

# MRI Fat Quantification Phantom

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## Client:

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## Team:

Bogdan Dzyubak (Team Leader)  
Joe Helfenberger (BSAC)  
Nick Balge (BWIG)  
Matt Parlato (Communicator)

## Progress Report for November 26 – December 10

### Problem Statement:

The goal of this project is to develop an MRI phantom for the quantification of fat. This phantom will be used to test MRI techniques developed by the client for the imaging of fat *in vivo*. The phantom must contain samples of known physiologically relevant quantities of fat. The eventual purpose is quality control of MRI scanners that use fat-water contrast imaging.

### Past Week's Goals:

- Deliver the final presentation
- Finish and submit the paper
- Finish the notebooks, reviews and other deliverables

### **Past Week's Accomplishments:**

- Delivered the presentation
- Submitted the paper
- Submitted other deliverables
- Gave a copy of the paper to the client

### **Future Goals:**

- Make 16 emulsions with consistent component concentrations
- Find the offset contributed by gelatin and correct for it
- Improve accuracy and repeatability of quantification using the client's procedure by choosing the appropriate scanner settings
- Ensure repeatability and homogeneity of samples
- Add the water tank to the experimental setup
- Communicate with the clients and tailor the phantom more specifically to their needs

### **Project Difficulties:**

- Organizing time investment.

## Team Activities

Date	Members	Activity	Time Spent
12/05/09	Full team	Assigning paper tasks	2 hr
12/05/09	Joe	Research on phantom competition	6 hr
12/05/09	Nick	Paper Section	6 hr
12/05/09	Bogdan	Research on IDEAL competition	4 hr
12/05/09	Matt	Paper	2.5 hr
12/05/09	Joe	Solidworks drawings	3 hr
12/06/09	Joe	Solidworks	1.5 hr
12/06/09	Bogdan	Paper section	5 hr
12/06/09	Nick	Paper section	2 hr
12/06/09	Joe	Paper section	4 hr
12/06/09	Matt	Paper section	5 hr
12/07/09	Team	Proofreading	1 hr
12/07/09	Bogdan	Paper compilation	2 hr
12/07/09	Matt, Bogdan	Paper formatting	2 hr
12/08/09	Joe	Paper	8 hr
12/08/09	Nick	Paper	3 hr
12/08/09	Bogdan	Paper	2 hr
12/08/09	Nick	Research	1 hr
12/09/09	Joe	Paper revisions	4 hr
12/09/09	Nick	Website Updates	1 hr
12/09/09	Bogdan	Progress Report	0.5 hr

## Project Schedule

Task	September				October					November				December		
	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17
<b>Project Development</b>																
Research																
Brainstorm/Design Development																
Finalize Design																
Prototyping																
Testing																
Data Analysis																
Order Supplies																
<b>Deliverables</b>																
Progress Reports																
Mid-semester Presentation (10/16)																
Writing Final Report																
Writing Final Poster																
Final Report (12/11)																
Final Poster (12/4)																
<b>Meetings</b>																
Client																
Advisor																
<b>Website</b>																
Online																

\* = deliverable due

## Future Timeline

Task	October	November				December	
	—	5	12	19	26	5	12
<b>Project Development</b>							
Brainstorm/Design Development	■						
Finalize Design	■	■					
Prototyping		■	■	■			
Testing				■	■		
Order Supplies	■						
<b>Deliverables</b>							
Draft Paper	■	■	■	■	■		
Finalize Paper						■	■
Prepare Poster				■	■		
Submit Paper (12/11)							*
Present Poster (12/4)						*	

## Expenses

Ultra High Molecular Weight Polyethelene (UHMWPE) - \$43.75

Clear Glass Vials - \$83.72

2 x Animal Hide Gel – \$26.71

Ivory Hand Soap – \$8

Formaldehyde – \$23.01

Acrylic Tank (Lock & Lock Box) – \$9.99

Safflower Oil - \$6.99

Total: \$227.88