

Post-Doctoral Researcher

Closed-Loop Neurostimulation – a joint position with the Fenno Lab and the Paydarfar Lab

Austin, TX · In-person

This is a unique opportunity to work at the interface of computational modeling and translational bioengineering, co-mentored across two labs pioneering complementary technologies for next generation of neurostimulation therapies.

About the Fenno Lab

The Fenno Lab designs first-in-class molecules, viruses, and neurostimulation technologies to understand and treat brain disease. The Lab's inventions are used widely in academia, link human and pre-clinical research, and are now moving to clinical application.

About the Paydarfar Lab

The Paydarfar Lab focuses on mathematical models, machine learning, physiological sensors, and electroceuticals: closed-loop approaches to neuromodulation.

About the Role

In this role, you will lead experimental work optimizing electroceutical stimulation waveforms – reducing output energy and/or increasing circuit specificity – by validating computational models against real biological responses, with applications spanning both the central and peripheral nervous systems.

In this role, you will:

- Collaborate with our team of engineers and biologists to guide the generation of future closed-loop neurostimulation assays.
- Explore the mechanisms behind complex neuronal pathways, translating that understanding into creative neural recording and behavioral assays.
- Develop novel screening and validation methods to accelerate the closed-loop system, ensuring a smooth transition from computational models to in vivo implementation.
- Own in vivo validation pipelines in rodents – neural stimulation and recording, surgical workflows, behavioral assays, and ex vivo characterization.
- Optimize delivery vehicles, administration methods, and parameters for robust, cell-type-specific expression, and quantify outcomes in real time via fiber photometry or in vivo imaging.
- Collaborate with engineers to build custom setups for recording nerve activation via force transducers, capnography, and optical or electronic methods.
- Work closely with computational theorists and engineers to define project goals and solve problems.
- Recruit and mentor research associate(s) as needed to expand efforts.

Required Qualifications

- A Ph.D. (or current graduate student status) in Bioengineering, Neuroscience, Biology, Electrical Engineering or a related field, or equivalent experience through research projects.
- Experience with in vivo neuroscience research in rodents using neural stimulation and/or recording techniques.

You will thrive in this role if you:

- Are comfortable using computational approaches for behavioral analysis and understand the fundamental principles involved.
- Think mechanistically: you are motivated by understanding how things work, not just that they work.
- Love developing, implementing, and troubleshooting novel techniques when they're new and there's a lot to figure out.
- Enjoy working with multidisciplinary teams, collaborating and communicating with experts across disciplines.

Nice to have:

- Experience with creative assay development.
- Familiarity with machine learning or data-driven design approaches.
- Familiarity with behavioral analysis and/or computational approaches for tracking behavior via pose estimation.
- Experience with in vivo protein expression and real-time calcium imaging.
- Experience with ex vivo methods such as activity-based labeling or histology.
- Knowledge of and experience in systems neuroscience.

Please apply if you're excited about this role even if you don't meet every qualification. The most important thing is a strong interest in what we're doing and a desire to learn while contributing.

How to Apply

Please visit fennolab.org/recruiting and submit your CV along with contact information for 2–3 references.