New centre aims to ENSURE our environmental well-being

Hong Kong – Our interaction with the environment has been increasingly recognised to have detrimental effects both on the environment itself and human health. While country parks can help lower temperatures as trees and plants help to mitigate air pollution, the careful balance of these ecosystem services will be affected by rapid urbanisation.

These global challenges call for sustainable solutions if we want to have a healthy, strong and resilient planet to call home. It is the aim of ENSURE, a new HK$20 million (US$2.5 million) research centre established by the Chinese University of Hong Kong (CUHK) and University of Exeter. The centre aims to address some of the most critical challenges we encounter today, including safe access to food, clean water and breathable air.

Drawing on complementary expertise in areas such as climate and environmental change, public health, marine science, and sustainable agriculture, in June 2018 the two institutions formed the Joint Centre for ENvironmental SUstainability and REsilience (ENSURE) to advance global sustainable development. One of the key aims of the centre is to interpret and communicate the science behind climate change and sustainability to facilitate meaningful

ENSURE strives to communicate potential solutions to the public, promote behavioural change, and foster greater understanding of the potential co-benefits associated with environment and health.

Spearheaded by climatologist Gabriel Ngar-cheung Lau at CUHK and data scientist Gavin Shaddick at the University of Exeter, the centre will promote an integrated approach to investigating the multi-faceted impacts of environmental changes on human well-being and ecosystem health.

A recent ENSURE workshop in Exeter brought together 30 researchers from a wide variety of disciplines with the aim of identifying the most pressing issues related to the environment, climate and health, and forming large-scale international projects to address them. These include the effects of changing dietary patterns in China on land-use, ecosystems and human health; using remote-sensing laser network to identify the vertical distribution of air pollutants and associated variation in the effects on health; examining the interplay between climate change policy and economic growth; and tracking the impact of climate change on coastal communities in subtropical locations such as Hong Kong.

Development of sarcopenia drug at UST

Sarcopenia is a disease associated with the progressive loss of skeletal muscle that comes with aging. The prevalence of sarcopenia is over 10% in people aged 60s and is rapidly growing with the aging population. The World Health Organization (WHO) has recognised sarcopenia as a condition with an International Classification of Disease Code in an attempt to treat a rapidly increasing number of patients resulting from population aging. This has given rise to a new drug market. A great deal of sarcopenia drug development research has been performed, mainly by global pharmaceuticals, but thus far no drug has been approved by the Food and Drug Administration (FDA) for treating the disease.

In their drug development process, Professor Kwon’s research team employed drug-repositioning, a drug development approach that guarantees safety and reduces development costs. As a result, the team was able to identify cetylpyridinium chloride, or CPC, which effectively helps strengthen muscles, in an aged mouse (an experimental animal). The researchers injected CPC into aged mice and measured their limb grip strength and exercise endurance. The results showed that the CPC-injected mice exhibited 20 to 25% muscle improvement compared to normal aged mice.

The team revealed that CPC can be applied to the treatment of sarcopenia and other muscle-weakening diseases. They have also filed patent applications for related technologies in Korea, the US, China, Japan, and the EU. In addition, the team conducted technology transfer to BTC Corporation, a new drug development company.

South Korea – The research team led by Professor Ki-Sun Kwon of the Aging Research Center of the Korea Research Institute of Bioscience and Biotechnology (KRIBB) School of the University of Science and Technology (UST), developed a drug for sarcopenia and conducted technology transfer via joint research with Seoul National University Hospital.