

Giulia Fiorenza

**Title of the project**

Aspects of the reproductive biology of insect vectors of human health and zoonotic importance

**Supervisor**

Professor Ludvik Gomulski

**Reviewer**

Dott.ssa Francesca Scolari

Professor Francesco Lescai



## Curriculum Vitae

### **Fiorenza Giulia**

Department of Biology and Biotechnology “Lazzaro Spallanzani”  
Laboratory of Genetics and Biotechnology of Insects  
University of Pavia  
Pavia, Italy

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#### **EDUCATION**

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- October 2021**                      **Master of Science degree** in Advanced Biotechnology at the University of Pavia  
  
Vote 110/110 cum laude  
  
Presented Thesis: *Molecular evaluation of the degree of polyandry in Drosophila suzukii as a function of control methods*. Supervisor: Prof. Anna R. Malacrida
- July 2019**                              **Bachelor of Science degree** in Biotechnology at the University of Pavia  
  
Vote 104/110  
  
Presented Thesis: *Evaluation of the effect of manganese on the stereochemistry of  $\gamma$ -PGA*. Supervisor: Prof. Cinzia Calvio
- June 2016**                              **High School Diploma**  
Liceo Classico Melchiorre Gioia (Piacenza, Italy)  
Scientific course

## POSITIONS

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- Oct. 2022 – Now                    **Ph.D. student** in genetics, molecular and cellular biology,  
University of Pavia
- Dec. 2021 – Sep. 2022           **Research fellow**, Department of Biology and Biotechnology  
Laboratory of Genetics and Biotechnology of Insects  
University of Pavia
- Feb. 7 - 18, 2022                **Invited Consultant**  
FAO/IAEA meeting on Symbiont Detection and Genomic  
Analysis of Tsetse Flies in Seibersdorf, Austria.

## MENTORING ACTIVITIES

Supervision for two undergraduate student during the internship and the preparation of their master thesis in the laboratory of Genetics and Biotechnology of Insects.

## ATTENDED SEMINARS

**Vector borne and Zoonotic Disease Control** - Lecturer: Prof. Serap Aksoy, Yale School of Public Health, Yale University, US. (June 9<sup>th</sup>-10<sup>th</sup> 2022)

## CONTRIBUTION TO SCIENCE

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### ***Functional genomics of reproduction in insect disease vectors***

In the tsetse fly, *Glossina morsitans*, vector of trypanosomes of public health, and zoonotic disease relevance, I am investigating the functional role in reproduction of the Odorant-Binding Protein 5 (OBP5). I am analyzing the tissue and cellular specificity of the transcript within the female reproductive tract, using qPCR and FISH technique. This work is in the frame of research grant Omics investigation of insect vectors reproductive biology - National Institute of Health (NIH) – NIAID #1R21A1R21AI128523-01A1 project (PI Prof. Anna R. Malacrida). This research project is carried out in collaboration with the Neuropharmacology laboratory of the University of Pavia (Prof. Marco Peviani) and UC Davis (Prof. Geoffrey M. Attardo).

### ***Study of the co-evolution between endosymbiont and Glossina hosts.***

In the tsetse fly, *Glossina fuscipes*, vector of human and animal trypanosomiasis (HAT and AAT) in Sub-Saharan Africa, I am investigating the functional role of the endosymbiont Spiroplasma, on the reproductive physiology of these vectors. This work is the frame of research grant Reproductive Biology of Glossina and Spiroplasma Effects – Research Agreement No: 26225 (PI Prof. Anna R. Malacrida), which forms part of the Insect Mass-rearing for SIT Applications and on the NIH grant Spiroplasma effects on Tsetse flies - NIH R21 A1163969-01 (PI Prof. Serap Aksoy). This research project is carried out in collaboration with Yale University (PI Prof. Serap Aksoy) and the International Atomic Energy Agency in Vienna (IAEA).

### GRANT PARTECIPATION

- NIH R21 A1163969-01, Serap Aksoy (PI); “Spiroplasma effects on Tsetse flies”.  
Role: Associate in this grant with a fellowship
- NIH R21 AI128523, Geoff Attardo (PI); “Unravelling intersexual interactions in tsetse. Analyse the post mating response in tsetse females at the transcriptional and metabolic level”.  
Role: Associate in this grant with a fellowship
- FAO/IAEA Research Agreement No: 26225 (PI Prof. Anna R. Malacrida), “Reproductive biology of Glossina and Spiroplasm effect” within the IAEA CRP “Improvement of colony management in Insect Mass-rearing for SIT Applications.”

### **PUBLICATIONS AND SUBMITTED ABSTRACTS**

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#### PUBBLICATION

Simone Puppato<sup>1,2</sup>, **Giulia Fiorenza**<sup>3</sup>, Alberto Grassi<sup>1</sup>, Davide Carraretto<sup>4</sup>, Carlos Cáceres<sup>5</sup>, Fabiana Sassù<sup>5,6</sup>, Gabriella Tait<sup>7</sup> Giuliano Gasperi<sup>3</sup>, Ludvik M. Gomulski<sup>3</sup>, Gianfranco Anfora<sup>8,9</sup>, Antonio De Cristofaro<sup>2</sup>, Claudio Ioriatti<sup>1</sup> Anna R. Malacrida<sup>3</sup> - Shed light on the reproductive behaviour of *Drosophila suzukii* in the wild.

In preparation for Molecular Ecology

#### ABSTRACT

**Giulia Fiorenza**<sup>1</sup>, Marco Peviani<sup>1</sup>, Mauro G. Spatafora<sup>1</sup>, Andrea Gazzano<sup>1</sup>, Giulia Mancini<sup>1</sup>, Stefano Liberi<sup>1</sup>, Federico Forneris<sup>1</sup> Irene Rossi<sup>1</sup>, Adly M. M. Abd-Alla<sup>2</sup>, Ludvik M. Gomulski<sup>1</sup>, Giuliano Gasperi<sup>1</sup>, Serap Aksoy<sup>3</sup>, Geoffrey Attardo<sup>4\*</sup>, Anna Malacrida<sup>1\*</sup> - Investigating the Role of Odorant binding proteins in *Glossina* reproduction, 2022 Abstract

Accepted for a presentation at “EMBO Kolymbari Meeting on Mosquitoes and Other Vectors of Disease, 2022”

## SKILLS

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### INFORMATIC AND BIOINFORMATICS SKILLS

- Knowledge of Windows 10, Excel, PowerPoint Microsoft Office suite programs.
- Knowledge of R programming language and techniques for the analysis of the large datasets (RNAseq Total RNA).
- Knowledge of programs for parentage analysis such as GenAlEx, CERVUS, GERUD, and GERUDsim.
- Basic knowledge of digital image elaboration program ImageJ.
- Basic usage of Linux Operating System and Bash.

### LABORATORY SKILLS

- Tsetse fly rearing and matings.
- Diptera dissections (mosquitoes and tsetse flies). Particularly, dissection of reproductive tract organs and sensory organs (e.g. maxillary palps, antennae, tarsi, and proboscis).
- Histological preparations: paraffin embedding, microtome sample slicing, and conventional staining procedures.
- FISH/In-situ
- Main molecular biology techniques: PCR, agarose gel electrophoresis, nucleic acid extraction, and purification from insect samples.

### SOCIAL SKILLS AND COMPETENCES

- Ability to communicate effectively through speaking as well as in writing
- Ability to work cooperatively and effectively in multidisciplinary and multicultural teams.
- Methodical and precise in planning and performing laboratory experiments and in data collection.
- Good management skills.
- Motivated and interested in learning new techniques/approaches.
- Open to new experiences and to learning from them