Aalto-Helsinki Work Log: From May to June

Tuesday, 20.5.

We perfected our presentation for the meeting with the Dean tomorrow. Designed our logo and phoned a few companies (Biocity, Finnair and HSL). In the lab we made Chloramphenicol -plates and found out that the autoclave is broken.

Tomorrow we'll be making competent cells and measuring the transformation frequency. Also finishing up the website and writing sponsorship applications.

Wednesday, 21.5.

Meeting with the Dean, Janne Laine. He suggested hiring all the students from Aalto for the summer with a salary for the easiest way to support us. Websites and sponsorship applications were made in the Learning Hub.

Called Finnair, HSL and Perkin-Elmer. Thought about sponsorship levels. Website close to completion. Travel plans made, flights and lodgings mostly figured out. Blog theme chosen and Twitter is getting updated regularly.

XL-1 Blue growing in the lab.

Thursday 22.5.

New fonts on the website and every tab has it's own html-page and preliminary content. Sponsorship deals are fine and on the website. Logo and website design was worked on and gradient coloring for tabs was implemented.

Made 50*100µl fo competent cells and transformed parts of the transformation efficiency kit into the cells and made a control. Laura bought a new MBA.

Friday 23.5.

Developed the website with 4 people. It's done and fixed with min-height (lol). Sponsor packages and texts done. All the web-developers know how to Git now. Finnair turned us down.

In the lab Oskari, Minttu and Niklas. New transformants with Sanni's competent cells and a bigger DNA amount. We made dilution series of our own competent cells, so we know the cell density in the liquid.

Monday 26.5.

Made some plates in the lab and transformed bacteria with BioBricks for the first time.

Website is prettier now, and some of it is also translated to English. Checked out other team's wikis. Pietu made a media card.

Tuesday 27.5.

First BioBrick™ -test was a success. In the lab we have more BioBricks growing. Website was translated to English and we sent e-mails to a bunch of companies. Checked out how to make a wiki. It's pretty horrible spaghetti code.

We redid our description on Facebook. Facebook page is out and all friends recruited to like it. We set up a meeting with Riikka Hopiavaara, the Communications Manager of Aalto University.

Everything on the website translated to English and language change buttons added.

In the lab we learned to use glass pearls. 5 BioBricks growing. Cyan, banana, promoter, terminator and RBS. Also a 5 ml culture in plastic pipes.

Wednesday 28.5.

Lab schedule, characterizing the challenges in the project. Transforming BioBricks and plating.

Shot some photos and contacted a few companies.

In the lab, miniprep increased the amount of plasmids 2000-fold. BioBricks (cyan, banana) growing in a liquid culture.

Wiki structure worked on. We founded a GitHub Organisation (Quiet Sushi Force), for the website and future projects.

Lab team made a lab schedule that is probably too optimistic.

Thursday 29.5.

In the lab we stored the BioBricks grown overnight in glycerol. Rest of the cells were pelleted and frozen for tomorrows plasmid extraction (purification?) and ligation.

Website content reworked in both languages. Sent applications to Finnzymes/Thermo Fisher and Kemira. We started planning a mathematical model for scent diffusion in a room with AxBxC dimensions as a function of amount of bacteria, temperature and intensity.
Otto is now in charge of picking a fun master for every week. Point is to have one day a week to do something fun with the team.

Friday 30.5

In the lab we extracted plasmids from the overnight clone cultures and stored them for future use. We noticed that there's enough linearized plasmid backbone for three constructions, so we have to make more and change the lab schedule. We are preparing Amp backbones by cloning

RBS (or PCR) and transforming a suitable Amp+RBS (and highly engineereed Red FP). We made an automatic ligation reagent amount calculator to Drive.

BioBrick Seeker was born. It's used to browse through the 2014 iGEM distribution with a simple search.

Sponsorship applications sent to bio companies. Contacting them further next week. Started writing application for Wihuri fund and asked Markus Linder and Merja Penttilä for recommendations.

First epic video published of cell membrane precipitation. Second blog post worked on.

Saturday 31.5.
Application to Jenny and Antti Wihuri fund. Merja Penttilä wrote us a letter of recommendation for use in future applications. We wrote a research plan for Ambiscent and a summary for later use. Applications for Biocentrum Helsinki, Institute for Biotechnology and Sitra. Lab schedule reworked.

Monday 2.6.
Took some photos (a new group photo!), put some overnight cultures growing, went to a lab meeting to introduce ourselves to all the other people working in the lab space. Planned making electrocompetent cells as none of them had grown by the morning. Checked out flights. Logo is now scanned and wiki more planned. Second blog post draft done and awaiting comments.

Tuesday 3.6
Called a few companies. The Project-section on the website updated. Made electrocompetent cells in the lab. The plates from last night that didn't show any colonies surprisingly had produced some, so making the new ones possibly wasn't necessary. Logo was edited, but it seems like it can't be converted into vector graphics. Research plan is now English too. We tried to buy plane tickets, but checkout failed. Oskari got his credit card working, so a new try tomorrow. Application for Synbio.

Got some feedback that the updates on Facebook should be more understandable.

Wednesday 4.6
Electroporation and moving transformed cells to plates. More bacteria growing in liquid for miniprep. Bought flights to Boston for everyone! Work on the wiki started, we have the basic outline of different pages and placeholder content. Laura put the new logo on the website and made it fancier in other ways too. Pietu made a Python program for uploading local pages onto the wiki, so we can make wiki pages with proper HTML editors. He also edited the team photos and the new group picture is live on the web page and Facebook. Mikko put out our second blog post and updated Facebook and Twitter in many ways.

In the evening most of us went to the Summer of Startups Demo Day to get a taste of the startup life (and Lapin Kulta).

Thursday 5.6.
Lab team did a miniprep with amp-backbones and RFP and cut the 11 bp part out of the backbone with restriction enzymes. Favicon to the website, footer debugged, work on our wiki pages and research on other teams' wiki pages. Trying to get into contact with sponsors.

Friday 6.6.
In the lab PCR purification was done to the Amp backbones, first assemblies (4 ligations). Learned to use thermocycler!! Wiki got some content. Flappy coli was made in an hour (http://igem-qsf.github.io/Flappy-coli/)! The looks for the wiki were designed. Our Summer of Startups team learnt to pitch projects.

Monday 9.6.
Pitching and fighting millionaire corporate overlords at Summer of Startups. Trying to figure out what our idea is in a marketable way. How do we combine Summer of Startups and iGEM? Encountering problems with making synthetic biology work in the startup world. Could make a Human Practices thing about it.

Transformed new BioBricks in the lab, planned more scent-related BioBrick work. Lab safety form filled and sent. More work designing wiki looks and a mascot. Added contact information to our site and added two new filters to BioBrick Seeker.

Tuesday 10.6.
First company gave us money, woo! Also, a few others were interested. We have plans with Heureka to organize a synthetic biology booth for two days for kids and young people. Meeting on 18.8. at Heureka at 14:00.

BioBrick Seeker got a ton of mentions on Twitter, people and iGEM teams seem to like it. The feature of searching through part names is back in too. Wiki look is now in a shape we can start implementing.

Ligating BioBrick combos didn't work out that well, seems like there is backbone that can still ligate with itself, as the negative control was growing. We got the scentless strain of E.Coli growing.

We learned to pitch a bit better. Pietu was representing us as the main pitcher, but in the afternoon there was Otto, Laura, Niklas and Lassi also doing a pitch and listening to a lecture. We had two different pitches, one starting with a product that solves a problem, one starting with the larger idea of synthetic biology and what problem it solves.

Wednesday 11.6.

In the lab, scentless E.Coli is now growing on a plate. After checking with a gel, it turns out the ligation didn't succeed. Linearized backbones are in the PCR machine. The Freeze Room broke down, we got our samples out at -7 C.

We were researching for scent genes. Turns out there's a lot of aromatic compounds, like the scent of rotting meat.

Wiki looks a bit more like we want it to. Making the wiki with the iGEM wiki tools is really difficult though.

SoS team was learning about law. In the evening we were at the Summer of Startups BBQ, meeting people and eating free food.

Thursday 12.6.
Wiki is better designed and looks more like it should.

Landing page on SoS. Weird as we already have two websites. Also, list of companies to call to.

PCR not working in the lab. Heat gradient running to see what is the best temperature for a certain step. iGEM says that the backbones shouldn't be used as templates, we did though.

Analytics added to BioBrick Seeker, in the first few hours already there was a few people from US and UK using it.

Friday 13.6.
We spent the morning thinking about what our project is in terms of Summer of Startups, and a bit what it is in terms of iGEM too.

In the lab we ran a gel to determine the best annealing temperature and did a new PCR test with fresh reagents and enhanced program. We transformed three new biobricks with RFP gene (different antibiotic resistances) and made a long term stock of the new odourless YYC912 strain.

In the afternoon we made some wiki things and made Flappy Coli awesome.

Monday 14.6
Set weekly goals for SoS. A three hour lecture on networking. Got a few contacts from Moaffak from SoS that should be useful for us.

Background research on the cooler controller structure. We split it it to Interface, Swapper and Intensity Controller and looked through old iGEM projects to see which of these had been done.

Also researched geosmine to see if it actually smells like a forest. It's smells a bit damp and not that pleasant to people.

Design on individual wiki pages. Like Members page with just eyes of everyone.

In the lab, made some bacteria cultures for miniprep. PCR still doesn't want to work.

Worked on a bunch of programming things, but kept getting stuck. Team Seeker sort of works, but only has data from 2008 and isn't integrated to BioBrick Seeker.

Tuesday 17.6.
iGEM Team Seeker is now working. It's a simple tool for searching through iGEM projects from 2009 to 2013. Now it searches through every field, but there's already some code for a better search. Also, the data JSON file for BioBrick Seeker is now half the size it used to be. Loading up the app for the first time should be way faster now. Also also, Laura made a sweet logo/background for BioBrick Seeker.

We started searching through old iGEM projects more thoroughly to see if there's anything close to our new controller idea.

We planned and practiced a 2-minute-pitch for our new idea. Lots of repetition and feedback.

We met Riikka Hopiavaara, Communications Manager at Aalto University to plan our media approach and contacts. We also met Eero Anhava, an investor who gave tips how to proceed further with a synthetic biology startup.

Wednesday 18.6
Pietu sent a message to Marko Ahtisaari and participated to Aape Pohjanvirta SoS lecture with Oskari. Minttu, Martina, Oskari and Pietu met Markus Linder, validated the idea, got new contacts and went through the Aalto job contract.

Wiki is now created and each page exists already. We need to figure out the best way to collaboratively write content to it. Next blog post is almost ready.

Laura, Lassi, Minttu and Martina went to an amazing lecture by MIT prof. Angela Belcher (Giving New Life to Materials for Energy, the Environment and Medicine).

In the lab we made more tetracycline plates, transformed tet-RFP to the scentless competent cells as well as ligation and ligation controls. We also ran a gel and figured out that our primers do not work at all (the both seem to be amplifying the insert, at different places).

Thursday 19.6.
Martina cleaned up lab folder in drive. We checked primers and they most likely are not the right ones. Ligation transformation seem to work since we got both white and red colonies, also turned out that Ykä grows better than XL1-blue (bigger colonies).

Lassi got high scores to Flappy Coli and taught Martina to use GitHub.

Laura did some research on previous iGEM projects and drew something cool.

Monday 23.6.
Added Flipclock countdown to wiki. Made a presentation for using GitHub and updating the wiki. Tried to design some primers for backbone PCR, but the original ones were pretty much exactly what's needed. For some reason there isn't a complete backbone sequence available on the iGEM site.

Made some illustrations and background research.

First successful BioBrick combo ligation! Checked with a gel too. SoS people visited the lab.

Tuesday 24.6.
Mikko contacted Maija Pollari to give permission to publish blog posts in English on MyScience-website. In turn, we get permission to publish English translations on our blog.

Otto and Pietu visited the U.S. Embassy to meet Oreck and Rodney Hunter and talk about co-operation and Skype sessions with US companies.

We made a "pitch deck", a short slide show to show visually what we do. We had a one hour time limit and it wasn't enough.

In the lab, BioBrick restriction, ligation and transformation. Also miniprep from a bunch of bricks.

We had a 2 hour meeting on what's happening with the project, what is important right now and what we plan to do differently in the future. Like moving Scrum to be online on Flowdock.

We prepared questions for the iGEM Paris Saclay- team that we are Skyping with tomorrow.

Laura is now an expert on BioBricks. Also, illustrations for the wiki and pitch deck. Background "logo" for BioBrick Seeker is now scanned and ready to go.

BioBrick Seeker and Team Seeker now cross-promote each other. Apparently BioBrick Seeker is also featured on the igem site.

We now have a RFP + psB1C3 FASTA sequence for future use that has all the binding sites and prefixes and suffixes for primers and other analysis. Lassi also designed new primers that bind to RFP for backbone cloning with PCR (we probably won't need them).

Wednesday 25.6
Otto and Pietu attended the business model canvas training at SoS and created a complete model for "Aalto-Helsinki Bioworks". We presented our idea and model to Microsoft employees. We got good feedback - people seemed to finally understand what we are doing. Our website also got positive feedback from other SoS-teams. Later Pietu attended (half of) the Microsoft lecture and then started preparing food together with the others. We organized a big BBQ for around 50 people and talked to a lot of people about our project and synthetic biology. The barbeque was a huge success! Our burgers were liked and tasty!

Mikko catched up with the work-contract and got introduced to Mailchimp newsletter platform. He also made a personal interview template for the blog. Lassi promoted the Biobrick Seeker™ by writing an advertisement text for the iGEM community page. After that Lassi conducted further research by reading Labor Labs publications.

Oskari, Otto and Martina Skyped the French iGEM people (notes in the drive). Otto also sent a question about the entrepreneurship track to igem HQ.

Oskari did work on the gene circuit and read more about biobricks. He also wrote a blog-post to the personal interview blog thing and made some 1on1 questions.

Minttu and Martina did broth cultures from the ligated Biobricks and did a gel on those. The gel revealed that things didn't go as we wanted. There's trouble with the RBS:s either in ligation or restriction. Later Otto, Minttu and Laura went to the shop to buy 10 kilos of meat for the BBQ. What a joy!

Thursday 26.6.
Lots of background research by everyone (like we decided in the meeting on Tuesday), both researching old teams and figuring out how we'll be able to do our project. Learning about gene circuits and protein production switches.

In the lab, gel electrophoresis showed that the RBS we picked is inconsistent and the restriction sites on it don't work. It required a tweet question and an answer from iGEM HQ to figure it out. It can be seen from the part page, but you had to click "Get this part" to see it. That wasted a bunch of time, by almost no fault of ours. New bricks transformed and miniprepping old ones.

Otto started learning more Matlab and Simulink for our mathematical modeling part.

Oskari introduced our project to a few high schoolers. Did a bunch of research and kept drawing on the mystifying gene circuit whiteboard.

Social Media work going strong every day. Also, the short piece about us on the Aalto-University web page was revised to be less scent-centric.

Friday 27.6

The team had 1-on-1s with Oskari, where we discussed work and other matters. We got the keys to the labs for working outside of regular hours. Everyone presented one previous iGEM-team for background research in the afternoon.

In the lab, there was Bartek. Not much happened.

Martina bought a new computer.

Laura did some drawing and background research.

Lassi updated BioBrick-Seeker, there are some inconsistent BioBricks that should be warned about. The idea is that other teams would submit the inconsistent bricks to us, so we can mark them to the Seeker. That functionality is yet to be implemented.

We had 1-on-1s with Marko Ahtisaari, from MIT Medialab. Ideas about collaboration with medialab and our team. Also, we could possibly visit Media Labs when we are in Boston.

Monday 30.6

We were confused by the way iGEM marks bricks as confirmed. Some can even miss 35 base pairs from the end so that the BioBrick doesn't even have a suffix. We still managed to find some parts for transforming. 6 bricks were transformed and 4 plasmids ligated. Backbones were also restricted. There was supposed to be kanamycin plates, but there was none. We decided to make our own, so we took LB+Agar liquid, but it had no agar.

We did more planning on our gene circuit for a 3-channel controller. It progressed a lot and we came up with a working plan, but that would be kind of unfeasible for a bioreactor as it is based on light intensity, so bacteria next to the light would be in a different phase than those far away.

Searching for relevant Bricks to use with the circuit.

Oskari met an assistant professor from Aalto to talk about us. Niklas, Pietu and Lassi met Miki Honkavaara who tried to get us to summarize our idea in 10 seconds. We are now making baddies into super heroes. i.e. bad bacteria to medicine-producing bacteria. Bacteria into superheroes.

We removed all scent-related text from our website. There’s now a countdown timer for updating the content.

Mikko contacted the headmaster of Aalto, rewrote the article to be published on the school’s webpage. We were also asked to write a 6000-7000 character article to Kemia-magazine.

Pietu took the few missing team member pictures.