

### **iGEM 2013 Basic Safety Form**

**Team name:**

SDU-Denmark

**Deadline: 30<sup>th</sup> of August 2013**

**Submission method: email form to the correct email list for your region:**

**safety\_forms\_asia@igem.org**

**safety\_forms\_europe@igem.org**

**safety\_forms\_north\_america@igem.org**

**safety\_forms\_latin\_america@igem.org**

Students can complete this safety form, but it must be read and signed (electronic or hard copy) by your team's faculty advisor. Your advisor must verify the information contained in this form and sign it.

The iGEM Safety Committee must be able to easily reach the advisor with questions or other follow-up communication. If you have made changes to your project (new coding regions or organisms) you must re-submit your safety form before wiki freeze (date TBD).

Key points to remember as you complete the safety assessment process:

- For help in completing questions 1 and 2, you may find it useful to consult the Risk Groups section of the Safety Resources List [2013.igem.org/Safety].
- The iGEM Safety Committee will be reviewing your project. To avoid temporary suspensions, answer these questions completely and accurately.
- The Safety Committee needs to be able to communicate with your faculty advisor about any safety concerns. If we cannot reach your advisor in a reasonable amount of time, you may be subject to restrictions at the Jamboree.
- Your safety page, wiki project page and poster should be consistent with each other. If you change your project, submit an updated Basic Safety Page to the iGEM Safety Committee before the wiki freeze. (Your faculty advisor must also read and sign the updated page.)
- We understand that projects may still be changing at a late date. However, large discrepancies between what you submit on the Basic Safety Page and what you present at the Jamborees may result in restrictions at the Jamboree.

### Basic Safety Questions for iGEM 2013

a. Please describe the chassis organism(s) you will be using for this project. If you will be using more than one chassis organism, provide information on each of them:

	Species	Strain no/name	Risk Group	Risk group source link	Disease risk to humans? If so, which disease?
Ex	<i>E. coli</i> (K 12)	NEB 10 Beta	1	<a href="http://www.absa.org/riskgroups/bacteria/search.php?genus=&amp;species=coli">www.absa.org/riskgroups/bacteria/search.php?genus=&amp;species=coli</a>	Yes. May cause irritation to skin, eyes, and respiratory tract, may affect kidneys.
1	<i>E. coli</i> (K 12)	MG1655	1	<a href="http://www.absa.org/riskgroups/Bacteria.html">http://www.absa.org/riskgroups/Bacteria.html</a> <a href="http://epa.gov/biotech_rule/pubs/fra/fra004.htm">http://epa.gov/biotech_rule/pubs/fra/fra004.htm</a>	No, it presents no hazard to human health
2					
3					
4					
5					
6					
7					
8					

\*For additional organisms, please include a spreadsheet in your submission.

2. Highest Risk Group Listed:

1 ☒ Greater than 1 ☐

If you answered 1+, please also complete the iGEM Biosafety form part 2 for any organisms in this category.

3. List and describe *all* new or modified coding regions you will be using in your project. (If you use parts from the 2013 iGEM Distribution without modifying them, you do not need to list those parts.)

	Part number.	Where did you get the physical DNA for this part (which lab, synthesis company, etc)	What species does this part originally come from?	What is the Risk Group of the species?	What is the function of this part, in its parent species?
Ex	BBa_C0040	Synthesized, Blue Heron	Acinetobacter baumannii	2	Confers tetracycline resistance

1	BBa_K108 8006	Colony PCR of B. subtilis 168, from Microbiology lab at SDU	Bacillus subtilis	1	Increase the flux through the MEP pathway
2	BBa_K108 8005	Conoly PCR of E.coli (K12) MG1655. Microbiology lab at SDU	Escherichia coli	1	Inhibits arabinose promoters
3	BBa_K108 8003	Synthesized, GenScript	Hevea brasiliensis	1	Links IPP molecules together to create natural rubber
4					
5					
6					
7					
8					

\*For additional coding regions, please include a spreadsheet in your submission.

4. Do the biological materials used in your lab work pose any of the following risks? Please describe.

a. Risks to the safety and health of team members or others working in the lab?

All organisms we are working with are non pathogenic, and pose minimal threat to the people working in the lab. Even after our modifications the organisms are not harmful.

b. Risks to the safety and health of the general public, if released by design or by accident?

The plasmids which contain the BioBricks also contain resistance cassettes, so if they transfer their resistance to a pathogen it could be harmful.

c. Risks to the environment, if released by design or by accident?

Should the bacteria be released, it could be slightly harmful to the environment due to a small production of rubber. However the active prenyltransferase requires IPTG or a mutation together with divalent cations, optimal growth and food supply.

d. Risks to security through malicious misuse by individuals, groups, or countries?

Very unlikely. As mentioned the modified E. coli strain is nonpathogenic and the potential amount of rubber produced is small.

5. If your project moved from a small-scale lab study to become widely used as a commercial/industrial product, what new risks might arise? (Consider the different categories of risks that are listed in parts a-d of the previous question.) Also, what risks might arise if the knowledge you generate or the methods you develop became widely available? (Note: This is meant to be a somewhat open-ended discussion question.)

Should this project succeed, it would be logical to use it on a larger scale. However the risks associated with a larger scale would be the same as mentioned above. If considerable amounts of rubber is produced this could pose a slightly bigger risk to the environment.

6. Does your project include any design features to address safety risks? (For example: kill switches, auxotrophic chassis, etc.) Note that including such features is not mandatory to participate in iGEM, but many groups choose to include them.

We have chosen to use an inducible promotor to prevent the organisms from producing unwanted rubber.

7. What safety training have you received (or plan to receive in the future)? Provide a brief description, and a link to your institution's safety training requirements, if available.

All wet lab team members received a mandatory lab safety course held by Simon Rose (responsible for work environment at the Microbiology lab) before we could use the lab. The course included working with GMO, proper waste disposal and what to do in case of an emergency.

8. Under what biosafety provisions will / do you work?

a. Please provide a link to your institution biosafety guidelines.

The institute follows the general biosafety guidelines issued by the Danish government.

b. Does your institution have an Institutional Biosafety Committee, or an equivalent group? If yes, have you discussed your project with them? Describe any concerns they raised with your project, and any changes you made to your project plan based on their review.

"Arbejdsmiljøgruppen" (eng. The Work Environment Group) is the institute equivalent of a biosafety committee. A representative, Simon Rose, has considered our project and has not raised any concerns regarding our project.

c. Does your country have national biosafety regulations or guidelines? If so, please provide a link to these regulations or guidelines if possible.

<https://arbejdstilsynet.dk/da/regler/bekendtgørelser/g/sam-genteknologi-og-arbejdsmiljo-910.aspx>

d. According to the WHO Biosafety Manual, what is the BioSafety Level rating of your lab? (Check the summary table on page 3, and the fuller description that starts on page 9.) If your lab does not fit neatly into category 1, 2, 3, or 4, please describe its safety features [see 2013.igem.org/Safety for help].

Risk group 1


e. What is the Risk Group of your chassis organism(s), as you stated in question 1? If it does not match the BSL rating of your laboratory, please explain what additional safety measures you are taking.

BSL 1

Faculty Advisor Name:

Simon Rose

Faculty Advisor Signature:

A rectangular box containing a handwritten signature in black ink. The signature is cursive and appears to read 'Simon Rose'.