

**Faculty Name:**

Elizabeth Olson

**Faculty Email:**

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**Lab:**

Fowler Memorial Lab

**Project Title:**

Fully implantable cochlear implant microphone

**Description:**

The student will work with myself, a Columbia medical student researcher and a Columbia Mechanical Engineering doctoral student. We will be further developing a fully implantable microphone, composed of a piezoelectric polymer. The microphone's basic design has been patented (collaboration between Columbia, Harvard and MIT). It works by being implanted in the middle ear space, in contact with one of the small bones that connect the eardrum to the inner ear. These small bones vibrate in synchrony with incoming sound pressure, and this vibration is detected by the implanted microphone. The summer work by the student will entail developing and testing the microphone and its fixation device on the lab bench and developing and testing a radio-wave transmitter and receiver we will use for testing the microphone in live sheep in later years. This is a hands-on mechanics and electronics project. The student will attend weekly zoom group meetings with the Harvard and MIT groups, and weekly lab meetings with my Columbia group. The student will submit written reports approximately weekly, and a complete report at the end of the summer.

**Location of Research:**

On Site

**# of hrs/week:**

35

**Department/Program:**

Biomedical Engineering

**Eligibility:**

BS, Second Year, BS, Third Year, BS, Fourth Year, MS

**To apply, please contact:**

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