



Laboratory of the Physics of Biological Systems

We would like a PhD student to join us to study two questions:

Project 1 is in systems neuroscience: What underlies individuality? After excluding genetic differences, large variability in animal behavior remains. We want to understand what the neural source of this individual-to-individual diversity is by studying brain activity and behavior.

Project 2 is at the intersection of neuroscience and cell biology: In collaboration with a large Swiss company, we want to collect massive amounts of behavioral data of animals modeling different human diseases and exposed to a large library of chemicals. Can you read out the health status of animals from their behavior? Can you dissect behavioral data in health-relevant categories?

All experiments will be performed with the nematode *C. elegans*, which is currently the only tractable model for these questions.

Your research would involve:

- 1) experiments, using and developing further a 3D-printed high-throughput imaging system that we have developed and recording animal behavior, and
- 2) computation, developing novel machine learning methods to extract meaning from your data.

Please reach out if you have any questions: Prof. Sahand Rahi (sahand.rahi@epfl.ch)