

Arianna Scaravelli

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EXPERIENCE

PhD Student in Applied Mathematics | University of Paris-Saclay – University of Bologna |

Nov. 2023 – Present

Research focused on using mathematical and computational methods tools to describe real biomedical problems.

- Pursuing a **joint PhD** (Italy-France) between the University of Bologna and Université de Paris-Saclay, with two 6-month research stays in Paris, collaborating with researchers from both institutions to combine mathematical, qualitative and numerical analysis.
- Developed and analysed **mathematical models** for Alzheimer's disease, including **reaction-diffusion-advection PDE** systems (Keller–Segel type) and **network-based** models, using the Budapest Reference Connectome v3.0 as a network representation of the brain, to investigate and predict the spatial and network spreading of pathological proteins.
- Designed and implemented numerical simulations in **MATLAB** using the method of lines, finite differences, IMEX time integration and upwind schemes, and compared simulation results with **clinical data** from 250 patients to calibrate and validate the models.
- Worked in an **international** and **interdisciplinary** environment, interacting with researchers from different scientific backgrounds and using foreign languages in a professional setting. Presented research findings at internal university events.

Tutor in Mathematical Analysis | University of Bologna | Oct. 2021 – Sep. 2022

- Tutored undergraduate students in Mathematical Analysis, providing theoretical explanations and practical exercises.
- Adapted explanations to different levels of understanding.

EDUCATION

MSc in Applied and General Mathematics | University of Bologna | Dec. 2020 – Mar. 2023

Erasmus Exchange Program | Universidad de Granada (Spain) | Feb. 2022 – Jul. 2022

BSc in Mathematics | University of Bologna | Sep. 2017 – Dec. 2020

ACHIEVEMENTS

Eiffel Excellence Scholarship

Awarded by the French Ministry for Europe and Foreign Affairs.

Scientific Publication

Landi, G., Scaravelli, A., Tesi, M.C., Testa, C., **Spreading of pathological proteins through brain networks: a case study for Alzheimer's disease**, *Mathematical Biosciences and Engineering*, 2026, 23(3), 619–635.

SKILLS AND INTERESTS

Skills : Excel, Python, MATLAB, SQL, mathematical modelling, numerical methods.

Languages : Italian (native language), English (advanced), Spanish (advanced), French (basic).

Hobbies : Traveling, Reading, Yoga, Skiing, Sports, Hiking and Socialising.