WaNPRC Instrumentation Services:

Supporting Biomedical Research since 1964

A Division of Neuroscience Core at the Washington National Primate Research Center

The Instrumentation services division is one of its kind engineering services within the seven national primate centers that provides specialized engineering services to biomedical research. The IS two main sub-teams, the electrical shop and mechanical machine shop have incredible experience in:

- Machining and manufacturing a wide range of mechanical systems and parts using steel, aluminum, plastics, titanium. Including biocompatible implants, example of designs completed at the M-shop:
    - Stainless Steel and Titanium screws, caps, mounts, placeholders.
    - Enclosures.
    - Cages.
    - Prosthetics and electromechanical subsystems for assisted operation.
- 3D printing using plastic and metal-composite materials.
- Designing and assembly high-density, compact formfactor Printed Circuit Boards (PCB) for lab automation, sensors & data acquisition, in-vivo & in-vitro applications (implants).
- Designing optical instruments for optogenetics using LEDs, low & high-power lasers, and fiber optics.
- Software applications development for desktop and embedded systems (firmware).
- Maintenance and repair of legacy equipment.
- Providing post-sale technical support.
- Consultation services.

Notable projects:

- ***Titanium Chambers*****:** precisely-machined custom titanium chamber implants for mounting various tools
- ***Micro Drive*****:** miniature dual micro-drive with guide cannula designed for mounting fiber optic light source and micro electrodes.
- **Multi-axis Sense-Perturb Manipulandum:** measures hand grip force and wrist torque generated about 3-axes and delivers servo-controlled position or force perturbations with several dynamics.
- ***Tether Turntable*****:** a rotating infusion stand that provides fluid and electrical health support and monitoring capabilities.
- ***Quad Channel Laser Modulator (QCUALOR)***: 4 channel, multi-wavelength laser waveform generator for optogenetics, with every two wavelengths multiplexed on the same optical output. Customers
  → 8 units manufactured to date: WaNPRC (3 units), NIH (2 units), Columbia University (2 units).

- ***Wireless Feeder Network System***: wirelessly controlled network of rodent feeders for food and drug administration in NHP.
  → **100 units manufactured to date.**
- ***Neurochip 3***: a small biophysical signal recorder designed for open and closed loop electrical stimulation experiments.
  → **42 units manufactured to date.**