

# InnoCarnival showcases scientific research with social relevance

## University interdisciplinary research holds key to the future

As part of the celebration of HKSAR's 20th anniversary, the InnoTech Month 2017 is organised by the Innovation and Technology Commission (ITC) from late September to early December to raise public interest in innovation and technology (I&T). The event serves as a showcase of Hong Kong's I&T achievements.

The anchor event of InnoTech Month is a nine-day InnoCarnival to be held at the Hong Kong Science Park from October 21 to 29. Carrying the theme of "Live Smart • Be Innovative", the carnival features activities including exhibitions, workshops, seminars, science competitions, guided tours, performances and interactive games to promote a culture of innovation. At the InnoCarnival, The Hong Kong University of Science and Technology (HKUST) and The University of Hong Kong (HKU) are presenting to the public some of their latest endeavours that span across different academic disciplines and demonstrate how research and innovation play an extremely important part to the future of our society.

### HKUST: Synthetic biology provides easy entry point to scientific innovation

At the InnoCarnival, HKUST showcases the work of its current iGEM team, a 22-team of undergraduate students from the life sciences, business and computer engineering.

iGEM is a global event for synthetic biology held annually for undergraduates, graduates and high school students. These multidisciplinary teams work together to build genetically engineered systems using standard biological parts called BioBricks. They work inside and outside the lab, creating sophisticated projects that will bring about real benefits to the world.



Prof King Chow, Director of Interdisciplinary Programs Office, HKUST

According to Prof King Chow, Director of Interdisciplinary Programs Office of HKUST, the university has participated in iGEM for over 10 years and has become a regional hub for this rapidly growing competition that originated in a course at the Massachusetts Institute of Technology in 2003.

Starting out as an idea to save coral reefs from dying due to high temperatures, HKUST's iGEM 2017 team has designed a synthetic circuit, or a "safety switch". It triggers a time bomb to allow genetically modified organisms to revert back to their wild state after their function to prevent contamination of the ecosystem has been fulfilled.

The project takes almost a year to complete, involving plenty of project planning, lab work, interdisciplinary collaboration as well as presentations to peers and the wider community. The team members all agree that the opportunity to work with students from other majors have benefited them immensely, and the exposure to other disciplines is an eye-opening experience. After the InnoCarnival, the team will travel to

Boston in November to participate in the iGEM jamboree to present their project and compete for prizes.

Prof Chow said, "The entry level of synthetic biology is quite low because DNAs are like lego blocks that can be rearranged at will so even primary students can understand the basics. It is a good way to open up people's minds about



HKUST's iGEM 2017 team



Prof Andy Hor, Vice-President & Pro-Vice-Chancellor (Research), HKU

science and instill them into the concept of engineering."

"iGEM offers a great opportunity to integrate biology, mathematics, computer engineering and even business management. It is an interdisciplinary research with social relevance because students often begin with real life problems like they did with the coral

reefs. It shows that learning should no longer be compartmentalised, but rather, multidisciplinary education is the way forward," he added.

### HKU: Health and information technology drives innovation

HKU has chosen five research projects for the InnoCarnival to illustrate how innovative research can contribute to smart living. They are related to health technology and information technology, two key areas that are seeing explosive growth.

"We want to show how innovation and innovative research can shape and change people's daily life, to help them

live better – healthier, longer and happier," said Prof Andy Hor, Vice-President and Pro-Vice-Chancellor (Research), HKU.

All the projects on display are advanced science but have practical applications. One focuses on new materials for organic light-emitting diode (OLED) that is light emissive, vivid and used in bendable display screens that have wide applications for televisions, phones and so on. In fact, the researchers have already reached a stage when they are working with the industry in an effort to bring new products to the market.

With an ageing population worldwide, many governments and academics have accorded top priority to disease prevention and diagnostics along the fight to find cures for diseases. HKU exhibits an ultrafast imaging technology that can detect rare cancer cells in a large population of blood samples (down to 1 cancer cell in a billion normal ones).

The exhibition also shows how computer simulation is used to improve surgical outcomes for orthopaedics and new dental materials and technologies in endodontics.

These projects are research collaborations among medical, engineering, science and industry. Other faculties like social sciences and education are also involved in smart living research. All come together to show how modern-day innovations are often the fruits of multidisciplinary collaboration and that the human element is an integral part of scientific research.

Indeed Prof Hor said it is important to connect scientific research to the people. The innovations serve to provide that connection as they help to shape people's daily life and find smarter ways of living.

"People need to be aware of science's relevance to their life, and the InnoCarnival is an occasion to be involved in the discoveries and inventions at the university, whose mission is to nurture future-ready graduates who are able to embrace technology and create new opportunities for themselves and others," added Prof Hor.

### INNOCARNIVAL 2017

<b>Date</b>	Oct 21 to 29
<b>Veune</b>	Hong Kong Science Park
<b>Organiser</b>	Innovation and Technology Commission
<b>Enquiry</b>	2561 6149
<b>Website</b>	<a href="http://www.itm.gov.hk">www.itm.gov.hk</a>

