

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

**Client:** Dr. Craig Atwood (GRECC 11G, VA Hospital)

**Faculty Advisor:** Professor William Murphy (2154 ECB)

**Team** Albert Kwansa, Team Leader

**Members:** John Harrison, Team Communicator

Yik Ning Wong (Jacqueline), Biomedical Student Advisory Committee (BSAC) Representative

Eric Lee, Biomedical Web Implementation Group (BWIG) Representative

**Project Webpage:** [http://homepages.cae.wisc.edu/~bme200/microencapsulation\\_f06](http://homepages.cae.wisc.edu/~bme200/microencapsulation_f06).

**Dates:** 11/6/06 – 11/12/06, Week 10 (Progress Report #9)

**Project Design Statement:** To design polyethylene glycol diacrylate (PEG-dA) hydrogels for the encapsulation of Murine Leydig Tumor Cells in an effort to increase cell viability and testosterone secretion. The PEGDA hydrogels must provide immunoprotection and allow for the effective diffusion of oxygen, nutrients, hormones, and metabolic wastes. The overall goal is to restore the testosterone level of castrated mice via injection or implantation of the PEG-dA encapsulated cells.

**Restatement of Previous Team Goals:**

1. After receiving PEG, obtain all other materials necessary for diacrylation (triethylamine, acryloyl chloride, ethyl ether), and perform diacrylation.
2. Obtain I2959 photoinitiator and 48-well microplates.

**Summary of Team Accomplishments:**

1. On Sat, 11/11/06 (Team meeting #13), performed some preliminary experiments of water sandwiched in between two microscope slides with paper spacers. The intent of these experiments was to observe how the liquid formed after being flattened (i.e., shape) and if the liquid would reach the paper spacers.
2. Order in progress by our client for PEG MW 12000.

**Current Individual Goals:**

- Albert Kwansa [Team Leader]:  
Work on 9<sup>th</sup> progress report due Sunday, 11/12/06 by 5pm.  
To receive another sample of 25µm thick Tefzel film from CS Hyde Company (data sheet states that their Tefzel is resistant to UV effects, which would allow us to pursue UV sterilization).
- John Harrison [Team Communicator]:  
Contact client about possible ordering of 48-well microplates and Irgacure 2959 photoinitiator (Ciba).
- Yik Ning Wong (Jacqueline) [BSAC Representative]:  
Look into 48-well microplates and Irgacure 2959 photoinitiator (Ciba) for purchase (i.e., for product numbers and other product information).
- Eric Lee [BWIG Representative]:  
Contact Amy and other personnel from Prof. Kao's Lab about diacrylation procedure.

**Summary of Current Team Goals:**

1. Meet with Amy (Grad Student in Prof. Kao’s Lab) possibly on Mon, 11/13/06 around 12 noon about assistance with PEG diacrylation.
2. Obtain all supplies needed for PEG diacrylation.
3. Plan to perform diacrylation by Fri, 11/17/06.

**Fall Semester Schedule:**

Week	Day	Date	Activities	Goals (From BME Design Schedule)
1	M	9/4	<b>Labor Day</b>	
	T	9/5		
	W	9/6		
	R	9/7		
	F	9/8	Take team photo. General research of project topic. Review past reports and presentations.	[Form teams. Select project. Contact client. E-mail team roles to advisor.]
2	M	9/11	Team meeting-1 on Mon, 9/11 at 11 am in ECB. (Develop list of questions for first client meeting)	[Literature search. Meet w/Client.]
	T	9/12		
	W	9/13		
	R	9/14		
	F	9/15	Client meeting-1 on Fri, 9/15 at 12:00 pm in GRECC, VA Hospital.	
3	M	9/18	Advisor meeting-1 on Mon, 9/18 at 4 pm near 2154 ECB.	[Develop understanding of project. Develop PDS.]
	T	9/19		
	W	9/20		
	R	9/21	Team meeting-2 on Thurs, 9/21 at 7:00 pm in ECB.	
	F	9/22		
4	M	9/25	Team meeting-3 on Mon, 9/25 at 2:30 pm in ECB. Advisor meeting-2 on Mon, 9/25 at 3:30 pm near 2154 ECB.	[Brainstorm]
	T	9/26	Team meeting-4 on Tues, 9/26 at 8:15 pm in ECB.	
	W	9/27		
	R	9/28		
	F	9/29	Advisor meeting-3 on Fri, 9/29 at 1:00 pm near 2154 ECB. (Evaluate current direction)	
5	M	10/2	Team meeting-5 on Mon, 10/2 at 2:30 pm in ECB. Advisor meeting-4 on Mon, 10/2 at 3:30 pm near 2154 ECB.	[Design Alternatives]
	T	10/3		
	W	10/4		
	R	10/5		
	F	10/6	Team meeting-6 on Sun, 10/8 at 7:00 pm in ECB.	
6	M	10/9	Advisor meeting-5 on Mon, 10/9 at 3:30 pm near 2154 ECB.	[Work on Mid-Semester Presentation & Report]
	T	10/10		
	W	10/11		
	R	10/12		
	F	10/13	Lecture: [Oral Presentation Guidelines, Peer Review of Report Drafts]	

BME 400-BME Capstone Design

Date: 11/12/06

7	M	10/16	Team meeting-7 on Mon, 10/16 at 2:30 pm in ECB. Advisor meeting-6 on Mon, 10/16 at 3:30 pm near 2154 ECB.	Work on Mid-Semester Presentation
	T	10/17		
	W	10/18		
	R	10/19		
	F	10/20	Team meeting-8 on Fri, 10/20 at 12:00 pm in ECB.	
8	M	10/23	Team meeting-9 on Mon, 10/23 at 3:20 pm in ECB. Advisor meeting-7 on Mon, 10/23 at 3:30 pm near 2154 ECB.	[Decide on Final Design]
	T	10/24	Team presentation development in CAE at 5:30 pm.	
	W	10/25	Team presentation development in ECB at 5:45 pm.	
	R	10/26	Team presentation practice at 9:30 pm in room 1047 ECB (reserved through Student Leadership Center).	
	F	10/27	<b>[MID-SEMESTER PRESENTATIONS] *NEW (BME 400 Only)</b> <b>[Design Notebooks Due to Advisor] **NEW</b>	
9	M	10/30	Team meeting-10 on Mon, 10/30 at 2:30 pm in ECB. Advisor meeting-8 on Mon, 10/30 at 3:30 pm near 2154 ECB.	[Work on Design]
	T	10/31		
	W	11/1		
	R	11/2		
	F	11/3	Team meeting-11 on Fri, 11/3 at 12:00 pm in ECB.	
10	M	11/6	Team meeting-12 on Mon, 11/6 at 2:30 pm in ECB. Advisor meeting-9 on Mon, 11/6 at 3:30 pm near 2154 ECB.	[Work on Design]
	T	11/7		
	W	11/8		
	R	11/9		
	F	11/10	Lecture: [Machine Shop required lecture] Team meeting-13 on Sat, 11/11 at 4:30 pm in ECB.	
11	M	11/13	Advisor meeting-10 on Mon, 11/13 at 3:30 pm near 2154 ECB.	[Work on Design]
	T	11/14		
	W	11/15		
	R	11/16		
	F	11/17		
12	M	11/20		[Work on Design]
	T	11/21		
	W	11/22		
	R	11/23	<b>THANKSGIVING</b>	
	F	11/24		
13	M	11/27		[Work on Design]
	T	11/28		
	W	11/29		
	R	11/30		
	F	12/1		
14	M	12/4		[Work on Presentation]
	T	12/5		
	W	12/6		
	R	12/7		
	F	12/8	<b>[FINAL POSTER PRESENTATIONS]</b>	
15	M	12/11		[Final Meeting w/Advisor]
	T	12/12		
	W	12/13	<b>[Final Report &amp; Design Notebooks Due to Advisor]</b>	
	R	12/14		
	F	12/15		