

KTEO NEWSLETTER

Feb 2022

IMPACT STORY

PolyVentures

Startup Postdoc Builds Miniature "Mushroom Spaceship" to Protect Fragile Probiotics



Dr Gail Chang, a GBA Startup Postdoc candidate at PolyU and founder of Bo InnoHealth Biotechnology Company Limited, studies how mushrooms grow. Inspired by the use of mushroom cells as furniture and packaging materials in the US as well as NASA's research on potential fungi-based habitats on the Moon and Mars, she is building miniature "mushroom spaceships" to carry some "micro-passengers".

"My area of expertise is in food and nutrition", says Gail. "It occurred to me that as mushroom cells are heat-resistant and pressure-resistant, they could also have useful applications in food technology. Research has found that walls made of mushroom cells are so strong that they can withstand the harsh environment in space and protect everything inside. Therefore, I started to study how mushroom cells might protect fragile probiotics." Probiotics are live microorganisms that are claimed to provide health benefits when consumed.

Gail has then developed a protective shell using mushroom cells. Just as spacecraft carry humans into space, the mushroom protective shell acts like a miniature spacecraft, carrying probiotics for a variety of different uses.

From laboratory to mass production: Supply chain poses a challenge

Probiotics are commonly found in commercially available lactobacillus drinks. However, they are less common in food as most food processing techniques involve sterilisation. Gail wondered whether the heat-resistant and pressure-resistant properties of mushroom cells may thus provide the protection that probiotics need.

Gail used to grow mushrooms herself in the laboratory for her research, but securing a regular supply of raw materials gave her a headache. She just couldn't grow them fast enough for the growing need. She then turned to readily available produce. But she had to consider the stability of the supply chain. "Not only do the strains of mushrooms vary from farm to farm, the variation in growing environments also leads to a variation in the cell structure of mushrooms depending on where they're sourced from. Different batches of mushrooms from different suppliers vary in terms of their cell structure and viscosity", says Gail. "And this makes the research process more difficult."

Gail concedes with a smile that she is going to face a challenge taking the technology out of the laboratory. "I expect it to be difficult to find a production line partner. It's been difficult for the factory to switch to another material for production, and negotiations with manufacturers have not been a smooth sail", she admits. "At the moment, we've yet to secure a manufacturing partner to produce the 'Mushroom Spaceship', although downstream food manufacturers are showing a lot of interest."



A researcher's approach to dealing with challenges in business

Gail has encountered countless challenges since she embarked on her research. But her years of scientific research have enabled her to uphold the spirit of academic research in overcoming these difficulties.

"People in the research universe are used to challenges because they often encounter problems that they can't find answers to", says Gail. "If you can't find the answer, you have to put the problem aside and turn to solving another problem. Maybe a few days later, an opportunity will emerge to break the deadlock. So, the strength of those with research experience in starting a business is that they tend not to rush for success, and don't give up because of a temporary setback."



Startup Postdoc programme opens up new opportunities

In 2019, Gail was selected into the PolyU GBA Startup Postdoc Programme. She was subsequently granted a PolyU Micro Fund and admitted into the Incu-Tech Programme of the Hong Kong Science and Technology Parks Corporation (HKSTP). She has received numerous awards in entrepreneurial competitions, which included the Gold Award of China International College Students' "Internet +" Innovation and Entrepreneurship Competition and the Silver Award of "Challenge Cup" China College Students Entrepreneurship Competition. The GBA Startup Postdoc Programme lasts for two years, providing candidates with a monthly salary, access to research facilities, and assistance in applying for government grants and startup subsidies. "In fact,

it would be difficult to carry on without a salary, and by participating in these programmes, I can access a broader spectrum of social entrepreneurship resources," says Gail. For example, she explains how her engagement with Micro Fund 2020, which provided her with a funding of HK\$120,000, paved a fast lane for other fund applications, helping her to gain recognition by more startup funds faster and easier. In 2021, Gail successfully obtained HK\$1.5 million of angel round financing, as well as additional funding of HK\$900,000 from the PolyU Tech Launchpad Fund (TLF) Scheme and HK\$1.29 million from HKSTP Incu-Tech Programme to accelerate her young company's growth.

Recently, Gail has applied her technology in a fungi- and plant-based meal replacement powder for weight loss and gut health improvement. "Antibiotic medicines harm our gut microbiome," says Gail. "I hope by feeding the beneficial microbes with our natural supplement, the damaged gut environments can be reversed." This meal replacement, called AkkMore™, has been tested on animals and is being tested on humans with promising results. Gail is pleased with the development of the startup, and envisages a bright future for her research and entrepreneurial endeavours.



ENTREPRENEURSHIP INITIATIVES

Proof-of-Concept Fund Encourages Student Entrepreneurship

PolyU Student Entrepreneurial Proof-of-Concept (POC) Funding Scheme is one of the key entrepreneurship education components at PolyU. As of 2021, over 120 student projects have benefitted from almost HK\$1.7 million in funding and other non-financial support. With the kind support from "Dr Winnie S M Tang-PolyU Student Innovation & Entrepreneurship Scholarship" since 2022, POC Fund aims to instil a problem-driven innovation mindset into young talents through experiential learning and student-initiated research and development. Student project teams will be awarded up to HK\$20,000 scholarship and go through a month-long POC Bootcamp with guidance from the dedicated team coaches. The outstanding teams will gain fast track to PolyU Micro Fund Scheme for further pre-incubation support. We have started our recruitment process and began holding informational sessions with professors and their classes. If you would like to learn more please visit our dedicated [webpage](#).

A banner for the PolyU Student Entrepreneurial Proof-of-Concept (POC) Funding Scheme 2022. The banner features a colorful background with arrows and logos. The text includes: "85th THE HONG KONG POLYTECHNIC UNIVERSITY 香港理工大學", "KTED Knowledge Transfer and Entrepreneurship Office 知識轉移及創業處", "Supported by: Dr. Winnie S M Tang PolyU Student Innovation & Entrepreneurship Scholarship", "POLYU STUDENT ENTREPRENEURIAL PROOF-OF-CONCEPT (POC) FUNDING SCHEME 2022", "Up to HK\$20,000 Student Scholarship", "POC Bootcamp with Dedicated Team Coach (covering Entrepreneurship, Knowledge Transfer, Venture Capital, ESG and more)", "Experience Entrepreneurship, Foster Innovation, Scale Impact and Win Prizes!", "Submission Deadline: 27 Feb 2022 (Sun)", and "Briefing Session: 8 Feb 2022 (Tue) | 1 - 2 PM | PolyU".

PolyU Maker Connect Creates Empowering Network for Hardware Startups



Co-organised with the School of Design (SD), "PolyU Maker Connect: Design x Tech x Manufacture" was held at the newly revitalised Central Market in October 2021. PolyU Maker Connect was a vibrant networking occasion where young entrepreneurs, I&T talents, designers and industrialists interconnected and explored collaborations. Echoing the University's GBA PolyVentures 2025 vision, it aimed to create an empowering network of stakeholders and resource providers in PolyU's entrepreneurship ecosystem to accelerate product development of hardware startups through synergistic collaborations.

Over 70 invited guests witnessed the award presentation to 12 PolyU hardware startup teams supported under PolyU Maker Fund Programme 2021. The teams are going to kickstart their two-year incubation journey with HK\$600,000 grant and develop their projects in the Greater Bay Area. Moreover, Prof. Tak Chi Lee of SD also introduced SD Plus (SD+), a knowledge transfer unit of SD and announced the appointment of five young designers as SD+ Ambassadors.



Pre-mixer Grooms Participants for Startup Ideation at PolyU Innovation Challenge

In strategic partnership with Chinachem Group, Esri China (Hong Kong) and HKT, PolyU Innovation Challenge is a startup ideation competition in which PolyU students and young graduates can meet like-minded teammates, come up



with new tech ideas and business models. In the Pre-Mixer event of the Challenge in mid-December 2021, our strategic partners shared their market insights with the participants, and discussed the pain points of 5G technology, geographic information system (GIS) and property technologies. The participants also learned more about the Challenge.

PolyU-nurtured Startups Gain Exposure at Tradeshows in Hong Kong and GBA

To create opportunities for PolyU-nurtured startups and alumni entrepreneurs to maximise their exposure, PolyU joined physical and online tradeshows in Hong Kong and GBA in October and November 2021.

A total of 14 PolyU-nurtured startups* were showcased in HKTDC Electronics Fair (Autumn Edition), Hong Kong International Medical and Healthcare Fair, International ICT Expo, as well as the online version of China Hi-Tech Fair.

These young and promising companies presented their innovations and technologies to visitors from industry and the general public, and even to the audience of exhibitors' forums. The experience and exposure gained from their participation will certainly be an asset for their companies's development.



* The 14 startups in the spotlight include:

PolyU academic-led startups – Grand Rise Technology Limited, Eieling Medical Limited, Active Biotechnology (Hong Kong) Company Limited, and Telefield Medical Imaging Limited

PolyU-supported/alumni startups – CLAIRE Clinical AI Research Limited, Blue Pin (HK) Limited, InnoSpire Technology Limited, Sisters Pro AI Solutions Limited, RC Labs Ltd, APEX PowerLab Company Limited, Shenzhen TOZI Technology Company Limited, Amonics, 理大玻璃技術(深圳)有限公司, and 國桓科技(深圳)有限公司

KNOWLEDGE TRANSFER INITIATIVES

Exchanges with CMA Intensify Synergistic University-Industry Partnership



PolyU is committed to advancing the transfer of the University's technologies and innovations for the benefit of industry through enhancing collaboration with industrial partners and organisations. In the month of December 2021, the senior management of the University paid a couple of exchange visits to The Chinese Manufacturers' Association of Hong Kong (CMA), as well as the CMA+ technology commercialisation centre and its laboratories in Fo Tan Industrial Zone.

On such occasions, not only did PolyU's delegates and CMA's senior executives exchange information on their latest developments, but also engaged in rigorous discussions on collaborating in knowledge transfer, entrepreneurship support and exchange activities. The conversations greatly deepened mutual understanding between the two parties, paving the way for further collaboration in future.



PolyU Embraces Government's Flagship Event to Promote Innovation and Technology

A number of the University's internationally awarded technologies received ample exposure at InnoCarnival 2021, an annual signature event staged by Innovation and Technology Commission, HKSAR. Through a nine-day exhibition in October 2021 and a concerted campaign composed of a press briefing, press interviews and media write-ups, the innovations received extensive publicity and attention.

Seven projects involving advanced applied bio-chemical, biomedical, smart city, automotive and edtech applications and three related PolyU-supported startups were showcased in the media events and the exhibition. PolyU's participation in the fun-filled and information-packed carnival kept the public abreast of its most recent technological developments and their impacts.



Networking Seminar Makes Impactful Contributions to Silk Road Development



The seminar China's Perspective and Digital Economy in a Post-pandemic World in December 2021 has reached out to over 220 business leaders, industry experts and professionals from Hong Kong and Mainland China. Six seasoned experts, including Derek LAI, Sarah CHI and Kelvin HO from Deloitte; Joceyln WANG from CEB International; ZHANG Zhenyu from SINOMACH Hong Kong; and Prof. XU Xinpeng from PolyU, were invited to join the panel discussions. They shared their views on the latest development of Digital Silk Road, RMB internationalisation, as well as the opportunities for Hong Kong professionals in GBA.

The seminar was the finale of the Belt and Road Cross-Professional Advancement Programme which was funded by the Professional Services Advancement Support Scheme of the HKSAR Government. With seven workshops and two networking seminars delivered in over three years, the programme provided a unique platform for professionals in Hong Kong to exchange views on multilateral co-operation and to explore new market opportunities arising from the Belt and Road Initiative. More than 40 prominent business leaders from Chinese enterprises and international firms were engaged as guest speakers. Over 700 professionals from the finance, accounting, construction, engineering and legal sectors participated in the programme.

The programme demonstrated PolyU's expertise and network to foster talent development and knowledge transfer, making impactful contributions to the development of Hong Kong and the Nation.



ENTREPRENEURSHIP AWARDS

Entrepreneurs often participate in competitive events to widen their exposure and networks, attract investments, gain recognition and earn resources for their entrepreneurial journeys. Some PolyU-nurtured startups and student teams have performed well in recent competitions. Congratulations to all award winners below:



Huawei ICT Competition Hong Kong SAR 2021-2022

- **Champion**
Polynomials (student team)

Hong Kong ICT Awards 2021

- **Student Innovation Award (Grand Award)**
- **Student Innovation (Tertiary or above) Award (Gold Award)**
Jackal XU Zhenda (student team)

City I&T Grand Challenge

- **Innovation Awards**
 - InnoSpire Technology Limited (WeVoice+)
(Awardee of Micro Fund 2020)
 - iMeddy
(Awardee of Proof-of-concept Fund 2020)
 - SENToR Education Company Limited
(Awardee of Micro Fund 2021)

The 7th China International College Students' "Internet+" Innovation and Entrepreneurship Competition

- **Silver Award**
iMeddy
(PolyU Student Entrepreneurial Proof-of-concept Fund 2020)

Knowledge Transfer and Entrepreneurship Office

Contact Details: ☎ (852) 3400 2929 ✉ info.kteo@polyu.edu.hk 🌐 <https://www.polyu.edu.hk/kteo>

