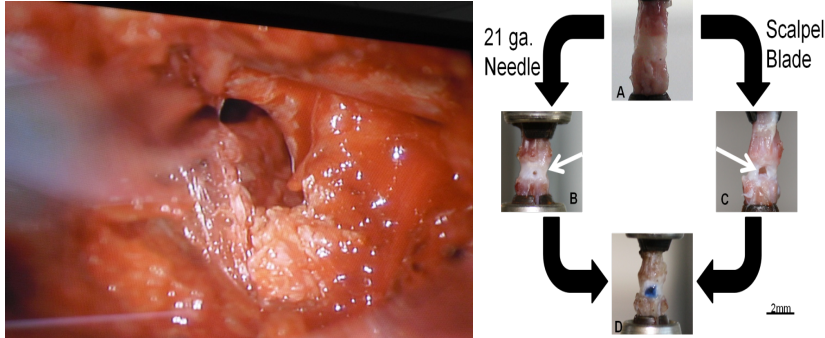


# Delivery of Injectable Patches for Intervertebral Disc Repair

More than 300,000 discectomy surgeries are performed each year in the US to treat herniated discs. Such procedures involve only the removal of herniated disc material, with no attempt to repair the damaged disc. As a result, up to 20% of patients who have this procedure have recurrent herniations, frequently through the same defect in the disc. Effective sealing of such defects would prevent further herniations and significantly slow the process of degenerative disc disease.

The Bonassar Lab (BME/MAE) in collaboration with Dr. Roger Härtl (Chief of Spine Surgery, Weill Cornell Medical) and 3DBio Corp, and Ithaca-based startup company, have developed an injectable patch composed of a collagen gel and the photocrosslinker riboflavin that can seal defects in herniated discs. These injectable patches have been shown to effectively inhibit disc degeneration in rat and sheep models of disc degeneration. Moving this technology to the clinic will require development of devices for controlled delivery of the patch and application of light to the disc to initiate photocrosslinking.

Students who join the team will be tasked with: developing a delivery strategy for photocrosslinkable collagen gels to herniated discs; developing a prototype device, maximizing the use approved, off the shelf components; and testing the prototype on cadaveric spines. Depending on the students' interest and background, additional opportunities may exist to deploy and assess this device during in vivo studies.



This project is well suited for 2-3 students who have a background in biomaterials, instrumentation, and mechanical design, including CAD and machining. Interested students should forward a copy of a resume and unofficial transcript to:

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