984 – July 1990

Field of study for the experimental thesis: molecular taxonomy and molecular diagnostics of infectious agents

WORK ACTIVITIES

- Awards**
- Young Parasitologists Award, from the Italian Society of Parasitology, 1992.
 - Temporary Consultant at WHO for the development of anti-symbiotic chemotherapy for the control of filarial diseases, in 1998 and 1999.
 - Member of the Direction Board of the Italian Society of Parasitology, 1996-2000.
 - Battista Grassi Award and Medal, from the Italian Society of Parasitology, for the discovery of *Wolbachia* endosymbionts in filarial nematodes and for the invention of anti-symbiotic chemotherapy for the cure of filarial diseases, in 2002.
 - Member of the Italian National Academy of Entomology (since 20189)
 - Numerous covers of scientific journals and highlights dedicated to the work of CB, in parasitology and ecology/evolutionary journals (e.g. in Parasitology, International Journal for Parasitology, Proceedings of The Royal Society of London B, ASM News, Trends in Ecology and Evolution, Nature Reviews Microbiology, Natural History).
- Commitments at the University**
- Coordinator of Sky Net UNIMI – Platform for Genomic Epidemiology and Experimental Microbiology
 - Coordinator of the Master in Biodiversity and Evolutionary Biology (2005-2021)
 - Member of the scientific and management committees of the Department of Biosciences (Top Italian scientific departments, according to MUR - Ministry of University and Research)
 - Member of the management committee of the University of Milano Veterinary Hospital
 - Member of the management committee of the Pediatric Clinical Research Center Romeo ed Enrica Invernizzi
- Editorial activity**
- Reviewer for the main scientific journals in the areas of parasitology and vector-borne diseases.
- Invited presentations**
- >100 oral presentations since 1993 in national and international congresses and major universities (including the Universities of Marseille, Rochester, Tokyo, Kyoto, Athens, Edinburgh, Sao Paulo, Imperial College) and scientific institutions (including the WHO, the Institut Pasteur, the Wellcome Trust).
- Grants**
- Last six years*
- University of Milan 2021, project Grandi Sfide di Ateneo. PI of the proposal “Integrated system of the University of Milan, for the study, monitoring and control of infections, epidemic emergencies and resistance to antimicrobial drugs (IDEA)”. Euro: 160.000. *A grant in support of networking activities and fellowships for young scientists, in relation with infectious agents and epidemiology of infections. Fully relevant to PE13.*
 - Finappo Grant 2021 for Research activity on Coronaviridae. PI. Euro 150.000. *The goal of this grant is to develop a novel platform for production of antigens from Coronaviridae. Fully relevant to PE13.*
 - MIUR-PRIN 2017. PI of the proposal “Rafts on the water, for mosquito vector control: hydrogel-based delivery systems and inhibition of insect defense mechanisms, to improve sustainable use of insecticides and counteract resistance development (RAFTING)”. Euro: 548,000. *The goal of this grant is to develop a novel type of system for a targeted delivery of insecticides to mosquito larvae. Fully relevant to the PE13, in relation with the control of important arthropod vectors.*
 - Romeo ed Enrica Invernizzi Foundation grant 2016. PI of the project for the development of the “Platform for Genomic Epidemiology and Experimental Microbiology”. Euro 800.000. *Fully relevant to PE13.*

Patents

- National Patent application N. IT 102021000004160 for "Use of the protist *Leishmania tarentolae* as an expression system for the production of antigens of the viruses of the Coronaviridae family, for their use in the serological diagnostics of infections caused by viruses belonging to this family" (February 23, 2021).
- International Patent application N. IT 102021000004172 for "Realization of an immunomodulating vaccine against SARS-CoV-2 based on the use of *Leishmania tarentolae* as a vaccine vehicle for professional APCs, engineered for the expression of the RBD-S1 fragment of the protein Spike (LeCoVax2)" (December 23, 2021).
- National Patent application N. 102021000029279 "*Leishmania* ghosts, micro-ghost, micro- and nano-vesicles as vehicles for the targeted delivery of antigens and molecules to pharmacological action on the cells of the myeloid lineage immune system (LeGho)" (November 19, 2021).

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s) English (Professional Proficiency)

Job-related skills Strong background in the areas of evolutionary biology, genetics, populations genetics and genomics in relations with arthropod vectors and vector-borne pathogens. Scientific Leadership. Management of complex projects. Excellent oral and written communication skills. Writing of scientific papers, grant & patent applications.

Statement of Research Interests

I have been working in the areas of parasitology, entomology, and vector-borne diseases since my master, in 1991. In this context, I contributed to the first projects aimed at the use of molecular tools for pathogen detection and identification. A major focus of my studies has been the microbiota associated with disease vectors and parasites. These studies allowed me to discover the bacterial symbionts of filarial nematodes (*Wolbachia*), a discovery that determined a major breakthrough in filariasis research, with the development of a novel approach to the cure of filarial infections, based on the use of antibiotics that target the *Wolbachia* symbionts. A further area of research that I explored is that of the immune response to antigens associated with vector-saliva or vector-associated microbial symbionts. The competence and skills that I acquired, and the research group that I established at the University of Milan, will allow me to contribute to Spoke 2, in WP2 and WP5.

Publications

total number of publications in peer-review journals: >220

total number of citations: >10.600

H index (Scopus): 58

Five selected publications in the last two years

Varotto-Boccazzi I, Manenti A, Dapporto F, Gourlay LJ., Bisaglia B, Gabrieli P, Forneris F, Faravelli S, Bollati V, Rubolini D, Zuccotti G, Montomoli E, Epis S, Bandi C 2021. Epidemic Preparedness—*Leishmania tarentolae* as an Easy-to-Handle Tool to Produce Antigens for Viral Diagnosis: Application to COVID-19. *Frontiers in Microbiology*. 12:3636. *This work shows that Leishmania tarentolae can be used as an expression system for the production of antigens for the serodiagnosis of viral infections.*

Comandatore F, Radaelli G, Montante S, Sacchi L, Clementi E, Epis S, Cafiso A, Serra V, Pajoro M, Di Carlo D, Floriano AM, Stavru F, Bandi C, Sassera D 2021. Modeling the Life Cycle of the Intramitochondrial Bacterium "Candidatus Midichloria mitochondrii" Using Electron Microscopy Data. *mBio* 12(3):e0057421. *A study on the first intra-mitochondrial bacterium ever described, discovered by the group of Claudio Bandi.*

Kashkouli M, Castelli M, Floriano AM, Bandi C, Epis S, Fathipour Y, Mehrabadi M, Sassera D 2021. Characterization of a novel *Pantoea* symbiont allows inference of a pattern of convergent genome reduction in bacteria associated with Pentatomidae. *Environ Microbiol*. 2021 Jan;23(1):36-50.

Varotto-Boccazzi I, Epis S, Arnoldi I, Corbett Y, Gabrieli P, Paroni M, Nodari R, Basilico N, Sacchi L, Gramiccia M, Gradoni L, Tranquillo V, Bandi C 2020. Boosting immunity to treat parasitic infections: *Asaia* bacteria expressing a protein from *Wolbachia* determine M1 macrophage activation and killing of *Leishmania* protozoans. *Pharmacol Res*. 161:105288. *A protein from Wolbachia bacteria, once expressed by a non-pathogenic bacterium, can be used to activate macrophages, with killing of intracellular parasites.*

Epis S, Varotto-Boccazzi I, Crotti E, Damiani C, Giovati L, Mandrioli M, Biggiogera M, Gabrieli P, Genchi M, Polonelli L, Daffonchio D, Favia G, Bandi C 2020. Chimeric symbionts expressing a *Wolbachia* protein stimulate mosquito immunity and inhibit filarial parasite development. *Commun Biol*. 3(1):105. doi: 10.1038/s42003-020-0835-2.

Five selected publications that had a major impact in the area of vector-borne diseases, mainly in relation with the biology of filarial nematodes and in filarial-disease control

Bandi C, Anderson TJ, Genchi C, Blaxter ML. Phylogeny of *Wolbachia* in filarial nematodes. *Proc Biol Sci*. 1998 Dec 22;265(1413):2407-13. *The discovery of Wolbachia in filarial parasites; a breakthrough discovery in parasitology, that determined a re-interpretation of the biology of filarial disease, and the development of anti-symbiotic chemotherapy for filarial disease control.*

Bandi C, McCall JW, Genchi C, Corona S, Venco L, Sacchi L. Effects of tetracycline on the filarial worms *Brugia pahangi* and *Dirofilaria immitis* and their bacterial endosymbionts *Wolbachia*. *Int J Parasitol*. 1999 Feb;29(2):357-64. *One of the first papers that showed that it is possible to cure a disease caused by a parasitic nematode using an antibacterial drug, that target the bacterial symbionts of the nematode.*

Bandi C, Slatko B, O'Neill SL. *Wolbachia* genomes and the many faces of symbiosis. *Parasitol Today*. 1999 Nov;15(11):428-9. *The launch of one of the first international initiatives aimed at the sequencing of the intracellular symbiont of a parasite.*

Brattig NW, Bazzocchi C, Kirschning CJ, Reiling N, Büttner DW, Ceciliani F, Geisinger F, Hochrein H, Ernst M, Wagner H, Bandi C, Hoerauf A. The major surface protein of *Wolbachia* endosymbionts in filarial nematodes elicits immune responses through TLR2 and TLR4. *J Immunol*. 2004 Jul 1;173(1):437-45. *One of the first studies that proved that Wolbachia, the bacterium associated with filarial nematodes, plays a role in the immunology of filarial infections.*

Montagna M, Sassera D, Epis S, Bazzocchi C, Vannini C, Lo N, Sacchi L, Fukatsu T, Petroni G, Bandi C. "Candidatus Midichloriaceae" fam. nov. (Rickettsiales), an ecologically widespread clade of intracellular alphaproteobacteria. *Appl Environ Microbiol.* 2013 May;79(10):3241-8. *The description of a novel family of intracellular bacteria, with some members of the family capable to invade mitochondria.*

Milano, 19 June 2023

Prof. Claudio Bandi