Week 14 Progress Report

Project: Injection Catheter for stem cells

Team: Adam Goon – Team Leader
Joel Webb– Communications
Andrew Bertram – BWIG
Michael Conrardy – BSAC

Week: November 4- December 10

Client: Tim Hacker
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Advisor: Prof. John Webster
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Problem Statement

Different methods have been tried to deliver stem cells to damaged cardiac tissue caused by a heart attack or other disease. These methods include injecting cells into the general circulatory system, injecting directly into the coronary arteries or open heart surgery to inject cells directly into the heart muscle. These methods have been ineffective for delivering a large number of cells to the damaged tissue or are invasive. A minimally invasive method of delivering stem cells directly into and around the damaged tissue is needed.

Currently, injection catheters are inserted in the femoral artery and advanced to the left ventricle (LV). Once in the LV, the catheter can be steered to the desired locations on the LV walls and a needle can be extended out from the tip of the catheter to penetrate the heart muscle and inject stem cells. This is a very time consuming process to make the multiple injections of stem cells necessary to heal the damaged tissue. In addition, with current tip designs lack of anchoring the needle in the muscle wall during the injections leads to fewer cells injected into the muscle and it is also time consuming to calibrate the depth of needle penetrations as needle depth is altered by the curve the of the catheter as it is bent into the necessary positions to reach damaged tissue. Therefore, a new catheter which can speed up the process of stem cell injection will be of critical importance to successful delivery of stem cells to the heart. A method is needed to improve precision of needle penetration and lessen the time to complete the procedure. This could be done by having multiple injections into the heart without adjusting the

catheter and employing a corkscrew needle or other designs to securely anchor the needle in the tissue and control the depth of penetration.

Last Week's Goals

- Give final poster presentation
- Finish notebooks and final report
- Meet with client to show and discuss final design and prototype

Accomplishments

- Gave final presentation
- Turned in notebooks and final report to advisor

This Week's Goals

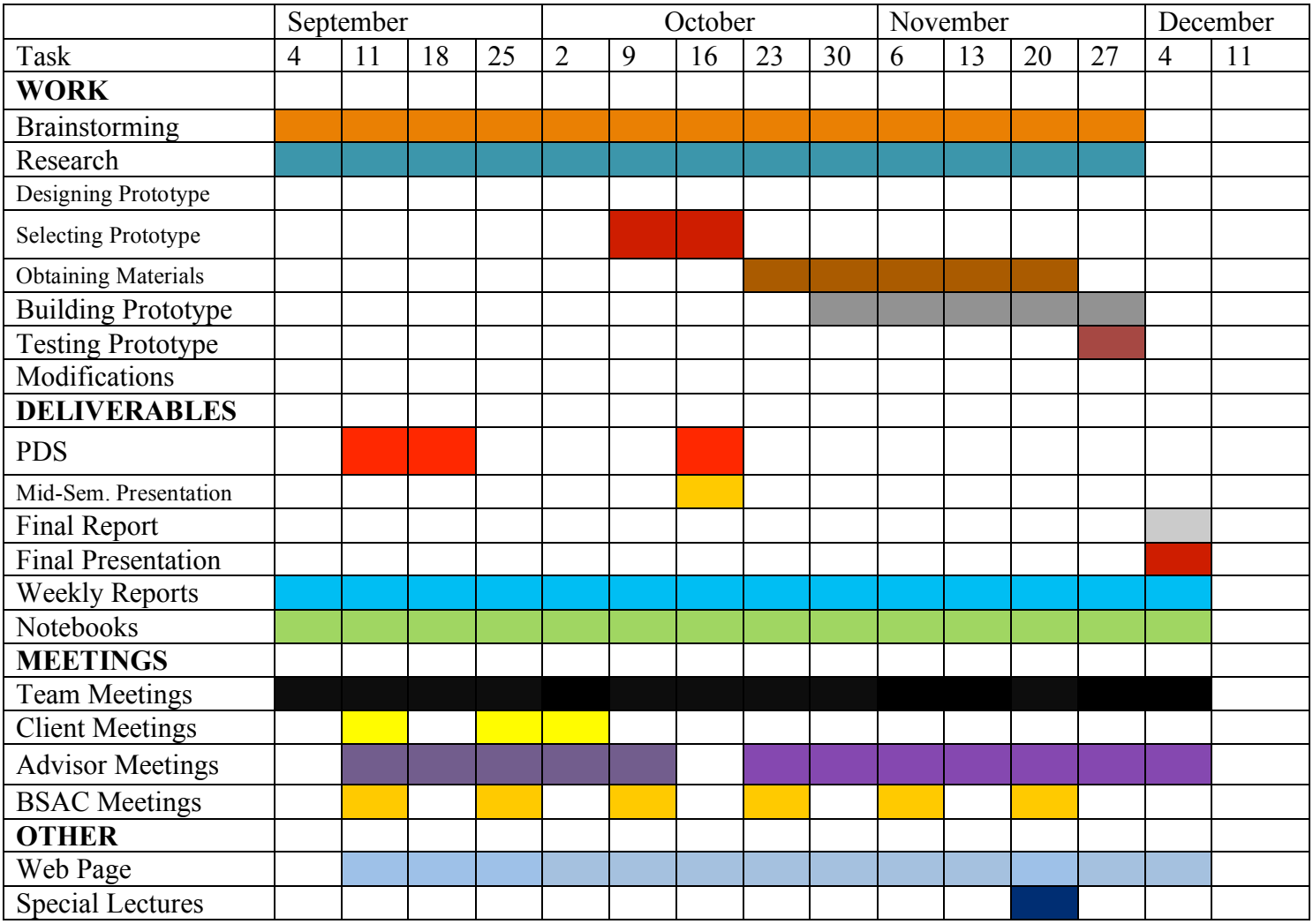
- Meet with advisor for final meeting of the semester
- Give the prototype, report, and poster to our client
- Submit peer and client evaluations to advisor

Difficulties

Team Effort

Team Member	Accomplishments	Time (Hrs)
Adam Goon	Final Presentation, writing final report	5
Joel Webb	Final Presentation, writing final report	5
Andrew Bertram	Final Presentation, writing final report	5
Mike Conrardy	Final Presentation, writing final report	5

Current Progress:



Expenses to Date:

- $55.61 at Home Depot for tubing and other materials for miniaturized prototype
- $16.70 at Home Depot for outer component and caps