

iGEM Advisor's meeting
4/3/12

Proposal presentations:

Uros and Adi: "Biodegradation of Polyester Polyurethane by Endophytic Fungi"

- Isolate the genes that degrade plastic and put them together in E. coli to breakdown plastic at a commercially viable rate
- Alternatively, certain strains of fungi have the ability to degrade polyurethane plastic.
- We would focus on one plastic composite to degrade. That would make the project more feasible for one summer.
- E. coli might not be able to handle all of this. It's been proven that the process works in anaerobic and aerobic conditions, so yeast might be another object.
- We have the capability to build the type of filtration system necessary.
- Is it the best to degrade this plastic? It's carbon sequestering. The degradation of plastic would need to be coupled to something that would get rid of the CO₂. We could couple it to make a precursor for some new plastic. We would need to repolymerize it in a type of biological recycling.
- Plastic is good to recycle. Another way to think about this project would be to microbially recycle plastic.

Divya: "Transplastomic antibacterials"

- Plants make small molecule compounds that act as antimicrobials against Gram positive bacteria. These compounds typically act in combination.
- Genetically modified plants would produce antimicrobials. New genes are inserted into the chloroplast DNA.
- Use a gene gun to deliver the DNA to the cells. This way the chloroplast's double membrane is penetrated.
- Rate of transformation of plants is very low and growing plant tissue is difficult and takes a long time.
- Transforming plants is a task in and of itself. We do have resources on campus to do this. It would look very impressive if it actually worked.
- Great project, but we need some feedback from alternative sources about the gene gun and plant transformation.
- This is a complex project for the time frame. You have to isolate the compound, look at the genes, then isolate and transform. This might work as a side project though, if a very simple compound was used and we changed its expression levels.

Cara: "A Privy Understanding of E. Coli"

- Fecal matter is the main source of bacterial pathogens in waste. Create a little package of genetically modified bacteria that would be added to a bucket that would be used as a toilet. Bacteria would sanitize the fecal matter and a color change would indicate full breakdown.
- How to focus the project: Choose one compound to degrade, look at what types of bacteria/fungi/protozoans are in the mix.

- Animal feces might be a bigger problem than human waste.
- The bacteria sanitizing the fecal matter would have to compete against the pathogenic bacteria already in the environment and fecal matter.
- Look up basillophila.

Announcements:

- In the next 2 advisor's meetings, decide which projects are the best ideas, focus on those, and represent them in groups. Have different people both critique and endorse the different projects.
 - o Rank the projects.
- There will be one main project, and then one good side project.
 - o The side project functions as both a safety in case the primary project fails, and as a continued project for the next year.
- Keep in mind what looks good in competition. The work we've put in might be enough, even if there is no finished final project. But the research and groundwork must be excellent in that scenario.
- Final advisor's meeting is Tuesday, May 1. At this meeting the main and side projects will be finalized.
- Next Tuesday we are meeting Dr. Robinson.
- April 17th, we will have a group picture for the brochure. Dress up!
- On Sunday's meeting we will vote on what projects we will focus on pitching again. This is the opportune time to add more to your presentation. We're not picking 2 projects, we're picking several to re-research and reevaluate. Remember, we're objective and no project is a bad project!
- This Sunday Angela will also explain about the standard cloning procedure.
- Sunday meeting will be at 8PM in the BIF.