

Stanford Postdoctoral Research Fellow – Automation of Microscale Tissue Dissection System

Location: Prof. [Sindy Tang](#), Stanford University

Duration: 1–2 years

Start Date: ASAP with flexibility

Project Overview

We are seeking a highly motivated and innovative postdoctoral researcher to lead the development of an automated platform for microscale tissue dissection, based on our recently published μ Dicer device (<https://www.nature.com/articles/s41378-024-00756-8>). The μ Dicer enables high-throughput dicing of tissue into microtissues. This position will contribute to NIH-funded projects focused on generating tumor organoids for cancer immunotherapy testing, and enabling spatial proteomics workflows through spatially resolved microtissue dissection. Our goal is to transform the current manual μ Dicer workflow into a fully automated system that integrates tissue handling, precision alignment, force-controlled dicing, and imaging-based spatial mapping of input-output relationships.

Key Responsibilities

- Design and build a benchtop instrument to automate tissue placement, alignment, dicing, and collection.
- Integrate motion control systems (e.g., linear actuators, XY stages) and imaging hardware (e.g., cameras, microscopes).
- Develop control software for coordinated mechanical and imaging operations (Python, LabVIEW, or similar).
- Implement image analysis pipelines for tissue mapping and registration before and after dicing.
- Interface with biologists and clinicians to validate the system using real tissue samples.
- Document progress and contribute to publications.

Required Skills and Qualifications

- PhD in mechanical engineering, bioengineering, robotics, or a related field.
- Hands-on experience in mechatronics, motion control, or robotic systems.
- Proficiency in programming for hardware control (e.g., Python, MATLAB, LabVIEW, C++).
- Experience with 3D CAD design (e.g., SolidWorks or Fusion 360) and prototyping tools.
- Familiarity with microscopy and imaging systems (brightfield, fluorescence, or stereomicroscopy).
- Strong data analysis skills, including image processing (e.g., OpenCV, scikit-image, ImageJ).
- Demonstrated ability to independently develop and troubleshoot complex instrumentation.

Preferred Skills:

- Experience with microfluidics, particularly in systems for cell or tissue manipulation, transport, or sorting.
- Familiarity with soft tissue handling, microtome sectioning, or histological workflows.
- Prior work in biomedical sample prep automation, high-content imaging, or organoid handling.

What We Offer

- A highly interdisciplinary research environment with collaborations across engineering, biology, and medicine.
- Access to state-of-the-art fabrication and imaging facilities.
- Opportunities for publishing, presenting at top-tier conferences, and participating in translational efforts.

Application

For questions or applications (see below), please feel free to reach out to Prof. Sindy Tang (sindy@stanford.edu).

Application: please email in a single PDF including:

- CV with publication list
- A 1/2 to 1-page summary of research accomplishment, why you are interested in this project, how you would approach the problem (we welcome details including figures), and your expected contributions
- Contact information of 3 references
- Links to 2–3 representative publications and a portfolio of relevant projects (e.g., devices, systems, instruments, or tools you've built)