“Massively Parallel, High-Throughput Engineering of Optogenetic Biosensors for Neuronal Signaling”

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Abstract: Genetically encoded sensors, combined with in vivo microscopy and fiber photometry, have revolutionized the access to and dissection of neuronal circuits. We developed a novel high-throughput screening platform that significantly accelerates the engineering of optogenetic sensor proteins. We can now screen extensive variant libraries in short timescales under relevant physiological conditions. Here, I will showcase the rapid development of sensors for dopamine, and opioids, which have been validated in cell cultures, and in vivo. In summary, we can develop sensors fast and at a low cost which enables us to adopt them from the whiteboard to neuroscience applications more quickly.