



THE HONG KONG  
POLYTECHNIC UNIVERSITY  
香港理工大學

# **Annual Report** on Activities and Advancement **of Knowledge Transfer**

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FY2018-19

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# **1. Executive Summary: KT & Entrepreneurship @ PolyU**

## **1.1 Review of KT Activities in FY2018/19**

This report summarizes key KT and Entrepreneurship activities and developments of PolyU in FY2018/19. Observations and suggestions from UGC in the past have been carefully considered to address related KT developments and practice improvements. The recurrent UGC KT fund also enabled the University to embark on a longer-term roadmap in its latest strategic planning exercise, with refined positioning to create higher impact in various KT and Entrepreneurship activities.

In FY2018-19, income generated from mainstream KT activities, namely, consultancy, contract research under consultancy and licensing<sup>1</sup> amounted to \$91.5 million (LY: \$112.1 million, -18.4%). The aggregate value of on-going collaborative research projects on hand was more than \$650 million. In this fiscal year, the University continued to partner with industry in driving impactful applied R&D and commercialization outcomes both locally and regionally, especially in the Greater Bay Area (GBA). In July 2018, PolyU signed a collaboration agreement with Shenzhen University (SZU) to establish Greater Bay Area International Institute for Innovations (GBA I3), a strategic platform for PolyU to further expand its KT and entrepreneurship developments in GBA for years to come. The Institute is also meant to be a vehicle for overseas corporations and institutions to explore KT, innovations and entrepreneurship endeavors through various collaborative and soft landing schemes. More information about the GBA I3 and other GBA related KT activities can be found in Section 3 and Section 5. In addition to GBA, PolyU has also established a Belt and Road Strategic Platform, with key initiatives in alignment with the national Belt and Road Initiatives such as advanced professional training supported by the Hong Kong SAR Government. More can be found in Section 3.

## **1.2 Developing Strategic KT and Entrepreneurship**

The FY2018/19, being the gap year between the two 6-year strategic plans of the University in alignment with UGC's triennium planning cycle, was a year of rapid change to embrace the bootstrapping Innovation and Technology policies which fundamentally impact the thinking and positioning of higher education sector in the practice of KT and Entrepreneurship.

With the University re-visiting its policies and operations for adding better value and impact through the KT processes, various programmes and initiatives in connection with deeper university-industry partnership, technology commercialization, and tech-driven entrepreneurial pursuits were launched in accelerated pace both on campus and in the larger community.

The emphasis of innovation and entrepreneurship both locally and in the Greater Bay Area (GBA) gave rise to ample opportunities for the University to advance KT through start-ups, and also as a way to demonstrate our support to young graduates' lifelong pursuit of personal values. It is under such philosophy that the University has conducted a series of review in various aspects of KT policies to align research to impact, with particular attention to staff involvement, infrastructural support, commercialization process de-risking, and conducive collaboration through university-industry partnership programmes along the KT value chain. Creating synergy in operations and programs associated with innovation and entrepreneurship will position the broader university community to leverage academic research output to innovative applications that would benefit regional development in GBA. In future, related intellectual property and KT policies will be further enhanced to facilitate faculty and students' participation to commercialize their own inventions through starting their own companies.

Sections 2 to 5 of this Report provide further information with respect of the University's effort and achievements in the KT and Entrepreneurship, with Section 6 highlighting related performance measures and the actual deployment of the KT Fund in FY2018/19.

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<sup>1</sup> Recognized through PolyU's wholly owned subsidiary, PolyU Technology and Consultancy Co. Ltd. (PTeC), contract research income through the Research Office has not been included.

## 2. Creating Impact for Industry and Society

As an application oriented university, KT has long been a strategic importance at PolyU to create societal and industrial impact through its innovations and research technologies to advance industry standards and solve industry-wide problem, which eventually creating a better and more sustainable environment for the betterment of human beings. Selected key KT projects are highlighted in the following sections.

### 2.1 Advancing Innovations and Technologies with Artificial Intelligence

#### (a) Comprehensive Study on Autonomous UAV System for E&M Installation Inspection



Monitoring of electrical and mechanical installations of devices on bridges and in tunnels is often carried out only with manual visual inspection that is both time consuming and costly. Teaming up with Electrical and Mechanical Services Department, PolyU researchers have developed an autonomous unmanned aerial vehicle (UAVs) for bridge and tunnel inspections. Powered by AI, the UAV can detect electrical and mechanical installation locations such as road lamps, CCTV and lamp shades. It also includes an intelligent path-planning algorithm and automatic flight path calculation for precise location inspection and visualizing obstacles surrounding the UAV and calculating its distance. For tunnel inspection, the device is capable of

operating in dark, dusty, humid conditions, with instant data feed to help the inspectors to scan the environment real time.

#### (b) Development of User Interface and Preparation of User Manual on the Deep Learning Model in Identification of Rock Outcrops

As a city with hilly terrains, the risk of landslides in Hong Kong due to water erosion cannot be overlooked. Understanding and monitoring the surface geology of natural hillside is one of the key factors to manage such risks. Yet, to produce a surface geology map covering Hong Kong would require substantial resources in field mapping and aerial photograph interpretation by expert geologists. Working with the Civil Engineering and Development Department of the Government of HKSAR, our researchers developed a model using deep learning and remote sensing techniques to map out hillside rock outcrops in an efficient and cost effective manner. The system will provide vital information on the surface geology map of Hong Kong's natural terrain to mitigate landslide hazards.

#### (c) Fabric Defect Detection System



Fabric inspection is essential to ensure the quality of fabrics and textile. Despite the highly automated manufacturing process, most textile manufacturers still rely on manual visual inspection, which remains inconsistent at times due to human errors.

PolyU's researcher has developed an automatic fabric defect detection system named "WiseEye", comprised of specially designed firmware with advanced AI algorithms. Based on trained data, WiseEye is capable of detecting 40 common fabric defects for automatic in-line detection of fabric defects.

The system has attained over 90% fabric defect detection accuracy, with a corresponding 90% reduction of loss and wastage in the manufacturing process when compared to human inspection. Licensed to a leading apparel manufacturing company, the technology is expected to shape the way of in-line inspection in the textile industry. The technology won two Grand Awards and Gold Medal with the Congratulations of Jury in the 47th International Exhibition of Inventions of Geneva in 2019.

### 2.2 Fostering Urban Sustainability & Green Technologies

#### (a) Enabling Drivers to Make Informed Route Choices through Smart 'Real-time Traffic Information' Solutions



Moving forward on the "smart mobility" initiative outlined in the Hong Kong SAR Government's "Hong Kong Smart City Blueprint", traffic detectors will be installed on all strategic routes to provide real-time traffic information to road users. Collaborating with Autotoll Limited, our researchers developed algorithms to enable video detectors to collect road use data on traffic speed, volume, and accidents to analyze the traffic condition of different vehicle categories. Capable of automatic license plate recognition, this smart city application will enable comprehensive monitoring of road traffic conditions for improved traffic management. In addition, more real-time traffic data and information will be provided for public use, assisting the public to better plan their journeys with route options or transport modes.

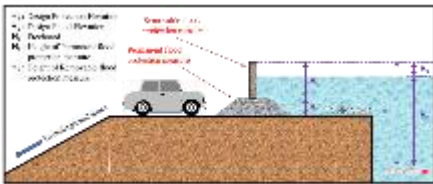


(b) Managing the Impact of Natural Disasters to Building and Car Parks



Hong Kong and Macau's geographical position makes it susceptible to weather-related threats such as tropical cyclone, rainstorm and storm surge, with occurrence of severe weather conditions being increasingly on the rise due to global warming. Super typhoons Hato and Mangkhut hit both Hong Kong and Macau respectively in August 2017 and September 2018, resulting in storm surges and rainstorms causing severe flooding damages.

In August, 2018, our researchers were invited by The Civil Engineering Laboratory of Macau to review and develop flood prevention guidelines for basements and underground car parks, with the aim to reduce damage and injuries during natural disaster strikes.



(c) Real-Time Monitoring, Assessment and Alarming System for Construction-Induced Vibration Impact on Hospital Buildings

Construction projects near existing hospitals present a technical challenge to the construction industry because induced disturbance to the operation of ultra-precision medical equipment. In collaboration with Chevalier (Construction) Co., Limited, our researchers developed the first real-time vibration monitoring, assessment and alarming system in Hong Kong through the leveraged use of recent advancement in sensing technology and software techniques. The System, providing continuous vibration monitoring and assessment to protect sensitive laboratory equipment in operation, has been implemented on a number of hospital expansion projects in Hong Kong. This innovative system not only provides an effective warning system for hospitals, but also improved industry standards and health and safety.

## 2.3 Promoting Healthy Living and Wellbeing

(a) Smart Elderly Home System and Assistive Technologies for the Elderly

Assistive technology and smart homes are important and integral components to health monitoring for the elderly and the communities they live in. Our researchers were involved in the development of a smart elderly home system for the Jockey Club Care and Attention Home at Yan Chai Hospital. The project involved design and installation of an innovative IT system for improved living quality, employing integrated innovative design concepts to enhance user experience and communication between the elderlies, family members and caregivers, with particular emphasis on communication, entertainment, connection and information.



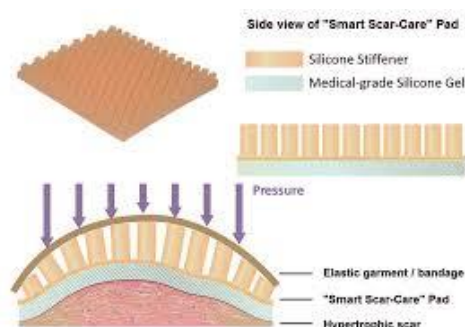
In another project aimed at the elderly population, our design researchers were engaged by Eastcolight (HK) Limited to design an intelligent digital companion for the elderly based on finding of user experience studies. Both projects help improve health outcomes, assist in independent living, and reduce healthcare costs.

### (b) Scar-Care Pad

Pressure garment therapy has long been used to treat hypertrophic scars resulting from burns, surgeries and trauma. Conventional pressure garments and pressure pads are usually made with polyethylene foam, which are uncomfortable to wear and often not durable enough to sustain the pressure over concavity on the scar. Our researcher has developed a scar-care pad which combines medical-grade silicone gel with unique chemical formula and silicone rubber stiffener to create hydration effect and at the same time reinforce evenly distributed pressure and occlusion for scar treatment.

The pad is much more durable compared to the polyethylene foam and can be used repeatedly with regular cleaning. The scar-care pad can be conveniently used underneath elastic bandages or pressure fabrics, including Smart Pressure Monitored Suit (“SPMS”) also developed by the research team for optimal therapeutic effect. A clinical trial showed its good performance on scar pigmentation, vascularity, elasticity and dehydration.

This innovation snatched the Grand Award and the Gold Medal with the Congratulations of Jury at the 45th International Exhibition of Inventions of Geneva in 2017. The technology has been licensed to a PolyU-supported start-up company for its commercialization.



### (c) One Size Fits All Lifejacket



The Marine Department of the HKSAR Government has been implementing marine safety enhancement measures in recent years, including enhancement of the lifejacket provision requirement on local marine vessels. MD has engaged the Institute of Textiles and Clothing of PolyU to develop a lifejacket which fits both adults and children (“Lifejacket”) whilst fully conforming to the related international standards. To ensure that children will stay afloat in the water without slipping out of the jacket, special straps to neck, waist and crotch were developed for one-size-fits-all application.

Having received positive feedbacks from the Legislative Council on the adoption of the Lifejacket, Marine Department intends to initiate an amendment to related laws to require operating vessels to have adequate number of lifejackets on board when number of children and adult passengers is no longer an issue.

The technology has been licensed to two local companies specializing in marine safety equipment. After the enactment of the ordinance, sector-wide adoption of the Lifejacket is expected and will exemplify the application value of PolyU’s research outputs for public good.

## 3. Advancing KT for Impact Beyond Hong Kong

### 3.1 Supporting Belt and Road Development Professional Advancement Programme



PolyU has been actively taking part in the Belt and Road Initiative with her domain expertise and networks on KT and talent development. Funded by the Hong Kong SAR Government under the Professional Services Advancement Support Scheme, PolyU officially launched the Belt and Road Cross-Professional Advancement Programme in December 2018, with a prominent launch ceremony commemorated by the Chief Executive at the Government Headquarters.

This one-year programme is designed to provide a first-ever cross-professional networking platform for Hong Kong professionals in the fields of accounting, legal, building and constructions to connect with Hong Kong and Mainland business leaders for knowledge exchange and multilateral collaboration. seven workshops are

arranged for 2019 with more than 150 people participating in each of the first four workshops and related thematic seminars.

The Tanzanian Leadership Programme launched in June 2019 is another PolyU initiative to offer cross-cultural and innovative youth leadership programmes to Belt and Road countries. The programme aims to nurture the Tanzanian delegates to become effective leaders in their own roles and professions. In conjunction with classroom lectures, field visits to key agencies and businesses such as Hong Kong Science and Technology Park and Huawei Technology Company were arranged for the delegates. The first cohort consisted of 30 delegates from various professional sectors, including IT, manufacturing and healthcare, all found the learning experience in Hong Kong extremely enriching and fruitful.



### 3.2 Greater Bay Area International Institute for Innovations (GBA I3)



To leverage the national initiative to develop the Guangdong-Hong Kong-Macau Greater Bay Area (GBA) as a world-class innovation and technology hub, PolyU has been actively exploring and engaging partners in the GBA region to foster its KT and entrepreneurship development. In July 2018, the University entered into a partnership with Shenzhen University to jointly develop a Greater Bay Area International Institute for Innovation (大灣區國際創新學院), with an aim to build an open platform to facilitate international and multi-sector collaborations on KT and entrepreneurship through open

innovation, education programmes, and related start-up support. More information about GBA I3 can be found in Section 5.

### 3.3 Exploring Research Collaboration and Technology Development

PolyU clinched multiple research collaborations of national and international scale, forging ahead on advancement of KT. The University collaborated with regional and global partners including Alibaba Cloud, China Resources and Imperial College to pave the way on furthering joint research in Artificial Intelligence, marine robotics, novel micro-electronic devices and precision medicine. Moreover, with our researchers' active participation in the GBA Rail Transit Joint Innovation Union, the Guangdong-Hong Kong-Macau Supercomputer Alliance, Guangdong-Hong Kong-Macau Space Science and Technology Alliance, the Guangdong-Hong Kong-Macau Ocean Technology Innovation Alliance, collaborative research framework agreement on green textile materials with Wuyi University and PolyU-Axis Therapeutics Joint Center for Immunotherapy, PolyU is poised as one of the important stakeholders in driving technology development and KT in the Greater Bay Area and beyond.



## 4. Engaging Partners and Communities

To advance KT development and create synergy between the KT and Entrepreneurship, PolyU is always eager to cultivate beneficial networks and partnerships with stakeholders in the community and the innovation ecosystem. All along, PolyU also actively promotes its innovations and research strengths through proven marketing channels and platforms.

### 4.1 Promotion of KT and Entrepreneurship

#### (a) Cross-channel and Cross-platform Marketing



To connect the broadest prospective audiences for maximum reach and influence, our innovations are publicized across a wide array of marketing platforms and channels. Consistent messages on PolyU's works and achievements in KT and Entrepreneurship are communicated in an integrated manner.

Exhibitions are an indispensable channel for demonstrating PolyU's KT and R&D expertise. On campus, iconic projects and successful KT projects are showcased in the House of Innovation (HoI). With over 340 scheduled visits and 9,500 visitors last year, HoI offers an efficient channel in drawing audiences to the heart of PolyU. To further its impact, HoI will undergo a major design and construction renovation in the coming year for optimal visitor experience.

Off campus, we participate in strategically relevant tradeshow and exhibitions, where our researchers can readily interact with tradespeople and industry face-to-face. In FY2018/19, PolyU joined 16 such shows across Hong Kong, Shenzhen, Shanghai, Guangzhou, Kuala Lumpur, Singapore, Geneva and the Silicon Valley, efficiently demonstrating our KT effort and achievement to targeted segments in the world.

Our marketing and communication efforts are usually aligned with these exhibition events and other activities. Catering to the dynamics of various industrial and business sectors, different social media platforms were employed to disseminate our messages. In addition to publicity events and publications, technology videos were also produced for PolyU's YouTube channel. We also revamped the website of the Institute for Entrepreneurship to offer responsive access throughout all devices, better disseminating information on KT and Entrepreneurship.

#### **(b) The “Star Tech” Approach**

A unique “Star Tech” approach has been adopted to select technologies and inventions with significant impact potential. A marketing roadmap is then constructed to communicate these projects as “star” innovations that would bring excellent value and benefit to the society. In this context, selected research teams are encouraged to participate in communication events, trade shows and other community exchange events with coordinated cross-channel promotion. This integrated approach stimulates interactions between PolyU and industry, expediting the KT and commercialization processes, and attracting research funding.



In FY2018/19, PolyU competed in 5 invention expos, namely Asia International Innovative Invention Award, the first Asia Exhibition of Inventions Hong Kong, the 47th International Exhibition of Inventions Geneva, TechConnect and Silicon Valley International Invention Festival. Among the submitted projects, the University garnered 28 prizes including five Grand Awards, earning widespread recognition at local, regional and international levels.

Star Tech Salon 2019, one of the signature events for the year, comprised a celebratory reception and a four-day public showcase in commemoration of PolyU's achievements. Officiated by the Under Secretary for Innovation and Technology and the acting Swiss Consul-General, the event demonstrated PolyU's commitment and achievement in advancing KT, and won excellent testimonies and supports on our university-industry collaborations.

## **4.2 Engagement of Partners and Communities**

PolyU constantly reaches out to communities in a proactive manner, maintaining and developing communication channels and partnership networks to drive KT and Entrepreneurship development. Focus is given to forging synergy among different communities for integrated communication.

#### **(a) Outreach to Associations**

To penetrate key industrial sectors, the University strategically works with trade and industry associations to foster long-term partnerships on both sector-specific applications and cross-disciplinary collaborations. Leveraging our support to the Professional Validation Council of Hong Kong Industries and The Professional



Validation Centre of Hong Kong Business Sector, the University is able to reach out to tens and dozens of trade-specific associations in both the manufacturing, the retail, and the service sectors.

Last year, a new campaign was launched to broaden our readership base through sharing of PolyU's technology capabilities and achievements through trade association publications. Fourteen articles were shared by different associations widely on their various channels. Partners include the Federation of Hong Kong Industries and Hong Kong Apparel Society who have been active in furthering their agenda regarding innovation and reindustrialization with enabling technologies.

### (b) Crossover Activities

Regular thematic activities are organized with the CEO Club, Polypreneurs, startups, as well as PolyU and industrial communities to induce cross-over networking and interests in our technology and university-industry partnering programmes. The sharing sessions, luncheon meetings and networking gatherings provide an excellent platform for business matching and university-industry collaboration. Seminars and workshops are also organized to demonstrate PolyU-developed knowledge to entrepreneurial and business entities, such as the strategic thinking tool “Staying FOCUSED” for executive decision making.



The “Shadowing a CEO” initiative was made possible with joint support of the CEO Club and PolyU's Office of Student Development, aiming to provide a valuable experience for undergraduate students in their attachment with top business executives. The programme started with a high table dinner for icebreaking and pairing, followed by actual “shadowing” of student participants with the daily activities of their mentoring CEOs.

## 5. Spearheading Regional KT & Entrepreneurship Development

As one of the strategic focused areas of the University, PolyU has been committing dedicated resources since 2011 to provide entrepreneurial education, funding, incubation and infrastructure programmes with specific purposes for students, alumni and increasingly academia, creating a holistic support framework to nurture young aspiring entrepreneurs and to incubate young potential startups. With the strategic integrative Greater Bay Area initiative, PolyU has respectively established PolyU InnoHub in Shenzhen in 2017 and the GBA International Institute for Innovations (GBA I3) with the Shenzhen University in 2018, both aiming to nurture future technopreneurs through a series of programmes and accelerated incubation attracting PolyU-affiliated regional and overseas technologies, talents to fuel the regional innovation ecosystem.

### 5.1 Cultivating “Do Well Do Good” Entrepreneurship Ecosystem & Education

#### (a) Seeding Young Startups

The Micro Fund scheme added another 17 new start-ups in FY2018/19. To date, 145 start-ups from around 1,450 applications<sup>2</sup> involving over 3,500 participants have benefited from the scheme since its inception in 2011. Close to 70%<sup>3</sup> are still commercially active, having raised over \$98 million in investment and financial support. Their products and services were also honoured by more than 90 international and local awards.



The collaboration with the Shanghai Technology Entrepreneurship Foundation for Graduates (STEF) on the matching China Entrepreneurship Fund had come to a satisfactory conclusion after two 3-year terms with the

<sup>2</sup> The figure include both applications under Innovation Stream and Entrepreneurship Stream, with the former discontinued in 2014. The number of application is 1,170 under the Entrepreneurship Stream alone.

<sup>3</sup> Survival Rate is calculated as the percentage of active start-ups as of 30 June 2019 that were funded on or before June 30, 2017 (excluding the two batches of awardees in FY2017/18 and FY2018/19).

Foundation, giving out 1-to-1 matching grants to PolyU-supported startups in Shanghai and Shenzhen, benefiting altogether 61 entrepreneurial projects from around 210 applications, with over 78% survival rate. The start-ups had collectively raised over \$185 million in further funding support and won 58 awards. Despite the completion of the matching partnership, PolyU remains as the only STEFG sub-chapter outside Shanghai to continue our collaborations on entrepreneurial activities, such as fast tracking PolyU start-ups to other STEFG funding programmes in Shanghai.

### **(b) Nurturing Aspiring Young Entrepreneurs**

Since its inception in 2017, 45 student projects have been supported under Student Entrepreneurial Proof-of-Concept (SEPOC) Funding Scheme, with 9 projects supported in FY2018/19 including 6 final year projects (FYPs). Two years into the operation, the Scheme now supports undergraduate student projects from 21 academic courses/classes, 16 leading competitions hosted in Hong Kong, and qualified FYPs.

### **(c) Building Vibrant Eco-system and Community through PolyU InnoHub**



Since the official opening of InnoHub (Hong Kong) in March 2017, 87 PolyU supported startups and POC student project teams have been admitted. Starting from FY2018/19, shortlisted Micro Fund applicants admitted to the final round panel interview are also entitled to InnoHub startup supports and training, benefiting from infrastructure support, mentoring/consultation with entrepreneurs-in-residence and other InnoHub community activities, including joint events with partners and collaborators from the region. Regular local partners include prominent players like MIT

Innovation Node Hong Kong, CoCoon, and corporate supported incubators such as The Mills. Plans are also underway to expand both InnoHub Hong Kong and Shenzhen with incubation capacity. Renovations are expected to be completed by end 2019 in Hong Kong and early 2020 in Shenzhen.



## **5.2 Spearheading DeepTech Commercialization and Venturing**

### **(a) Accelerating Commercialization through Tech Launchpad Fund**



With the annual TSSSU funding support from the Innovation & Technology Commission of the HKSAR Government increased from \$4 million to \$8 million starting in 2019, the Tech Launchpad Fund (TLF) assessment was conducted twice in FY2018/19, awarding altogether 11 technology start-ups. Together with the Tech Incubation Fund<sup>4</sup>, more than 50 start-ups benefited from the angel round matching exercise, raising over \$150 million investments from angel investors and other

funding/incubation sources. The increased funding pool will in future enable the University to support more technology commercialization through academic entrepreneurship, a strategic approach termed as “KT+E”.

### **(b) PolyU Lean Launchpad Programme (PolyU LLP)**

As a strategic objective to promote the commercialization of PolyU’s research technologies through entrepreneurial venturing, the PolyU Lean Launchpad Programme (LLP), a 10-week experiential learning programme supported by local industry partners and practitioners, was launched with a pilot cohort in 2018 with 10 research teams on fashion and wearable technology. With encouraging outcome from the pilot, the programme expanded to cover health technology, smart city and AI in FY2018/19, with 15 teams joining the programme to explore their product/technology-market fit.

<sup>4</sup> The Tech Incubation Fund has been merged with PolyU Micro Fund starting from FY2017/18

## 5.3 Building Vibrant Regional Entrepreneurial Community

### (a) Regional Partnership Development

The University's continuous effort to expand regional outreach and partnership generated positive results with some start-ups expanded to other markets in Greater China and ASEAN countries. In November 2018, 6 PolyU's startups participated at Meet Taipei, the largest entrepreneurship conference and exhibition in Taiwan. In June 2019, another delegation with 5 HealthTech start-ups participated at the Innovfest Unbound in Singapore to explore the business and market expansion to South East Asian market.



### (b) Leveraging Greater Bay Area for Strategic KT and Entrepreneurship



PolyU through the Greater Bay Area International Institute for Innovations (大灣區國際創新學院) organised a series of international activities in FY2018/19 together with Shenzhen University. They include a 7-week Startup Internship and Immersion Programme (SIIP) in May 2019 to offer experiential learning opportunities for students through workshops, company visits and internship at start-ups and technology companies in Shenzhen. Participating students beyond the two universities included another 30 students from our partnering overseas institutions, including University of Waterloo, University of Warwick, Technical University of Munich, Sydney School of Entrepreneurship, KAIST, Korea University and Kyoto University.

Under the KT+E framework, a Startup Postdoc Programme (SPP) is currently under planning, with an aim to recruit 10 postdocs (5 under PolyU and 5 under SZU). The two-year SPP aims to develop postdoc talents and their research technologies for potential commercialization as technology ventures, leveraging both public and private resources, as well as industry and alumni network of both universities.



## 6. Performance Measure – Key Performance Indicators

A summary of the key performance indicators for various KT areas are presented in the table below, with figures expressed in HK\$'000:

Performance Indicators	2017/18 Actual	2018/19 Actual	2019/20 Target
<b>Patenting &amp; Licensing</b>			
No. of patents filed	131	130	100
No. of patents granted <sup>Note 1</sup>	52	55	50
Accumulative no. of licenses granted	138	126	135
Income generated from IPR <sup>Note 2,3</sup>	\$5,214	\$6,642	\$4,000
Expenditure involved in generating income from IPR	\$6,122	\$6,383	\$6,000
<b>Consultancy, Collaborative / Contract Research &amp; Spin-off / Joint Ventures</b>			
No. of collaborative research, income generated and total contract value <sup>Note 4</sup>	346 \$115,376 \$613,651	365 \$154,244 \$654,096	370 \$157,000



Performance Indicators	2017/18 Actual	2018/19 Actual	2019/20 Target
No. of contract research, income generated and total contract value <sup>Note 5</sup>	343 \$78,442 \$394,643	331 \$73,901 \$397,963	350 \$80,000
No. of consultancy projects and income generated <sup>Note 6</sup>	735 \$66,497	842 \$71,165	800 \$78,000
No. of economically active spin-off companies <sup>Notes 7,8</sup>	24	29	35
Net income generated (or net loss arising) from spin-off companies	\$128	\$595	\$500
<b>Other Knowledge Transfer / Dissemination Activities</b>			
No. of equipment and facility service agreements and income	337 \$5,051	440 \$3,690	450 \$4,000
No. of student contact hours for business or CPD needs <sup>Notes 9,10</sup>	1,126,980	1,082,404	1,100,000
Income received from CPD courses <sup>Note 10</sup>	\$286,233	\$290,860	\$290,000
No. of public lectures / symposiums / exhibitions and speeches to community	616	647	650
No. of performances and exhibitions of creative work by staff or students	126	100	130
No. of staff engaged as members of external advisory bodies	349	378	380

**Notes:**

1. A detailed list of patents granted is presented in Appendix 5.
2. The reported figure includes license income amounted to \$594,594 in FY2018/19 and \$163,000 in FY2017/18 generated from PolyU supported startups which licensed PolyU's IPs. This license income was also included in the "Net income generated (or net loss arising) from spin-off companies" (refer to Note 6 below).
3. A drop in the licensing income in FY2019/20 is expected as a new measure shall be implemented with a relatively lower upfront licensee fee for encouraging academic-backed start-ups with PolyU technologies.
4. Collaborative research income reported is on cash-receipt basis from on-going projects in FY2018/19, with an aggregate project value of \$654.1 million. As some of the internally funded projects also involved third parties as collaborators for KT purpose, the number of those projects was counted here but not the income nor project value.
5. Contract research projects are those involving third parties from public, private and NGO sectors. The income reported is on cash-receipt basis from on-going projects in FY2018/19, with an aggregate value of \$397.9 million.
6. The reported figure for FY2018/19 includes \$19.3 million income from corporate and executive development training related consultancies and \$51.9 million income from consultancy and advisory services, such as investigation, advisory on business, management, social, technical or policy related issue(s), as well as product, technology, materials or process enhancements.
7. The figure includes the number of start-ups that license PolyU generated IPs with reported net income as proceeds arising from licensing. Subsidiaries set up as operating vehicles for specific functional purposes, e.g. PTeC, Hotel ICON and PolyU Base in Shenzhen are not included.
8. The reported figure includes license income amounted to \$594,594 in FY2018/19 and \$163,000 in FY2017/18 generated from PolyU supported start-ups which licensed PolyU's IPs. This license income was also included in the "Income generated from IPR" (refer to Note 2 above).
9. The student contact hours are defined to be the number of enrollments multiplied by the number of contact/course hours.
10. The CPD courses are now defined to include award-bearing and credit-bearing programmes (both in and outside Hong Kong) for learners already in work who are undertaking the course for purposes of professional development / upskilling / workforce development, in addition to short term non-credit-bearing training programmes.
11. Additional KPIs on other related KT activities are presented in Appendix 4.

## 7. Closing Remarks and The Way Forward

Like Chinese mainland, Hong Kong has been tapping on the human resources and the science and technological capital of the higher education sectors to augment the relatively low R&D spending in both the government and commercial sectors. With the national blueprint for the integrative development of GBA, Hong Kong SAR government has initiated fundamental policy shifts in channeling resources towards innovation and technologies in the past couple of years. Despite the paradigm shift, universities are still considered as innovation powerhouses to generate technological applications that would help to redefine the technology landscape for the region. With a long-standing history in serving the business communities and strong alumni network in GBA, PolyU is committed to strategic applied research, university-industry partnership and KT operations in ways that would encourage both internal and communal stakeholders to create impactful values. The University will continue to review its IP and KT policies in response to both public and private sector initiatives ranged from InnoHK to start-up accelerators, taking in valuable input also from individual stakeholders such as court and council members, expert advisors, and mentors. Entrepreneurship programmes will be reinforced to encourage deep tech start-ups with academic involvement, bringing researchers closer to markets and market opportunities closer to the University. While it is not likely that such activities would bring in substantial financial return to the University proper, such alignment of objectives in the triple helix system would help both PolyU and her collaborators to orchestrate their resources for impactful advancement in KT beyond the established values of teaching and research.



Miranda Lou  
Executive Vice President

## Appendix 1 – Impact Case History

### Case 1: PT01 (Pegtomarginase), initially developed by PolyU is granted U.S. FDA Allowance of Investigational New Drug Application (IND)

#### 1. Summary

Pegtomarginase is a PEGylated genetically modified human arginase that targets cancer growth and survival by removing the supply of an amino acid, arginine. It was initially developed by The Hong Kong Polytechnic University (PolyU) and Avalon Biomedical (Management) Limited (Avalon Biomedical), possessing human-derived origin and recombinant modification that has enabled site-specific PEGylation. The resulting single isomer has a predictable and extended duration of action as demonstrated by durable arginine depletion in preclinical studies. It was announced on 25 June 2019 that U.S. Food and Drug Administration (FDA) has allowed the sub-licensee of Pegtomarginase, a global public listed biopharmaceutical company to apply clinical investigation of PT01 (Pegtomarginase) for the treatment of patients with advanced malignancies. It is hailed as another significant milestone for both advances in biotechnology and novel drug development in Hong Kong as well as another success story for PolyU in translating innovation into technology for betterment of people's life through academia-industry partnership.

#### 2. Underpinning Research

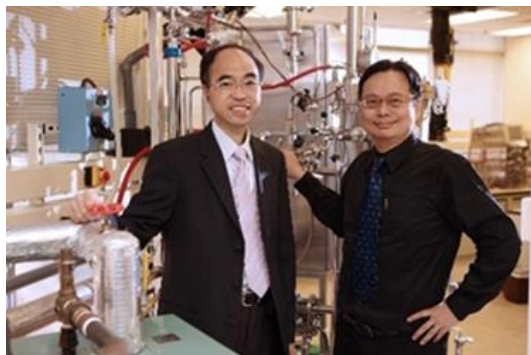
Prof. Thomas Leung and Dr Thomas Lo in the Department of Applied Biology and Chemical Technology and Lo Ka Chung Research Centre for Natural Anti-Cancer Drug Development at PolyU jointly researched Pegtomarginase at the laboratory stage. Pegtomarginase was licensed to Avalon PolyTom (HK) Ltd. in 2016 during the initial stage of preclinical development. In 2018, the novel biomedical pegylated arginase for cancer treatment is further sub-licensed to a global public listed biopharmaceutical company, who further advances the biologic product to clinical stage.

##### Arginine Deprivation Therapy

Arginine is an essential amino acid to many tumor types for survival and growth. A significant proportion of cancer types lack the ability to synthesize arginine due to deficient expression of certain metabolic enzymes of the urea cycle, including argininosuccinate synthetase 1 (ASS1), argininosuccinate lyase (ASL) or ornithine transcarbamylase (OTC). These arginine-auxotrophic cancers depend on external sources of arginine, which enables arginine deprivation therapy a potentially viable strategy for cancer treatment. By depleting circulating arginine, growth of cancers with a disrupted urea cycle can be halted and cell death can be induced. Healthy cells capable of producing sufficient arginine would be largely unaffected.

##### Human-derived origin and single-site pegylation

Naturally occurring arginase has a very short biological half-life and thus cannot be effectively used for therapeutic purpose. Moreover, previous arginine depleting therapies employed enzymes that were derived from non-human origin, which can trigger the development of neutralizing antibodies, or had multiple PEGylation sites with multiple positional isomers in the product. Pegtomarginine is a recombinant human arginase with chemical modification, enabling site-specific PEGylation and prolonged half-life for therapeutic use.



Prof. Thomas Leung (left) and Dr. Thomas Lo (right)



### 3. References to the Research

#### Publications

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2. Yu KM, Pang TPS, Cutler M, Lau JYN, Lo WH, Leung YC. Design, engineering, and characterization of a novel long-acting (Pegylated) single isomer human arginase for arginine depriving anticancer treatment. Journal of Clinical Oncology 37(15\_suppl):3090-3090, May 2019 DOI: 10.1200/JCO.2019.37.15\_suppl.3090
3. Verma A , Lam YM, Leung YC, Hu X, Chen X, Cheung E and Tam KY. Combined use of arginase and dichloroacetate exhibits anti-proliferative effects in triple negative breast cancer cells. The Journal of Pharmacy and Pharmacology 2019 Mar;71(3):306-315. doi: 10.1111/jphp.13033. E Pub 2018 Oct 25.
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#### Granted Patents

- US Patent US 9382525 B2 (Date of Patent: 5 July, 2016) Site-directed pegylation of arginases and the use thereof as anti-cancer and anti-viral agents. (IP-544)

#### Knowledge Transfer

- The licensed patent is US Patent US 9382525 (Date of transfer: Dec 2016) Site-directed pegylation of arginases and the use thereof as anti-cancer and anti-viral agents.

### 4. Impact and Benefits

Due to population growth and ageing as well as other factors, the global cancer burden is estimated to have risen to 18.1 million new cases with 9.6 million deaths in 2018. One in 5 men and one in 6 women worldwide develop cancer during their lifetime, and one in 8 men and one in 11 women die from the disease. According to projection conducted by Cancer Tomorrow, a statistics tool powered by The International Agency for Research on Cancer (IARC) of World Health Organization, the number of incident cases will reach 29.5 million in 2040 while death will exceed 16 million. The surges cast a huge social and healthcare burden to the global economy and society.

For the time being, surgery, radiation therapy, and chemotherapy are the three basic treatments to cure cancer. However, these therapies or treatments are mostly associated with comparatively serious side-effects to the

patients. The typical ones include anemia, hair loss, oral ulcer, nausea, vomiting and so forth. These immensely attenuate patients' quality of life and could possibly cause negative impact to the psychiatric health of patients.

As illustrated in the previous sections, Pegtomarginine provides a metabolic approach to the treatment of cancer through arginine deprivation therapy. Apart from monotherapy, it could also be applied in combination with other oncology therapeutics for the treatment of a wide range of cancers. It allows treatments to cater patients' well-being from a more holistic perspective and minimizes their side-effect sufferings as a result of conventional treatments.

Furthermore, the development of Pegtomarginine is the product of synergy between the academia and industry. It vividly demonstrates research is not confined at laboratories and on papers. It could contribute to bringing progress and improvements to mankind. Academia and industry collaboration plays a significant role in enabling and catalyzing the translation process.

## 5. References to the Corroboration of Impact or Benefit

- <https://www.who.int/cancer/PRGlobocanFinal.pdf>  
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- <https://gco.iarc.fr/tomorrow/home>  
The International Agency for Research on Cancer (IARC), World Health Organization
- <https://www.globenewswire.com/news-release/2019/06/24/1872888/0/en/Athenex-Announces-U-S-FDA-Allowance-of-Investigational-New-Drug-Application-for-PT01-Pegtomarginase.html>  
“Athenex Announces U.S. FDA Allowance of Investigational New Drug Application for PT01 (Pegtomarginase)”, 24 June 2019 by Athenex, Inc
- [https://www.polyu.edu.hk/abct/en/research/research\\_centres/lkcc/about\\_us/index.html](https://www.polyu.edu.hk/abct/en/research/research_centres/lkcc/about_us/index.html)  
The Lo Ka Chung Research Centre for Natural Anti-Cancer Drug Development

## Case 2: Radiation-free 3D Ultrasound Scoliosis Assessment System

### 1. Summary

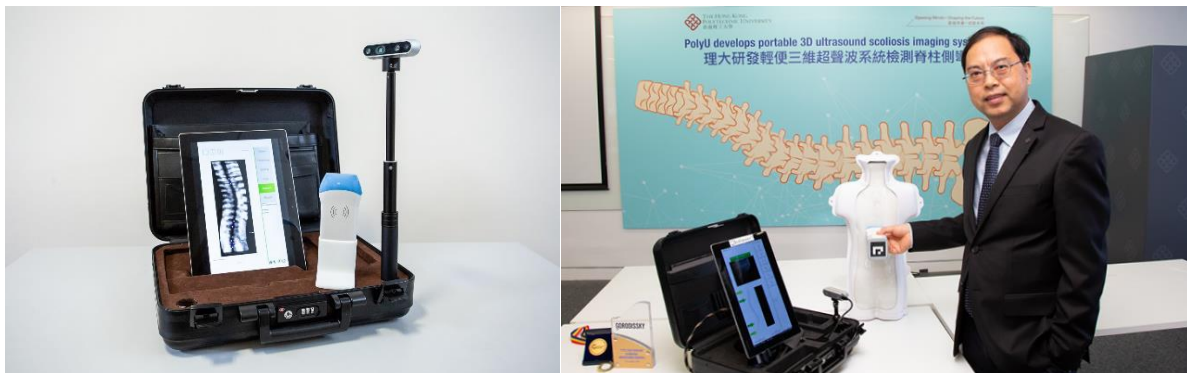
Scoliosis is one of the most prevalent spinal diseases affecting adolescents. It is estimated that about 3% to 5% of adolescents in Hong Kong suffer from scoliosis, with increasing prevalence in recent years. Similar issue seems to permeate also in Greater Bay Area metropolitans and even nationwide, with a recent study in Guangzhou indicating that for girls aged 14 and 15, the prevalence is as high as 13.8%. About 15% of the adolescents affected with scoliosis would see their conditions deteriorating, requiring bracing or even surgery if the problem progresses unchecked. Early detection of scoliosis conditions and regular check-up during the rapid growth period of adolescents is thus crucial. At present, X-ray imaging is the most accepted clinical standard for scoliosis assessment, even as overexposure to radiation poses increased risk for cancer. The present X-ray imaging is also limited to 2D data, whereas spinal deformity is a three-dimension issue. As such, 2D imaging cannot effectively provide real-time data and feedback for non-surgical treatment of scoliosis.

Scolioscan Air, developed by Ir Professor ZHENG Yong-ping, Head of Department of Biomedical Engineering and Henry G. Leong Chair Professor in Biomedical Engineering, is a palm-sized 3D ultrasound imaging system for radiation-free scoliosis assessment. **Scolioscan Air** is a second-generation system based on the PolyU-developed 3D ultrasound imaging technology already commercialized under the trademark “**Scolioscan**”, in partnership with a local company Telefield Medical Imaging Limited back in 2016. With three PolyU patents licensed to the company, Scolioscan is now registered as a medical device in European Union and Australia, with sales to multiple countries and regions, including Netherlands, Italy, Australia, Beijing, Guangzhou,

Shenzhen, Macau, and Hong Kong, for clinical and research purposes. Over 5,000 scoliosis patients have been scanned by Scolioscan.

Being radiation-free and more cost-effective than prevailing X-ray imaging technologies, Scolioscan can facilitate mass screening and frequent follow-up monitoring. Clinical trials have proven the novel technology is very reliable, with the accuracy of curve measurement comparable or superior to X-ray assessment in 2D imaging examination. Its advantage really lies in its ability to capture images in any posture, provide vertebra rotation and muscle-related information, and form a 3D spinal digital model for the three-dimensional analysis of deformity of the spine, all of which cannot be achieved by X-ray imaging systems commonly used at present.

With its novelty and potential impact to current medical practice for scoliosis diagnosis and treatment, Scolioscan Air was recently awarded Grand Award, Gold Medal with the Congratulations of Jury, and Special Merit Award at the 47th International Exhibition of Inventions of Geneva held in April 2019.



## 2. Underpinning Research

Scoliosis is the most common spinal disease among adolescents both locally and internationally. This disease does not reveal obvious symptoms at the early stage, so patients may not discover the onset of the disease until their spines visually suggest physical deformation, which affects the effectiveness of treatment. Traditionally hospitals use X-ray imaging to diagnose scoliosis, however the relatively high cost and radiation hazards make it unusable for regular screening at large. Topography and scoliometer are alternatives for mass screening, but they come with a price of lower accuracy as measurements are only made on the skin surface instead of the spine.

Seeing the lack of reliable radiation-free devices for scoliosis diagnosis, Prof. Zheng's team has been working for years on ultrasound-based imaging to visualize spine, a technology that was later incorporated into Scolioscan as a medical device. Scolioscan was developed based on the research works of Prof. Zheng's team on 3D ultrasound image reconstruction algorithms, scanning methods, 3D ultrasound measurement, and 3D spatial tracking methods since 2003. The team researched into the application of 3D ultrasound for scoliosis assessment, and demonstrated the feasibility of using ultrasound for spine imaging along with the coronal view and for measuring spinal deformity. Using the dataset, they further invented a novel projection method to generate a radiography-like image of the spine for ease of comparative review by medical practitioners. The related research has been funded by the Research Grant Council (RGC) General Research Fund, Innovation and Technology Fund, etc. Recently, RGC further supported Prof. Zheng and his collaborators in HKU, CUHK, and University of Utrecht in Netherlands and Fudan University in China with a total funding amount of \$12M under the Research Impact Fund scheme to further research on the prediction of scoliosis progression using 3D ultrasound imaging.

Traditionally, ultrasound is seldom used for imaging bony structure, as artifacts are generated when ultrasound beam interacts with the tissue-bone interface. The innovative work of Professor Zheng's team has overcome this limitation, turning artifacts into imaging features for spinal deformity. Research studies have repeatedly evidenced that the angle of deformity obtained using Scolioscan is comparable to those obtained by X-ray and can be adopted as the new standard for scoliosis scanning.



Scolioscan Air is specially designed for mass screening in an environment with limited space or resources. The newly developed optical 3D spatial tracking method for Scolioscan Air enables it to achieve the same level of accuracy comparable with that of Scolioscan. Other technological compatibility makes Scolioscan Air commercialization-ready for broader use beyond conventional assessment at clinics. With dramatically reduced material cost, size and weight, the device weighs less than 5kg and can be carried within a suitcase. With its portability, operators can bring the device and deliver mass screening service to the youngsters anywhere, anytime, providing a higher chance of on-time treatment for scoliosis patients.

### 3. References to the Research

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17. Huang QH, et al. (2005). "Development of a portable 3D ultrasound imaging system for musculoskeletal tissues." *Ultrasonics* 43(3): 153-163.

#### Patents

1. A three-dimensional (3D) ultrasound imaging system for assessing scoliosis. US 8,900,146 B2; China 201080040696.0; Japan 5849048; Canada 2,769,150; Australia 2010278526; and EU pending. Filed in Jul 2009.
2. Rapid 3D ultrasound measurement. Chinese patent No. 200510127193.8. Mar 2009.
3. Method and device for 3D ultrasound imaging. Chinese patent. No. 200810094381.9. Jan 2011.

## Clinical Trial Registration

<https://clinicaltrials.gov/ct2/show/NCT03135665>

## Details of Key Research Grants

1. Zheng YP, Castelein R, Cheng CYJ, Cheung JPY, Lam ZP, Luk DKK, To MKT, Wong MS, Yu JH. Early detection of progressive adolescent idiopathic scoliosis and optimization for non-surgical treatments using novel 3D ultrasound imaging. RGC Research Impact Fund. HK\$12M. Jun 30 2019 – Jun 29 2024.
2. Zheng YP. Ultrasound evaluation of spine health for patients with spinal cord injury (SCI). Hong Kong Spinal Cord Injury Fund Ltd. HK\$500K, 2015-2020.
3. Zheng YP, Cheung JCW. Scolioscan: Radiation-free scoliosis assessment system using 3D ultrasound imaging. Hong Kong Innovative Technology Fund (ITF) for University-Industry Collaboration (UIM/213). Budget: HK\$5.84M. 2012-2014.
4. Zheng YP, Ng KW (CUHK), Cheng JCY, Wong MS, Huang QH, Lam TP. Development of 3-D ultrasound system for assessment adolescent idiopathic scoliosis. Research Grants Council (RGC) Competitive Earmarked Research Grant (CERG). (PolyU5332/07E). HK\$449K. 2008-2010.

## Major Awards

- 2010-10 Silver Medal. The 62<sup>nd</sup> ENA (International Trade Fair for “Ideas-Inventions-New Products). Nuremberg, Germany.
- 2012-04 Gold Medal Award and Mau Award for the Best Educational Innovation. The International Exhibition of Inventions of Geneva.
- 2015-11 Champion, Innovation Award of Excellence (Hong Kong). The 2<sup>nd</sup> Hong Kong Innovation Day.
- 2015-12 Equipment and Machinery Design Award. 2015 Hong Kong Awards for Industries.
- 2016-09 Most Promising Idea, World Healthcare Innovation Award, Canada
- 2019-04 Grand Award, Gold Medal with the Congratulations of Jury, and Special Merit Award. The International Exhibition of Inventions of Geneva.

## **4. Impact and Benefits**

Based on the novel 3D ultrasound imaging techniques, the licensee of the technology has developed and commercialized Scolioscan<sup>®</sup>, a registered medical device, which has been successfully installed for clinical uses in multiple countries, including Netherlands, Australia, Italy. Orders from other countries are being processed. Scolioscan received the CE mark for EU market in 2016 and TGA for Australia market in 2017. Units have been installed in the medical schools and clinics in Hong Kong, Macau as well as in Guangzhou, Shenzhen and Beijing as pilots, with CFDA approval for the entire China market expected by 2020. Through two collaborating hospitals, more than 5,000 scoliosis patients have been scanned by Scolioscan in Hong Kong, covering around 15% of active scoliosis cases in the city.

The technology with 3 related patents was licensed to a local company Telefield Medical Imaging Limited, in 2012. The company has so far invested close to \$30 million for further engineering development, IP protection (with additional 20 patents filed), clinical trials, registration, manufacturing, and marketing. In addition, the company engaged the research team for consultancy projects on the functional enhancement of the unit. With joint university-industry collaborative efforts, Scolioscan Air, the portable version of Scolioscan, won the Grand Award, Gold Medal with the Congratulations of Jury, and Special Merit Award at the 47th International Exhibition of Inventions of Geneva in April 2019. Scolioscan is expected to become a new standard for scoliosis assessment and to benefit the society at large. The company has recently been selected by Hong Kong Science and Technology Park to join its Accelerating Program, LEAP, to accelerate the scaling up of its business endeavour.

## 5. References to the Corroboration of Impact or Benefit

Selected recent media coverage about Scolioscan Air

Date	Media	Topic	URL
2019-05-03	成報網	理大研發便攜系統 助發現青少年脊柱側彎問題	<a href="http://www.singpao.com.hk/index.php?fi=news1&amp;id=100864">http://www.singpao.com.hk/index.php?fi=news1&amp;id=100864</a>
2019-05-05	電子技術應用	香港理工大學研發超聲波系統 無輻射檢測脊柱側彎	<a href="http://www.chinaaet.com/article/3000101079">http://www.chinaaet.com/article/3000101079</a>
2019-05-05	電子工程世界網	香港理工大學研發超聲波系統 無輻射檢測脊柱側彎	<a href="http://www.eeworld.com.cn/medical_electronics/ic460562.html">http://www.eeworld.com.cn/medical_electronics/ic460562.html</a>
2019-05-03	東方日報網	便攜式超聲波系統 查脊柱側彎	<a href="http://orientaldaily.on.cc/cnt/news/20190503/00176_066.html">http://orientaldaily.on.cc/cnt/news/20190503/00176_066.html</a>
2019-05-03	華僑報	理大研發世界首創便攜式成像系統 助及早發現青少年脊柱側彎	<a href="http://www.vakiodaily.com/news/view/id/320023">http://www.vakiodaily.com/news/view/id/320023</a>
2019-05-03	明報網站	理大研便攜驗脊系統 助大規模篩查	<a href="https://news.mingpao.com/pns/教育/article/20190503/s00011/1556821679260/理大研便攜驗脊系統-助大規模篩查">https://news.mingpao.com/pns/教育/article/20190503/s00011/1556821679260/理大研便攜驗脊系統-助大規模篩查</a>
2019-05-03	香港經濟日報網	理大新超聲波儀 助篩查脊柱側彎	<a href="https://paper.hket.com/article/2341771/理大新超聲波儀%20助篩查脊柱側彎">https://paper.hket.com/article/2341771/理大新超聲波儀%20助篩查脊柱側彎</a>
2019-05-03	香港文匯網	便攜 3D 超聲波 脊彎可密密照	<a href="http://paper.wenweipo.com/2019/05/03/ED1905030001.htm">http://paper.wenweipo.com/2019/05/03/ED1905030001.htm</a>
2019-05-02	新城廣播有限公司	理大研發便攜式成像系統可及早發現脊柱側彎	<a href="http://www.metroradio.com.hk/MetroFinance/News/NewsLive.aspx?SearchText=&amp;NewsId=20190502105821&amp;page=0">http://www.metroradio.com.hk/MetroFinance/News/NewsLive.aspx?SearchText=&amp;NewsId=20190502105821&amp;page=0</a>
2019-05-08	新浪網	香港理工大學研發超聲波系統 無輻射檢測脊柱側彎	<a href="https://med.sina.com/article_detail_1031_65480.html">https://med.sina.com/article_detail_1031_65480.html</a>
2019-05-02	信報網	便攜超聲波 檢測脊柱側彎	<a href="https://health.hkej.com/health/article?suid=2127378">https://health.hkej.com/health/article?suid=2127378</a>
2019-05-02	星島頭條網	便攜式無輻射 理大三維超聲波系統篩查脊柱側彎	<a href="http://www.stheadline.com/inews-content.php?cat=a&amp;nid=88478">http://www.stheadline.com/inews-content.php?cat=a&amp;nid=88478</a>
2019-05-05	中國新聞網	香港理工大學研發超聲波系統 無輻射檢測脊柱側彎	<a href="http://www.chinanews.com/ga/2019/05-05/8827766.shtml">http://www.chinanews.com/ga/2019/05-05/8827766.shtml</a>
2019-05-02	881903.com 商業電台	理大研發新超聲波系統助篩查脊柱側彎	<a href="http://www.881903.com/Page/ZH-TW/newsdetail.aspx?ItemId=1094784&amp;csid=261_341">http://www.881903.com/Page/ZH-TW/newsdetail.aspx?ItemId=1094784&amp;csid=261_341</a>
2019-05-02	PRNewswire	PolyU Develops Palm-sized 3D Ultrasound Imaging System for Scoliosis Mass Screening and Frequent Monitoring	<a href="http://www.allaboutthechild.com/news/?rkey=20190502IO38843&amp;filter=102">http://www.allaboutthechild.com/news/?rkey=20190502IO38843&amp;filter=102</a>
2019-05-02	Azcentral.com – Financial Content	PolyU Develops Palm-sized 3D Ultrasound Imaging System for Scoliosis Mass Screening and Frequent Monitoring	<a href="http://finance.azcentral.com/azcentral/news/read/38189873/polyu_develops_palm">http://finance.azcentral.com/azcentral/news/read/38189873/polyu_develops_palm</a>



2019-05-13	Becker's Spine Review	Portable 3D ultrasound imaging device developed for scoliosis	<a href="https://www.beckersspine.com/orthopedic-a-spine-device-a-implant-news/item/45632-portable-3d-ultrasound-imaging-device-developed-for-scoliosis.html">https://www.beckersspine.com/orthopedic-a-spine-device-a-implant-news/item/45632-portable-3d-ultrasound-imaging-device-developed-for-scoliosis.html</a>
2019-05-07	Bioengineer.org	PolyU develops palm-sized 3D ultrasound imaging system for scoliosis mass screening	<a href="https://bioengineer.org/polyu-develops-palm-sized-3d-ultrasound-imaging-system-for-scoliosis-mass-screening/">https://bioengineer.org/polyu-develops-palm-sized-3d-ultrasound-imaging-system-for-scoliosis-mass-screening/</a>
2019-05-03	Bio Portfolio	PolyU introduces palm-sized 3D ultrasound imaging system for scoliosis detection	<a href="https://www.bioportfolio.com/news/article/3974520/PolyU-introduces-palm-sized-3D-ultrasound-imaging-system-for-scoliosis-detection.html">https://www.bioportfolio.com/news/article/3974520/PolyU-introduces-palm-sized-3D-ultrasound-imaging-system-for-scoliosis-detection.html</a>
2019-05-06	BioSpectrum Asia	PolyU develops novel 3D ultrasound imaging system	<a href="https://www.biospectrumasia.com/news/27/13370/polyu-develops-novel-3d-ultrasound-imaging-system.html">https://www.biospectrumasia.com/news/27/13370/polyu-develops-novel-3d-ultrasound-imaging-system.html</a>
2019-05-02	Borger News Herald	PolyU Develops Palm-sized 3D Ultrasound Imaging System for Scoliosis Mass Screening and Frequent Monitoring	<a href="http://business.borgernewsherald.com/borgernewsherald/news/read/38189873/polyu_develops_palm">http://business.borgernewsherald.com/borgernewsherald/news/read/38189873/polyu_develops_palm</a>
2019-05-03	NS Medical Devices	PolyU introduces palm-sized 3D ultrasound imaging system for scoliosis detection	<a href="https://www.nsmedicaldevices.com/news/polyu-introduces-scolioscan-air/">https://www.nsmedicaldevices.com/news/polyu-introduces-scolioscan-air/</a>
2019-05-03	Line Today	便攜式無輻射 理大三維超聲波系統篩查脊柱側彎	<a href="https://today.line.me/hk/pc/article/%E4%BE%BF%E6%94%9C%E5%BC%8F%E7%84%A1%E8%BC%BB%E5%B0%84+%E7%90%86%E5%A4%A7%E4%B8%89%E7%B6%AD%E8%B6%85%E8%81%B2%E6%B3%A2%E7%B3%BB%E7%B5%B1%E7%AF%A9%E6%9F%A5%E8%84%8A%E6%9F%B1%E5%81%B4%E5%BD%8E-38WeGE">https://today.line.me/hk/pc/article/%E4%BE%BF%E6%94%9C%E5%BC%8F%E7%84%A1%E8%BC%BB%E5%B0%84+%E7%90%86%E5%A4%A7%E4%B8%89%E7%B6%AD%E8%B6%85%E8%81%B2%E6%B3%A2%E7%B3%BB%E7%B5%B1%E7%AF%A9%E6%9F%A5%E8%84%8A%E6%9F%B1%E5%81%B4%E5%BD%8E-38WeGE</a>
2019-05-02	MSN 香港	PolyU develops Palm-sized 3D Ultrasound Imaging System for Scoliosis Mass Screening and Frequent Monitoring	<a href="http://www.msn.com/zh-hk/news/localnews/%e4%be%bf%e6%94%9c%e5%bc%8f%e7%84%a1%e8%bc%bb%e5%b0%84-%e7%90%86%e5%a4%a7%e4%b8%89%e7%b6%ad%e8%b6%85%e8%81%b2%e6%b3%a2%e7%b3%bb%e7%b5%b1%e7%af%a9%e6%9f%a5%e8%84%8a%e6%9f%b1%e5%81%b4%e5%bd%8e/ar-AAAN6e6">http://www.msn.com/zh-hk/news/localnews/%e4%be%bf%e6%94%9c%e5%bc%8f%e7%84%a1%e8%bc%bb%e5%b0%84-%e7%90%86%e5%a4%a7%e4%b8%89%e7%b6%ad%e8%b6%85%e8%81%b2%e6%b3%a2%e7%b3%bb%e7%b5%b1%e7%af%a9%e6%9f%a5%e8%84%8a%e6%9f%b1%e5%81%b4%e5%bd%8e/ar-AAAN6e6</a>
2019-05-02	NOW 免費即時資訊網站	理大研發超聲波系統用作脊柱側彎檢查	<a href="https://news.now.com/home/local/player?newsId=346562">https://news.now.com/home/local/player?newsId=346562</a>
2019-5-08	Value Investing News	PolyU Develops Palm-sized 3D Ultrasound Imaging System for Scoliosis Mass Screening and Frequent Monitoring	<a href="http://markets.financialcontent.com/fatpitch.valueinvestingnews/news/read/38218730/polyu_develops_palm">http://markets.financialcontent.com/fatpitch.valueinvestingnews/news/read/38218730/polyu_develops_palm</a>



## Appendix 2 – Technology Marketing and Networking Activities

### (a) Highlights of Special Events

Date	Event	Photos
Jul 2018	<b>Staying F.O.C.U.S.E.D. Workshop</b>  A workshop trained around 50 industry partners, CEO Club members and Polypreneurs® to use “Staying F.O.C.U.S.E.D.”, an innovative strategic thinking framework for problem solving developed by Dr Robert Wright, Associate Professor of Department of Management and Marketing.	
Oct 2018	<b>Eco Expo Asia 2018</b>  PolyU's booth exhibited a collection of its green technologies and its endeavours in bringing about a clean and sustainable environment.	
Nov 2018	<b>China Hi-Tech Fair 2018</b>  Our booth at the fair exhibited the expertise, professional services and research outputs of PolyU Shenzhen Base and its research facilities, with special focus on food safety and traditional Chinese medicine.	

Date	Event	Photos
Nov 2018	<p><b>InnoCarnival 2018</b></p> <p>The PolyU pavilion showcased the University's eye and vision care technologies as well as optometry development at the 9-day exhibition. Featuring a "Blurry Zone" which allowed visitors to experience difficulties faced by eye disease patients, it was voted "My Favourite Booth" as in previous years.</p>	
Mar 2019	<p><b>Poly-preneurs® Sharing Series Seminar</b></p> <p>The sharing seminar provided a platform for Poly-preneurs® to introduce their business, share their insights and experience as seasoned entrepreneurs, and get connected with academia on PolyU knowledge.</p>	
Apr 2019	<p><b>The 47<sup>th</sup> International Exhibition of Inventions of Geneva</b></p> <p>PolyU garnered 18 awards, including four Grand Prizes, with its seven inventions at this annual international event.</p>	



Date	Event	Photos
Apr 2019	<p><b>Rail Solutions Asia 2019</b></p> <p>At this specialized trade show in Malaysia catering to international audiences, PolyU showcased its digital railway monitoring solutions and the Hong Kong Branch of National Rail Transit Electrification and Automation Engineering Technology Research Center (CNERC-Rail) established at PolyU.</p>	
May 2019	<p><b>Star Tech Salon 2019</b></p> <p>In celebration of PolyU's achievements in three invention exhibitions, a celebratory reception and a 4-day exhibition were organized to showcase the nine research breakthroughs which garnered 22 prizes to the industry leaders, government officials, and the general public.</p>	



**(b) Major Exhibitions and Tradeshow Participated**

Exhibitions / Tradeshow Participated	Location	Disciplines / Items Promoted
1. Food Expo 2018	Hong Kong, PRC	Food safety technologies, food testing, etc.
2. TechInnovation 2018	Singapore	Healthcare technologies
3. Hong Kong Electronics Fair 2018 (Autumn Edition)	Hong Kong, PRC	IoT-based logistics systems, anti-counterfeiting and security technology, ultra-precision machining, etc.
4. Hong Kong Innovative Invention Award	Hong Kong, PRC	IoT-based logistics system
5. Eco Expo Asia	Hong Kong, PRC	Green technologies and researches
6. InnoCarnival 2018	Hong Kong, PRC	Vision and eye care
7. China International Import Expo	Shanghai, PRC	Defocus Incorporated Multiple Segments Spectacle Lens
8. China Hi-Tech Fair 2018	Shenzhen, PRC	Life sciences, healthcare, machining, etc.
9. 1st Asia Exhibition of Inventions Hong Kong	Hong Kong, PRC	Bone regeneration, water generation, and 3D human modelling
10. 47 <sup>th</sup> International Exhibition of Inventions Geneva	Geneva, Switzerland	Healthcare, wearable energy sources, green living, smart city, automated defect detection in textiles, and precise polishing
11. Rail Solutions Asia	Kuala Lumpur, Malaysia	Railway condition monitoring technologies
12. ICT Expo 2019	Hong Kong, PRC	IoT-based logistics systems
13. Hong Kong International Medical Devices and Supplies Fair	Hong Kong, PRC	Bone regeneration, spinal health assessment, rehabilitation training systems, etc.
14. Star Tech Salon 2019 Showcase	Hong Kong, PRC	Healthcare, wearable energy sources, green living, smart city, automated defect detection in textiles, and precise polishing
15. China Innovation and Technology Fair 2019	Guangzhou, PRC	Anti-heat stress uniform, edible and gutter oil authentication, rehabilitation training, and scar care
16. Silicon Valley International Invention Festival	San Francisco, US	Indoor farming system, and functional garment for scoliosis

## Appendix 3 – PolyU InnoHub / Entrepreneurship Activities

In FY2018/19, there were 25 activities organised by PolyU InnoHub or jointly with local and regional partners and collaborators<sup>5</sup>:

Event	Date	Partnering Organization(s)
1. Wicked Wednesday - Boutir	Jul-18	Boutir
2. InnoHub Welcome Party	Aug-18	--
3. InnoHub Academy - Learn to make Epic Designs using Grids	Aug-18	--
4. InnoHub X NUS SIA Challenge Panel Discussion	Sep-18	NUS SIA Challenge
5. PolyU InnoHub X JCDISI X Good Seed X MRC Beyond Sustainable Entrepreneurship	Sep-18	JCDISI
6. PolyU InnoHub X Platform Cooperativism for Asia	Sep-18	Platform Cooperativism
7. PolyU InnoHub Wicked Wednesday - Wellbeing Workshop	Sep-18	--
8. PolyU InnoHub Wicked Wednesday - AI Disruption in Retail: Payment	Sep-18	Boutir, Heycoins, HSBC
9. Qianhai Entrepreneurship Power Up Workshop	Oct-18	Qianhai
10. InnoHub Training - Become a Content Marketer in 10 hours	Oct - Nov 18	Growth Marketer Academy
11. Wicked Wednesday - AI Disruption in Retail: Fashion	Oct-18	Lane Crawford Joyce, Tozi
12. InnoHub Exhibition - Meet the Entrepreneur	Nov-18	--
13. Wicked Wednesday - AI Disruption in Retail: Dining	Nov-18	SHTM, Cherrypicks, Deliveroo
14. Hong Kong Techathon Pre-Event Networking Mixer	Nov-19	HKSTP, CityU, HKBU
15. Hong Kong Techathon 2019	Nov-19	HKSTP, CityU, HKBU
16. PolyU X Cocoon Xmas Party	Dec-18	Cocoon
17. InnoHub Academy - Canva Creative Workshop	Dec-18	Canva
18. Wicked Wednesday - AI Disruption in Retail: Living	Dec-18	Sino Group
19. InnoHub Academy Canva Creative Workshop	Jan-19	Canva
20. InnoHub Academy Up Level your presentations	Jan-19	--
21. Wicked Wednesday - AI Disruption in Retail: Travelling	Jan-19	Pokeguide, Wesurance
22. InnoHub STEAM Saturday	Feb-19	AP, SD, Animomo, Labwork, Nanothink, Tech4D
23. Wicked Wednesday - Rise of API Economy	Feb-19	AppQuick, HSBC, KPMG
24. Entrepreneur Day	May-19	HKTDC
25. Technology for Start-ups - Business Essentials	Jun-19	trustME, Xero

<sup>5</sup> Excluding training programmes and regional outreaching events / activities like delegation visits to Singapore (Innovfest Unbound in June 2019) and Taiwan (Meet Taipei in November 2018)

## Appendix 4 - Additional Measures for Related KT Activities

Performance Indicators	2017/18 Actual	2018/19 Actual	2019/20 Target
<b>Marketing &amp; Outreaching</b>			
Outreach to industry <sup>Note 1</sup> -			
• No. of Exhibitions / Conference and Forum attended <sup>Note 2</sup>	44	40	40
• No. of people <sup>Note 3</sup> reached ('000)	1,220	1,680	1,100
No. of innovations / technologies being promoted / marketed	150	152	130
<b>Innovation and Entrepreneurial Activities Enabling KT</b>			
Accumulative no. of start-up ventures supported / created by students, graduates or staff <sup>Note 4</sup>	241	271	301
Survival / sustainable rate of supported start-up ventures <sup>Note 5</sup>	74% (1 year) 69% (2 years) 61% (3 years)	71% (1 year) 66% (2 years) 61% (3 years)	70% (1 year) 65% (2 years) 60% (3 years)
Accumulative no. of PolyU innovations / technologies / knowledge transferred through start-ups by students / alumni / staff <sup>Note 6</sup>	38	46	56
• No. of Entrepreneurship Fund applications <sup>Note 7</sup>	283	216	200
• No. of students, alumni and staff involved <sup>Note 8</sup>	558	404	400
• No. of new start-ups / entrepreneurial projects supported <sup>Note 9</sup>	33	30	30

### Notes:

1. The reported figures covers events organized / attended by the Institute for Entrepreneurship only.
2. The target reflects only major public exhibitions, symposia, and competitions in both Hong Kong, mainland and overseas, excluding seminars, workshops and featured media reporting for specific technologies, commercialization and start-ups endeavours.
3. Includes both people from industry and the general public.
4. The reported figure includes all award recipients of Micro Fund, China Entrepreneurship Fund (CEF) Schemes, TIF, TLF and Good Seed schemes.
5. Sustainability rate is defined as: number of start-ups (supported for more than 1 / 2 / 3 years) still actively operating as of 30 June 2019, divided by the total number of funded start-ups supported as of 30 June 2018 / 2017 / 2016 respectively.
6. The figure for FY2017/18 was restated to take out one withdrawn case.
7. The reported figure includes all applications under Micro Fund, China Entrepreneurship Fund (CEF) Schemes, TIF, TLF and Good Seed schemes. The figure for FY2018/19 is much less than the previous fiscal year as the CEF Scheme was discontinued since this fiscal year, and the Good Seed Programme has organized only one single cohort in FY2018/19 compared to two cohorts in previous years.
8. It also includes non-PolyU participants from the Good Seed Programme. With the same reason cited in Note 7 above, the figures for FY2018/19 is much less than that for FY2017/18.
9. The actual number of funded start-ups in FY2018/19 was 38. Among them 8 were existing start-ups seeking for further funding from PolyU's other funding schemes. As such, the total number of NEW start-ups supported was 30.

## Appendix 5 – List of Patents Granted in FY2018/19

1. 智能可调节型人体模型	China
2. 水嚮應印花織物及其製備方法	China
3. 一種利用玉米醇溶蛋白包裹魚油的方法	China
4. 一種用於鼻胃管操作實訓的智能沉浸式教學系統及裝置	China
5. 一種基於形狀記憶材料的智能壓縮系統	China
6. 一種多功能復合納米纖維膜材料及其製備方法	China
7. 鑒別食用油的方法	China
8. 基於三維超聲成像的二維陣列超聲換能器及其製備方法	China
9. 具有用於患脊柱則凸的患者的生物反饋系統的體感背心	China
10. 一種電壓均衡電路	China
11. 一種基於室內虛擬地標的定位方法及裝置	China
12. 一種刀具磨損監測方法及系統	China
13. 相位解調器、光纖聲壓解調系統、解調方法及製造方法	China
14. 勵磁直接控制交直軸自解耦的寬轉速調速電機	China
15. 機床主軸中軸線位置獲取裝置及獲取方法	China
16. 一種碳納米管增強泡沫鋁基複合材料的製備方法	China
17. 一種水力發電機的自動控制系統	China
18. 一種基於撓度影響線的橋樑局部損傷量化方法	China
19. 單一大小適合眾人的個人漂浮裝置	China
20. 移動式織物疵點自動檢測系統	China
21. 一種前開扣式可調節內衣	China
22. 一種負泊比機織物及製造方法	China
23. 一種拋光模具微結構表面的拋光頭以及拋光裝置	China
24. 一種長者組合式連身瑜伽內衣	China
25. 一種鉸鏈	China
26. 一種多冗餘度機械臂系統的協同控制方法與裝置	China
27. 基於突加度的多冗餘度機械臂系統的協同控制方法與裝置	China
28. 履帶車輛懸架隔振裝置	China
29. 隔振裝置	China
30. GPS 室內定位系統和基於 GPS 室內定位系統的室內定位方法	China
31. 一種 CC-QC-LDPC 碼的構法及譯碼裝置	China
32. 一種共形電路及其製備方法	China
33. 超疏水二氧化矽粒子及超疏水塗層的製備方法	China
34. 一種在位測量方法	China



35. 機器人防碰撞和防擠塞的方法 Method for anti-collision and anti-congestion for robots	Hong Kong
36. Spectacle lens	Hong Kong
	United States of America
37. Flavonoid dimers and their use	India
38. 眼鏡片	Macao
39. Lens for optical treatment	United States of America
40. Ionic liquid supported synthesis	United States of America
41. LED Automotive Tail Lamp Set	United States of America
42. Bilayer dye sensitized solar cell and fabrication method thereof	United States of America
43. Drive method and system for led display panel	United States of America
44. Novel phosphines, synthesis thereof and their use in catalysis	United States of America
45. Prodrug of green tea epigallocatechin-3-gallate (pro-egcg) for use in the treatment of endometriosis	United States of America
46. Synthesis and use of amine-containing flavonoids as potent anti-leishmanial agents	United States of America
47. Photocatalyst	United States of America
48. A synthesis method for cathode material in lithium-sulfur battery	United States of America
49. Methods, devices, and systems for inhibiting ocular refractive disorders from progressing	United States of America
50. Alkyne-, Azide- and Triazole-containing flavonoids as modulators for multidrug resistance in cancers	United States of America
51. Coated nanofiller/polymer composite sensor network for guided-wave-based structural health monitoring	United States of America
52. Photoluminescent nanoparticles and their synthesis and uses	United States of America
53. Polymeric waveguide with single dopant	United States of America
54. Heterogeneous microarray based hybrid upconversion nanoprobe/nanoporous membrane system	United States of America

## Appendix 6 – Highlighted Cases of Funded Start-ups

### **ASA Innovation & Technology Limited (Tech Incubation Fund 2017/18 Awardee & Tech Launchpad Fund 2018/19 & 2019/20 Supported Start-up)**

#### Background:

ASA developed Airluna, an app-controlled LED luminaire which breaks down indoor pollutants using patented Ozone Catalytic Oxidation (OCO) nanotechnology. The integrated air purifier has a life expectancy of 10 years, combining intelligent technology and breakthrough design for a luxurious user experience and saving energy effectively.

ASA was co-founded by designer Mui Kinoshita (PolyU Industrial Design, 2005).

#### Current Stage:

ASA has gained recognition in several start-up support schemes and won The Best JUMPSTARTER award and the Most Favorite JUMPSTARTER award in 2019.

ASA secured around HK\$2 million investment and is expecting a pre-A round.

Airluna is set for market trial at the end of 2019 and will be launched in the market in early 2020.

#### Awards:

- BIXPO 2017 International Invention Fair - Bronze Prize
- HSBC Sprinter Programme - Top 10 Selected Companies
- The Best JUMPSTARTER 2019 - The Most Favorite JUMPSTARTER 2019

a-sa  
air & science



**NoMatterWhat Technologies Limited**  
(Micro Fund 2018 & Tech Launchpad Fund 2019/20 Supported Start-up)

Background:

NoMatterWhat developed FusionLens, a clip-on dual lens optical system for mobile photographers to capture stunning wide-angle videos and photos, from anamorphic, 8mm wide-angle, fisheye to 360° shooting. Multiple accessories to FusionLens are also available.

Before FusionLens, the team launched Spindle app and entered TechCrunch Disrupt Startup Battlefield San Francisco in 2016, being one of the top 25 teams among 1000+ worldwide tech start-up companies. However, the start-up cannot monetise the 360° photo-taking app despite the initial applause by the media.

Current Stage:

The start-up has gained the spotlight under massive coverage by various media. They raised HK\$1 million in late 2018 and successfully bootstrapped themselves after the launch of FusionLens for iPhone Xs Max in early 2019.

**NoMatterWhat.**



**Shenzhen TOZI Technology Co. Ltd.**  
(STEF-G-PolyU China Entrepreneurship Fund 2017 Supported Start-up)

Background

With the core technology of “Image-based 3D Human Model Customisation” developed by the Institute of Textile and Clothing of PolyU, Shenzhen Tozi Technology Co. Ltd. launched the world’s first smart body measuring app “IMeasure” in June 2017. The AI-augmented app is capable of accurate 3D modelling of a human body with only two photos (front and side) by a smart phone, which carries great potential in personalised fashion and many other applications.

Apart from the RMB200,000 seed fund from the STEFG-PolyU China Entrepreneurship Fund 2017, since its incorporation in 2017, Tozi has already raised over RMB13 million of further investment.

Current Stage:

The Company mainly provides SaaS solution to online clothing stores via channels like WeChat and Taobao. It is also running its own customised clothing line on “YIHU” WeChat micro-programme. Clothing like shirts and trousers for men, and suits for women are available for sales on it.



图致创新科技



**Eternal Billion (Hong Kong) Ltd.**  
**(STEF-G-PolyU China Entrepreneurship Fund 2016 & PolyU Tech Launchpad Fund 2018/19 Supported Start-up)**

Background

The start-up developed a self-help hormone testing device to accurately profile the ovulation cycle of a woman. It works like a pregnancy test, the user can know which day of the ovulation cycle she is in by testing her urine. With cloud-based analytics and personalised tracking data, the product can identify the ovulation cycle within +/- 12 hours with above 99% accuracy.

Apart from the RMB200,000 and HK\$560,000 fund from the STEFG-PolyU China Entrepreneurship Fund 2016 and PolyU Tech Launchpad Fund 2018/19 respectively, since its incorporation in 2016, Eternal Billion has already raised over HK\$5.3 million of further investment.

Current Stage

The start-up has already obtained FDA certification of Home Use Medical Devices and clinical trial of the product is in progress. The application of CFDA and CE have been filed. The product is expected to be on sale in the US, Southeast Asia and Hong Kong by end of 2019.

The start-up is raising another round of funding after graduation from HAX, the world's first hardware accelerator, earlier this year.





## Appendix 7 – Awards won by PolyU Supported Start-ups

Startups / Startup Founders	Awards
AESIR.hk (Micro Fund 2015)	iCan2018 Silver Medal
	iCan2018 Special Inventor Award
Sightecho Limited (Micro Fund 2018 & CEF 2017)	創新南山 2018'創業之星' 大賽二等獎
	Cocoon Final Champion
	創青春全國大學生創業大賽銀獎
Abida Medical Limited (Micro Fund 2018)	HKUST Sino Entrepreneurship Competition Elevator Pitch Award and Health Tech Award
	HKUST International One Million Dollar Competition Excellence Award
Mosi Mosi Design Limited (Micro Fund 2018 & Good Seed 2017)	Hong Kong Smart Design Awards 2018 Silver Award
Labwork Technology Limited (Micro Fund 2018)	HK ICT Awards 2019 - Certification of Merit in Smart People (Smart Education and Learning)
Asiabots Ltd. (Tech Launchpad Fund 2018-19)	智慧城市獎 - 「傑出人工智慧醫療服務聊天機械平台」獎項
ASA Innovation & Technology Limited (Tech Incubation Fund 2017-18 & Tech Launchpad Fund 2018-19 & 2019-20)	The Best JUMPSTARTER 2019
	The Most Favorite JUMPSTARTER 2019
傲飛創新科技(深圳)有限公司 (STEFU-PolyU China Entrepreneurship Fund 2016)	2018 中國科學院創客之夜最具投資價值獎及最佳人氣獎
阿凡達康復科技(深圳)有限公司 (STEFU-PolyU China Entrepreneurship Fund 2018)	2018 前海粵港澳青年創新創業大賽總決賽銅獎