



*Dr Chin Sau Yin from the Molecular Engineering Laboratory (MEL), Biomedical Sciences Institutes, A*STAR is the winner of Singapore's Falling Walls Lab 2018. She convinced with her presentation on Biocompatible Implantable Devices.*

You delivered the winning performance at the Falling Walls Lab competition in Singapore? What is your innovative idea?

My idea is to introduce a new-generation of implantable medical devices. The fabrication strategy that we have developed enables the fabrication of medical devices that are entirely biocompatible, do not require an onboard battery or power source but yet can be actively controlled after implantation. This results in devices with sophisticated functions and yet are entirely safe for the patient.

Why should people pay attention to your research project?

Current implantable medical devices have resulted in great improvements in treatment outcomes, however they are more or less made using technology and materials that are no different from your regular electronic devices and have to be powered using batteries, which are also implanted into the patient. This can often cause adverse effects such as chronic inflammation, rejection of the devices and even additional surgical procedures to replace batteries that are running low. Often times, it is preferable to remove the device entirely after it has served its function. What we are proposing with this research will result in devices that are much safer for the patient and do away with additional surgical procedures to remove/replace batteries.

**How did you win over the audience?**

I believe most in the audience and judging panel will have had a relative with an implantable device (eg: pacemaker, cochlear implant or insulin infusion pumps). This makes the topic relatable. Additionally, my presentation also talks about an actual device that has already been designed and tested in animals. Although there is a long road to go towards clinical trials, it is obvious that this proposed device is more than just a hypothesis or idea.

You will be representing Singapore in the global Falling Walls Lab Finals in Berlin this November? How are you preparing for the event?

I am pitching to anyone and everyone to not only perfect my pitch but also improve upon the delivery such that people from various walks of life can understand the work.

You are also the winner of the EURAXESS Prize 2018 to visit a research lab anywhere in the EU. What are your plans?

I have not decided which institute or university I will visit and it will be a rather difficult choice as there are many great institutions in Europe such as the various Max Planck Institutes, ETH Zurich, Ecole Polytechnique Federale de Lausanne, and many more.

What are you most looking forward to?

The exchange of ideas between people from various disciplines. I enjoyed learning about different fields during the Falling Walls Lab as everyone made the effort to present their ideas in a way that can be understood by a non-expert but without compromising on the



impact of their research. In this way there could also be possibilities for interdisciplinary collaborations as well.

Where do you see yourself in 10 years in terms of your research career?

I hope to be bringing one of my research projects into the market and actually developing a product or a device that is able to impact healthcare positively.

Bio

Sau Yin Chin, PhD is a biomedical engineer with interests in real-world applications. She was trained in microfabrication and microfluidics and started off working on point-of-care diagnostics, specifically a CD4+ T-cell counter that was field-tested in Kigali, Rwanda. Her interests went on to include micropatterning of hydrogels and other soft materials. Her current work focuses on developing fabrication strategies for 3D printing micromachines that are entirely biocompatible and can be actively controlled using magnets. As a proof-of-concept, she lead a project to design and implant a hydrogel-based drug delivery device for localised low-dose chemotherapy in an *in vivo* osteosarcoma model. This work has been published in Science Robotics and has been featured in Nature, Research Highlights. In line with her interests in translational research, she also endeavours to explore the world of biotech entrepreneurship and is currently the President of Biotech Connection Singapore, a non-profit organization that promotes life science entrepreneurship via the creation of a platform of interaction between researchers, industry and government.