

## **iGEM 2013 Basic Safety Form**

**Team name:**

Grenoble-EMSE-LSU

**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/bacteriasearch.php?genus=&amp;species=coli">www.absa.org/riskgroups/bacteriasearch.php?genus=&amp;species=coli</a>	Yes. May cause irritation to skin, eyes, and respiratory tract, may affect kidneys.
1	E. Coli (K 12)	BW25113	1	<a href="http://www.absa.org/riskgroups/bacteriasearch.php?">http://www.absa.org/riskgroups/bacteriasearch.php?</a>	Yes. Same as Example.
2	E. Coli (K 12)	M15	1	<a href="http://www.absa.org/riskgroups/bacteriasearch.php?">http://www.absa.org/riskgroups/bacteriasearch.php?</a>	Yes. Same as Example.
3	E. Coli (K 12)	XL1-Blue MRF'	1	<a href="http://www.absa.org/riskgroups/bacteriasearch.php?">http://www.absa.org/riskgroups/bacteriasearch.php?</a>	Yes. Same as Example.
4	E. Coli (K 12)	JM109	1	<a href="http://www.absa.org/riskgroups/bacteriasearch.php?">http://www.absa.org/riskgroups/bacteriasearch.php?</a>	Yes. Same as Example.
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	ho1	Voigt Lab, MIT	Synechocystis sp. (PCC6803)	1	Chromophore synthesis (heme oxidation catalyzing enzyme).
2	pcyA	Voigt Lab, MIT	Synechocystis sp. (PCC6803)	1	Chromophore synthesis (oxidoreduction-catalyzing enzyme).
3	ccaS	Voigt Lab, MIT	Synechocystis sp. (PCC6803)	1	Green light-sensitive receptor.
4	ccaR	Voigt Lab, MIT	Synechocystis sp. (PCC6803)	1	Regulator associated to ccaS at the DNA level.
5	cph8	Voigt Lab, MIT	Synechocystis sp. (PCC6803) and E. coli (chimeric protein)	1	red light photoactivated phytochrome linked to Enz-OmpR pathway.
6	KillerRed	Albert Bonniot Institute, La Tronche, France	An unknown species of anthomedusa	NA	Originally anm2CP, the KR protein is a fluorescent photosensitizer.
7	BBa_K174000	iGEM Parts Registry	E. coli	1	Specificity-enhancing factor for the ClpXP protease.
8	ssrA	Sigma Aldrich	None: part was entirely synthesized	1	Protein tag recognized by sspB.

\*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?

Yes. Risk of exposure to E. coli which may result in diseases and conditions described for the strains used. Also a risk of developing allergies to particular strains.

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

Same as for researchers. Exposure to E. coli can be greater among the general public since BW25113 E. coli is a reference wild-type strain and can colonize and grow on foodstuffs and minimal media, being able to synthesize everything it needs from basic minerals, a carbon source, a nitrogen source and oxygen.

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

No risk specific to the strain nor the parts used. Released transgenic bacteria could pollute bodies of water like any other micro-organism.

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

No project-specific risks are present relating to misuse of our transgenic bacteria, apart from providing antibiotic resistance with the plasmids contained within. The protein and photosensitive promoters do not provide additional means to survive and aren't virulence factors.

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.)

Long-term use of KillerRed expressing E. Coli without regular bleaching of cultures might result in progressive selection of bacteria that have better resistance to oxidation. Resistance could then be conferred to possible pathogens through horizontal gene transfer, making them more difficult to kill. It should be noted that there are no clear industrial applications of our project as it has been designed first and foremost as a research tool.

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.

None. Since physiological data on cell growth is dependent on cell viability, any mechanisms that decrease viability in minimal media would alter results. The study of cell growth is the main aspect of molecular biology our project focuses on and it would lose usefulness if a limited chassis was used.

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.

Our team has received safety training in the laboratory regarding use of protective clothing, guidelines for dangerous chemicals e.g. ethidium bromide, guidelines for disposal of biological material waste (bleaching, autoclaving...), and emergency response instructions and alert systems.

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

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

Our institution is affiliated with public research and follows the guidelines of the main public research organism, the CNRS, available at the following address:  
<http://www.dgdr.cnrs.fr/cnps/guides/risquebio.htm>

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.

Our institution has a Safety Committee with whom we have made contact and with and informed of our project. We have submitted our Safety Sheet for them to keep records of our activities. They didn't identify any particular risks to be dealt with in 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.

France has national biosafety guidelines and regulations that can be accessed at: <http://www.inrs.fr/accueil/risques/biologiques/>

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](http://2013.igem.org/Safety) for help].

According to the WHO Biosafety Manual, the BSL of our lab is BSL 1.

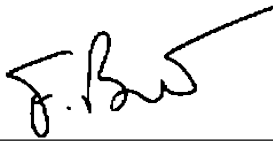
e. What is the Risk Group of your chassis organism(s), as you stated in question 1? If it does not match the BSL rating of your laboratory, please explain what additional safety measures you are taking.

The Risk Group of our chassis (E. coli K 12) is RG1. This corresponds to our laboratory's BSL rating.

Faculty Advisor Name:

Franz Bruckert

Faculty Advisor Signature:

A handwritten signature in black ink, appearing to read 'F. Bruckert', is written inside a rectangular box.