

Surgeon Hand Tremor

Surgeons often take beta-blocking drugs to reduce their hand tremor. We are testing whether or not these drugs really work for this, and whether other common activities, such as exercise or coffee consumption affect tremor levels. Initial results indicate that beta blockers are effective and that coffee increases tremor level. The student will assist with experimental measurement and characterization of tremor in both the time and frequency domains.

Peter Kastl, MD, Tulane Dept Ophthalmology, and David Rice, Ph.D., Dept Biomedical Engineering. Reply to Dr. Rice at Dave.Rice@tulane.edu or 865 5898.

Glaucoma Drainage Device

Glaucoma is a disease process that damages the optic nerve, usually by excessive intraocular pressure. When drugs or surgery fail to correct this condition, a drain device is often implanted. Existing drains can initially lower pressure excessively. This puts the patient at risk for anterior chamber tissue damage. We have designed a regulating drain that should prevent this initial pressure drop. The student who joins this team will assist with improving the manufacturability of the drain, characterizing the drain in vitro, and measuring the functionality of the drain in situ or in vivo.

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Drinking Cup for People with Dysphagia

Dysphagia is difficulty in swallowing, and is experienced by 6 to 15 million Americans. Dysphagia is not a disease, but is a disorder resulting from a number of pathologic processes. Dysphagia can cause malnutrition or aspiration leading to pneumonia, and may lead to dependence on caregivers.

We, with a local company, are prototyping and evaluating a cup to aid drinking. The student will assist in optimizing the cup numerically and monitoring its production on a rapid prototyping system. We will also characterize flow behavior with some model food liquids and study how this behavior relates to fluid delivery and retention in the prototypes. This includes uniformity of fluid delivery to the lips and the potential for sloshing and spills. This will lead to evaluating the utility of the cup with normals and people with dysphagia.

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