



GOOD HEALTH AND WELL-BEING

Research

Genome Sequencing Helps Limit Spread of COVID-19

Professor Gilman Siu, Professor of the Department of Health Technology and Informatics, and his team have used whole viral genome sequencing of the COVID-19 virus to successfully identify the source of the super-spreader event and highlighted that asymptomatic carriers of SARS-CoV-2 could trigger community outbreaks. Their findings have provided scientific support for the implementation of effective anti-pandemic measures by the Hong Kong Government and helped to close loopholes.

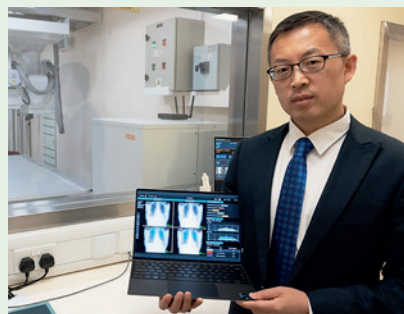


PolyU develops antivirus 3D printing materials,
which can terminate over 90% of COVID-19 in 10 mins
理大研發全新防病毒三維打印物料 十分鐘殺滅逾九成新冠病毒



World's First Antivirus 3D Printing Material

An interdisciplinary research team led by Professor Chris Lo Kwan-yu, Professor of the School of Fashion and Textiles, has developed the world's first antivirus 3D printing material that can kill the COVID-19 virus. With the use of 3D printing, materials can be produced in different forms. As a result, they are highly flexible and can be used extensively in public facilities to provide epidemic prevention support to the community.



AI-Empowered Chest X-Ray and CT Quantitative Analysis for COVID-19 Patient Management

Professor Jing Cai, Associate Dean of the Faculty of Health and Social Sciences and Professor of the Department of Health Technology and Informatics, has won a prestigious global innovation award in the areas of artificial intelligence (AI) at TechConnect World Innovation Conference and Expo 2022 with his development of an AI-empowered chest X-ray and CT quantitative analysis for COVID-19 patient management.

His AI-enhanced techniques for COVID-19 clinical applications provide accurate and low-cost imaging solutions for COVID-19 diagnosis, severity estimation and prognosis. These applications include chest X-ray imaging, COVID-19 disease segmentation and multiview analysis. Their ease of access will particularly benefit developing countries that lack the resources to accurately diagnose and monitor COVID-19.

Ultrasensitive, Portable COVID-19 Antibody Test

A research team led by Professor Yan Feng, Associate Director of the Research Institute for Intelligent Wearable Systems, Chair Professor of Organic Electronics at the Department of Applied Physics has developed an ultrasensitive and portable COVID-19 antibody detection sensor based on organic electrochemical transistors. Fast and easy to use, the sensor is designed for testing the antibody levels of people who have either received vaccination or have been infected with the virus. The whole detection process, which uses a saliva sample, takes **less than six minutes** and the cost per test is as low as **approximately HK\$10**. The antibody detection sensor can test the concentration of antibodies **from lower than 10fM to higher than 100nM**.

Research

Jockey Club Smart Ageing Hub

Aiming to promote new gerontechnologies and improve the service quality of residential care for the elderly, this five-year PolyU project, led by Ir Professor Zheng Yongping, Henry G. Leong Professor in Biomedical Engineering, Director of Research Institute for Smart Ageing, and Chair Professor of Biomedical Engineering at the Department of Biomedical Engineering, has received HK\$47.95 million from The Hong Kong Jockey Club Charities Trust. The project consists of two key components: a “Day Experience Centre” and “Real-Life Hostels”. The first one aims to enhance public awareness of gerontechnological products and devices through demonstrating the products in various formats. The second one, in collaboration with six NGOs, provides opportunities to frontline staff of elderly care for experiencing those gerontechnological devices that help relieve their work pressure and provide quality services.

AkkMore™: a Fungus- and Plant-Based Supplement to Fight Obesity and Prediabetes

Dr Gail Chang Jinhui, Research Assistant Professor of the Department of Food Science and Nutrition, and

co-founder of the PolyU start-up Bo InnoHealth Biotechnology Company Limited, has developed AkkMore™—a fungus- and plant-based nutritional supplement to protect against obesity and prediabetes by reducing metabolic disorders and body weight.

The supplement, which received a Silver Medal at the Geneva Invention Expo, improves users’ body condition through building a healthy microbiome by boosting the *Akkermansia muciniphila* bacterium in the human gut, reducing metabolic disorders and helping users to lose weight.

Ring-Focus Spectacle Lens for Controlling Myopia Progression

Professor Benny C. F. Cheung, Chair Professor of Ultra-Precision Machining and Metrology at the Department of Industrial and Systems Engineering and Director of the State Key Laboratory of Ultra-Precision Machining Technology (PolyU) and Professor To Chi-ho, Visiting Chair Professor of Experimental Optometry at the School of Optometry are the inventors of the ring-focus

spectacle lens for controlling myopia progression, which was granted a Hong Kong patent in 2022.

The novel manufacturing method provides a semi-finished lens meeting the needs of individuals diagnosed with high myopia and high astigmatism, which not only greatly simplifies the molding process, but also reduces the need for large lens inventories, thereby reducing costs. As a result, this technology can benefit more patients by making lenses more accessible and affordable.



Education

Assistive Technologies: Service Learning towards the Elderly and Disabled

The subject is hosted by the Department of Biomedical Engineering for students with an engineering, healthcare or design background. It attracted **172 students** in the 2021/22 academic year.

Service-learning projects were organised through special schools for people with disabilities, NGOs and other rehabilitation organisations where students work in groups to tackle a specific client need, using the skills they have learnt to analyse the situation and propose a solution. Examples of projects undertaken included designing a device to facilitate daily activities, developing a board game and developing hardware and software.

Subject: Mentoring Health Ambassadors for School Communities

The subject aims to cultivate healthcare students’ social responsibility and cultural sensitivity as they apply the skills they have learnt. It provides ‘real-world’ experience for students, nurturing them as health ambassadors to support underprivileged schoolchildren who lack an understanding of self-care and health.

Students acquire the sense of intellectual ownership and a better understanding of their own abilities, and become caring, innovative and effective in their communication with the schoolchildren and community stakeholders.

Subject: Engaging in Workforce Health for Health Care Workers in Nursing Homes

Hosted by the School of Nursing, the subject requires students to identify the health needs of healthcare workers, and then plan, implement and evaluate a programme of workforce health and wellness promotion. Students reflect throughout the whole learning journey.

Subject: Learning through Providing Eye Care and Vision Health to the Community

The subject, hosted by the School of Optometry, aims to help students understand the basic concepts of vision screening and become familiar with simple clinical tests for vision assessment. Students work in groups to develop a vision screening project to serve underprivileged communities in Hong Kong who have difficulty in accessing vision and eye healthcare services. In the 2021/22 academic year, **237 students** enrolled on the subject.

Online Health Talks for the PolyU Community

Between November 2021 and April 2022, the University Health Service has hosted four health talks: three focusing on Traditional Chinese Medicine (TCM) and one on nutrition, engaging **320 participants** in total. The first TCM talk aimed at increasing understanding of how TCM can help alleviate stress and prevent emotional disorders; the second discussed how TCM might be useful in the prevention and treatment of COVID-19; the last TCM talk—“Seasonal Heart Care”—intended to increase self-awareness of cardiovascular health and the importance of an appropriate diet, exercise and emotional regulation. Finally, the nutrition talk reflected on how hectic urban living, and unhealthy lifestyles and dietary habits can lead to cardiovascular diseases.





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Engagement

New Call Centre on Campus Supports Hospital Authority's Hotline

Dedicated nursing students and teachers from the School of Nursing have set up a new call centre on the PolyU campus to support the Hospital Authority's hotline service for COVID-19 patients. The Centre initially provides ten hotlines for 14 hours each day, handling **nearly 600 calls** daily.



One Stop Shop—Embrace Your Life with Love, Care and Hope

Launched by the Department of Applied Social Sciences in 2022, PolyU's online anti-epidemic platform "One Stop Shop" provides a range of co-created COVID-19 information and resources. The Department has mobilised students, staff and alumni, in collaboration with social services organisations and professional bodies, to provide resources that include a series of professional talks, physical and mental health workshops and advice from recovered COVID-19 patients. It is hoped that through this online initiative the Department can interact with the community and overcome the epidemic in the long term via co-creation, co-production and co-learning.



PolyU Jockey Club "Operation SolInno" Programme

Organised by the Jockey Club Design Institute for Social Innovation and funded by The Hong Kong Jockey Club Charities Trust, the SolInno social innovation project was launched in August 2018 to create solutions to social challenges in Hong Kong. The programme aims to generate innovative ideas and actionable prototypes focusing on the impact of the ageing of people and buildings. Its four main features are: (i) "One from Hundred Thousand" public symposia and workshops, (ii) SolInno Action Projects, (iii) SolInno Design Education and (iv) SolInno Knowledge Platform.

In 2021/22, **5,159 participants** were engaged in the project; while **8,857 accessed** the online resource platform.

Mental Health Caring Project

Recognising the importance of psychological fitness in overcoming life's challenges, the Mental Health Caring Project operated by the Student Affairs Office has the overall aims of promoting the general awareness of the importance of mental health on campus and enhancing the overall psychological wellness of the PolyU community. To achieve these aims, the project equips participants with basic knowledge about mental health and ways to cope with mental health issues through activities such as art-making sessions, talks and workshops.

In the 2021/22 academic year, **over 200 students** benefitted from participating in the project.

Policies and Operations

Exercise is Medicine® On Campus (EIM-OC)

PolyU received the EIM-OC Gold Level Award presented by the American College of Sports Medicine in 2022, in recognition of the University's efforts in promoting a healthy campus.

EIM-OC's mission is to promote physical activity on higher education campuses. Integrated with the "Healthy Life Style" courses for all undergraduates, the physical and virtual courses were attended by **around 900 students**, which provided them with tools necessary to strengthen lifelong healthy physical activity habits and prevent onset of physical diseases and mental health issues. To support this initiative, PolyU developed a mobile application "WellFit" attracting **over 300 students** to revisit the tools and exercises using slow-motion videos.

Wellness Promotion on PolyU Campus: Wellness-in-Action

Integrating sports and counselling, Wellness-in-Action is a year-round campaign with approximately **2,000 student beneficiaries** annually which aims to foster a thriving culture of both physical and psychological wellness within the university community. Students are

provided with a wide range of activities to boost their physical and psychological well-being. These include, for example, a campus-wide campaign with physical fitness and experiential workshops focusing on self-care and arts and crafts. Through these activities, it is intended that students will be able to step out of their comfort zone, achieve physical and psychological well-being, and most importantly, develop positive values.

Mental Health Support to Staff and Students

In addition to establishing the Mental Wellness Clinic, the University supports various mental health initiatives. For staff, these include the Employee Assistance Programme which provides professional counselling and a 24-hour hotline and which, from 1 November 2021 to 31 October 2022, handled **132 service requests** and organised wellness seminars/workshops for **326 participants**. With the 2021/22 budget of approximately HK\$1 million, the University also sponsored the Staff Club to run recreational activities for staff members catering for **1,231 participants**. **Over 6,600 counselling sessions** were offered to **around 1,300 students** and **more than 700 access** to online counselling ChatBOT were recorded since its launch in March 2022.

