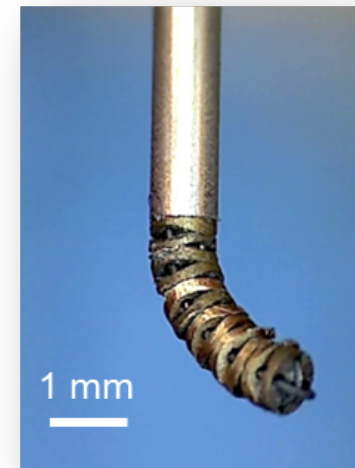
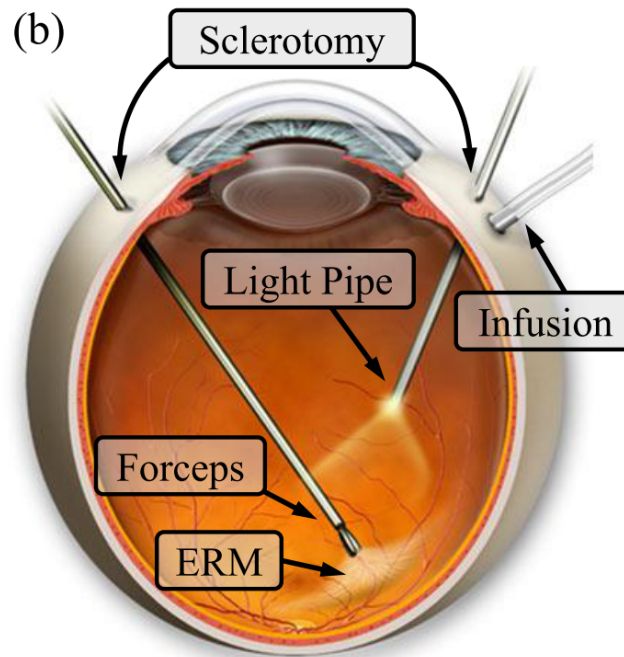
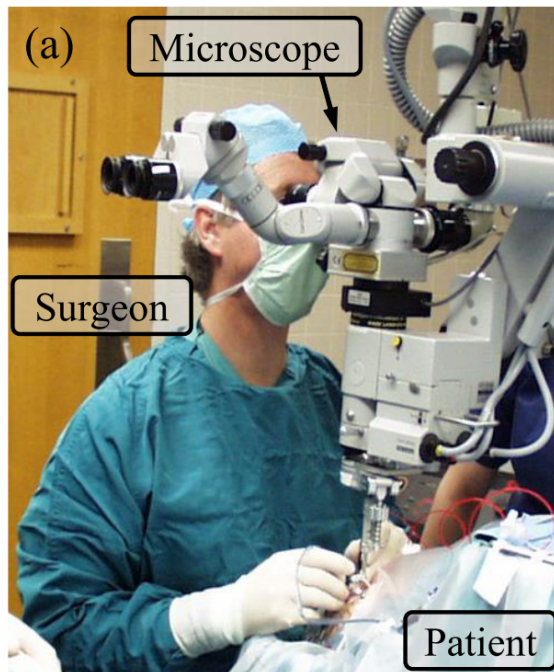


Integrated High-Dexterity Intraocular Micromanipulation

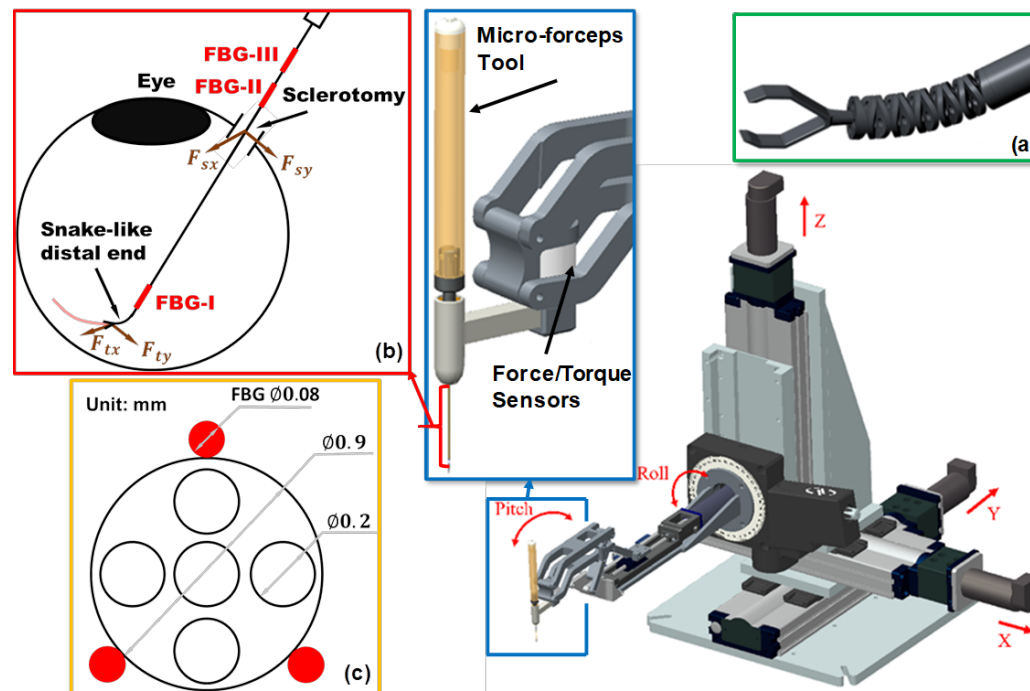
- Vitreoretinal surgery is one of the most challenging microsurgery disciplines. Small intraocular work-volume (less than 5 cc), obstructed access to relevant portions of the surgical target.
- A tendon-driven snake micro-manipulator can provide dexterous intraocular tool motion.



Integrated High-Dexterity Intraocular Micromanipulation

- **What Students Will Do:**

- Analyze the kinematics
- Analyze the force distribution
- Design control algorithm for the integrated robotic system
- Simulate the system to follow desired trajectories
- Integrate the simulation with Phantom Omni (if possible)



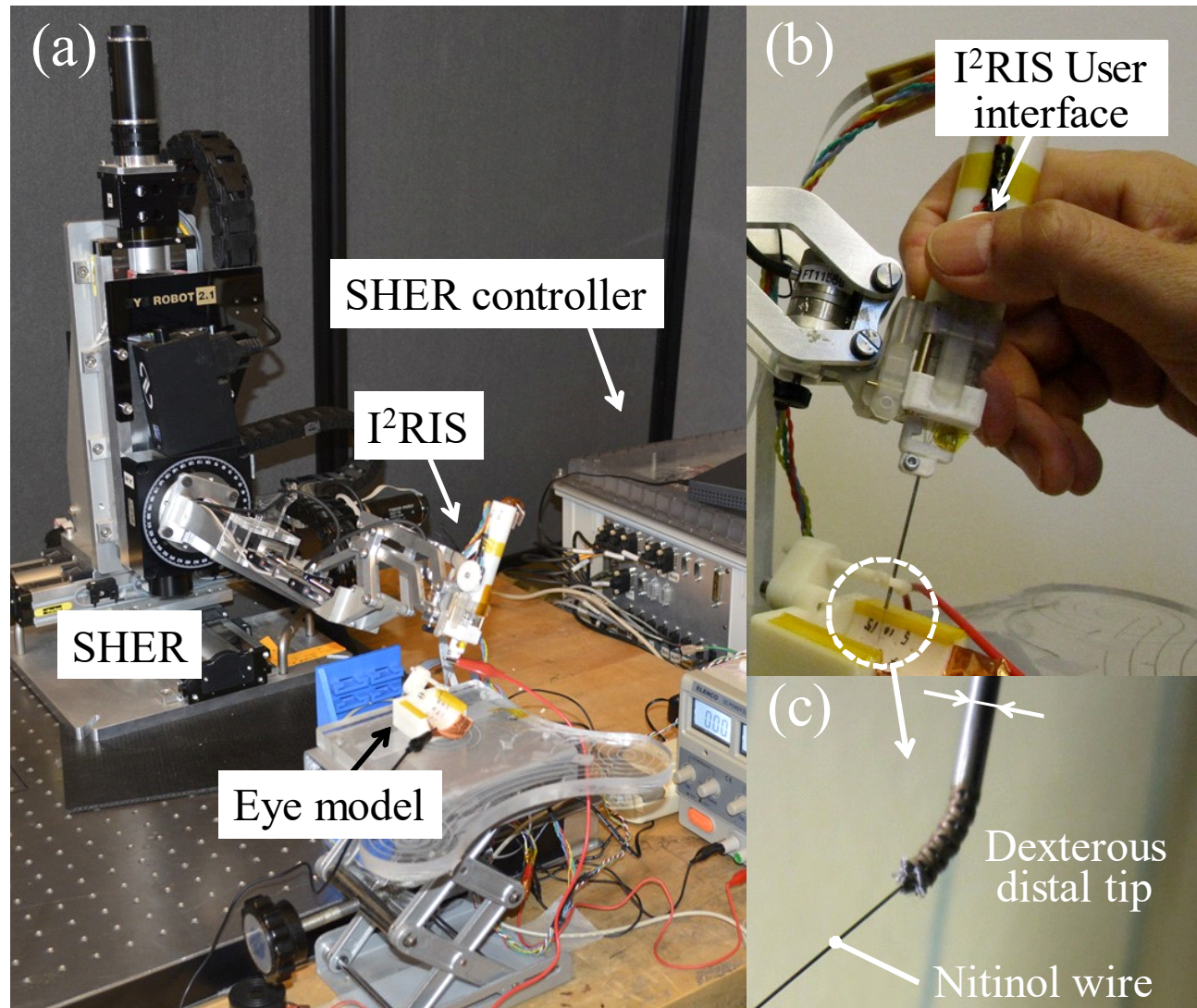
Integrated High-Dexterity Intraocular Micromanipulation

- **Deliverables:**
 - Kinematics model
 - Force distribution model
 - Control algorithms
 - Simulation results
- **Size group:** 1 ~ 2
- **Skills:**
 - Required: Robot Kinematics, Control Theory, Programming (Matlab or C/C++)
 - Desired: ROS/Gazebo or equivalent simulation platform
- **Mentors:** Dr. Gang Li, Dr. Iulian Iordachita



Integrated High-Dexterity Intraocular Micromanipulation

- Current status



Integrated High-Dexterity Intraocular Micromanipulation

- Current status

