Daniel Thédié

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Skills

Programming	Python, R, Java, Matlab, Unix, LaTeX, git
Communication	User training, documentation writing, tutorial design
Microscopy	Fluorescence imaging, super-resolution, image analysis
Languages	French, English, German, Esperanto

Education and Employment

Research Software Engineer — 2025–present
University of Edinburgh, Scotland

- Maintenance and development of the BioDare2 website
  - Java, Typescript, HTML, CSS
  - Angular framework
  - Front- and back-end development
- Development of data management tools for a clinical trial in psychiatry
  - Python, R, R shiny
  - Data management and analysis
  - User interface design

Post-doctoral research associate — 2020–2024
University of Edinburgh, Scotland

- *In-vivo* dynamics of the RecBCD repair complex upon exposure of *E. coli* to antibiotics
  - Single-molecule fluorescence imaging
  - Single-Particle Tracking
  - Automated image acquisition and processing of large datasets
- Development of a Python package (PyBerries) for data analysis in the lab
  - Produce stable, reliable code
  - Distribute package and provide updates to multiple users
- Maintenance and supervision
  - Regular microscope maintenance
  - Training for new users
  - Supervision of Master students

Ph.D. Student, Super-resolution microscopy — 2016–2019
Institute of Structural Biology (IBS), Grenoble, France

Characterisation of photoconvertible fluorescent proteins for advanced single-molecule localisation microscopy

- In-vitro photophysical characterisation of fluorescent proteins
- Quantitative PALM (PhotoActivated Localisation Microscopy)
- Data analysis and simulation (Matlab)
- Regular maintenance and upgrading of a home-built PALM/STORM microscope

Biotechnology engineering student
2013–2016

Ecole Supérieure de Biotechnologie de Strasbourg (ESBS), France

Awarded an Engineering degree in Biotechnology and a Master's degree in structural biology

- Advanced training in varied disciplines including genetic engineering, programming, chemistry, mathematics, statistics

Internships

- **European Molecular Biology Laboratory (EMBL), Grenoble, France (6 months)**
  Characterised the epigenetic regulator of gene expression p300 bound to several of its ligands
- **Institute of Genetics, Molecular and Cellular Biology (IGBMC), Strasbourg, France (2 months)**
  Designed procedures for an automation platform to perform high-throughput pull-down and ATPase activity assays
- **Institute of Genetics, Molecular and Cellular Biology (IGBMC), Strasbourg, France (2 months)**
  Applied bioinformatics tools to the structural study of a eukaryotic protein complex
- **Centogene AG, Rostock, Germany (3.5 months)**
  Improved the genetic testing procedure for two tumor suppressor genes

Bachelor student in biology
2010–2013

Cergy-Pontoise University, France

Ranked first out of 131 students for the degree

- Core training in cellular and molecular biology
- Erasmus year at Copenhagen University, Denmark

Internships

- **Copenhagen University, Denmark (3 months)**
  Studied the influence of a toxin on mammalian cell viability markers
- **Pierre and Marie Curie University, Paris, France (1 month)**
  Studied the influence of glucose concentration on the *in-vitro* production of red blood cells

Software

Python packages

- Ambient downloader - download and management of sleep data from radar devices
- REDCap downloader - download and management of data from the REDCap platform
- PyBerries - analysis of quantitative data from microscopy images

R packages

- svgedit - creating figures with complex layouts in R by using an svg file as a template

- nocturn - processing and visualisation of sleep data. Includes a programmatic interface and a Shiny app.

Teaching

Dealing with Data - PhD induction (0.5 day)   2025
University of Edinburgh

Introduction to data management best practices, open science and the FAIR principles (making data Findable, Accessible, Interoperable and Reusable) for new PhD students.

Data anonymisation workshop (0.5 day)   2025
Edinburgh Circadian Mental Health Conference

Introduction to data anonymisation for researchers from different disciplines and career stages.

Workshop on the BACMMAN Fiji plugin (2 days)   2024
Internal lab training

Performing image analysis tasks (segmentation, measures of object properties) based on the participants' own data, troubleshooting

Workshop on git and Gitlab (1 day)   2022
Internal lab training

Basics of using git for code management

Teaching assistant, cell biology practicals (2 weeks)   2018, 2019
Grenoble-Alpes University

- Mammalian cell culture, fluorescence microscopy

- Helped students conceive experimental projects

- Marked oral presentations

Supervision of Masters students

- 2023 – Effects of a DNA-damaging antibiotic on *E. coli* replication forks

- 2022 – Using deep-learning for bacterial cell segmentation

- 2018 – Structural dynamics of a phototransformable fluorescent protein at cryogenic temperature

- 2018 – Benchmarking methods for complex stoichiometry determination by PALM microscopy

Publications

First author

- Spatio-temporal coordination of the DNA Double-Strand Break repair machinery in *Escherichia coli*
  BioRxiv, 2025 (DOI)

- Characterisation of photoconvertible fluorescent proteins for single-molecule localisation microscopy
  PhD thesis, 2019 (DOI)

- Photoswitching of green mEos2 by intense 561 nm light perturbs efficient green-to-red photoconversion in localization microscopy
  Journal of Physical Chemistry Letters, 2017 (DOI)

Co-authorship

- In vivo single-molecule imaging of RecB reveals efficient repair of DNA damage in *Escherichia coli*
  Nucleic Acids Research, 2025 (DOI)

- Ambient and passive collection of sleep and circadian data in bipolar disorder to understand symptom trajectories and clinical outcomes (AMBIENT-BD): Study protocol
  Wellcome Open Research, 2025 (DOI)

- The crucial role of bioimage analysts in scientific research and publication
  Journal of Cell Science, 2024 (DOI)

- Photophysical studies at cryogenic temperature reveal a novel photoswitching mechanism of rsEGFP2
  Journal of the American Chemical Society, 2023 (DOI)

- mEos4b Photoconversion Efficiency Depends on Laser Illumination Conditions Used in PALM
  Journal of Physical Chemistry Letters, 2022 (DOI)

- Mechanistic investigations of green mEos4b reveal a dynamic long-lived dark state
  Journal of the American Chemical Society, 2020 (DOI)

- Mechanistic investigation of mEos4b reveals a strategy to reduce track interruptions in sptPALM
  Nature Methods, 2019 (DOI)

Conferences and Workshops

Diversity in the circadian, neuroendocrine and neurobehavioural effects of light in humans - Symposium   2025
Online
Invited oral presentation

RSEcon (website)   2025
Coventry, UK
Participant

MetaScience (website)   2025
London, UK
Oral presentation

Edinburgh Circadian Mental Health (website)   2025
Edinburgh, UK
Data anonymisation workshop

Images to Knowledge (website)   2024

Milan, Italy
Poster

Single-Molecule Bacteriology III (website)   2024
De Vere Cotswolds Water Park, UK
Oral presentation

Efficiently Communicating BioImage Analysis Workshop (website)   2024
Buxted, UK
Competitively selected to participate
Oral presentation

Crick BioImage Analysis Symposium (website)   2023
London, UK
Poster

Single-Molecule Bacteriology II (flyer)   2022
Didcot, UK
Poster

EMBO symposium
New Approaches and Concepts in Microbiology (website)   2021
Online
Poster

Picoquant workshop (website)   2019
Berlin, Germany
Poster

Quantitative BioImaging (website)   2019
Rennes, France
Poster

Winter school on fluorescent markers for microscopy (website)   2018
Les Houches, France
Participant

Quantitative BioImaging (conference booklet)   2018
Göttingen, Germany
Oral Presentation

Single Molecule Localisation Microscopy Symposium (website)   2017
London, UK
Poster

Outreach activities

Edinburgh Science Festival   2023
Engaging with families on the topics of microscopy, bacteria and antimicrobial resistance

Member of a young scientists committee   2018–2019

Grenoble, France

Organising research talks from external speakers

- Find speakers and invite them to give a talk about their research
- Help organise their travel and accommodation
- Welcome them to the institute, introduce their talk and schedule one-to-one discussions with group leaders

PhD work presentation in a high-school 2018–2019

Grenoble, France

Presenting fluorescence microscopy to 17-18 year-olds and answering their questions about scientific research