



SHORT CV

PROFESSOR SARA EPIS,
DEPARTMENT OF BIOSCIENCES,
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UNIVERSITY OF MILAN, MILAN (ITALY)

SCIENTIFIC PRODUCTION

Author of **62 publications in indexed journals**

Google scholar indexes Total citations = 1359; H-index = 22; i10 index = 34

Speaker at 22 national and international congresses (12 as Invited speaker), author of 9 book chapters. **I have 12 years experience in Parasitology.** In particular, I spent my research time at the University of Camerino and Milan, as member of the two main research groups focused on symbiosis of arthropod vectors (mosquitoes and ticks).

Current position

Since September 2016, I am Associate Professor of Parasitology, at the Department of Biosciences at the University of Milan. Before I was Assistant Professor for 2,5 years; I was able to start my own research group in March 2014, on the basis of a grant from the Italian Ministry of Research. The FIR2013 is a highly competitive research funding system, tailored for young postdoctoral researchers who aim at starting their own laboratory, similarly to the ERC starting grants, albeit with lower budgets. Out of over 800 grant proposals for Life Sciences, only 28 were financed (I ranked first overall).

PhD studies

I spent my PhD working in the laboratory of Parasitology of the University of Milan. There I learnt molecular, microscopy, phylogeny and microbiological techniques, which I used to work on a completely new symbiotic system discovered in the tick *I. ricinus*. During my PhD I contributed to the description of a novel bacterial genus and species, *Midichloria mitochondrii* and to the genome sequencing of this bacterium. My PhD work on this topic resulted in 5 publications, two as first authors and one as corresponding. The paper published in the journal MBE 'Phylogenomic evidence for the presence of a flagellum and cbb(3) oxidase in the free-living mitochondrial ancestor' was selected by the post publication peer review system 'Faculty of 1000', which evaluated it as a 'must read work'.

Interdisciplinary experience

During my PhD, I felt the need to explore other aspects of scientific research, outside the University system. I applied to RIFCon as field assistant (Society for the registration of agrochemicals, Heidelberg) for the monitoring arthropods pre-and post-treatment, using specific techniques. This experience strengthened my ability to understand how to move from basic to applied research. After my PhD, I decided to cooperate as a professional assistant with the Public Health Laboratory (ASL Milano), for the management of the projects "The use of biotechnology in the identification of epigeal macromycetes responsible for poisoning". The project led to the development of a system for the molecular identification of fungi responsible for poisoning and for the toxin alpha-amanitin, the international collaboration with Prof. Walton, and the publication of 2 papers in international journals (BioMedLib recognition), 2 articles in national magazines and 2 presentations as invited speaker at the V International Congress of Mycotoxicology (12-2012) and at the Conference "Intoxication of epigeal macromycetes" (10-2009). In 2012, I hosted the PhD student Alessandro Desirò from the University of Turin at the University of Milano. During his PhD fellowship, Dr. Desirò collaborated with me on molecular studies and microscopy (FISH staining) on the symbiotic interactions between liverworts,



arbuscular mycorrhizal fungi and their endobacteria. This collaboration was very successful, with the publication of two papers in high rank journals (Environmental Microbiology and ISME Journal).

Postdoctoral studies

After my PhD, following a competition based on qualifications and interview, I was able to obtain the fellowship on the topic "evaluation of the potential role of bacteria of the genus *Asaia* such microbial agents for the control of malaria vectors", under the supervision of Prof. G. Favia (University of Camerino) in the laboratory of Prof. Favia for a 3 years. I worked on the study of symbiosis in mosquitoes and on the manipulation of the bacterium *Asaia* with recombinant plasmids, publishing 6 scientific works (2 as first author). During this period, I attended a summer school on "Advances in symbiosis research" in Israel, The Hebrew University of Jerusalem, in order to obtain the necessary know-how. After this fellowship, I was contacted by Prof. C. Genchi (University of Milan), who wanted to activate a Postdoctoral project on the inhibition of multidrug-resistance efflux pumps as new strategy for the control of arthropod vectors (*Anopheles* mosquitoes and ticks). The gained experience at the University of Camerino allowed me to obtain the know-how necessary to perform bioassays on mosquitoes and to study the ABC transporters (7 scientific works, 2 as first author and 2 as corresponding).

Expertise

My experience in different laboratories, universities and companies allowed me to obtain expertise in multiple techniques, many of which will be useful within the proposed project. In particular, my professional skills, documented by the scientific production, are: the collection and maintenance of ticks, mosquitoes and sand flies; techniques of light and electron microscopy, IFA and FISH staining; biochemical and immunological methods for the study of proteins; methods for the study of nucleic acids, PCR, reverse transcription, real-time RT-PCR, cloning; isolation of bacteria and yeasts and bacterial transformations.

Invited speaker at internationally established conferences and international advanced schools

- Oct 2018: 1st International Caparica Congress on Leishmaniasis 2018 (LEISHMANIASIS2018), Portugal.
- May 2017: International conference on Insect symbionts: Plasticity in confronting environmental challenges. Ben Gurion University, Israel.
- Sept 2016: International Congress of Entomology, Orlando, USA.
- Jun 2015: Congress "System Approach for improving the sustainability of animal production, health and welfare", Milan.
- Jun 2015: Symposium "Symbiotic Fungi and Bacteria in arthropod vectors as a tool for disease control", Bangladesh.
- Mar 2014: Annual meeting Italian Malaria Network, "Wolbachia surface protein: role in immune activation and potential use for reducing vector competence of mosquitoes", Perugia.
- Dec 2012: 5th International Meeting of Mycotoxicology, Milano;
- Jun 2012: COST FA0701 Final Meeting and 7th Wolbachia Conference, Ile de Oleron, France;
- Mar 2010: COST arthropod symbiosis: from Fundamental Studies to Pest and Disease Management, Rehovot, Israel.

Grants as PI

- 2018. PI of the national project financed by Cariplo Foundation and Lombardy Region (2017-N.1656) (100.000 euro), "Il batterio chimerico *Asaia*-WSP: nuovo agente immunostimolante, per la prevenzione vaccinale e la terapia della leishmaniosi viscerale".
- 2017. PI of the project Transition Grant 2015-2017-Horizon 2020 (G42F17000140001) "Unimi for ERC Starting e Consolidator applicants" (80.000 euro), "Engineering the bacterium *Asaia* for the expression of WSP".



- 2015. PI of the projects financed by the University of Milan “Piano Sviluppo UNIMI”, funding for young researchers with proven scientific production, “In vitro evaluation of the leishmanicidal activities of killer yeast strains” (5.100 euro).
- 2014. PI of the application INFRAVEC-FP7 project 0123 -“Transgenic mosquitoes expressing the Wolbachia surface protein” (The winning of this award implies that the Infravec Consortium will generate, free of charge, the transgenic mosquitoes, as designed by the applicant. Estimated cost: 60.000 euro, ‘funding scheme’ FP7-CP-CSA-Infra-2008-1).
- 2014. PI of the project financed by the University of Milan “Piano Sviluppo UNIMI”, funding for young researchers with proven scientific production, “Companion birds as risk factors for human infections and ocular lymphomas: an epidemiological survey in parrots and prospects for future studies” (3.500 euro).
- 2013. PI of the project MIUR-FIR 2013 (RBF136GFF), “Killer yeasts and killer peptides as experimental models for the control and the therapy of vector-borne diseases” (678.430 euro). Thank to this project I gained the position as Assistant Professor of Parasitology, at the University of Milan.

LIST OF PUBLICATIONS

- Mangia C, Vismarra A, Genchi M, **Epis S**, Bandi C, Grandi G, Bell-Sakyi L, Otranto D, Passeri B, Kramer L. Exposure to amitraz, fipronil and permethrin affects cell viability and ABC transporter gene expression in an *Ixodes ricinus* cell line. *Parasit Vectors*. 2018 Jul 31;11(1):437.
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- Martin E, Varotto Boccazzi I, De Marco L, Bongiorno G, Montagna M, Sacchi L, Mensah P, Ricci I, Gradoni L, Bandi C, **Epis S***. The mycobiota of the sand fly *Phlebotomus perniciosus*: involvement of yeast symbionts in uric acid metabolism. *Environ Microbiol*. **2018** Jan 18. doi: 10.1111/1462-2920.14044.
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