JACOPO RAZZAUTI

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The Rockefeller University
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PhD student at The Rockefeller University studying mosquito neurogenetics and behavior. Specialized in computer vision, animal tracking and data analysis. Fellow of the Boehringer Ingelheim Fond. and Price Center for the Social Brain Center. Member of The Explorer Club.

EDUCATION

PhD Neurosciences Laboratory of Neurogenetics and Behavior — *07/2021-Present*
The Rockefeller University, New York, USA

Visiting Student, Cornell Tech, New York, USA — *01/2025-Present*
Computer Vision

Visiting Student, Columbia University, New York, USA — *01/2022-05/2022*
Ethology and the Evolution of Behavior, Grade: A
Course taught by Dr. Andrés Bendesky

BSc Neurosciences Grade: First Class (Honours) — *09/2017-06/2021*
University of Dundee, Scotland

Visiting Student, University of Northern British Columbia, Canada — *09/2018-05/2019*
2nd Year Exchange Program, GPA: 4.27/4.33

RESEARCH EXPERIENCE (LABORATORY)

The Rockefeller University, New York, USA — *07/2021-Present*

PhD Student; Supervisor: **Dr. Leslie Vosshall**

1. Animal Tracking: Design and implementation of state-of-the-art computer vision systems for multi-animal 3D tracking, with focus on mosquito behavior.

2. Neuronal Imaging: Development of custom imaging systems for non-conventional biological samples, specializing in mosquito sensory appendages.

First Year Rotations — *07/2021-09/2022*

1st Rotation (07/2021-12/2021): Mentor: **Dr. Leslie Vosshall**

- Used genetically-encoded calcium sensor to study how the yellow-fever mosquito taste system responds to tastes. Showed that a subset of the tarsal neurons responds to DEET.

2nd Rotation (01/2022-04/2022): Mentor: **Dr. Vanessa Ruta**

- Quantified courtship behavior of distinct Drosophila melanogaster strains pairing two males with one female to establish the role of male-male competition in mating success.

3rd Rotation (04/2022-07/2022): Mentor: **Dr. Daniel Kronauer**

- Designed and implemented a protocol for bright-field imaging of abdominal tip of *Ooceraea biroi* pupae. Work published in *Nature*.

University of Dundee, Dundee, Scotland — *09/2020-12/2020*

Honours Student; Mentor: **Prof. Jeremy Lambert**

Project: Investigating Tianeptine electrophysiological effects in a mouse model of early-life adversity.

Max Planck Institute of Neurobiology, Munich, Germany *06/2019-09/2019*

AMGEN Scholar at Ludwig Maximilian University of Munich; Mentor: **Dr. Herwig Baier**

Project: Optogenetic dissection of descending behavioural control in zebrafish larvae

University of Northern British Columbia, Prince George, Canada *01/2019-04/2019*

Research Assistant; Mentor: **Dr. R. Luke Harris**

Project: An Investigation of Acute Exercise Effects on Cognition and its Neural Correlates.

RESEARCH EXPERIENCE (FIELDWORK AND EXPEDITIONS)

The Mars Society, Mars Desert Research Station, Utah, USA

Crew Biologist on multiple missions focused on desert extremophile biodiversity

Crew 298: Martian Biology IV *06/2024*

Crew 282: Martian Biology III *06/2023*

Crew 247: Martian Biology II *06/2022*

- Conducted transect-based ecological surveys focusing on local lizard and insect populations, with emphasis on mosquitoes
- Contributed to collection and cataloguing of local desert flora
- Supported mission logistics and operations in remote location

Operation Wallacea

Research Assistant at multiple field sites

Krka National Park, Croatia *08/2020*

- Conducted transect-based ecological surveys for census of local tortoise populations
- Developed a citizen-science trap-based system for monitoring butterfly populations

Mariarano Forest, Mahajanga, Madagascar *06/2018-07/2018*

- Conducted ecological surveys using species-specific techniques (e.g. Pollard counts of butterflies) to map distribution and biodiversity of local fauna

PUBLICATIONS

Published Papers

Snir, O., Alwaseem, H., Heissel, S., Sharma, A., Valdés-Rodríguez, S., Carroll, T. S., Jiang, C. S., **Razzauti, J.**, & Kronauer, D. J. (2022). The pupal moulting fluid has evolved social functions in ants. *Nature*, 612, 488–494. doi:10.1038/s41586-022-05480-9

Preprints

Goldman, O. V., DeFoe, A. E., Qi, Y., Jiao, Y., Weng, S.-C., Houri-Zeevi, L., Lakhiani, P., Morita, T., **Razzauti, J.**, ... Vosshall, L. B., & Shai, N. (2025). Mosquito Cell Atlas: A single-nucleus transcriptomic atlas of the adult Aedes aegypti mosquito. *bioRxiv*. doi:10.1101/2025.02.25.639765

In Preparation

Houri-Zeevi, L., Walker, M., **Razzauti, J.**, Sharma, A., Pasolli, H.A., & Vosshall, L.B. (2025, in preparation). Mosquito sex under lock and key: female mating control in Aedes aegypti mosquitoes

Sokoloff P.C., Rupert S.M., McBeth S.R.M., Murray D.A., Irvine M.G., Bimm J., **Razzauti J.**, Drayson O. (2025, in preparation). Further Additions to the "Martian Flora": new vascular plant collections from the Mars Desert Research Station, Utah, U.S.A.

Undergraduate Awards

Biomedical Sciences Honours Stream Prize, University of Dundee *2021*

Waymouth Reid Prize *2021*
Neurosciences Honours Prize, University of Dundee *2021*
Biomedical Sciences Stream Prize - Level 3, University of Dundee *2020*
Chemers Neustein Summer Undergraduate Fellowship, The Rockefeller University *2020*
2 Armistead Bursaries *2018, 2020*
Jonathan Glover Core Curriculum Award for Academic Excellence *2018*
Ede and Ravenscroft Prize *2018*
Level 1 Core Curriculum Prize, University of Dundee *2018*

Academic Distinctions

Member of The Dean's List, School of Life Sciences, University of Dundee *2018-2021*

Other Prizes

Oscar Livornesi, Italian Naval Academy, Livorno, Italy *09/2023*

PRESENTATIONS AND ORGANIZED EVENTS

Invited Talks

"To Bite or Not To Bite: Understanding Repellency through Mosquito Tracking"
The Price Center Dataclub *11/2024*

"Breaking the Unbreakable: Quantifying Mosquito Foraging and Repellency"
Mosquito Neuroethology Satellite Meeting, Berlin *07/2024*

"Tracking Mosquitoes with Machine Learning"
The Price Center Workshop on Tracking and Analysis of Social Behaviors *05/2024*

"A Short Adventure in the Mosquito Brain"
Museo di Storia Naturale del Mediterraneo, Livorno, Italy *09/2023*

"Imaging Molting Fluid Secretion in Ant Pupae"
Brainiac Breakdown, Fordham University *12/2022*

Poster Presentations

"Tracking Freely-Flying Mosquitoes using Transformers"
The Short Course on ML for Automated Quantification of Behavior, Jackson Laboratory *10/2024*

"When Predation Becomes Escape: Quantifying Behavioral Effects of Mosquito Repellents"
International Congress of Neuroethology, Berlin *07/2024*

"Quantifying Mosquito Foraging to Understand Repellency"
HHMI's Janelia Research Campus, Bridging Diverse Perspectives on the Mechanistic Basis of Foraging *02/2024*

"The Mosquito HOSTel: a Modular Behavioral Chamber to Study Repellency"
European Symposium for Insect Taste and Olfaction, Sardinia, Italy *09/2023*

"Optogenetic Dissection of Descending Behavioural Control in Zebrafish Larvae"
AMGEN Symposium 2019, University of Cambridge *09/2019*

Scientific Events Organized

Tri-State Mosquito Neurobiology Symposium
The Rockefeller University, Princeton University, Columbia University *05/2024*

SCIENTIFIC COURSES AND ADVANCED TRAINING

Machine Learning for Automated Quantification of Behavior

Jackson Laboratory, Maine *10/2024*

Communicating Science, BIF Seminar
Banbury Center, Cold Spring Harbor Laboratory *04/2024*

Imaging Structure & Function in the Nervous System
Cold Spring Harbor Laboratory *07/2023-08/2023*

Neuromatch Academy
Online Intensive Course *07/2023*

Modern Approaches to Behavioral Analysis
CAJAL Neurokit course, taught by Dr. Alexander Mathis and Dr. Danbee Kim *11/2022*

Scientific Presentation Master Class
Memorial Sloan Kettering Center, taught by Melissa Marshall *02/2020-06/2020*

Introduction to Data Analysis and Advanced Data Analysis
LMU Biocenter, Munich; taught by Dr. Nicholas A. Del Grosso *08/2019*

SKILLS AND CERTIFICATIONS

Programming Languages: Python 3.x, R, Git, Unix

Coding Achievements

Third Place, Nucleate BioHackathon, New York *11/2023*

Language Proficiency

Italian: Native Language

English: Advanced (C1) - IELTS Level 8 *2017*

Additional Certifications

PADI Open Water Diver License *07/2022*

CURRENT PROFESSIONAL AFFILIATIONS

The Explorer Club

Member *2025- Ongoing*

PAST PROFESSIONAL AFFILIATIONS

Oxford University Press (OUP)

OUP Bioscience Student Panel member *2020-2021*

The Physiological Society

Member *2018-2021*

The Genetics Society

Member *2020-2021*

REFERENCES

Dr. Leslie Vosshall PhD Advisor
Robin Chemers Neustein Professor
Laboratory of Neurogenetics and Behavior
The Rockefeller University
leslie@rockefeller.edu

Dr. Herwig Baier Undergraduate Mentor
Director
Max Planck Institute for Biological Intelligence
herwig.baier@bi.mpg.de

Prof. Jeremy Lambert Undergraduate Mentor
Professor of Neuropharmacology
University of Dundee
j.j.lambert@dundee.ac.uk