

PAST RESEARCH

During my studies, I have carried out three research projects that have helped me develop my scientific skills. Below are the details of each project:

1. "Effects of bupivacaine on the regeneration of the female rat external urethral sphincter"
This project was developed at the Faculty of Medicine of the University of Porto under the supervision of António Avelino and involved 10 months of research. The aim of our research was to test the repurpose of a drug commonly used as a local anaesthetic in the regeneration of the external urethral sphincter muscle. My contributions to the project included conducting surgeries for local drug delivery, implementing a urethral lesion model in female rats, independently managing dozens of samples, and executing image acquisition using fluorescence microscopy. I also analyzed and quantified the results and published our findings as an abstract in a peer-reviewed local journal as a poster session.
2. "Effects of the stimulation of serotonin neurons in the dorsal raphe nucleus in mice performing a foraging task" This project was developed at Champalimaud Centre for the Unknown under the supervision of Fanny Cazettes and involved three years of research. The aim of our research was to study the real-time impact of serotonin (5-HT) neurons activation on behavior, physiology, and cognition. My contributions to the project included maintaining and implementing a head-fixed foraging task automated setup, preparing mice for acute electrophysiology and optogenetics experiments, and independently managing a diverse experimental cohort. I also imaged brain slices, quantified infected cells, and co-authored two scientific papers in high-impact peer-reviewed journals.
3. "Neural substrates of procognitive actions mediated by serotonin receptors 5-HT₄ and 5-HT₇" This project was developed at Institut Català de Nanociència i Nanotecnologia under the supervision of Victoria Puig and involved six months of research. The aim of our research was to study how different serotonin receptor systems (5-HT) differentially modulated different brain regions. My contributions to the project included designing a multiplex staining protocol, preprocessing and processing neural electrophysiology data, and studying the modulation of prefrontal-hippocampal neural dynamics by 5-HT₇.