Stanford Postdoctoral Position: Micro/Nanofabrication and Electrical Microsystems for Biological Tissue Processing

Location: Tang Lab, Stanford University (https://web.stanford.edu/group/tanglab/)
Duration: Initial appointment of 1–2 years with possibility of extension
Start Date: ASAP

The Tang Lab at Stanford University is seeking a postdoctoral scholar to develop novel microfabricated devices for spatially resolved processing and analysis of biological tissues. Our lab develops engineering technologies that enable precise, reproducible handling and measurement of complex biological samples, with applications in spatial multi-omics, cancer research, and other areas of biology.

One major effort in the lab is the **µDicer platform** (https://www.nature.com/articles/s41378-024-00756-8, https://onlinelibrary.wiley.com/doi/full/10.1002/smll.202514816), a microdissection technology for processing biological tissues into uniform microscale fragments. We are advancing this platform and developing new microsystems for precise tissue handling and integration with downstream molecular and functional analyses. The postdoctoral scholar will lead the design, fabrication, and experimental development of these technologies, combining micro/nanofabrication, microelectronics, and biological experimentation.

Responsibilities

The postdoctoral scholar will:

- Design, fabricate, and characterize micro/nanofabricated devices, including high-resolution 3D micro/nanostructures.
- Develop novel concepts and microscale systems for electrical manipulation of biological samples.
- Develop scalable electronic addressing and control systems for high-throughput biological sample processing.
- Work closely with other team members to integrate microfabricated devices, electronic control, precision motion, imaging, and spatial tracking into a complete, functional platform.
- Perform hands-on experiments with fixed and live biological tissues, including tissue slicing, microdissection, and processing. Coordinate tissue acquisition with the Stanford Tissue Bank and biological collaborators.
- Explore new engineering approaches through iterative experimentation and troubleshooting, including concepts with uncertain technical feasibility.
- Collaborate with researchers across engineering, biology, genomics, and proteomics to develop and validate integrated workflows.

The position offers substantial intellectual ownership and opportunities to explore new research directions. We particularly welcome candidates who enjoy hands-on experimentation, independent problem-solving, and testing new ideas.

Research Environment

The Tang Lab works at the intersection of microengineering and quantitative biology. We have access to Stanford's micro/nanofabrication facilities and collaborate with researchers in cancer biology, pathology, genomics, and proteomics. The position provides opportunities to develop new engineering technologies and apply them to biological and biomedical research.

Qualifications

Required

- PhD in Electrical Engineering, Mechanical Engineering, Applied Physics, Materials Science, Bioengineering, or a related field. Candidates with an Electrical Engineering or MEMS background are particularly encouraged to apply.

- Strong hands-on experience in micro/nanofabrication, including some combination of two-photon polymerization lithography, photolithography, thin-film deposition, metal deposition, etching, and microdevice fabrication.
- Experience independently designing, fabricating, characterizing, and troubleshooting micro/nanoscale devices.
- Willingness to work hands-on with biological tissues and learn tissue processing techniques.
- Creativity, technical independence, and enthusiasm for exploring new engineering approaches.

Preferred

- Experience with high-resolution 3D micro/nanoprinting, particularly two-photon polymerization using **Nanoscribe or UpNano**.
- Experience with microelectrode fabrication, multilayer interconnects, or MEMS devices.
- Experience with CMOS technology, microelectronics integration, or programmable electronic control.
- Experience with CAD design, numerical simulation, and experimental instrumentation.

How to apply

Interested applicants should email sindy@stanford.edu with the subject line: "Postdoc Application – μDicer Micro/Nanofabrication & Electrical Systems – [Applicant Name]"

1. **CV**, including publication list.
2. **Description of one microfabricated device you personally developed, from design through experimental testing** (maximum one page). Clearly describe the device, your specific contributions, the fabrication steps you personally performed, and how you characterized or validated its performance.
3. **Brief statement of research interests** and why you are interested in this position.

Applications will be reviewed on a rolling basis. Start date is flexible, with an earlier start preferred.