

**Title:** Microencapsulation of tissues and cells for treatment of hormone-related diseases.  
(microencapsulation), Project #4

**Client:** Dr. Craig Atwood

**Faculty Advisor:** Professor William Murphy

**Team Members:** Eric Lee (Team Leader)  
Yik Nong Wong (Jacqueline) (Communicator)  
Miguel Benson (Communicator)  
John Harrison (BSAC)  
Albert Kwansa (BWIG)

**Dates:** 2/24/07~3/1/07, Week 6

**Project Design Statement:** To investigate the effects of thickness, UV radiation exposure, and RGD adhesion molecules on the viability and testosterone production of human prostate cancer cells embedded within polyethylene glycol diacrylate hydrogel. The overall goal of this project is to design an encapsulation system that offers efficient immunoprotection and effective diffusion of oxygen, nutrients, hormones, and metabolic wastes. Conceptually, the stated encapsulation system, along with embedded human prostate cancer cells, will enable the restoration of un-regulated testosterone levels commonly observed in elders, and retard the symptoms of aging.

**Restatement of Previous Team Goals:**

1. Team meeting to compile questions for Professor Tim Stiles of Medical physics department on using ultrasound as a measuring method for hydrogel thickness
2. Contact client for training and an update on the cell line
3. Mock presentation of K~12 activity

**Summary of Team Accomplishments:**

1. Compile question and answers for the meeting with Professor Tim Stiles of the Medical physics department
  - a. Bulk modulus of hydrogel
  - b. Density differences between water and hydrogel
  - c. Flat/parallel surface for ultrasound measurement

**Current Individual Goals:**

- Eric Lee:  
Practice K~12 outreach presentation. Contact Amy to obtain HPLC data on our PEGdA product. Work on Mid-semester presentation slides. Carry out hydrogel swelling ratio experiments.
- Jacqueline Wong:  
Practice K~12 outreach presentation. Get trained to maintain cell lines on Monday. Contact Professor Wally Block to obtain information on

possible contrasting agents for using ultrasound method to measure hydrogel thickness. Work on Mid-semester presentation slides

- Miguel Benson:  
Practice K~12 outreach presentation. Contact Madison East high school to confirm Wednesday presentation date. Work on Mid-semester presentation slides.
- John Harrison:  
Practice K~12 outreach presentation. Get trained to maintain cell liens on Monday. Work on Mid-semester presentation slides. Carry out hydrogel swelling ratio experiments.
- Albert Kwansa:  
Practice K~12 outreach presentation. Obtain a Team picture and work on the project website. Find more information on the UV light bulbs to be used in the client's lab. Work on Mid-semester presentation slides. Carry out hydrogel swelling ratio experiments.

**Summary of Team Goals:**

1. Get HPLC data of our PEGdA product
2. Carry out hydrogel swelling ratio
3. Get trained and an update on the cell line
4. Obtain new bulb for the UV light
5. K~12 outreach activity