**Feedback on biohardware from Tom Hodder, London BioHackspace**

1. Do you currently work with plants/algae and, if not, is this an area of research you would be interested in?

We've cultured algae for microscopy purposes, including pyrocystis fusiformis and pyrocystis lununa. We did some work with yeast for our previous iGEM entry. It's definitely something we will be looking to do more with

1. What do you see as the major obstacles in working with plants/algae?

I think it's a level up in terms of complexity, so the main issue is time and resources to do the work. particularly with working with plant GMO there are regulatory issues that make it more complex. Currently our group lack the skills/experience and equipment for working with GM plants.

2. What equipment do you currently use for culturing your cells?

We mostly have a workflow setup for bacteria, so we use a shaking incubator, laminar flow hood, and the various means of ensuring sterile technique.

3. What features would you find useful in a new incubator?

It would be nice to have the ability to add a camera to watch the growth on plates etc

4. Could you give a rough estimate of the budget your lab has for new instruments?

We historically have relied on donated equipment and our income is very small. However I am keen to invest in better equipment and we have 1000-200 GBP to spend in the next year. (but most of that is likely to be kits, enzymes, and consumables)

5. Does your lab / community group currently use transformation protocols? Which ones?

I can't speak for the wider group, but I mostly work with the protocols published by eppendorf, as we have an Eppendorf electroporator. However there are various sources of protocols aimed at open bio labs, for example;

<http://theolb.readthedocs.io/en/latest/index.html>

6. Have you used biolistics before?

No.

7. Does your lab / community group have access to a gene gun? If not, is this something your lab would be able to purchase in the future?

A local uni donated a gene gun to us a while back, but it was just the head. I looked into the cost of obtaining the consumables but it was going to cost several thousands, so we ended up donating to another group at UCL.

It's something we would be interested in, if it were reasonably cheap.

8. What level of technical experience do members of your lab currently have?

 e.g. in electronics/wiring, wood work, laser cutting, general DIY

Many of the group have good experience with designing and assembly electronics, and we are located in a hackspace, so we have a pretty good level of skill/experience

9. Have you built any open source hardware before? If so, did you encounter any difficulties?

Yep, we built one of the openPump syringe pumps, and made up the openPCR and a spectrophotometer based on an open design. These projects seem to be fairly basic, and the equipment is not up to the level of the commercial versions. Often they lack basic features and are not very robust. However they are a good base for an improvement project.

10. Are you interested in building your own open source hardware, or finding out more about DIY biology hardware?

Of course, we are biohackspace!

11. We are designing a low cost open source growth box and gene gun - roughly what budget would your lab be able to allocate to building one of these devices, if they could be used in place of higher cost commercially-available equipment?

All in, I think we would pay 500 GBP for a specific piece of open hardware. However for us, the main issue is that we are not registered for GMO for plants.

12. Would you be interested in receiving protocols for our hardware and possibly building it for your lab / community group?

I would definitely be interested in building the project.

13. Do you have any comments on the specifications above?

More details would be useful... List of equipment required for manufacture. Parts list. Step by step instructions. Example protocols etc

14. Do you have any recommendation as to how we can improve our hardware’s safety?

It might be an idea to add a blast shield around the target area, and some sort of cut off, to make sure the gun cannot be fired unless the shield is in place.