

# University of Illinois iGEM 2010 Newsletter

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## Project Update: Wetlab

The Wetlab Team spent the first half of June researching all the necessary components of the BioAlchemy project. However, the information we gathered lead us to rethink our project direction. Because many of the pathways required for the BioAlchemy project are not well defined at this point, we have decided to gear our efforts towards cell surface engineering with a focus on gold and arsenic accumulation as a method of bioremediation. Our project will entail fusing metallothioneins, small metal binding proteins, to membrane proteins displayed on the cell's surface. This will allow the cell to collect metal present in it's environment. Once the cell has bound the metals, we hope to implement a response system, such as cell floating, as a method of cell retrieval so we can extract the metals from the

cells surface. We also plan to couple this project to last year's Bacterial Decoder which would result in a bacteria capable of responding to it's surroundings by using small RNAs and regulatory proteins. Our ultimate goal is to incorporate our bioremediation project with our bacterial decoder so that bacteria will be able to isolate specific metals based on their environmental conditions.



Members of the Wetlab team after a days work at the library developing our project

## Project Update: Tools

This month the Software Tools team has been focusing on making improvements to last year's iGEM project, IMPtools, in order to allow it to more effectively add to the team's overall project, BioMORTAR. By incorporating the Kyoto Encyclopedia of Genes and Genomes RPAIR database, the IMPtools output is able to create more logical pathways. Future additions will include determining enzymes found in host organisms to use the information to design a minimum length pathway, among others. The other main focus for the Software team has been creating a plasmid strain

designer. This will be accomplished by utilizing the Constraint-based Reconstruction and Analysis program to test growth of organisms based on their metabolic networks. Using the program will allow for a pathway to be chosen for optimum growth or maximum production based under a user-specified constraints. An abstract for this year's iGEM project has been sent to the Department of Defense for the 2010 Chemical and Biological Defense Science and Technology Conference. This will ideally will us help gather more support for the project.



### Around The Lab:

While much of this month was spent researching our project, the Wetlab Team also made it into lab to begin cloning out the genes essential to the pathways outlined in our project design. We have begun constructing these parts into biobricks which we will be able to send in to the parts registry and use to create a cell surface engineered metal binding cell. During the next month we hope to finish cloning out the rest of the necessary genes and put all the parts into standard bio-brick format.

### Collaborations:

Early this month we were contacted by the Purdue iGEM team with interest in team collaboration. We met with the team through a skype video conference to describe our projects and exchange feedback. It was beneficial to learn about Purdue's potential project regarding photorespiration as well as to discuss ideas for our project. We are excited to continue our collaborations with the Purdue iGEM team through bi-monthly Skype conferences.

### Fundraising:

Both UIUC iGEM teams plan to combine efforts to raise money to support their projects. Fundraiser ideas have included making Dip n' Dots using liquid nitrogen, contributing to Urbana, Illinois' Sweet Corn Festival in August, as well as team members taking part in Psychology Studies done by University of Illinois students. The teams have decided to hold a Volleyball tournament (see below).



Software tools members collaborating.



### Upcoming Events: Volleyball Tournament Fundraiser

In order to fund our projects, the teams have been exploring a number of different fundraising ideas, one of which is a volleyball tournament. If you're interested in participating, we plan on holding the tournament at the sand volleyball courts located at the corner of Stadium and Oak streets in Champaign from 5-9 PM Saturday, July 17th. Registration will be \$40 for teams of 4- 8 people and there will be prizes for the winners and runners up. Right now we're looking at cash

prizes and/or gift certificates to restaurants in campus town. In addition to the tournament, we plan on holding a cookout so you can grab some food if you're hungry.

If you would like to register, please contact Meagan Musselman at [musselm1@illinois.edu](mailto:musselm1@illinois.edu). We will be accepting registration through July 17th and will allow registration on site at the tournament.

### We Need Your Support!

Financial support and supply donation is vital to completion of iGEM projects and the team's success. If you are interested in making a donation to the team please contact Co-Director Meagan Musselman at [musselm1@illinois.edu](mailto:musselm1@illinois.edu) or Melissa McKillip at [mmckilli@igb.uiuc.edu](mailto:mmckilli@igb.uiuc.edu). We appreciate any donation.



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