

Denise Zujur, Smart Tissues

“Developing novel bioinks for printing 3D human tissues”

90% of drugs do not get to patients because they fail during the clinical trials. In fact, for every new drug that fails, we put at risk the life of thousands of patients while costing \$1.5 billion dollars, and more than 12 years wasted during the drug development process.

You may be wondering why this is happening? That is because we scientists have a very inefficient approach to the preclinical tests. Cells cultured in petri dishes are still tested on animals, expecting that this method will predict the human responses. However, the data demonstrate that this is not the case. Smart Tissues can develop accurate drug testing systems, and can even create lab made tissues and organs in the future by using bioprinting technology.

The process of 3D bioprinting begins by taking the cells from the patient or from a donor, and combining them with a biomaterial that is called Bioink. This allows for the insertion of these Bioink in a 3D bioprinter and print layer by layer a three-dimensional human tissue that can be used for drug discovery, fundamental research, and regenerative medicine.

One of the critical parts of this process is having the right Bioink. However, most of the Bioinks available in the market are difficult to manipulate. They have pure mechanical properties, thermally unstable, sensible to contamination, and they are not clinically relevant which is an obstacle for translational medicine.

[Our Solution]

Our solution is the X-Ink. We have developed a new biomaterial, which is suitable for bioprinting and has the right combination of mechanical and biological properties. It has tunable elastic modulus so we can print tissues with different stiffness. It has a high cell proliferation, which is key for forming the human tissues, appropriate viscosity, so we can obtain excellent printability. And most importantly, our Bioink is the first Bioink in the market that has antibacterial properties. We have tested our Bioink in two of the more commonly found bacteria in the clinical settings, we found that our Bioink can reduce up to 80% the growth of bacteria.

In contrast to the Bioinks that are currently available in the market, printing with our bioink is easy. We can print at room temperature while maintaining mechanical properties and the high cell viability and also it has the added value of the antibacterial properties. So, in summary, our bioink is antibacterial, tunable, and is universal which means that it can be used in any bioprinter.

[Team]

The Smart Tissues team has been working on their technology for over three years, after meeting at the Graduate School of Tokyo University. There are also many advisors and key business partners, not only in Chile, but also in Japan.

They are currently working on the IP protection of their new biomaterial. They are also looking for investment and collaborative partnerships. Hoping to achieve two major milestones. Both are needed to start operations in Japan, and also to launch the product.

[Q&A]

Q.

One question from my side. I always like it that MBA students work while they do their MBA already have ideas on how to set up businesses and how to start it. I think it's fantastic. This is what innovation is all about. What is important, I think that you think through you asking for 1 million, what do you want to do with this 1 million. I always said 1 million is a round number. I don't trust round number. So maybe you have a breakdown of this budget, I trust that you need 750k or 1.5 million, or maybe a bit more. But think maybe true on how you want to spend the money and ever kind of break down and when investors want to invest in you that they have a clear idea on how you

want to spend the money and what they will get what they get back. Also, tell us how long you for example, can work with this 1 million is it helping you for half a year for a year. So also tell the time length that you want to spend this money but well presented. Thank you.

A.

Thank you very much. We'll keep it mind.

Q.

Especially like you guys formed a team with young talents at University of Tokyo you guys met? I think it's a great opportunity you have in front of you. The question is related to Harm-Jan's question. I think raising 1 million in Japan, that is reasonable number, but if you are in the US, maybe you will add another zero or something. So do you have a specific reason that you are going to operate in Japan? Or is it the logical reasons something?

A.

Yes, sure. Yes, actually, we believe that Japan is well known for being a leader in regenerative medicine. So we believe that bioprinting combining with, for example, with IPS cell technology, or all those key investment areas in Japan, will provide us with many opportunities. That's why we believe that Japan is the perfect country to start.

Q.

You know how you're going to spend the investment, the 1 million and the reason you want to stay in Japan. So I'm interested in knowing your near future plan in seeking collaborations, as a bioprinting in the future may not be a standalone business, what's your plan in seeking the partnership collaboration to maximize the outcome?

A.

Actually, our main technology relies on the Bioink which is a biomaterial, we believe that this biomaterial can be used not only for bioprinting. But for other kinds of three-dimensional cultural systems, also as a coating to provide antibacterial surfaces for medical devices. So we believe the from our Bioink we can explore other applications and based on that, and we want to establish also collaborations with the other bioprinting companies, which may have the hardware, for instance, so we can provide our biomaterial to those kinds of companies.

Q.

And one last comment from the regenerative medicine market, probably you should have the some sudden vision or the future shape of the market itself, and the positioning of your company in that in that type of the workflow of the customers. So I really want you to have the how you will grow together with other companies, if you can have the vision on it.