iGEM 2013 Basic Safety Form

Team name: Valencia Biocampus

Deadline: 30th 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	*E. coli* (K 12)	NEB 10 Beta	1	www.absa.org/riskgroups/bacteriasearch.php?genus=&species=coli	Yes. May cause irritation to skin, eyes, and respiratory tract, may affect kidneys.
1	C.elegans	N2	1	genspace.org/Page/Safety	No.
2	E. coli	XL1-Blue	1	academicdepartments.musc.eu/vpfa/operations/Risc%20Management/biosafety/E%20coli	No. It was specially developed for laboratory cloning use.
3	P. putida	KT 2440	1	Microbewiki.kenyon.edu/index.php/Pseudomonas_putida	No. Only in extrem cases when other diseases are present.
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_K1112001	Synthesized, GeneScript	Xenorhabdus nematophila	2 or 3 depends on the strain	Triggers biofilm formation through its adhesion properties
2	BBa_K1112002	Naturally present	Pseudomonas putida	1	Allows bioplastic (PHA) synthesis
3	BBa_K1112003	Synthesized, GeneScript	Sense sequence was taken from C. elegans	1	Codifies for the iRNA that allows clumping formation.
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?

Our work was developed with strains of E. coli and P.putida (biosafety level 1) which are easily killed by autoclaving or using bleach. Bioplastic or iRNA activities are harmless. BBa_K1112001 triggers biofilm formation on nematodes (Steinernema spp.). There is no other known effect of this biological material.

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

As deduced from above, even in case of accident, none of our biological devices would cause a disease in humans. Although most strains of E. coli are harmless, some (not used in our project) can cause severe food poisoning.

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

None of the genes used are harmful nor represent a danger to the environment. For example, we worked with P. putida, a bacterium broadly used in bioremediation. Genetically engineered bacteria were subjected to usual decontamination procedures and cultures and materials were always sterilized.

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

We have used antibiotics, ethidium bromide and octanoic and oleic acids. These chemical compounds can be dangerous when a malicious purpose is done. We used them with standard biosafety procedures. Biosecurity concerns are unlikely to arise taking into account their lack of pathogenicity.

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.)

If our project was applied on the field as it is now, several new risks would arise: biofilm formation on C. elegans and antibiotic markers. The project is a proof of concept of the potency of a bacteria-nematode artificial consortium and it is not intended for immediate industrial use or field released.

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.

As stated above, this is a proof of concept project. Commercialization would require either a confined use or the removal of some biological parts (i.e. antibiotic resistance).

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 laboratory belongs to the University of Valencia and it supports us all kind of manuals and safety guides to work correctly and without risks. All of us were guided by experienced researchers at the beginning of our work who trained us on the specific risks of the project (i.e. sharp blades use, EtBr)

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

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

www.uv.es/uvweb/universidad/es/investigacion-transferencia/investigacion-uv/comision-etica/comites/comite-bioseguridad-1285853622326.html

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.

In our laboratory of Biotechnology and Synthetic Biology there is not a biosafety group. However there is a biosecurity committee from the University of Valencia that has recently visited our laboratory in order to confirm that all the safety rules are accomplished. The lab passed this inspection satisfactorily.

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

Yes, there is the National Committee of Biosafety, in which our main supervisor, Manuel Porcar, is one of the especial experts.

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].

According to the WHO BioSafety Manual our laboratory reaches biosafety level 1-2, considering that it is advisable a monitored ventilation system, an autoclave and a biological safety cabinet.

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 in which the organisms we have worked with are classified is level 1, so that, our laboratory rates with all the requirements needed.

Faculty Advisor Name:

Manuel Porcar

Faculty Advisor Signature: