

## Chorionic Villus Sampling- Transcervical Model

Client: Dr. Jesus Iruretagoyena

Advisor: Professor Kreeger

Team Members: Derek Klavas (Leader)  
Mason Jellings (Communications)  
Jon Mantes (BSAC)  
Andy LaCroix (BWIG)

Week of April 10- April 16, 2009

### Problem Statement:

Chorionic villus sampling is a prenatal diagnosis procedure that involves extracting placental tissue from the uterus of a pregnant woman in her first trimester of pregnancy. This tissue contains the same genetic information as the unborn fetus. Testing thus allows chromosomal abnormalities and genetic defects to be diagnosed early on in the gestation period. The current, and most difficult, method for chorionic villus sampling requires a catheter to be inserted through the woman's vagina and into the cervix (also known as the transcervical approach). However, doctors and residents currently do not have a model to simulate female anatomical structures and practice the transcervical method. The goal of this project is to develop a realistic and affordable model that precisely replicates the anatomy of a pregnant woman, is constructed out of ultrasound permeable materials, and can be repeatedly used to practice the transcervical approach.

### Last week's goals:

- Start and finish exterior ABS box casing
- Meet with Greg Gion to get the materials necessary for building a mold, and learn how to properly mix the silicone material prior to pouring.

### Accomplishments:

- Constructed and finished the exterior box casing made out of ABS (with the exception of the hole in the back piece)
- Began shaping uterine mold along with rubber vagina. The uterine mold is being shaped out of hardened foam sealant.

### This week's goals: (April 10- April 16, 2009)

- Finish the uterine mold
- Meet with Dr. Iruretagoyena to make sure he approves of the mold dimensions
- Pour the Smooth-On EcoFlex material into our model with the help of Greg Gion
- Finish constructing the back piece of the casing

Project Difficulties:

The main difficulty at this point in the semester is designing a way to pour the silicone material into our casing/mold, in order to create the desired model with accurate dimensions and with a contoured top to simulate a stomach. Getting this correct the first time is crucial, because we do not want to waste materials that have cost our client valuable dollars.

Activities:

Member	Description of Activity	Hours this week	Cumulative Hours
Derek	Wrote Progress report. Worked on shaping the uterine mold	2.0	16.0
Mason	Worked on shaping the rubber vagina	2.0	15.0
Jon	Attended BSAC meeting. Worked on ABS box casing. Researched suitable adhesives for ABS material	2.0	15.5
Andy	Updated website. Worked on ABS box casing	2.0	15.5
Entire team	Met Tuesday and Thursday to work on constructing the model and brainstorm. Met on Wednesday to buy necessary materials from the hardware store.	2.5	29.0

Project Timeline:

Tasks	February				March				April				May	
	6	13	20	27	6	13	20	27	3	10	17	24	1	8
Meetings														
Advisor														
Client														
Product Development														
Research														
Brainstorming														
Design Prototype														
Order Materials														
Manufacture Prototype														
Testing														
Deliverables														
Progress Reports														
PDS														
Midsemester Powerpoint														
Final Poster Presentation														

Expenses:

- 1 sheet of ABS plastic 24" x 24" x 3/8" thick = \$74.91
- 4 EcoFlex silicone 00-30 trial kits = \$114.68
- Acetone, foam sealant, rubber gloves (for vagina rubber) = \$17.00
- Total cost = \$206.59

