

Progress Report 1

Date: 2 September to 8 September, 2005

Project: Bioactive Interference Screw

Client: William Murphy, Ph. D

Members: Katherine Davis (BSAC)
Aaron Huser (BWIG)
Cole Kreofsky (BSAC)
Dana Nadler (Communicator)
Joe Poblocki (Team Leader)

Problem Statement:

Currently, during an ACL reconstructive surgery, titanium or partially degradable interference screws are used to secure the graft within the femur and tibia. These screws or parts of these screws will remain in the patient's knee for the rest of his or her life and can cause problems. The current screws are also not conducive for tissue re-growth. It is, therefore, our client's desire to develop a biphasic interference screw for ACL reconstruction that will promote and foster the growth of surrounding bone tissue, as well as limit any potential problems a patient may incur due to these screws in his or her body.

Summary of Accomplishments:

We have recapped what our immediate and long term goals are for this project. We also introduced the problem to our new member, Kate. Roles were further assigned for the semester, along with duties hoped to be accomplished in the next couple weeks.

Hours:

Group:	Met to discuss aspects of project that needed to be accomplished:	0.5 hours
	Contacted and met with client, Prof. Murphy	0.5 hours
	Contacted and gained information RE: Rapid Prototyping	0.5 hours
	Went to hardware store to search for Alternative, temporary mold	1.0 hour
	TOTAL:	2.5 hours

Goals for 9/8/05-9/15/05:

- Find temporary mold to use until rapid prototyping is finished
- Look into casting possibilities once mold is created
- Discuss with ME shop what needs to be done to get mold
- Order appropriate plastic to mimic PLGA properties for early testing

Problems:

- making a reproducible mold before RP process

Task	September					October				November				December	
	2	9	16	23	30	7	14	21	28	4	11	18	25	2	9
Continued Background Research	█	█	█				█							█	
Mold Development							█	█						█	
-Computer Model		█	█				█							█	
-Bullet Mold Screw Synthesis		█	█	█	█	█	█							█	
-Rapid Prototyping				█	█	█	█							█	
-Metal Casting					█	█	█							█	
-Modifications and Refinement							█		█	█	█	█	█	█	
Materials of Screw							█							█	
-Alginate Mineralization	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
-Polymer Ratio	█	█	█	█	█		█							█	
Testing Materials & Prototype							█							█	
-In Vitro Degradation				█	█	█	█	█	█	█	█	█	█	█	
-Mineralized Alginate Properties					█	█	█	█	█	█	█	█	█	█	
-Screw Mechanical Properties							█	█	█	█				█	
-Interface Dynamics							█		█	█	█			█	
Team Building	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Meetings							█							█	
-Client (Formal or Informal)	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
-Advisor	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Deliverables							█							█	
-Progress Reports	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
-Midterm Presentation							█	█						█	
-Final Poster Presentation							█						█	█	█
-Final Report							█							█	█
Website Update	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█