香港浸會大學
HONG KONG BAPTIST UNIVERSITY

Institute for Innovation,
Translation and Policy Research
創新 › 轉化及政策研究院

FOOD TECH AT HKBU

Translating Innovation &
Creativity for Impact

Contents

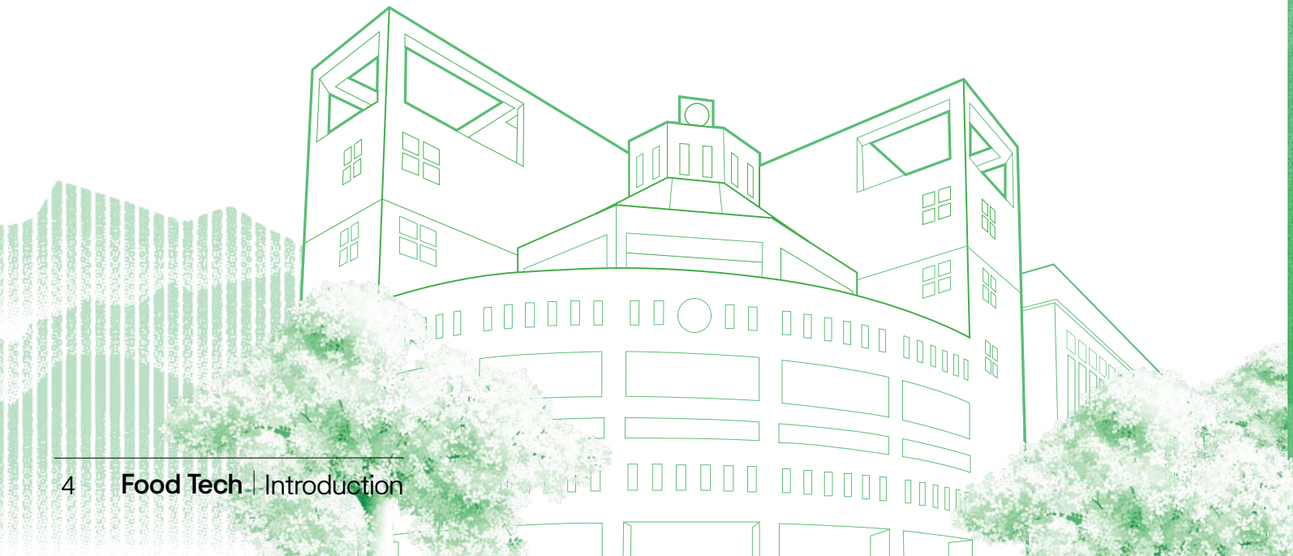
FOOD TECH

innovates for a better tomorrow and
leads the society to a safer, healthier,
and more sustainable future.

HONG KONG BAPTIST UNIVERSITY

Hong Kong Baptist University (HKBU) is committed to the pursuit of excellence in education, research and service to the community. As one of Asia's finest institutions of higher learning, HKBU is dedicated to nurturing future generations of civically engaged community members, and it provides them with a broad-based, transdisciplinary and creative education. Its eight faculties/schools offer a wide array of programmes across a diverse range of disciplines, from the arts, business, communication, and social sciences to science and technology, Chinese medicine and sport.

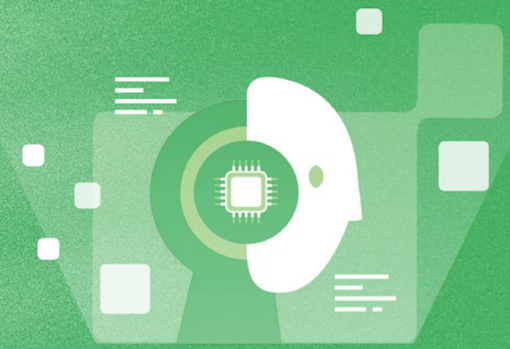
HKBU offers an education and research environment that fosters technological progress with a focus on the human dimensions. At the same time, the University is using technology to push the envelope of human imagination in the arts and cultural sphere. Coupled with our unceasing efforts to achieve breakthroughs in science and Chinese medicine, HKBU strives to contribute to the building of a better world and a more compassionate society.



OUR STRATEGIC CLUSTERS

Art, Culture and Creative Media

Film, Literary Arts, Music, Visual/Media Arts



Data Analytics and AI

In applications such as data-journalism, data-healthcare and data-literature

Health, Chinese Medicine and Drug Discovery

Chinese medicine, Chemistry, Microbiology, Ageing, Physical Education

Institute for Innovation,
Translation and Policy Research
創新 › 轉化及政策研究院

TRANSLATING INNOVATION & CREATIVITY FOR IMPACT

The Institute for Innovation, Translation and Policy Research (ITPR)

at HKBU is dedicated to driving innovations, research and development, technology translation, and applications to enable HKBU to respond to emerging challenges and opportunities globally, nationally, and under the aegis of the Hong Kong SAR Government s top policy priority on innovation and technology development.

We strive to bridge the gap in technology readiness between academic innovation and industry applications in order to bring HKBU's innovations for the well-being of the society.

ITPR comprises three sections

Innovation and Entrepreneurship

Technology Translation

Policy Research

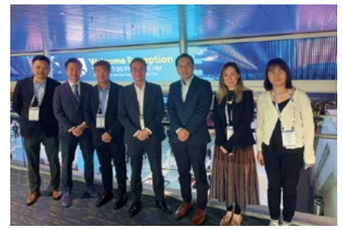
each being instrumental in fostering a vibrant ecosystem at HKBU conducive to technology translation and collaborations.

The all-round business development, scientific, and policy research support will anchor HKBU's robust and sustainable development.

STRATEGIC ALLIANCE AND ENTREPRENEURSHIP

Accelerating Technology Translation and Application

To bridge the gap in technology readiness between academia and industry in technology development, ITPR strives to enhance HKBU's innovation capacity and improve our research and technology development capabilities through proactive outreach and engagement with strategic partners and investors. We achieve this by establishing collaborative platforms, engaging stakeholders, facilitating high-impact innovation, and conducting multidisciplinary R&D.



ITPR offers support and resources to mature technology and startups of HKBU in realising their potential to generate social, economic, and cultural impacts. To showcase the potential of technology, ITPR identifies anchor events in different industries to participate and demonstrate technology applications to industry players and investors.

TECHNOLOGY TRANSLATION

Anchoring Technology Application

ITPR offers infrastructure to support HKBU's translational research.

We provide resources and expertise for technology development and demonstration, while we also serve as a training hub to cultivate the next generation of scientists and researchers.

Our aim is to equip them with the necessary skill set and know-how for technology applications. Our flagship translational infrastructures include:

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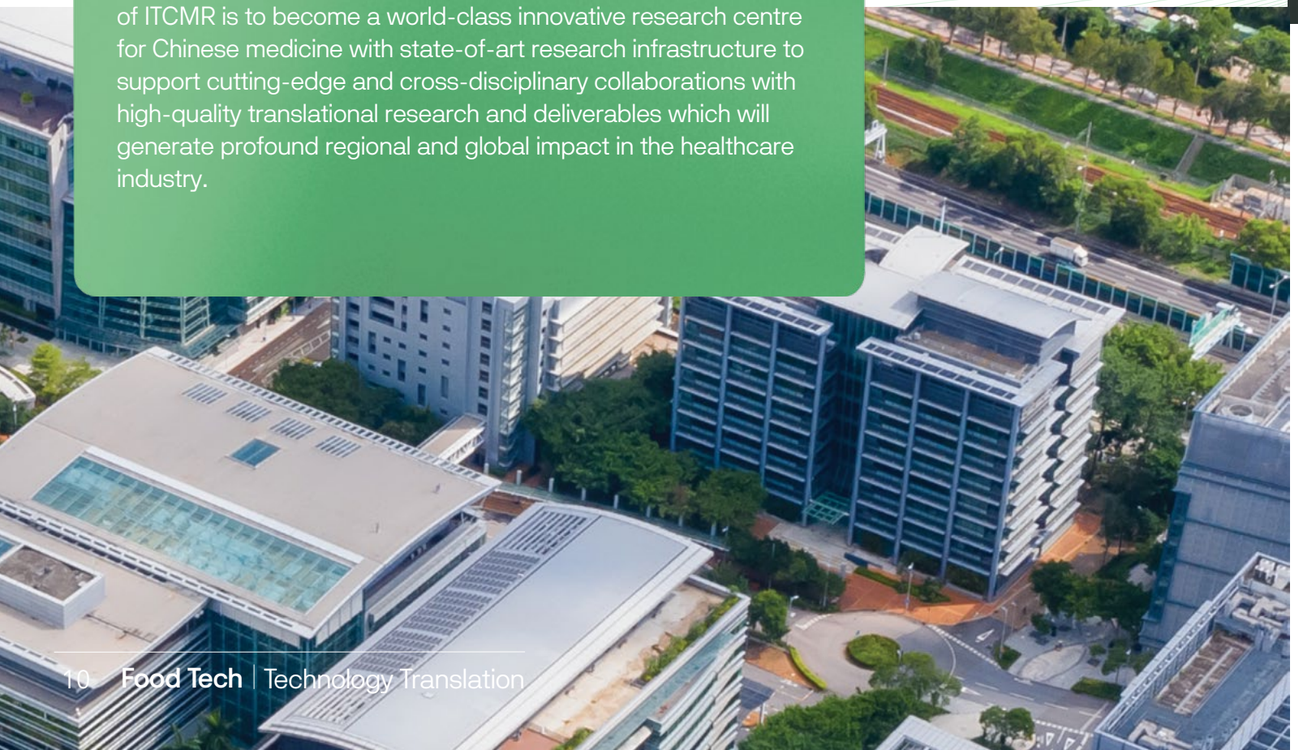
Institute of Translational Chinese Medicine Research (ITCMR)

Located at the Hong Kong Science Park, the overarching mission of ITCMR is to become a world-class innovative research centre for Chinese medicine with state-of-art research infrastructure to support cutting-edge and cross-disciplinary collaborations with high-quality translational research and deliverables which will generate profound regional and global impact in the healthcare industry.



02

Art Tech Incubation Hub

Located at the Jockey Club Creative Arts Centre (JCCAC), the incubation hub aims to foster the incubation of edge-cutting Art Tech projects, technology development, and entrepreneurial activities by providing a creative environment for our innovators to support early stage of their journeys. The hub will feature a mechatronics area, digitisation area, co-working space, and exhibition space of various forms.

PLATFORM AND INFRASTRUCTURE

Food Safety Consortium 食品安全聯盟

NGO observer
CODEX ALIMENTARIUS
INTERNATIONAL FOOD STANDARDS

An affiliate of
International Association for Food Protection

Powering Food Safety & Quality with Science & Technology

Food Safety Consortium (FSC) is a charitable organisation in Hong Kong aiming to address food safety challenges with cutting-edge and applied technology and with timely and in-depth communication on food safety related matters. FSC comprises stakeholders from academia, industry and other organizations and is currently home to over 70 corporate members. FSC is supported by Hong Kong Baptist University's Institute for Innovation, Technology and Policy Research, HKBU academic units and research centers.

Objectives

- To create stakeholder network in food safety and quality
- To provide support to global community with advanced technology and science
- To enhance capability and competence on food safety & quality and related technology developments through university, industry and government collaborations

Our Strengths & Scope

- Food as Medicine
- Innovative technology development
- Functional food development
- Nutrition and public health
- Testing and certification
- Risk Analysis and toxicology
- Food virus testing
- Genetically modified animal and plant testing
- Food authentication
- Application of QA/QC systems
- Novel biological, chemical and physical testing technologies
- Professional education training, and consultancy services

Global Engagement and Recognitions

FSC actively engages with regional, national, and supranational bodies to promote Hong Kong's capabilities and efforts in various areas of food tech. Through relentless efforts in engaging with representative agencies in food safety, such as the Food and Agriculture Organization of the United Nations, WHO/FAO INFOSAN, the China National Center for Food Safety Risk Assessment, Chinese Academy of Agricultural Sciences, Interpol, DG Sante, European Institute of Innovation and Technology (EIT), and the European Food Safety Authority (EFSA), FSC aims to showcase Hong Kong's competence in innovation on a global platform and facilitate collaboration in different fields of food safety, including food authenticity, food fraud, genome sequencing, food safety applications, and antimicrobial resistance.

World Food Safety Day and Senior Advisory for United Nations Project

FSC participated in the inaugural meeting of World Food Safety Day (WFSD) held at the United Nations Headquarters in New York to share the importance of interdisciplinary research driven by academia to address emerging food safety challenges.

Professor Terence Lau, Chairman of FSC, was appointed by United Nations Office for Project Services (UNOPS) as Senior Advisor to facilitate the development of the Asia-Pacific Smart Agricultural and Food Safety Industrial Demonstration Zone, which aimed to enhance capacity-building, promotion, and facilitation of public-private partnerships in Changchun, mainland China.

IAFP Recognition and FAO/WHO Codex Alimentarius NGO Observer

FSC is the Hong Kong affiliate of the International Association for Food Protection (IAFP), a century-old food association in the United States with over 4,500 food safety professionals from more than 50 countries.

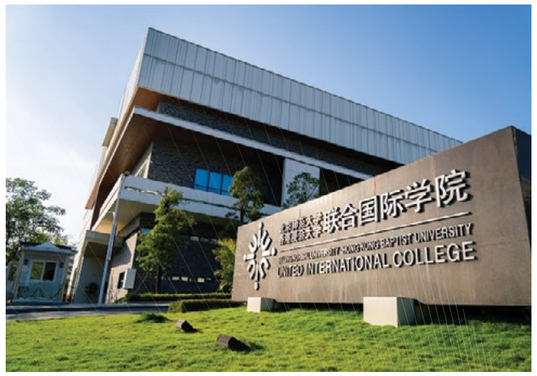
FSC's effort and contribution towards promoting food safety globally was recognised by the IAFP via two significant awards - the "C.B. Shogren Memorial Award" in 2017, the first affiliate outside of the Americas to receive this award, and the "Affiliate Communication Award" in 2019.

Under the Joint Food Standards Programme of the Food and Agriculture Organization of the United Nations (FAO) and World Health Organisation (WHO), the Codex Alimentarius Commission (Codex) was established by FAO/WHO with an aim to develop an international food standard. FSC was the first non-governmental organisation (NGO) from Hong Kong and mainland China to obtain the Observer status at Codex. Such status creates the channel for sharing concerns and suggestions from FSC, and its members, at supranational level over the standard formulation process of Codex.

Learn More

BEIJING NORMAL UNIVERSITY-HONG KONG BAPTIST UNIVERSITY UNITED INTERNATIONAL COLLEGE (UIC)

Situated in Zhuhai city of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), Beijing Normal University-Hong Kong Baptist University United International College (UIC) was established as a collaborative effort between Beijing Normal University (BNU) and Hong Kong Baptist University – the first full-scale cooperation in higher education between the Chinese mainland and Hong Kong.



UIC places great emphasis in promoting collaboration between academia and industry as well as facilitating the translation of research achievements. With invaluable research platforms like the Guangdong Provincial Key Laboratory of Data Science and Technology Cross-Application, UIC harnesses innovative resources from the GBA to drive forward scientific research that is forward-thinking.

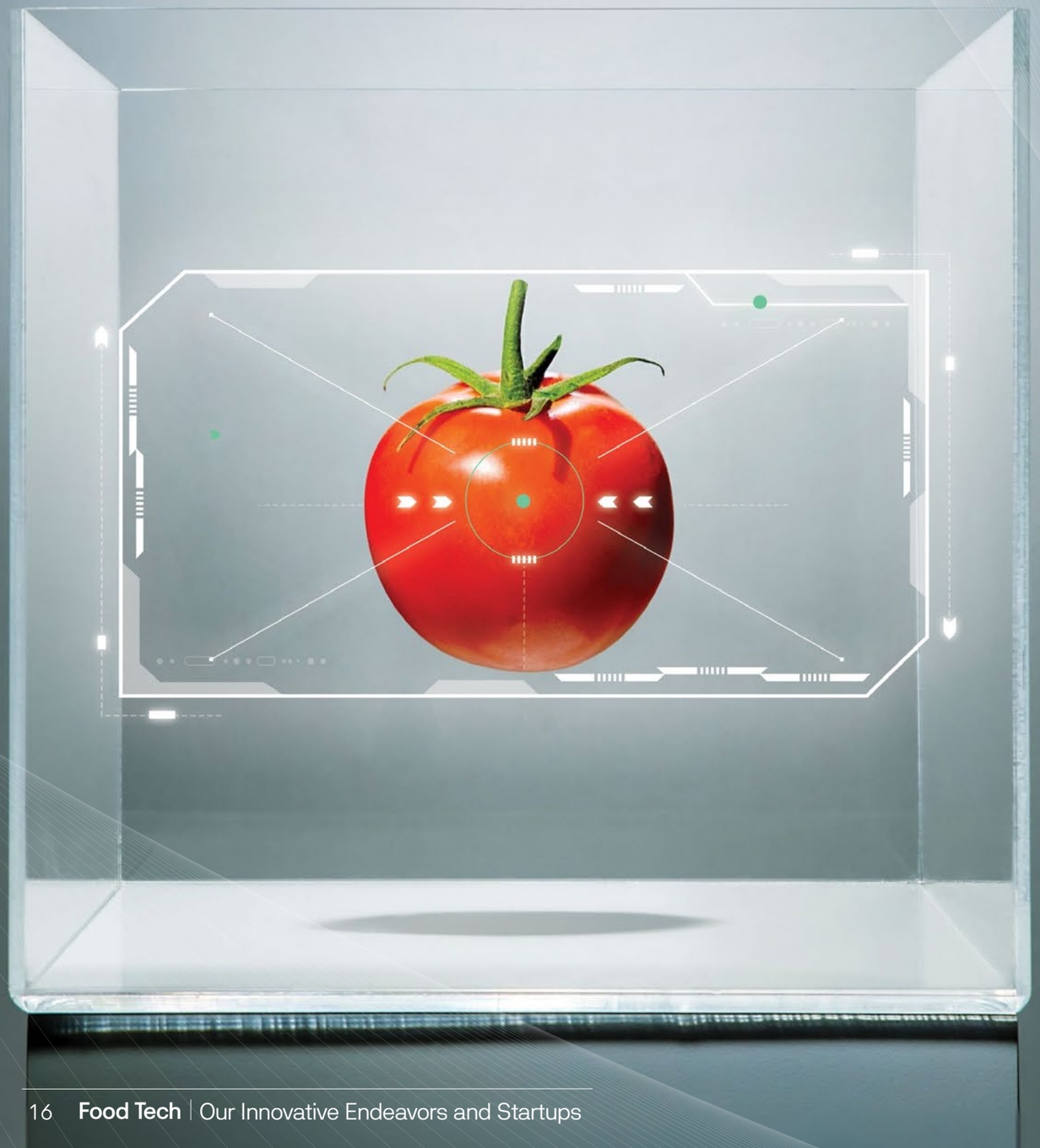
Within the UIC Department of Life Sciences, the **Food Science and Technology Program** is offered, which aims to cultivate talents for the food safety industry. This program encompasses six research major subjects:

- **Biotechnology & food safety**
- **Health promotion effect of bioactive dietary components**
- **Nutrition & health**
- **Food processing, flavour chemistry & sensory science**
- **Bomedical materials & targeted drug delivery**
- **Food packing innovation**

This four-year program is designed to nurture graduates who possess comprehensive knowledge and competence in addressing issues related to the production, marketing, and management of food and nutritional science. The program seeks to equip students with the skills and expertise necessary to become food scientists, technologists, regulatory specialists, and professionals in the field of food science.

北京师范大学 香港浸会大学 联合国际学院
BEIJING NORMAL UNIVERSITY · HONG KONG BAPTIST UNIVERSITY
UNITED INTERNATIONAL COLLEGE

OUR INNOVATIVE ENDEAVORS AND STARTUPS



Transcending Traditions, Driving Innovation: HKBU's Interdisciplinary Approach to Food Tech

HKBU recognises the immense potential of food tech in addressing global challenges such as public health, food safety, food authentication, antimicrobial resistance, sustainable development, and food security. To nurture the development of food tech and optimise research impact, HKBU embraces an interdisciplinary approach that transcends traditional disciplinary boundaries by integrating various fields such as biology, chemistry, physics, engineering, computing, and artificial intelligence.

> **“ If it’s not safe, it’s not food. ”**
>
> *FAO, United Nations*

Good food is fundamental to good health, and HKBU strives to generate health benefits for the public. Leveraging the established strengths and advantages of our School of Chinese Medicine, HKBU explores the concept of “Food as Medicine” to encourage a wider application and integration of Chinese medicine and food safety. This will in turn contribute to the internationalization and standardization of Chinese medicine.

HKBU strengthens its research, education, and innovation efforts and maximises their impact on the community by collaborating with industry stakeholders, government agencies, and non-profit organisations. These public-private partnerships facilitate the translation of research findings into practical applications and ensure that the benefits of food tech advancements could reach a wider community.

BREAKTHROUGH IN THE PRODUCTION OF HYBRID RICE SEEDS

The research led by HKBU represents a significant advancement in hybrid rice seed production, offering the potential for increased efficiency and reduced costs. By addressing the limitations of the male sterility technique and harnessing the TFS1 gene mutation, the researchers have paved the way for mechanised hybrid rice breeding with commercial applications.

The commonly used “three-line” male sterility technique in hybrid rice seed production involves breeding male-sterile lines as pollen receivers and restorer lines as pollen donors. However, restorer lines can also produce self-pollinated seeds, which need to be manually removed to ensure seed purity. The research aims to address this limitation by introducing a sterile female rice as the restorer line.

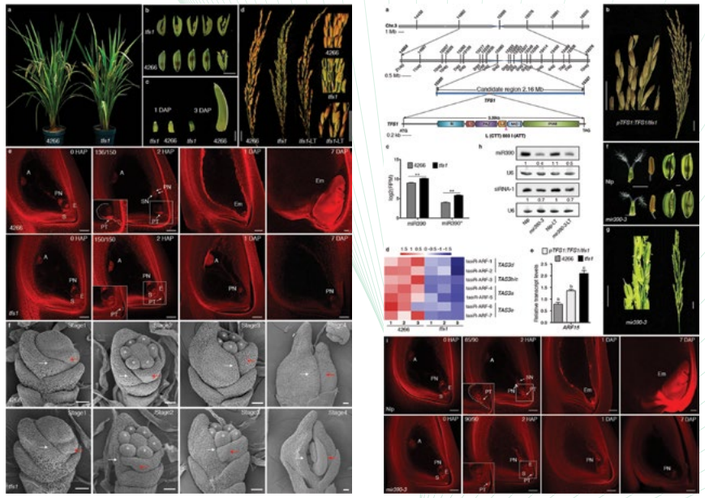
The research team led by Professor Zhang has identified a gene mutation called “spontaneous thermo-sensitive female sterility 1” (TFS1) in an elite rice cultivar. This mutation causes female sterility under regular or high temperature conditions and resumes fertility under low temperature conditions. The team found that the TFS1 mutation affects the pollen tube entrance into the partially embryo sac, resulting in failed fertilization and seed production under certain temperature conditions.

With the pioneering female sterility technique, the researchers achieved a breakthrough in the production of hybrid rice seeds and have enhanced the efficiency of hybrid rice production by eliminating self-pollinated rice seeds. This novel technique allows for fully automatic harvesting of hybrid seeds, reducing harvesting costs.

The research results have been published in Cell Research, a top-ranking international scientific journal.

Access Publication

Learn More



PROJECT-IN-CHARGE

Professor Jianhua Zhang
Chair Professor of Plant Biology,
Department of Biology

ECONOMICALLY MOTIVATED ADULTERATION (EMA)

Non-targeted detection of food adulteration using AI and big-data enabled collaborative database

Economically motivated adulteration (EMA) is an act of intentional food adulteration and a major public health risk. It is an act of deceiving food buyers motivated by economic gains, which contributes significantly to broader issues related to food safety compared with other traditional threats as the contaminants are often unconventional with unknown effects on human health. Recurrent incidents of economically motivated adulteration such as the Melamine incident in 2008, Horsemeat scandal in 2013, Counterfeit olive oil in 2009, and the plastic rice scandal have long-lasting and devastating effects on public health, economy, and society.

With current detection methods being target-oriented as per the regulations of local legal authorities, that is, the testing ensures that a list of specific substances does not exceed the maximum residual limits, newly engineered and unencountered adulterants are designed to evade existing, target-orientated testing methods. With unlimited unknown targets, it is impractical to test every product with all available quality evaluation methods, which are often expensive and labour-intensive. The complex, global food supply chain further creates numerous opportunities for unscrupulous suppliers to commit food fraud.

PROJECT-IN-CHARGE

Professor Terence Lau
Interim Chief Innovation Officer

Honorary Professor,
School of Chinese Medicine

Using historical industrial data that have been amassed over time but filtered out, we have developed an alerting system that enables non-targeted detection of food adulteration without additional testing, powered by artificial intelligence (AI) and big data enabled collaborative database. Using our alerting system, the industry can continuously monitor and flag suspicious samples for further in-depth testing. Starting with mid-infrared spectroscopy data of raw milk as a pilot, the system can be extended to other food commodities prone to fraud as well as linking up other ingredients along the supply chain and manufacturing process for prediction, and thus become an important contributor for safeguarding public food safety.

Results have been published in Scientific Reports titled “Non-targeted detection of food adulteration using an ensemble machine-learning model”.

Access Publication

DISCOVERY OF NOVEL GENES FOR THE BIOSYNTHESIS OF VALUABLE MONOTERPENES THYMOL, CARVACROL AND THYMOHYDROQUINONE FROM MEDICINAL PLANTS

The research identified and characterised enzymes involved in thymol, carvacrol, and thymohydroquinone biosynthesis in the Lamiaceae family, determining a unique pathway that commences with the formation of y-terpinene from geranyl diphosphate. The entire pathway was successfully reconstituted in tobacco, thereby validating the work's experimental model.

Long esteemed for their aroma and flavour, thymol and carvacrol, besides exhibiting antibacterial and anti-spasmolytic properties, are also precursors to thymohydroquinone, a substance with anti-inflammatory, antioxidant and anti-tumour activities. Understanding the biosynthesis of these phenolic monoterpenes enriches the understanding and opens new opportunities in studying complex biochemical processes.

Results have been published in PNAS titled "The biosynthesis of thymol, carvacrol, and thymohydroquinone in Lamiaceae proceeds via cytochrome P450s and a short-chain dehydrogenase".

The findings from the project can be applied in metabolic engineering to produce high-value terpenes in plants and microorganisms. Given the diverse therapeutic activities, large-scale biosynthesis could greatly benefit medicine, nutrition and aromatherapy. By demonstrating a novel mechanism for the formation of phenolic monoterpenes contrary to previous predictions, the research enhances techniques for creating these metabolites, potentials for further industrial application.

PROJECT-IN-CHARGE

Dr Pan Liao
Assistant Professor,
Department of Biology

Access publication

SEARCHING FOR IMPORTANT GENES THAT AFFECT CROP OIL PRODUCTION

Genetically modified B. napus lines, overexpressing critical enzymes for triacylglycerol formation, exhibited differences in lipid accumulation, PC (phosphatidylcholine) and TAG (triacylglycerol) distribution. These variances emphasise the need for continued research in this field to fully comprehend and manipulate the lipid metabolism of this vital oil crop. Such findings have a profound impact on understanding the world's most crucial oil crops.

B. napus is the third most essential oil crop globally, contributing around 16% of plant oil production. Understanding its lipid metabolism could lead to the modification of oil content and quality, contributing to improved crop yields. Enhanced knowledge allows for better prediction of the implications in lipid accumulation, distribution, and functional shifts associated with transgenic alterations.

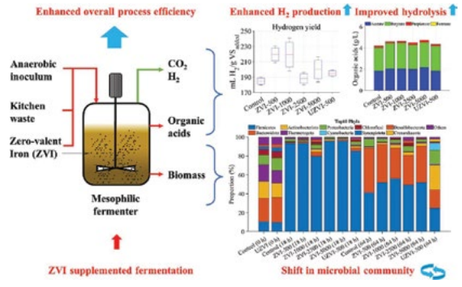
Insights from this study could transform agricultural practices and oil production, allowing for an increase in oil yield from B. napus. By improving understanding of how oil accumulation is regulated in the plant, researchers could engineer lines with a higher oil content, benefiting biofuel production and the food industry. This could also lead to the modification of oil quality tailored for either human consumption or industrial use.

Results have been published in Scientific Reports titled "Transgenic manipulation of triacylglycerol biosynthetic enzymes in B. napus alters lipid-associated gene expression and lipid metabolism".

Access publication

ZERO-VALENT IRON NANOPARTICLES BOOST HYDROGEN PRODUCTION FROM KITCHEN WASTE

The research team investigated the effects of adding different amounts of zero-valent iron (ZVI) to kitchen waste affected the production of hydrogen gas (H_2) through dark fermentation. The researchers found that adding 500 mg of ZVI per liter resulted in the highest yield of H_2, which was 19% more than the control. Analysis of the metabolic pattern and metalloenzymes revealed that acetic and butyric acid production played a crucial role in generating H_2.



Additionally, the study found that certain bacterial groups, specifically phyla Firmicutes and genera Clostridium sensu stricto 1, were predominant during the gas production phase, indicating their involvement in the production of various organic acids. These findings suggest that ZVI supplementation can boost H_2 production from organic waste and influence the composition of the metabolic and microbial community.

The study provides an in-depth understanding of microbial community structure at a temporal scale and demonstrates its impact on H_2 production using kitchen waste as a substrate and variations in the key metalloenzymes at different stages of fermentation. Further, the findings offer an improved state-of-the-art technology for manipulating microbial community structures to improve H_2 yield and production rate.

The article titled “Effect of zero-valent iron nanoparticles on taxonomic composition and hydrogen production from kitchen waste” was published in Bioresource Technology.

PROJECT-IN-CHARGE

Dr Nirakar Pradhan
Assistant Professor,
Department of Biology

Access Publication

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A HKBU startup

Crimsonvision

CRIMSON VISION TECHNOLOGY LIMITED

Empowering industries with instant portable material analysis solutions through NIR and IoT technologies

Crimson Vision is committed to the development of near-infrared (NIR) detection and visualizing technologies for fast and portable authentication and detection services for fruit in the commercial and retail market.

Through the patented Near-Infrared (NIR) detection and visualizing technologies, it has achieved fast and accurate material analysis capabilities with the portable detector, all in a non-destructive manner. Currently, fruit sugar levels are predominantly measured using intrusive methods such as reflectometers and liquid chromatography, which can damage the fruits during the measurement process. Other non-destructive methods, like spectrometers, are limited, complex, bulky, and expensive.

By utilising NIR technology, which is absorbed and reflected within the fruit, its organic photodetector can capture the signal with exceptional sensitivity and accuracy. By measuring the absorbance after diffuse reflection and comparing it with our extensive database using sophisticated algorithms, various qualities of the fruit, including sugar level, water content and acidity, can be discerned in a non-invasive manner.

With Crimson Vision’s solution, the portable fruit quality detector can authenticate fruit species and assess fruit qualities faster and more affordably. By capturing the sugar level (Brix), acidity, and water content of the fruit, swift and cost-effective fruit authentication and quality detection can be achieved.

PROJECT-IN-CHARGE

Professor Zhu Furong
Associate Dean (Reserch and Postgraduate Studies),
Faculty of Science

Director,
Institute of Advanced Materials

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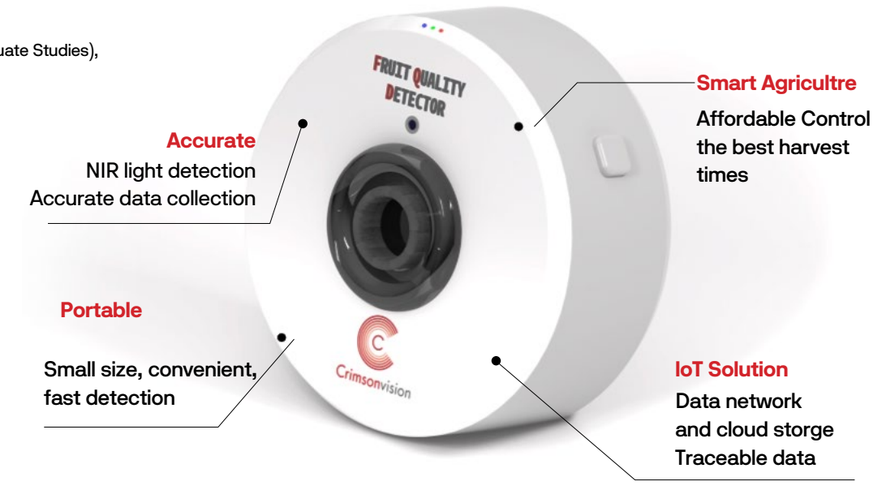
Traceable fruit quality detection technology and IoT solution



HONG KONG AUTHENTICATION CENTRE OF VALUABLE CHINESE MEDICINES LIMITED

Ideal cost-effective routine testing for valuable Chinese Medicine authentication

A HKBU startup

香港名貴中藥檢定中心
HK Authentication Centre of Valuable Chinese Medicines

The Hong Kong Authentication Centre of Valuable Chinese Medicines Limited (Authentication Centre) has a vision to address customer concerns in the Chinese medicine market and promote industry advancement through the use of innovative technologies.

Traditionally, the differentiation of Chinese medicines relied on the expertise of experienced professionals, which was subjective, or DNA bio-coding, which was costly and time-consuming. However, Prof. Han's invention has introduced a new testing method that is objective and cost-effective. By identifying specific biomarkers and active ingredients of valuable Chinese medicines, an objective standard has been developed. This authentication service offers significant advantages over conventional methods in terms of cost and efficiency, and it has been patented in the US, Mainland China, Hong Kong, and Macau.

The Authentication Centre provides accreditation for the quality of Chinese medicines on the market, specifically for Cordyceps, Dendrobii Officinalis Caulis, and donkey-hide gelatin. As the only third-party certification body in Hong Kong accrediting Chinese medicines, the company greatly enhances consumer trust. This has led to successful collaborations with renowned enterprises in Hong Kong and Mainland China, including Tong Xin Tang, Good Point Food Company Limited, the Hospital Authority, and All Care Herbal Medical.

Looking ahead, the innovative technology developed by the Authentication Centre can be widely applied to fresh and dried raw materials, as well as formulated products with different dosage forms. This expansion will further contribute to the improvement and authentication of Chinese medicines in the market.

PROJECT-IN-CHARGE

Professor Simon Han
Professor,
School of Chinese Medicine-
Teaching and Research Division

Associate Director (Research),
Research Centre for Standardization of Chinese Medicines

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A HKBU startup

MicroFlow

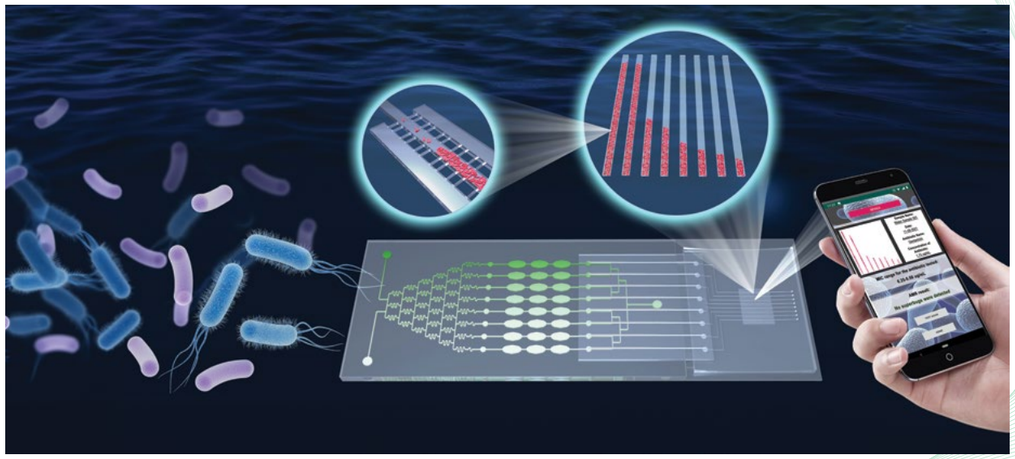
MICROFLOW INNOVATION LIMITED

"Barcode" cell sensor microfluidic system: Rapid and sample-to-answer antimicrobial susceptibility testing applicable in resource-limited conditions

MicroFlow Innovation Limited is dedicated to improving the antimicrobial susceptibility tests (ASTs), surveillance of antimicrobial resistance (AMR) in resource-limited environment.

With a mission to bring microfluidic techniques into point-of-care-tests (POCTs) development and analysis of drug-resistant bacteria, Dr Ren has developed the antimicrobial susceptibility testing (AST) system, which includes a whole-polypropylene chip and a "barcode" cell sensor as the key parts. This novel system is designed for mass screening of antimicrobial bacteria in the environment and food.

This platform can serve as a cost-efficient sample screening tool to quickly detect any sample with potential drug-resistant bacteria, which can then be sent for subsequent advanced analysis. It is expected this system will become a useful tool for the routine screening of drug-resistant bacteria in different situations, such as the food industry, public areas, and healthcare facilities, which can be applied without advanced clinical assay facilities or operator skill.



PROJECT-IN-CHARGE

Dr Ren Kangning
Associate Professor,
Department of Chemistry

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EC BOT LIMITED

A HKBU startup

Chinese Medicine Remedial Soup System for Suboptimal Health and Post-COVID Conditions

Chinese medicine and remedial food have long been essential to the Chinese culture, and Hong Kong is renowned for the development of this industry. EC Bot has crafted a comprehensive range of remedial soup packages, designed to address a broad spectrum of suboptimal health concerns as well as post-COVID conditions, which are available in two formats: crude herbs and herbal granules.

The crude herbs package is designed to pair with meat as a traditional way to prepare medicinal soups. Taking a leap forward and adopting the principles of Chinese medicine granules, EC Bot also turns the remedial soup into herbal granules which retain both the genuine flavors and nutritional values of the ingredients, providing a contemporary, convenient, and tasteful solution to those inclined towards vegetarianism. Both package variants are specially curated not only for their medicinal properties but also for their palatability, appealing to individuals who are exploring Chinese medicine alternatives but may find the traditional taste challenging.

Alongside these encapsulated wellness soups, EC Bot also offers an online recommendation system to better aid international customers, thereby making them conveniently available to a global audience seeking the benefits of Chinese medicine, especially for suboptimal health conditions and post-COVID recovery.

PROJECT-IN-CHARGE

Dr Zhang Shi Ping
Associate Professor,
School of Chinese Medicine

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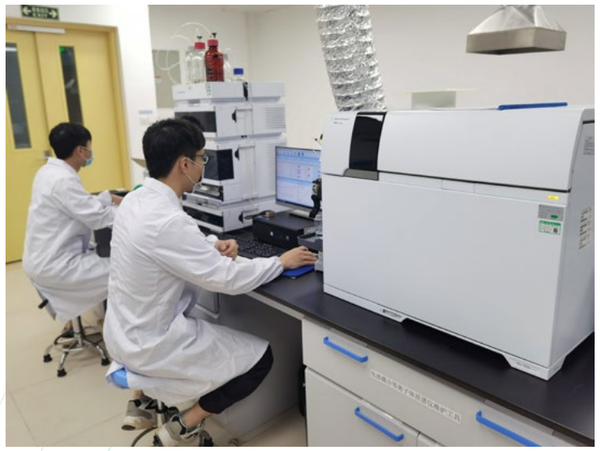
ZHUHAI GUANGDONG-HONG KONG FOOD SAFETY TESTING CO LIMITED

珠海粤港食品安全检测有限公司

Zhuhai Guangdong-Hong Kong Food Safety Testing Co.Ltd



Established in 2018, the food testing center is a leading facility in the Greater Bay Area that provides third-party testing and analytical research experiments on food safety and agricultural product safety. The testing services adhere to national regulations in China, ensuring compliance and accuracy.

Through collaboration with esteemed institutions such as the State Key Laboratory of Environmental and Biological Analysis of HKBU and Zhuhai Key Laboratory of Agricultural Products Quality and Food Safety of UIC, the center offers a comprehensive range of testing services. This includes contaminant testing, microbiological testing, and residue testing for various food products, including meat products, dairy products, and processed foods in addition to raw agricultural products.

Currently, the center holds 5,585 qualifications under the CMA (China Metrology Accreditation for Food) and CNAS accreditation in the field of food testing. Additionally, it possesses 2200 qualifications under the CATL testing for agricultural products. These accreditations demonstrate the center's commitment to maintaining high standards and providing reliable testing services in the field of food and agricultural product safety.

PROJECT-IN-CHARGE

Professor Lei Bo
Professor,
Faculty of Science and Technology-Food Science and Technology,
UIC

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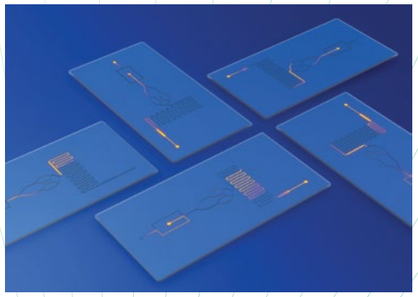
ZHUHAI SILVER ARK BIOCHIP CO LIMITED

Established in 2021, Zhuhai Silver Ark Biochip Co Limited is an integrated company that focuses on the research, design, manufacturing, and application of microfluidic chip based analytical instruments. Located in Zhuhai, the company specialises in the R&D, sales, and marketing of microfluidic chips and molecular diagnostic technologies in the field of food safety testing.

银方舟生物芯片
Silver Ark Biochip



The team of core technical team members have extensive experience leading and participating in numerous national key research and development projects, as well as projects of the Ministry of Science and Technology. They have successfully obtained multiple invention patents and achieved various technology transfer outcomes.

Currently, a range of products are available, including handheld pesticide residue detectors, microfluidic intelligent pesticide residue detectors, microfluidic intelligent cell counters, supporting chip reagents, and aquaculture disease detection reagents. These products showcase the company's commitment to providing innovative solutions in the field of microfluidic technology and contribute to the advancement of food safety testing.

PROJECT-IN-CHARGE

Professor Lei Bo
Professor,
Faculty of Science and Technology-
Food Science and Technology,
UIC

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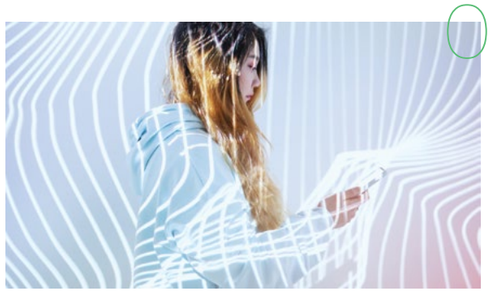
HKBU LABORATORIES, INFRASTRUCTURE AND FACILITIES

Learn More

Six Interdisciplinary Laboratories

To underpin interdisciplinary and theme-based research excellence knowledge/technology transfer, and attract global collaboration, six laboratories were established for vibrant intellectual interactions where researchers and collaborators can explore and discover novel solutions for grand challenges.

01



Augmented Creativity Laboratory
focuses on augmenting human creativity, artificial intelligence & human-machine collaboration, public policies & strategies

02

Computational Medicine Laboratory
focuses on top-tier new drug research and development base driven by Chinese Medicine research

03

Data Economy Laboratory
focuses on new theories, business practices and cryptocurrencies and block chain technologies, data capitalization as a new natural resource and business asset

04

Smart Society Laboratory
focuses on crossover of data science and artificial intelligence with digital social science, digital humanities, and digital media

05

Ethical and Theoretical AI Laboratory
propels research on basic theories of artificial intelligence, emphasising on machine and cognitive behaviour studies, central issues in philosophy, ethics, AI verifiability, and AI interpretability

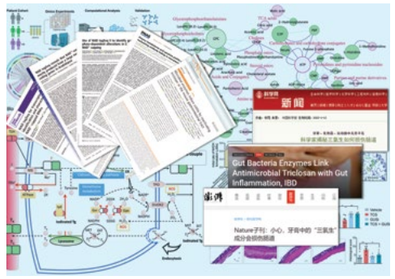
06

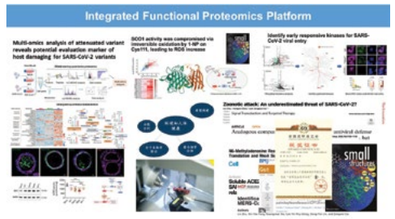
System Health Laboratory
focuses on behavioural and wellbeing functioning mechanisms of complex systems including life, environment, human society and web media

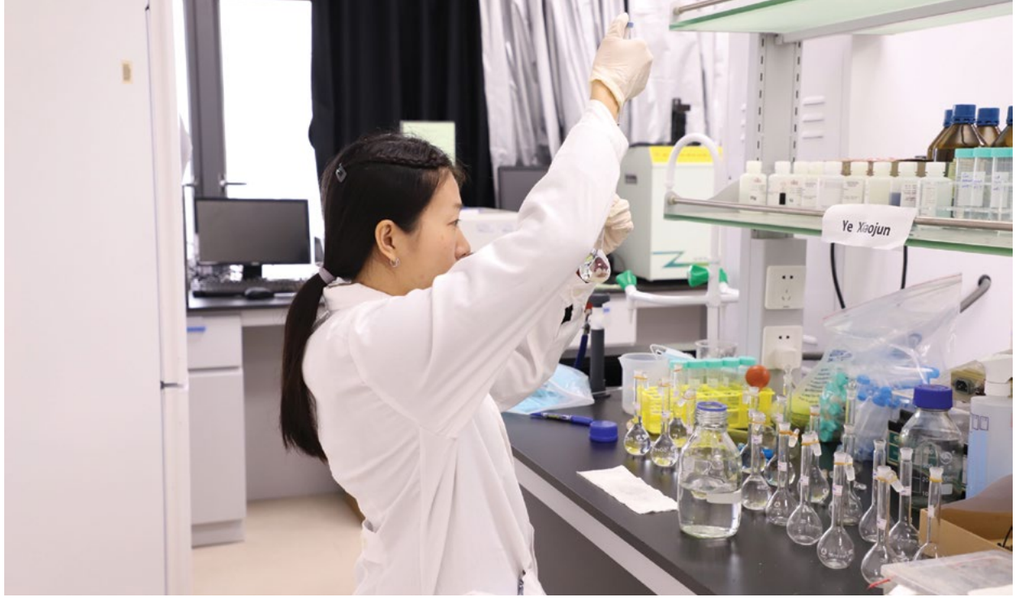
State Key Laboratory of Environmental and Biological Analysis

The State Key Laboratory of Environmental and Biological Analysis (SKLEBA) is an interdisciplinary research platform that focuses on three interconnected fields: environmental science, biological science, and material science. The laboratory is dedicated to promoting fundamental research and developing innovative analytical methods for life science. Its primary research objectives revolve around the impact of persistent organic pollutants (POPs) on the environment, food safety, and public health.

Learn More







Zhuhai Key Laboratory of Agricultural Products Quality and Food Safety

The Zhuhai Key Laboratory of Agricultural Products Quality and Food Safety was established as Zhuhai's key laboratory in 2015. The laboratory's primary focus is to promote food nutrition and health, prioritise food safety, and undertake targeted research and development of products.

In response to the advancements in food safety testing technologies, UIC has collaborated with the Wang Lab of Molecular Food Safety at the University of British Columbia in Canada. Together, they are establishing key safety control points in the production, preservation, and transportation processes of sea bass. By integrating modern molecular detection and strain typing technologies, UIC is developing innovative molecular detection methods to enhance the monitoring and control of food safety. Additionally, UIC is working in partnership with the Technical Center of the General Administration of Customs to jointly develop rapid food safety testing technologies and instruments. This collaborative effort improves the efficiency and accuracy of food testing, ensuring the timely detection and resolution of food safety issues.

Through the collective efforts of the government, industry, academia, and research institutions, along with international and local collaborations with experts and institutions, UIC can leverage advanced research experience and technology in the development of new food safety testing technologies. This enhances the laboratory's research capabilities and enables it to make significant contributions to the field of food safety.

Food Science and Technology Laboratories in UIC

There are 13 food related laboratories in UIC which are well-equipped with advanced facilities for cell culture, biochemistry and biotechnology, chemical and food analysis, and food processing.

The Food Science and Technology labs are the key developing labs in UIC, which consist of **three teaching laboratories** (Food Processing Laboratory, Food Analysis Laboratory, Chemistry Lab), **six research laboratories** (Health Food Lab, Laboratory Kitchen, Food Sensory Evaluation Lab, Molecular Biology Lab, Animal Cell Culture Room, Microbiology Lab) and **four supporting functional laboratories** (Walk-in Cooler and Freezer, Weighing room, Sample Retention Room, Water Purification Room), as well as the UIC Food Safety Testing Centre, with a total of 1,500m^2.

The labs in UIC focus on 6 major research areas: ·

Biotechnology and Food Safety

Health Promoting Effects of Bioactive Dietary Components

Nutrition and Health

Food Processing, Flavour Chemistry & Sensory Science

Biomedical Materials and Targeted Drug Delivery

Food Packaging Innovation

FOOD TECH RELATED FACULTIES AND DEPARTMENTS

Faculty of Science

Department of Biology

Department of Chemistry

Department of Computer Science

Department of Mathematics

Department of Physics

School of Chinese Medicine

Beijing Normal University-Hong Kong Baptist University United International College (UIC)

Faculty of Science and Technology

Department of Life Sciences – Food Science and Technology

Department of Life Sciences – Environmental Science

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