

MetroHealth Medical Center

**RESEARCH DAY 2023
Abstract Submission Form**

Poster Title: SWARM: Sensor Withdrawn from A Remote Module

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The Networked Neuroprosthesis System (NNPS) is a modular, fully implanted neuroprosthesis consisting of a central power module (PM) which provides power to and communicates with remote modules (RMs). Current RMs include one for neural stimulation to activate muscles and another to measure biopotential signals to act as command signals; the platform architecture creates an opportunity for the development of additional modules that could be integrated with the existing system. The Sensor Withdrawn from A Remote Module (SWARM) project aims to create a RM capable of interfacing with an arbitrary outlying sensor, enabling placement of small sensors in distal appendages and on/between organs as well as allowing for the streamlining of development and testing human grade implants. This project is developing a robust host module that can support a variety of analog and digital sensors by providing variable power supplies and multiple communication protocols. Here we discuss the progress made during the first year of the project, including the initial circuit design, housing design for the initial outlying sensor, prototype of an initial auxiliary inertial measurement unit, and upcoming testing to be performed.