

From 0 to 20

Biomedical project and business pitch in two weeks

Report of the 2022 biomedical innovation and Entrepreneurship Training Course for
SPARK Asia and Oceania

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Introduction

It's uncommon for a scientist to become an entrepreneur. One of the major reasons supporting this statement is the absence of business and administration teaching in science, and this is due to a lack of interest from scientist to become managers or businessmen. This becomes a problem when researchers want to launch a start-up to bring their ideas outside the academia because there are some important details to consider before and during this process.

The Biomedical Innovation and Entrepreneurship Training Course for SPARK Asia and Oceania offers the opportunity for scientist and engineers to learn more about those details, from conceiving an idea, to the business pitch, a 20 minute presentation. I took part in its **2022 edition**, and with this report I want to talk about my experience, the knowledge I obtained and the lessons I learned during this **2 week course**. this report is divided in sections, starting with the following.

1. Many talks, many interesting lessons

The course was hosted by SPARK Oceania's professor Michael Wallach and Dr. Isabella Hajduk. There were around 32 students with different backgrounds and nationalities: some doing their masters or PhDs like me, some already working in a company or hospital or some with start-up experience. The majority of participants came from Australia, Taiwan or Japan, with few other nationalities such as Indonesia, Russia and Colombia (myself). The main language used for communication was English. The course was organized with talks during the morning and workshops during the afternoon-evening.

I want to mention the most important aspects of the different talks we received. One of the first talks was about creativity and design ideas. In there, the presenter spoke about design thinking and what should be considered when conceiving a product. Design thinking is a design process with the user as its core. Every phase of the process contemplates the user and its needs. This approach is very important when we want to create something to address an unmet need, specially in the biomedical field.

The next talk was about patenting. Patenting is done to protect our ideas and with them the products we create. Is not easy and in some cases is better to apply with the support of a lawyer. The most important conclusion from this talk was to submit a patent

application, even provisional, before publishing the results of our research because if not, is not possible. What I mean is that after publishing, the idea and process become publicly available, making the claim for novelty very difficult or impossible.

The following presentation was centered on creative thinking focused on biomedical research and innovation. We learned about how is not always necessary to start a product from zero if we are keen enough to see how to repurpose a drug or a device. This strategy is interesting because when we seek approval for a drug or device with another purpose, when it has already passed some safety concerns, the process tends to go faster and without so much trouble, being less risky and cheaper, becoming very attractive for investors.

Finally, I want to comment on the pitch guide presentation. There are different types of pitches, ranging from very short (30s to 2 min - elevator pitch), middle length (5 to 20 min - business plan pitch) to lengthy (30 to 60 min - full presentation). Regarding the business plan pitch, what is important during its preparation is to think of its purpose which is to entice the audience, making them part of the idea while keeping the story simple and consistent, explaining the business plan briefly, without much detail, just enough to keep them excited and wanting more. The business plan is one of the most important parts of this pitch, it should contain the ensuing key categories, especially when it's about a biomedical device or drug: clinical validity, regulatory and reimbursement, competition and commercialization. Is also important to check that the presentation flows well between the explanation of the product and the business plan while considering the number of slides.

As I mentioned before, we had workshops after the talks. These workshops offered a space to discuss and construct our own project and prepare its presentation for the last day. I will explain my project briefly and comment about what I did and what I could have done better.

2. Made in Haven

The name of my project is Haven - cell therapy. I choose this name with my colleagues because it means a place of safety, a refuge and that's what we would like our patients to think by using our products. I worked on this project with three Taiwanese students. Although sometimes the communication was not fluent, we could understand each other very well.

The product we came up with was a cell sheet to cure intrauterine adhesions or IUA. The unmet need regarding this condition is the lack of prevention on its appearance after an intrauterine procedure and the possibility of infertility due to it. Even when there are some treatments available, they don't prevent the regrowth of these adhesions or fibrous bands and don't increase the chances of pregnancy in a woman after being removed. Our idea consisted of the application of a cell sheet inside the uterus, made from the host cells, in an area where a fibroid has been removed and after cutting the

adhesions. The cell sheet will regrow and repair the area. It would be attached to it with a carrier, called Pegasus, of our own design.

In general, I believe the idea is very interesting. It has a very clear purpose and the success of this technique for curing IUA, even though still under research, seems promising. The increase of the chances of pregnancy or at least that they are as similar as before treatment, have already been confirmed in rats. One big shortcoming of this solution is how cumbersome it could be for a patient, due to it taking around 1 month for her to have the cell sheet implanted. I proposed if the cultivation part or the process of making the sheet could be refined or made available in the clinic instead of being carried in a private lab, but it seems the current regulations don't allow it.

All in all, although the idea is novel, as far as I remember, some patents for intrauterine cell sheet already exist while for the carrier there are some but not with the same characteristics as ours. The budget and process of approval could be very difficult because we would require the recruitment of women with this problem (not many) and offer an incentive for taking part on it; also, cell sheet therapy costs a lot which implies that conducting a clinical trial would be more expensive than with other devices or drugs.

Considering all these pros and cons was part of the preparation for the final pitch, which I will explain briefly in the next section

3. Reaching Haven or not?

The final pitch (business pitch) was the most interesting and stressful part of the course. Even 30 minutes before the presentation, we were still making some changes to the slides. After pitching our idea, I felt relieved but it seemed to me that the audience couldn't catch it. Probably, we weren't very clear with our purpose or solution, a problem that happened even between my group members when we discussed about it.

Conclusions

Thinking about an unmet need, proposing a solution and coming up with a business plan is not an easy task, much less in two weeks, but the experience of learning more about the process of materializing an idea and bringing it outside the academia, was worth all the effort.

My last advice and the most important lesson from this program is to not fear asking what should be asked to experts or those that offer their help. I think the process of approval of a drug or treatment device is quite long and difficult, while if its for diagnosis or evaluation is shorter. I'm more inclined to tackle the latter in the future, if possible.

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