

Federico M. Barabas

POSTDOCTORAL RESEARCHER

Stockholm, Sweden

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Profile

- Wrote an open-source analysis tool that enabled automated and unbiased quantification of structures in biological images. It allowed collaborators to discover new mechanisms in the degeneration of neurons.
- Developed a modular instrument control software and GUI for optical microscopy. Currently in use in 5 experiments in 2 different laboratories by an interdisciplinary group of users.

Skills

Programming Python (Numpy, matplotlib, pandas, PyQt, device control libraries, multiprocessing), Linux, LaTeX, Git.
Optics Microscopy system design and construction. Fluorescence bioimaging beyond the diffraction limit.
Statistics Probability distributions, parameter estimation, experiment design and hypothesis testing.

Experience

Advanced Optical Bio-Imaging Lab, SciLifeLab

Stockholm, Sweden

POSTDOC RESEARCHER

2017 - PRESENT

- Developing new methods for pushing the resolution limits of fluorescence microscopy.

Applied NanoPhysics Group, Bionanosciences Research Center

Buenos Aires, Argentina

PHD CANDIDATE

2012 - 2017

- Designed and built a localization fluorescence microscope, capable of acquiring images of nanometric resolution.
 - Software paper: <https://doi.org/10.1063/1.4972392>
 - Code repository: <https://github.com/fedebarabas/tormenta>.
- Developed an image analysis tool to automatically quantify a periodical structure currently under study within the community.
 - Work paper: <https://doi.org/10.1038/s41598-017-16280-x>
 - Code repository: <https://github.com/fedebarabas/ringfinder>.

Dept. of NanoBiophotonics, Max Planck Institute for Biophysical Chemistry

Göttingen, Germany

PHD CANDIDATE INTERNSHIP

2013

- Trained in fluorescence super-resolution microscopy at Nobel prize winner Stefan Hell's laboratory.

Detection Technologies and Astroparticles Institute

Buenos Aires, Argentina

LICENCIATE THESIS

2011 - 2012

- Studied the statistical counting efficiency of muon detectors for the Pierre Auger Observatory.

Education and courses

deeplearning.ai

www.coursera.org

DEEP LEARNING SPECIALIZATION

Feb 2018 - PRESENT

Stanford University

www.coursera.org

MACHINE LEARNING COURSE

Nov 2017 - Jan 2018

Buenos Aires University

Buenos Aires, Argentina

PHD IN PHYSICAL SCIENCES

2012 - 2017

Buenos Aires University

Buenos Aires, Argentina

LICENCIATURA IN PHYSICAL SCIENCES

2006 - 2012

Teaching

Physics Dept., Faculty of Exact and Natural Sciences, Buenos Aires University

Buenos Aires, Argentina

GRADUATED ADVANCED LABORATORY TEACHING ASSISTANT

2015 - 2017

Management

Optical Society of America Student Chapter

Buenos Aires University

PRESIDENT

2015 - 2017

- Launched a new activity where young researchers presented their work to spark collaborations and inspire students into optics.
- Recruitment activities organization: during my term, the number of members doubled.
- Chapter resources administration and writing of grant applications.

Optics and Photophysics Student National Meeting

Buenos Aires, Argentina

ORGANIZING COMMITTEE MEMBER

2013

- Organized the meeting schedule.
- Designed the book of presentation abstracts.
- Logistic support during the National Meeting talks.

Languages and interests

Languages Spanish (native), English (fluent), Swedish (basic), Italian (basic).

Interests bike touring, guitar, space and astronomy, reddit, Seinfeld.