Valencia_UPV SAFETY FORM

1. Your Training

a) Have your team members received any safety training yet?

Yes, we have already received safety training.

b) Please briefly describe the topics that you learned about (or will learn about) in your safety training.

We learned about waste disposal, working in sterility in the laminar air flow cabinet, how to react in case of accident and which safety clothing should we wear.

c) Please give a link to the laboratory safety training requirements of your institution (college, university, community lab, etc). Or, if you cannot give a link, briefly describe the requirements.

http://www.ibmcp.upv.es/docs/serprora.pdf

2. Your Local Rules and Regulations

a) Who is responsible for biological safety at your institution? (You might have an Institutional Biosafety Committee, an Office of Environmental Health and Safety, a single Biosafety Officer, or some other arrangement.) Have you discussed your project with them? Describe any concerns they raised, and any changes you made in your project based on your discussion.

The Radiological, Chemical and Biological Protection Service of the IBMCP is the responsible for biological safety at our institution. We have not discussed our proyect with them yet, as there are no special biosecurity concerns.

b) What are the biosafety guidelines of your institution? Please give a link to these guidelines, or briefly describe them if you cannot give a link.

http://www.ibmcp.upv.es/docs/serprora.pdf

c) In your country, what are the regulations that govern biosafety in research laboratories? Please give a link to these regulations, or briefly describe them if you cannot give a link.

In Spain the regulations are stablished by the National Biosafety Cabinet (CNB).
http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/biotecnologia/organismos-modificados-geneticamente-omg-/comision-naciona-bioseguridad/actas_2.aspx

3. The Organisms and Parts that You Use

Please visit this page to download a blank copy of the spreadsheet for question 3. (If you need a CSV version instead of XLS, visit this page.)

Complete the spreadsheet. Include all whole organisms that you will handle in the lab,

whether you are using them as a chassis or for some other reason. Include all new or highly modified protein coding parts that you are using. If you submitted a Check-In for an organism or part, you should still include it in this spreadsheet.

You may omit non-protein-coding parts, and you may omit parts that were already in the Registry if you are using them without significant modifications.

http://2014.igem.org/wiki/images/a/ac/Valencia_UPV_Safety2014_Spreadsheet.xls

-- Please do not change the "Destination Filename"!

You may upload multiple versions of your spreadsheet. The wiki software will keep track of different versions and list them in chronological order.

4. Risks of Your Project Now

Please describe risks of working with the biological materials (cells, organisms, DNA, etc.) that you are using in your project. If you are taking any safety precautions (even basic ones, like rubber gloves), that is because your work has some risks, however small. Therefore, please discuss possible risks and what you have done (or might do) to minimize them, instead of simply saying that there are no risks at all.

a) Risks to the safety and health of team members, or other people working in the lab:

There are no special safety concerns for people working in the lab if we work properly and avoid inhalation and contact with the skin in high concentrations of the pheromones we are producing.

b) Risks to the safety and health of the general public (if any biological materials escaped from your lab):

There should not be any risks for general public as these pheromones are only toxic for mammals and birds in very high concentrations.

Mammals – Acute oral LD50: above 5000 mg/kg
Mammals – Dermal LD50: above 2000 mg/kg body weight
Mammals – Inhalation LD50: above 4.6 mg/L
Birds – Acute LD50 : above 2250 mg/kg

c) Risks to the environment (from waste disposal, or from materials escaping from your lab):

Two of the pheromones we intend to produce are Z111-16:Ald and Z11-16:OAc.

Z11-16:Ald has been classified by the EC as Xn - Harmful: R20, R46 (harmful by inhalation and may cause heritable genetic damage) and N – Dangerous for the environment: R50/53 (very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment).

Z11-16:OAc has also been classified as Xi – irritant: R38 (irritating to skin) and N – Dangerous for the environment: R51/53 (toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment).

However, these pheromones are compounds naturally synthesized by moths, thus they are not

specially harmful.

d) Risks to security through malicious mis-use by individuals, groups, or countries:

It is highly improbable that someone uses moth sex pheromones for bioterrorism.

e) What measures are you taking to reduce these risks? (For example: safe lab practices, choices of which organisms to use.)

Confinate transgenic plants in the greenhouse environment, taking care that no water gets contaminated by toxic compounds, and autoclave all the material used in the lab.

5. Risks of Your Project in the Future

What would happen if all your dreams came true, and your project grew from a small lab study into a commercial/industrial/medical product that was used by many people? We invite you to speculate broadly and discuss possibilities, rather than providing definite answers. Even if the product is "safe", please discuss possible risks and how they could be addressed, rather than simply saying that there are no risks at all.

a) What new risks might arise from your project's growth? (Consider the categories of risk listed in parts a-d of the previous question: lab workers, the general public, the environment, and malicious mis-uses.) Also, what risks might arise if the knowledge you generate or the methods you develop became widely available?

We need to take into account that Z11-16:OAc and Z11-16:Ald so water contamination may occur. Nonetheless, any harm may happen if plants are grown in areas far from rivers.

b) Does your project currently include any design features to reduce risks? Or, if you did all the future work to make your project grow into a popular product, would you plan to design any new features to minimize risks? (For example: auxotrophic chassis, physical containment, etc.) Such features are not required for an iGEM project, but many teams choose to explore them.

Yes. We look forward to introducing a biosafety module which consists on two parts: a male sterility submodule and an identity preservation submodule.

The male sterility submodule is based on a barnase, an RNase gene from *Bacillus amyloliquefaciens*, specifically expressed in anthers under the regulation of the TA29 tapetum-specific promoter. As result, pollen from these plants will not be capable of fertilize plants. The identity preservation submodule will express a chromoprotein, a protein which will provide the plant with a color, so that plants containing the biosafety module will be easily differentiated from non-transgenic plants.