Title: Microencapsulation of Tissues and Cells

Team Members:
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Timothy Eng – BWIG Representative
April Zehm – BSAC Representative

Client:
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Problem Statement:
A method of treatment for various diseases incorporates the encapsulation of cells and tissues and the time-released delivery of chemical mediators. Presently, this method encounters a slew of problems, including a lack of biocompatibility, limited immunoprotective properties, and hypoxia. The client desires the development of microcapsules that would permit the successful release of hormones (namely, testosterone and inhibin) by encapsulated cells into animals, while avoiding the aforementioned problems.

Website: http://homepages.cae.wisc.edu/~bme200/microencapsulation_fall05/

Last Week’s Goals:
• Finish microfluidic construction. Will be able to use flow-controllers in engineering labs ($1000 to purchase).
• Start new cell culture early next week for use in experiments.

This Week's Goals:
• Continue work with microfluidic device. Use metal needles rather than glass pipette for channel formation in PDMS.

Summary of Accomplishments:
• Still working on microfluidic device.

Difficulties:
• Challenges encountered in microfluidic construction, including glass fragments after pipet removal and PDMS tearing upon boring sheath flow inlet with needle
Activities:

Team: 1.5 hr – team/advisor meeting (1 hr), team discussion (30 min)

Joe Zechlinski: 0.25 hr – progress report (15 min)

Bryan Baxter: 3 hr – PDMS work (1.5 hr), pipette extraction and microscope work (1.25 hr), communications (15 min)

Tim Eng: 0.75 hr – researching needle sizes for microfluidic device

April Zehm: 1.75 hr – design notebook (15 min), PDMS work (1.5 hr)

Total time this week: 7.25 hours
Cumulative Project time: 70.25 hours

Project Timeline: