

## **EDUCATION**

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- 2014-2018**    **PHD. SYSTEMS BIOLOGY IN IMMUNITY AND INFECTIOUS PATHOLOGIES**  
**University of Perugia, Perugia, Italy, in convention with Imperial College London, UK**  
**Scholarship awarded by the University of Perugia**  
Thesis title: "Cellular resolution of the transcriptional profile of mosquito spermatogenesis and its potential application for vector control."  
Lab Rotation Project: "Antibody production for the immunomodulatory enzyme IL-4i1."  
Lab Rotation Project: "Evaluation of an immunomodulator in immune response during DSS colitis."
- 2008-2013**    **BSc. BIOCHEMISTRY AND BIOTECHNOLOGY**  
**University of Thessaly, Larissa, Greece**  
**Upper second-class honours degree**  
Thesis title: "Identification of *P. falciparum* targets for transmission blocking interventions"
- Feb-Aug**        **LLP/ERASMUS STUDENT, IMPERIAL COLLEGE LONDON**  
**2012**            **Scholarship for 6-month practice and final year project**

## **EMPLOYMENT**

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- 2023 – now**    **SENIOR RESEARCHER AND CONSULTANT, POLOGGB, TERNI, ITALY**  
Laboratory of Genetics and Ecology
- Directing a project on development and optimisation of systems to modulate and limit suppressive gene drives in *A. gambiae*.
- Successfully secured two research grants from the Bill and Melinda Gates Foundation as Principal Investigator (\$1,074,964; \$1,759,205)
  - Leading and managing a team of one post-doctoral researcher, two research technicians and one post-graduate student.
  - Establishing international collaborations with field experts.
  - Presenting at international conferences and organising international workshops on the use of systems to reverse the spread of gene drives.
  - Delivering PPT presentations and reports to update funders on milestones and deliverables on quarterly basis.
  - Writing and submission of grant applications.
- 2018- 2024**    **RESEARCH ASSOCIATE, IMPERIAL COLLEGE LONDON, UK**  
Faculty of Natural Sciences, Department of Life Sciences, Crisanti lab
- Target Malaria researcher (2022-2024): Worked on pioneering technology for genetic control of human malaria using CRISPR/cas9-mediated genome engineering.
- Supervised a PhD student (now graduated) working on development, optimisation, and assessment of gene drive systems.
  - Contributed to the scientific proposal for the renewal of the funding, securing a substantial budget from the Bill & Melinda Gates Foundation for five years (named investigator).
  - Delivered PPT presentations and reports to update teams and funders on milestones and deliverables on yearly basis.
  - Supported recruitment and training of Postdoctoral Research Associates and Research Technicians.
  - Lectured on "Genomics and population genetics of Anopheles mosquitoes and implications for vector control" for the final year BSc module in Parasitology and Vector Biology.
  - Tutor and lab demonstrator in final year BSc module in Parasitology and Vector Biology.
  - Developed and demonstrated science communication materials for annual departmental outreach activities (Imperial college Open Day)

DARPA funded researcher (2017-2022): Developed technologies to control, surveil, and counter genome-editing nucleases and gene drives in mosquitoes.

- Designed, oversaw, and directed all research activities, and published research in peer-reviewed journals.
- Managed and authored grant renewal and extensions during COVID-19 pandemic, securing the £2,200,000 research funding (named investigator) from the Defence Advanced Research Projects Agency (DARPA), Safe Gene program.
- Built and maintained connections with collaborators to deliver project objectives.
- Line managed a group of four research technicians.
- Supervised lab projects of four undergraduate and two postgraduate students.
- Delivered PPT presentations and reports to update teams and funders on milestones and deliverables on monthly and quarterly basis.
- Presented at international conferences, webinars and annual DARPA meetings

In parallel, I developed a single cell RNA-sequencing method of *A. gambiae* mosquito spermatogenesis under the funding of Wellcome Trust Centre for Global Health Research.

- Designed and conducted the research and managed the collaboration between the department of Natural Sciences at Imperial College and the MRC London Institute of Medical Sciences.
- Played a key role in obtaining research budget of £10,000 from the Wellcome Trust Centre for Global Health Research.

Sept – Dec  
2017

**BIOLOGY TUTOR**

Private lessons of Genetics and Molecular Biology to two 2<sup>nd</sup> year undergraduate students at Imperial College London, UK

2017- 2018

**RESEARCH ASSISTANT, IMPERIAL COLLEGE LONDON, UK**

Faculty of Natural Sciences, Department of Life Sciences, Crisanti lab

Assessed *A. gambiae* germline promoters for the expression of nucleases in gene drive systems and investigated the cross-species function of the Y Chromosome in the *A. gambiae* species complex.

- Contributed to peer-reviewed publications. Research and operational support of the lab.

2013- 2014

**RESEARCH TECHNICIAN, IMPERIAL COLLEGE LONDON, UK**

Faculty of Natural Sciences, Department of Life Sciences, Christophides lab

Investigated the molecular interplay between the malaria parasite *P. berghei* and the mosquito vector *A. gambiae*, providing insights into how parasites interact with and evade mosquito defences.

- Contributed to peer-reviewed publications. Research, operational and technical support of the lab.

2010- 2011

**SCIENCE TUTOR**

Private lessons of Biology and Chemistry to one student in secondary education, Greece

Jul – Aug  
2010

**VOCATIONAL TRAINEE AT GENERAL HOSPITAL OF IERAPETRA, CRETE, GREECE  
Microbiology laboratory technician (Biochemical, Immunological, Haematological)**

**RESEARCH GRANTS AWARDED**

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2025-2027 Gates Foundation (\$1,759,205) – “Genetic methods to limit gene drives”, Principal Investigator.

2023-2025 Bill and Melinda Gates Foundation (BMGF) (\$1,074,964) – “Anti-CRISPR and novel strategies for gene drive remediation”, Principal Investigator.

## CONTRIBUTIONS TO OTHER AWARDED RESEARCH GRANTS

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- 2017-2021 Defense Advanced Research Projects Agency (DARPA), Safe Genes program (£2,200,000) - "Technologies to Control, Surveil, and Counter Genome-editing Nucleases and Gene Drives", Named investigator, writing of the proposal and renewal proposal.
- 2020-2025 Bill and Melinda Gates Foundation (>\$10,000,000) - "Target Malaria", Named investigator, writing of the proposal.
- 2017-2018 Wellcome Trust Centre for Global Health Research (£10,000) – "Dissecting the transcriptional program during mosquito gametogenesis by Single-Cell RNA-Seq", Writing of the proposal; my research results contributed to the implementation of related projects.

## PUBLICATIONS

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### Peer reviewed articles

1. D'Amato, R., Taxiarchi, C., Galardini, M. et al. Anti-CRISPR Anopheles mosquitoes inhibit gene drive spread under challenging behavioural conditions in large cages. *Nat Commun* 15, 952 (2024). <https://doi.org/10.1038/s41467-024-44907-x>
2. Page N, Taxiarchi C, Tonge D, Kuburic J, Chesters E, Kriezis A, Kyrou K, Game L, Nolan T, Galizi R. Single-cell profiling of *Anopheles gambiae* spermatogenesis defines the onset of meiotic silencing and premeiotic overexpression of the X chromosome. *Commun Biol.* 2023 Aug 15;6(1):850. doi: 10.1038/s42003-023-05224-z. PMID: 37582841; PMCID: PMC10427639.
3. Taxiarchi, C., Beaghton, A., Don, N.I. et al. A genetically encoded anti-CRISPR protein constrains gene drive spread and prevents population suppression. *Nat Commun* 12, 3977 (2021). <https://doi.org/10.1038/s41467-021-24214-5>
4. Grilli, Silvia, Roberto Galizi, and Chrysanthi Taxiarchi. 2021. "Genetic Technologies for Sustainable Management of Insect Pests and Disease Vectors" *Sustainability* 13, no. 10: 5653. <https://doi.org/10.3390/su13105653>
5. George J. Annas, Chase L. Beisel, Kendell Clement, Andrea Crisanti, Stacy Francis, Marco Galardini, Roberto Galizi, Julian Grünewald, Greta Immobile, Ahmad S. Khalil, Ruth Müller, Vikram Pattanayak, Karl Petri, Ligi Paul, Luca Pinello, Alekos Simoni, Chrysanthi Taxiarchi, and J. Keith Joung. A Code of Ethics for Gene Drive Research. *The CRISPR Journal*. Feb 2021. 19-24. <http://doi.org/10.1089/crispr.2020.0096>
6. Roya Elaine Haghghat-Khah, Atashi Sharma, Mariana Reis Wunderlich, Giulia Morselli, Louise Anna Marston, Christopher Bamikole, Ann Hall, Nace Kranjc, Chrysanthi Taxiarchi, Igor Sharakhov & Roberto Galizi (2020) Cellular mechanisms regulating synthetic sex ratio distortion in the *Anopheles gambiae* germline, *Pathogens and Global Health*, 114:7, 370-378, DOI: 10.1080/20477724.2020.1803628
7. Simoni, A., Hammond, A.M., Beaghton, A.K. et al. A male-biased sex-distorter gene drive for the human malaria vector *Anopheles gambiae*. *Nat Biotechnol* 38, 1054–1060 (2020). <https://doi.org/10.1038/s41587-020-0508-1>
8. Taxiarchi, C., Kranjc, N., Kriezis, A. et al. High-resolution transcriptional profiling of *Anopheles gambiae* spermatogenesis reveals mechanisms of sex chromosome regulation. *Sci Rep* 9, 14841 (2019). <https://doi.org/10.1038/s41598-019-51181-1>
9. Federica Bernardini, Roberto Galizi, Mariana Wunderlich, Chrysanthi Taxiarchi, Nace Kranjc, Kyros Kyrou, Andrew Hammond, Tony Nolan, Mara N K Lawniczak, Philippos Aris Papathanos, Andrea Crisanti, Nikolai Windbichler, Cross-Species Y Chromosome Function Between Malaria Vectors of the *Anopheles gambiae* Species Complex, *Genetics*, Volume 207, Issue 2, 1 October 2017, Pages 729–740, <https://doi.org/10.1534/genetics.117.300221>
10. Ukegbu, C.V., Giorgalli, M., Yassine, H. et al. *Plasmodium berghei* P47 is essential for ookinete protection from the *Anopheles gambiae* complement-like response. *Sci Rep* 7, 6026 (2017). <https://doi.org/10.1038/s41598-017-05917-6>
11. Galizi, R., Hammond, A., Kyrou, K. et al. A CRISPR-Cas9 sex-ratio distortion system for genetic control. *Sci Rep* 6, 31139 (2016). <https://doi.org/10.1038/srep31139>

### Monographies

1. **PhD. Thesis:** Cellular resolution of the transcriptional profile of mosquito spermatogenesis and its potential application for vector control., 2017, Perugia, Italy

2. **BSc. Thesis:** Identification of *P. falciparum* targets for transmission blocking interventions., 2013, Larissa, Greece

## ***PATENT***

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Anti-CRISPR construct useful to counteract the spread of a gene- drive in an arthropod population.  
International Application No.: PCT/GB2022/051600  
International Filing Date: 23.06.2022

## ***CONFERENCES***

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1. "Using a viral protein to block gene drives", Speaker at and organiser of workshop "Gene Drive Reversal Strategies: uses and applications in lab and field" at EMBO Vector Kolymbari Meeting, Crete, Greece, 2024
2. "Suppressive Gene Drives and Genetic Approaches to Constrain them in *Anopheles* Mosquitoes", Invited Keynote Speaker at Genetic Biocontrol (GRS); Exploring Genetic Biocontrol and Novel Biotechnology in Public Health, Food Security, and Biodiversity, Barcelona, Spain, May 18 - 19, 2024
3. "Genetic approaches to constrain gene drives in *Anopheles* mosquitoes", Speaker at the 9th PAMCA Annual Conference & Exhibition, Addis Ababa, Ethiopia, September 17-21, 2023
4. "Team C2-GEM: Controlling and Countering Gene Editing in Mosquitoes", Poster and oral presentation at DARPA Safe Genes virtual final meeting, October 25-27, 2021
5. "Development of gene drives and a method to block them in *Anopheles gambiae*" Invited Speaker at GeneConvene Webinar Series, September 22, 2021
6. "Controlling and Countering Gene Editing in Mosquitoes (and Human Cells), Poster and oral presentation at DARPA Safe Genes virtual annual meeting, May 25-27, 2021
7. "Development of gene-drives and a method to block them in *A. gambiae*" Speaker at Virtual Symposium RNA Therapeutics: From Concept to Clinic, June 23-25, 2021
8. "Controlling and Countering Gene Editing in Mosquitoes (and Human Cells)", Oral presentation at DARPA virtual Safe Genes PI Meeting; Gene Editing Innovation for Vector Control, July 27, 2020
9. "Gene Drive Confinement in *A. gambiae*" Speaker at Target Malaria Consortium Strategy Workshop, Windsor, UK, January 30-31, 2020
10. "Dissecting the transcriptional programme during mosquito gametogenesis" Poster presentation at EMBO Conference on Molecular and population biology of mosquitoes and other disease vectors, Kolymbari, Greece, July 22-26, 2019
11. "Dissecting the transcriptional programme during mosquito gametogenesis", Poster presentation at EMBO Mosquito Kolymbari Meeting, Kolymbari, Greece, July 24-28, 2017

## ***PEER-REVIEW***

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**Ad hoc reviewer:** Nature Communications, PLOS Neglected Tropical Diseases, MDPI: Genes, Insects, Cells, IJMS