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Breakthroughs in Four Key Areas
四大傑出範疇 成就非凡突破

Great Chinese medicine masters used to say that we can experience the mysteries of the universe and appreciate the nature of order through the study of Chinese medicine. These ideas also extend to include the ultimate ideal of a Chinese medicine practitioner, who embodies the benevolence and integrity of Confucianism, the goodness and salvation of Buddhism, and the longevity practices and self-cultivation of Taoism.

In walking the path illuminated by their illustrious predecessors, HKBU Chinese medicine scholars have leapt forward with breakthroughs in four key areas.

誰說過，研習中醫藥，能感受宇宙之奧妙、體察天地之規律；又是誰說過，醫者的終極理想，是儒家的仁德與兼濟、佛家的行善與救渡，道家的長生與修道。

前人留下的盞盞明燈，照亮後來者的方向。浸大學者一路驅前，在四個範疇，成就突破。

Joint and Bone Disease
骨骼與關節疾病

One of the School's key areas of strength relates to the use of translational and precision medicine to target debilitating joint and bone diseases.

Breakthrough 1:
An advanced aptamer-based molecular delivery system which can deliver therapeutic small interfering RNAs to bone-producing cells.

Breakthrough 2:
A potential precision medicine-based therapeutic strategy for spinal fusion in osteoporotic individuals.

Breakthrough 3:
Precision medicine and combination therapy for rheumatoid arthritis.

Our future focus will be the targeted delivery of natural products and herbal drugs from the TCM tradition as a necessary step towards achieving the internationalisation of TCM.

學院精於骨與關節疾病的轉化醫學及精準醫學方面的研究，並取得以下突破：

突破一：
以適配子作為靶向載體的分子遞送系統，將具治療作用的小核酸遞送至成骨細胞。

突破二：
為骨質疏鬆症患者所需的脊椎融合術提供以精準醫學為基礎的治療策略。

突破三：
類風濕關節炎的精準醫學及綜合療法。

天然產物和草本藥物的靶向傳遞，將是浸大未來研發傳統中醫藥道上的焦點，更是成就中醫藥國際化，不可或缺的一步。

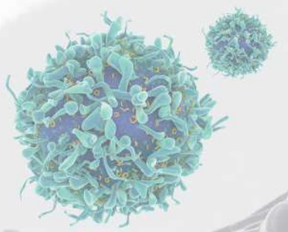
Cancer
癌症

Our researchers focus on developing TCM-based smart anti-cancer therapies through two strategies:

- Discovery of potential anti-cancer agents through the adoption of traditional approaches and the identification of active components and compounds from TCM herbal medicines.
- The utilisation of targeted delivery systems, such as aptamers or aptamer-modified nanoparticles, to deliver active compounds from TCM herbal medicines to specific tumour cells.

遵從兩大關鍵策略，發展以中醫藥為基礎的智能抗癌療法：

- 以傳統方法鑑定中草藥的活性成分及化合物，發掘潛在抗癌製劑。
- 使用靶向遞送系統（如借助適配子或經適配子修飾的納米粒子），將中草藥的活性化合物遞送至特定的腫瘤細胞。



Gastrointestinal Disease
腸胃道疾病

Based on research into the efficacy and safety of classic TCM herbal formulas, the School has developed new formulations for hard-to-treat gastrointestinal diseases.

Breakthrough 1:
A new formulation for irritable bowel syndrome has been awarded a clinical trial license from China's National Medical Products Administration.

Breakthrough 2:
A new version of a classic formulation for functional constipation is being developed following the use of advanced biochemical techniques in clinical trials to further understand its clinical efficacy and mechanism.

Breakthrough 3:
Discovery of the mechanism by which early life stress can trigger the development of irritable bowel syndrome in adulthood, and the identification of a clostridium species as a key player in 25 per cent of diarrhoea-predominant irritable bowel syndrome cases, which often present with increased bile acid excretion.

以經典中草藥複方功效和安全的研究為基礎，針對難以治療的腸胃疾病研發新複方。

突破一：
治療腸易激綜合症的新複方已獲得中國國家藥品監督管理局批出臨床試驗許可證。

突破二：
在臨床試驗中使用先進的生化技術，進一步掌握醫治功能性便秘經典複方的臨床療效及機制後，現正研發新版本的經典複方。

突破三：
發現幼年生活壓力會引發的成人腸易激綜合症，並識別出梭狀芽孢桿菌與四分一的腹瀉型腸易激綜合症個案息息相關，導致患者出現膽汁酸排泄增加。

Neurodegenerative Disease
神經退行性疾病

Diseases such as Alzheimer's and Parkinson's pose a major health threat to ageing populations worldwide and there are currently no effective cures. Our researchers have made great progress in understanding how neurodegenerative diseases develop and have also produced a possible treatment:

Breakthrough 1:
Determining the role of the autophagy-lysosomal pathway (ALP), which is involved in the recycling of cellular components, in the pathogenesis of neurodegenerative diseases.

Breakthrough 2:
Discovery of TCM-derived drug candidates for the treatment of Alzheimer's and Parkinson's disease by targeting ALP.

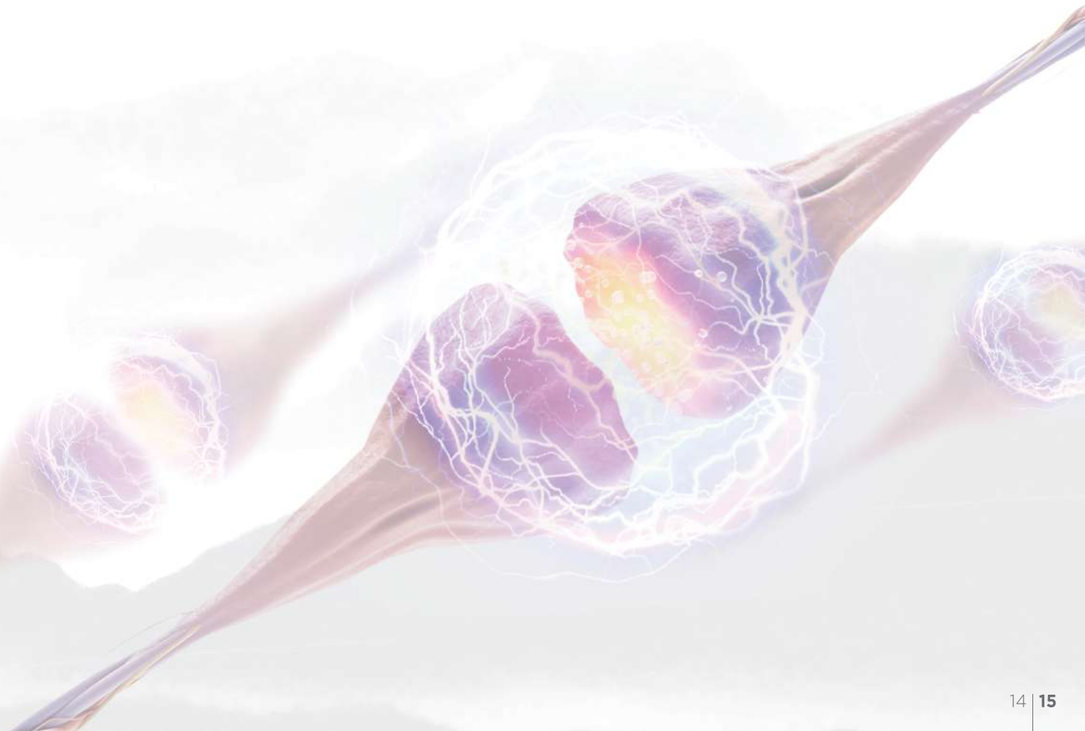
Breakthrough 3:
Identification of the environmental pollutants which can lead to Parkinson's disease, and the dissection of the underlying molecular mechanisms.

阿茲海默症和柏金遜症至今尚無根治良方，令全球老齡人口的健康備受威脅。浸大的研究團隊就了解神經退行性疾病的形成取得重大進展，並找出可行療法：

突破一：
確定細胞再造過程中的自噬溶酶體途徑（ALP）在神經退行性疾病發病機理中的作用。

突破二：
針對ALP，尋找用於治療阿茲海默病和柏金遜症的中藥候選藥物。

突破三：
辨識導致柏金遜症的環境污染物，並剖析其潛在分子機制。



Innovative Drug Discovery
懸壺數十載 匯智能濟世

According to ancient Chinese legend, Shennong (the divine farmer), unable to bear seeing human suffering, overcame many obstacles to taste hundreds of herbs and identify their medicinal properties. In the Ming dynasty, Li Shizhen's quest to learn everything there was to know about Chinese medicine took him deep into the mountains and forests. Years later, he compiled the masterpiece *Compendium of Materia Medica*.

To this impressive foundation of knowledge compiled by the great doctors and sages of bygone eras, HKBU has applied cutting-edge technology. More recently, the use of artificial intelligence and big data has facilitated the development of new drugs and therapies for the prevention and treatment of disease. Technology has kept the wheels of TCM turning.

The combination of the classical wisdom of Chinese medicine with modern cutting-edge science will significantly improve the drug development process.

從未忘卻那留存千古的事蹟。神農氏不忍人類病苦，歷盡千山萬水，冒險親嚐百草；李時珍從醫心比鐵石堅，不惜遠涉深山曠野，終編纂出傳世巨著《本草綱目》。

立足於歷代大醫和先賢嘔心瀝血奠下的中醫藥根基，浸大精闢運用現代頂尖技術，配合人工智能與大數據，為疾病防治與復康，研發更多嶄新藥物和療法；推動中醫藥高速發展，繼續前行。

中醫藥的經典智慧，完美融合現代先進知識；無庸置疑，將把新藥研發推上另一高峰。

Herbal Formula-based Drug Development
以草藥複方為基礎的藥物研發

The composition of herbal formulas and their historical application offers directions for the development of new drugs:

- Disease-driven drug development: The ingredients of classic herbal formulas could be used as the foundation for drug candidates for particular diseases.
- Compound-based drug development: Based on the compounds used in classic formulas, the latest scientific techniques could be used to identify the appropriate compounds for structural modification or target determination.

草藥複方的組成及過往的應用方式，為新藥研發指引了方向：

- 針對特定疾病的新藥物：經典草藥複方的成分可作為疾病的候選藥物。
- 以化合物為基礎的新藥物：以高端的科學技術辨識經典複方內的合適化合物，以作結構修飾或靶點確定。

AI and Drug Discovery
人工智能與藥物研發

Drawing on our wealth of experience in precision medicine, translational medicine and the authentication and testing of Chinese medicine, two platforms were created to facilitate the screening of useful molecules for drug development:

- SMTRS is a powerful, user-friendly drug discovery web server offering two-way virtual screening for small target molecules and miRNA-mRNA motifs. The service has indexed 805 unique small molecules and 1,276 small molecule-miRNA-mRNA interactions. The database will expand monthly, offering researchers an increasingly powerful data resource.
- DeepAptamer is a virtual-screening platform for aptamers, which functions like an agent in diagnostics and therapeutics, based on a generative adversarial network (GAN), the latest deep-learning algorithm.

多少年來，浸大緊貼以人工智能機器學習為基礎的藥物研發技術以及理論之最新進展；仰賴於精準醫學、轉化醫學及中藥認證和檢測方面之豐富經驗，創建兩大平台，為新藥研發篩選有用分子：

- SMTRS是功能強大、應用簡易的藥物研發網頁伺服器，可對小分子和微核糖核酸—信使核糖核酸模組進行雙向虛擬篩選，目前已有805個獨特小分子和1,276個微核糖核酸—信使核糖核酸的交互作用編排了索引。數據庫會每月擴充，為研究人員提供強大的數據資源。
- DeepAptamer是一個以深度學習演算法「生成對抗網絡」為基礎的虛擬篩選平台，可篩選在診斷和治療過程中作為載體的適配子。

Research Platform for Aptamer-based Translational Medicine and Drug Discovery
轉化研究與藥物研發國際研究平台

The Guangdong-Hong Kong-Macao Greater Bay Area International Research Platform for Aptamer-based Translational Medicine and Drug Discovery was set up to provide a synergistic collaboration platform for multidisciplinary scientists from universities in the region and to translate aptamer-based research into applications. Its mission is to integrate aptamer research in the Greater Bay Area so as to facilitate the development of both therapeutic and diagnostic aptamer-based drugs, and it also aims to establish the Greater Bay Area as a leading destination for aptamer-based research and the development of precision medicine and drug discovery. In addition, the platform hopes to nurture talent in the field of aptamer research.

粵港澳大灣區基於適配子的轉化醫學與藥物研發國際研究平台（HKAP），為區內大學不同學科的科學家提供協同合作機會，並將適配子的研究轉化為實際應用。HKAP的使命是整合大灣區的適配子學術研究，從而促進發展相關的治療和診斷藥物，並確立大灣區在適配子研究、精準醫學和藥物研發的領先地位，同時培育相關人才。

Standardising TCM for the World

中藥標準現代化 擁抱國際

From its origins millenia ago, TCM is now widely recognised and practised around the world. Standardisation provides an opportunity to integrate TCM with modern science. This is an important milestone in the inheritance and sustainable development of Chinese culture, and it will provide a bridge connecting Chinese medicine to the world.

中醫藥，光芒於世界綻放，在全球市場潛力盡現；標準化，是融合中醫中藥和現代科學的契機，是承傳和持續發展這中華文化的里程，更是讓中醫藥真正連接國際的一道橋樑。

Development of Chinese Medicine Clinical Practice Guidelines

制定中醫臨床實踐指南

HKBU has conducted more than 20 evidence-based clinical trials on Chinese medicine over the last six years and published more than 100 Science Citation Index papers, and this body of research has been used to update Chinese medicine practitioners on different aspects of clinical practice.

Towards this end, the University established the first evidence-based Chinese medicine Clinical Practice Guidelines (CPG) in Hong Kong for three common diseases in the city- stroke, insomnia and chronic gastritis. A national survey of 4,503 Chinese medicine doctors in mainland China showed that most doctors regarded CPG-recommended therapies as safe, economically-viable and effective.

In addition, our researchers led an international group of experts in publishing recommendations for the reporting of clinical trials with Chinese medical formulas in 2017. The CONSORT-CHM Formulas 2017 project hopes to improve the quality of clinical trial reporting for studies involving Chinese medical formulas, and it ultimately aims to refine their research design and methodologies.

過去六年，浸大已進行逾20項循證中醫臨床試驗，並發表超過100篇SCI論文，加強中醫的臨床實踐。

為此，大學建立香港首個針對三種常見疾病──中風、失眠和慢性胃炎──的中醫循證臨床實踐指南。根據一項針對全國28省4,503位中醫進行的調查顯示，大多數醫生認為臨床實踐指南推薦的療法安全、經濟及有效。

此外，中醫藥學院學者領導的國際專家小組，於2017年發布中藥複方臨床隨機對照試驗報告規範（CONSORT-CHM Formulas 2017），提高中藥複方臨床試驗報告的質素，且進一步完善其研究設計和實踐方法。

Formulation of the HK Chinese Materia Medica Standards

制定香港中藥材標準

The Hong Kong Government's Department of Health launched the Hong Kong Chinese Materia Medica Standards (HKCMMS) project in 2002, setting the safety and quality standards for the Chinese *materia medica* commonly used in the city. Since 2002, HKBU has been one of the research institutions deeply involved in formulating these standards.

Modern analytical techniques have made it possible to identify, isolate and control the complex compounds in TCM herbal drugs. In addition, the safety of herbal medicines can be ensured by assessing them for toxic components, such as heavy metals, ash and microbial contaminants.

Our research results on TCM quality control informed the Government on the relevant regulatory and quality assurance standards, and it will enable them to tackle the problems associated with poor quality, adulterated or counterfeit products.

香港政府衛生署於2002年推行「香港中藥材標準」（HKCMM）計劃，為本地常用中藥材制定安全及品質參考標準，浸大一直積極參與其中。

透過現代分析科技，鑑定、分離及控制中草藥當中複雜的化合物；另為確保中草藥的安全性，鑑別如重金屬、灰、微生物污染物等相關成分。

中醫藥品質控制的研究，為政府提供監管和檢定質量的標準；可望令品質差、攙雜或假冒產品的問題迎刃而解。

Taking TCM to the World

中醫藥瑰寶 寰宇輝煌

Extending the benefits of TCM to people around the world would be a fitting tribute to the great sages, doctors and researchers who carried the legacy of TCM down through the ages. Collaborating with universities around the world not only allows us to contribute to the advancement of science and medicine, but also to promote TCM culture worldwide.

大醫精誠之志，在於救濟天下眾生，無遠弗屆；把中醫藥文化推廣四海，並藉著與各地頂尖學府緊密合作，不斷開拓、探索；正是浸大矢志弘揚中醫學之最佳實踐。

Cornell University
康奈爾大學

Researchers from Cornell and HKBU have been using a revolutionary nanotechnology approach to modernise the delivery of Chinese medicine with the aim of improving the efficacy of cancer therapies.

浸大與康奈爾大學的研究團隊利用革命性納米科技使中藥的遞送現代化，目標是大幅改善癌症治療之成效。

Harvard University
哈佛大學

Researchers from both universities are exploring whether acupuncture can be used as a treatment for Major Depressive Disorder.

浸大與哈佛大學的研究員正研究針灸用於治療重度抑鬱症的成效。

University of Cambridge
劍橋大學

Scientists from Cambridge and HKBU are collaborating on a research project which aims to understand the molecular mechanisms of Corynoxine B and the role it plays in promoting autophagy and neuroprotection.

合作研究項目旨在探討天然的自噬增強劑Corynoxine B促進神經細胞自噬和神經保護的分子機理。

Imperial College London
倫敦帝國學院

HKBU joined hands with Imperial to establish the Hong Kong Traditional Chinese Medicine Phenome Research Centre in 2017. It is the only centre working on TCM medicine in the global phenome research network built by the MRC-NIHR National Phenome Centre.

兩學院於2017年成立香港中醫藥表型組學研究中心，乃英國國家表型組中心建立的全球表型組學研究網絡中，唯一研究中醫藥的中心。

The State University of New York at Stony Brook and Shanghai University of Traditional Chinese Medicine
紐約州立大學石溪分校和上海中醫藥大學

Jointly established in 2017, the HKBU Joint Centre for Pain Research focuses on studying pain-related diseases and aims to promote public awareness of pain management.

香港浸會大學疼痛聯合研究中心於2017年成立，作為擴大和支援痛症研究的綜合平台，並向公眾推廣痛症管理的知識。