Internship Vacancy

Title of the project	Investigation of the dopaminergic signaling pathway using instant fluorescence lifetime photometry
Contact person	Bart Lodder, MSc
	Graduate student at the Sabatini Lab in Harvard medical school
Daily supervisor	Bart Lodder, MSc
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Topic	Investigation of the dopaminergic signaling pathway using instant fluorescence lifetime photometry
Techniques	General systems neuroscience mouse techniques (behavior, cardiac perfusion, slicing, fluorescence microscopy), fluorescence lifetime photometry, fiber photometry and depending on the interest of the student, building optical set-ups, electrical engineering, 2P fluorescence lifetime microscopy and programming in MATLAB.
Time period	6-10 months
Short description of the proposed internship	Downstream dopamine signalling plays an important role in the reinforcement of behavior, choice, reward and punishment. In addition, it is known to be dysregulated in various neurological disorders and diseases, such as addiction, bipolar disorder and Parkinson's disease. Recent technological advances have made it possible to directly measure and modulate dopamine levels, it's downstream targets and other modulators and investigate correlation and causation of these components in behaving model organisms, such as mice. However, these technologies are limited in how many processes they can investigate at the same time and are thus limited in their applicability. In addition, they are only able to measure relative changes in dopamine and other important neurotransmitters, making it hard to compare different regions of the brain as well as different conditions. To address this, our lab has developed an exciting new type of brain scanner termed instant fluorescence lifetime photometry. We predict that this technique will allow us to look at 4 or more molecular processes at the same time and absolute concentrations/activity of these components, allowing us to gain a broader understanding of the underlying components (such as dopamine, acetylcholine, glutamate and calcium levels) governing dopamine signalling and their importance in behavior. We are looking for a master student excited to join our lab for an 8 to 10-month internship starting around November (although there is flexibility here), who would like to work with new cutting-edge technology to investigate important biological questions in the field (No optical/computational engineering background is required). The student preferably has some experience working with mice, neuroscience and is excited to work with new cutting-edge technologies to understand the role of dopamine signalling in learning. Techniques that can be learned during this internship are: general systems neuroscience mouse techniques (behavior, cardiac perfusion, slicing, fluorescence microscopy), fluorescence lifetime photometry, fiber photometry and depending on the interest of the student, building optical set-ups, electrical engineering, 2P fluorescence lifetime microscopy and programming in MATLAB. If you have any questions about the project/the lab feel free to send me an email at the email address listed above. If you're interested in the position, please do not hesitate to send me your CV and a short motivation (2-3 paragraphs are enough) why you'd like to join. Thanks, Bart Lodder Graduate student in the Sabatini lab at Harvard Medical School

*Individual Travel Grant available (c.mooren@science.ru.nl ; https://www.ru.nl/radboudinternational/english/)