



The **8th** Cheung On Tak International Award for
Outstanding Contribution To Chinese Medicine
Award ceremony-cum-award lectures

第**8**屆張安德中醫藥國際貢獻獎
頒獎典禮暨得獎學人講座

23.4.2026

Mr. and Mrs. Lau Chor Tak Multi-Purpose Hall
Level 2, Madam Kwok Chung Bo Fun Sports and Cultural Centre
Hong Kong Baptist University

香港浸會大學郭鍾寶芬女士康體文娛中心二樓
劉佐德伉儷多用途會堂

Cheung On Tak International Award for Outstanding Contribution to Chinese Medicine

張安德中醫藥國際貢獻獎

With its rapid development in different parts of the world, traditional Chinese medicine is playing an increasingly important role in the healthcare systems in many countries. Against this backdrop, the School of Chinese Medicine of the Hong Kong Baptist University established the International Award for Outstanding Contribution to Chinese Medicine in 2011. The objectives of the Award are to honour scientists and scholars who have made groundbreaking and internationally recognised achievements in advancing the internationalisation of Chinese medicine or Chinese medicine research, and to promote the modernisation and internationalisation of Chinese medicine for the benefit of the global community.

Established by a generous donation from the Cheung On Tak Charity Foundation, the Award is named after the Foundation's Founder, Mr. Cheung On Tak. The Cheung On Tak International Award is conferred biennially on one or two scholars, with a total monetary prize of HK\$500,000.

傳統中醫藥在世界各地迅速發展，在許多國家的醫療保健制度中的角色日趨重要。因此，香港浸會大學中醫藥學院於2011年設立中醫藥國際貢獻獎，旨在表揚在推動中醫藥國際化、或在中醫藥研究領域，取得具突破性及獲國際認可成就的科學家和學者，並促進中醫藥現代化和國際化，以及推動中醫藥發展，惠澤全球。

承蒙張安德慈善基金的慷慨捐資，此獎項得以設立，並以其基金創辦人張安德院士的名字命名，以彰善舉。張安德中醫藥國際貢獻獎每兩年頒發一次，每屆授予一至兩位學者，獎金總額為港幣五十萬元。

Cheung On Tak Charity Foundation

張安德慈善基金



The Cheung On Tak Charity Foundation was founded by renowned industrialist Mr. Cheung On Tak in 1992 to support society and the needy through facilitating the development of education, religious and medical services. Formerly consultant of Man Po Investment Company Limited and On Tak Enterprise Company Limited, Mr. Cheung is well-known for his philanthropy and commitment to serving the society. He held numerous positions in trade, industrial, and community organisations, such as President and Chairman of Chiu Chau Plastic Manufacturers Association Company Limited, Director of the Hong Kong Chiu Chow Chamber of Commerce, Honorary President of The Aberdeen Kai-fong Welfare Association Social Service Centre, Chairman of the Southern District Anti-drug Campaign and President of the Hong Kong Cheung Shi Clansmen's Association. In 2011, Mr. Cheung was conferred Honorary University Fellowship by the Hong Kong Baptist University.

Over the years, the Foundation has made generous contributions to education and research initiatives and has provided substantial support to various Hong Kong universities, driving their advancement.

張安德慈善基金由張安德院士於1992年創辦，旨在促進教育、宗教及醫療服務的發展，扶危解困，回饋社會，造福社群。張先生是著名工業家，曾任萬寶置業有限公司及安德企業有限公司顧問，一向熱心公益和履行社會責任。他曾在許多工商及社區團體擔任職務，包括潮僑塑膠廠商會會長和主席、香港潮州商會會董、香港仔街坊福利會社會服務中心榮譽會長、南區反吸毒運動委員會主席、香港張氏宗親會會長等。2011年，張先生獲香港浸會大學頒授榮譽大學院士榮銜。

張安德慈善基金自成立以來熱心支持本港的教育事業，曾先後捐資多間大學，積極推動本地高等教育的發展。

Panel of Adjudicators of the 8th Award 第八屆評審委員會

Chairman 主席

Academician Chen Kaixian



- ◆ Academician, Chinese Academy of Sciences
- ◆ Researcher and Former Director, Shanghai Institute of Materia Medica, Chinese Academy of Sciences
- ◆ Tenured Professor and Former President, Shanghai University of Traditional Chinese Medicine

陳凱先院士

- ◆ 中國科學院院士
- ◆ 中國科學院上海藥物研究所研究員及前任所長
- ◆ 上海中醫藥大學終身教授及前任校長

Members 成員

Academician Chen Shilin



- ◆ Academician, Chinese Academy of Engineering
- ◆ Principal Professor, Chengdu University of Traditional Chinese Medicine
- ◆ Chief Researcher, China Academy of Chinese Medical Sciences

陳士林院士

- ◆ 中國工程院院士
- ◆ 成都中醫藥大學首席教授
- ◆ 中國中醫科學院首席研究員

Professor Guo De-an



- ◆ Researcher, Shanghai Institute of Materia Medica, Chinese Academy of Sciences
- ◆ Director, National Engineering Research Center for TCM Standardisation Technology
- ◆ Director, Shanghai Research Center for Modernisation of Traditional Chinese Medicine

果德安教授

- ◆ 中國科學院上海藥物研究所研究員
- ◆ 中藥標準化技術國家工程研究中心主任
- ◆ 上海中藥現代化研究中心主任

Professor Leung Ping-Chung, SBS, OBE, JP



- ◆ Director, Centre for Clinical Trials on Chinese Medicine, Institute of Chinese Medicine, The Chinese University of Hong Kong
- ◆ Director, State Key Laboratory of Research on Bioactivities and Clinical Applications of Medicinal Plants (The Chinese University of Hong Kong) (2018-2025)

梁秉中教授, SBS, OBE, JP

- ◆ 香港中文大學中醫中藥研究所臨床研究中心總監
- ◆ 藥用植物應用研究國家重點實驗室（香港中文大學）主任（2018-2025）

Academician Liu Liang



- ◆ Academician, Chinese Academy of Engineering
- ◆ Director, Guangdong Provincial Laboratory of Traditional Chinese Medicine
- ◆ Director, State Key Laboratory of Traditional Chinese Medicine Syndrome and Dean, Institute of Integrated Traditional Chinese and Western Medicine Innovation, Guangzhou University of Chinese Medicine

劉良院士

- ◆ 中國工程院院士
- ◆ 中醫藥廣東省實驗室主任
- ◆ 廣州中醫藥大學中醫證候全國重點實驗室主任、中西醫融合創新研究院院長

Academician So Kwok-Fai



- ◆ Academician, Chinese Academy of Sciences
- ◆ Dean, Guangdong-Hong Kong-Macau Institute of CNS Regeneration (GHMICR), Jinan University

蘇國輝院士

- ◆ 中國科學院院士
- ◆ 暨南大學粵港澳中樞神經再生研究院院長

Professor Alexander Ping-kong Wai, JP



- ◆ President and Vice-Chancellor, Hong Kong Baptist University

衛炳江教授, JP

- ◆ 香港浸會大學校長

Professor Li Min



- ◆ Dean of Chinese Medicine and Chair Professor, Hong Kong Baptist University
- ◆ Ma Pak Leung Endowed Professor in Innovative Neuromedicine

李敏教授

- ◆ 香港浸會大學中醫藥學院院長及講座教授
- ◆ 馬百良創新神經藥物教授

External adjudicators are listed in alphabetical order of surnames.
校外成員按英文姓氏字母排序。

Award Ceremony
頒獎典禮

Opening Address
開幕辭

Presentation Speech
介紹得獎學人

Award Presentation
頒發獎項

Award Winners' Addresses
得獎學人致辭

Presentation of Mementos
致送紀念品

Award Lectures
得獎學人講座

Systems Biology of Chinese Herbal Medicine
中藥的系統生物學
Professor Thomas Efferth

**Contributions of International Standards to
the Internationalisation of Traditional Chinese Medicine (TCM)**
論國際標準對中醫藥國際化發展的貢獻
Professor Shen Yuandong
沈遠東教授

Dialogue with Award Winners
與得獎學人對話

Award Winners' Addresses

得獎學人感言

Receiving the Cheung On Tak International Award for Outstanding Contribution to Chinese Medicine from Hong Kong Baptist University is an extraordinary honor and a very special moment in my scientific career. This Award not only recognises my research achievements to date, but also symbolises the importance and future of natural product research. I am deeply grateful to the University and the jury for this recognition.

Natural products have already proven their enormous potential for pharmacological research and the development of new drugs many times, both in Western medicine and in traditional Chinese medicine. They form an indispensable bridge between millennia-old knowledge and modern scientific research and open up new avenues for innovative, effective, and safe therapies. However, scientific achievements are never the work of one person alone. I would like to express my special thanks to my students, whose commitment, curiosity, and hard work have contributed significantly to the success of our research. I would also like to thank my colleagues around the world for their many years of collaboration, numerous inspiring discussions, and the friendships that have grown from them. I would also like to highlight the great hospitality I have experienced at Chinese conferences and on my numerous trips through China—especially at Hong Kong Baptist University, where I have been an honorary professor of the School of Chinese Medicine for many years.

I fully trust the healing power of medicinal plants. That is why we will continue to conduct intensive research into how phytotherapy and herbal medicine can be integrated into Western academic medicine on a scientific basis. Our goal is to create a “one-world medicine” that combines the best of Western and Eastern medicine – for the benefit of patients worldwide.

English version only
只提供英文版本



Professor Thomas Efferth

Professor Efferth is truly a pioneer and ambassador of TCM in the Western world. By bridging the cultural divide between East and West, he has successfully promoted TCM globally. His scientific career and work have exemplified the notion that 'science connects humanity'. His relentless pursuit of innovation and unwavering dedication to TCM render him a most deserving recipient of this Award.

Efferth教授是西方世界真正的中醫藥先驅和使者。他在東西方之間架起了橋樑，在全球推廣中醫藥。他的科學生涯和工作成功地詮釋了「科學連接人類」這句話。他對創新的不懈追求和對中醫藥的執著，使他成為當之無愧的獲獎者。

Nominating Organisation:
Zhejiang Chinese Medical University
提名機構：浙江中醫藥大學



I am extremely honoured to accept the 8th Cheung On Tak International Award for Outstanding Contribution to Chinese Medicine. The international standardisation represents an essential pathway for its global advancement. I wish to express my sincere gratitude to the Award Committee for acknowledging our efforts and achievements in this meaningful pursuit. This Award is both a cherished encouragement and a powerful inspiration that will continue to drive me forward. At this moment of joy and gratitude, I am also keenly aware that the journey toward the global integration of traditional Chinese medicine remains long and demanding. With renewed dedication, I commit to continue striving toward this meaningful mission.

我非常榮幸能夠成為第八屆張安德中醫藥國際貢獻獎的獲獎者。中醫藥國際標準化是中醫藥走向世界的必由之路，感謝國際貢獻獎評審委員會對我們中醫藥國際標準化領域取得的成就的肯定和褒獎，我倍加珍惜、倍受鼓舞！此刻，在滿懷獲獎的喜悅和感激之情的同時，我深感中醫藥國際化發展任重而道遠，我將繼續為之而努力奮鬥！

Professor Shen Yuandong is a trailblazer and contributor to the international standardisation of TCM. Under his visionary leadership, the international standardisation platforms for TCM of three key global organisations, namely WHO ICD11-ICTM, ISO/TC 249 and WFCMS CSC were established in Shanghai, China. This strategic achievement has not only secured China's leadership in global governance of traditional medicine but also made significant contributions to both the "TCM Internationalisation" and "China Standards Going Global" initiatives, promoting TCM's global recognition and adoption.

沈遠東教授是中醫藥國際標準化發展的先行者和貢獻者。在他的卓越領導下，三大國際組織的中醫藥國際標準化平台 (WHO ICD11-ICTM, ISO/TC 249, WFCMS CSC) 落戶中國上海，構築了中醫藥國際標準化高地，確立了我國在傳統醫學國際治理中的主導權，為「中醫藥國際化」戰略和「中國標準走出去」戰略作出傑出貢獻。

Nominating Organisation:

Shanghai University
of Traditional Chinese Medicine

提名機構：上海中醫藥大學



**Professor
Shen Yuandong
沈遠東教授**

Award Winner
得獎學人簡介



Professor Thomas Efferth

Professor Dr. Prof. h. c. mult. Thomas Efferth is the Director of the Institute of Pharmaceutical and Biomedical Sciences and Chair of the Department of Pharmaceutical Biology at Johannes Gutenberg University Mainz, Germany. He is a trained biologist (Technical University of Darmstadt, Germany) and completed his doctoral thesis at the German Cancer Research Center (DKFZ) in Heidelberg, Germany, (1990). He has received nine national and international scientific awards, including Dr. Willmar-Schwabe-Award of the German Society for Medicinal Plant Research (2006), CESAR Award for Translational Oncology (2011), Qihuang International Award of the Chinese Association of Chinese Medicine (2017), SFE Outstanding International Ethnopharmacologist Award (2021), among others.

He is a member of the Academia Europaea and of the World Academy of Sciences, as well as a fellow of the Royal Society of Medicine (London). He is an honorary and visiting professor at seven international universities. In 2022, he was visiting professor (“professional visitor”) at the McLean Hospital, Harvard Medical School, Boston, USA.

He has published over 900 PubMed-listed papers in peer-reviewed journals in the field of cancer research, pharmacology, and natural products (Hirsch-factor: 125; citation rate: 82,000; according to Google Scholar). He compiled a textbook on “Molecular Pharmacology and Toxicology” (Springer Publisher) and edited several other books.

According to the Stanford University Citation Ranking, he was among the top 2% most-cited authors worldwide. He is editor-in-chief of *Phytomedicine and Phytomedicine Plus* as well as associate editor of several other pharmaceutical journals. Furthermore, he is a member of several scientific advisory boards. Nineteen of his former lab members have been promoted to leading academic positions (full professors, associate/assistant professors).

Professor Efferth’s research focuses on molecular and network pharmacology of natural and synthetic compounds, bioinformatics, and artificial intelligence.

Thomas Efferth 教授是美因茨約翰內斯—古騰堡大學藥學及生物化學研究所所長兼製藥生物學系主任。他是一位受過專業訓練的生物學家（德國達姆施塔特工業大學），並於德國海德堡的德國癌症研究中心（DKFZ）完成其博士論文（1990年）。他曾獲得九項國內外科學獎項，包括德國藥用植物研究學會的Dr. Willmar-Schwabe獎項（2006年）、中歐抗癌藥物研究協會的CESAR轉化腫瘤學獎（2011年）、中華中醫藥學會的岐黃國際獎（2017年）、SFE傑出國際民族藥理學家獎（2021年）等。

他是歐洲科學院和世界科學院成員，同時也是倫敦皇家醫學會的院士。他是七所國際大學的榮譽及客座教授。2022年，他於美國波士頓的哈佛醫學院麥克林醫院擔任客座教授（專業訪問學者）。

他在癌症研究、藥理學及天然產物領域的同行評審期刊中發表了900多篇被PubMed收錄的論文（Hirsch指數：125；引用次數：82,000；根據Google Scholar統計）。他著有《分子藥理學與毒理學》（Springer出版），並編輯了多本專著。

他榮列史丹福大學全球引用率最高的前2%作者排行榜。他是《植物藥（*Phytomedicine*）》及《*Phytomedicine Plus*》的主編，同時也是多本藥學期刊的副主編。此外，他還是多間機構的科學顧問委員會成員。他的實驗室團隊已有十九位前成員晉升為領導級學術職位（正教授、副教授或助理教授）。

Efferth教授的研究重點是天然及合成化合物的分子與網絡藥理學、生物資訊學與人工智能。

Award Winner
得獎學人簡介

Professor Shen Yuandong 沈遠東教授



Professor Shen Yuandong graduated from Shanghai University of Traditional Chinese Medicine in 1975 and later earned a Hospital Management diploma from the China Europe International Business School (CEIBS) in 2003. He has served as the Director of the Diabetes Center and President of Shuguang Hospital affiliated to Shanghai University of Traditional Chinese Medicine, Deputy Director of the Shanghai Municipal Health Bureau, and Director of the Shanghai Administration of Traditional Chinese Medicine. Currently, he holds the positions of Chair of ISO/TC 249 (International Organisation for Standardisation/ Technical Committee for Traditional Medicine), Honorary President of the Shanghai Academy of International Standardisation for Traditional Chinese Medicine, and Tenured Professor at Shuguang Hospital.

During his tenure at Shuguang Hospital, Professor Shen made outstanding contributions to clinical practice, education, scientific research, and hospital management. In 2007, as President, he became the first among all TCM hospitals in China to propose a strategic vision and a specific plan for establishing a research-oriented hospital. This initiative laid a solid foundation for Shuguang Hospital to maintain its leading position and ensure sustainable development among TCM hospitals nationwide.

In 2009, Professor Shen served as the Deputy Director of the Shanghai Municipal Health Bureau and concurrently as the Director of the Shanghai Administration of Traditional Chinese Medicine. During that period, he spearheaded the publication of the “Opinions of the Shanghai Municipal People’s Government on Further Accelerating the Development of Traditional Chinese Medicine in Shanghai” and implemented the Three-Year Action Plan for TCM Development in Shanghai. These measures provided significant momentum for the high-quality advancement of TCM in the city.

Since 2008, Professor Shen has been dedicated to promoting the internationalisation of TCM. Following the national directives, he was responsible for organising and managing the Chinese Expert Group for the WHO ICD-11 TM1 project. His work contributed to integrating a TCM-based disease and syndrome classification system into the WHO’s global health management framework.

At the end of 2009, Professor Shen was appointed with leadership of ISO/TC 249. Adhering to the principles of ISO, with his outstanding leadership and international perspective, ISO/TC 249 has been built into a harmonious, efficient, and steadily developing international organisational platform. To date, ISO/TC 249 has grown to include 45 member countries and published 125 international TCM standards, establishing itself as a model of success within the global ISO system.

In 2025, following a resolution by the ISO Technical Management Board, ISO/TC 249 underwent significant restructuring. Professor Shen once again turned challenges into opportunities and established a robust organisational framework for the committee through extensive communication and coordination. The new TC 249 is poised to lead international standardisation efforts for traditional medicine worldwide, further contributing to the global development of TCM.

沈遠東教授，1975年畢業於上海中醫學院，2003年取得中歐國際工商學院的醫院管理文憑。曾任上海中醫藥大學附屬曙光醫院糖尿病中心主任、院長、上海市衛生局副局長、上海市中醫藥發展辦公室主任。現任國際標準化組織傳統醫藥技術委員會（ISO/TC 249）主席、上海市中醫藥國際標準化研究院名譽院長、曙光醫院終身教授。

沈教授在醫院工作期間，在臨床醫教研和醫院管理工作方面作出了傑出貢獻。作為院長，沈教授於2007年在全國中醫院中率先提出創造研究型醫院的戰略思路與具體規劃，為曙光醫院在全國中醫院中保持領先地位和實現可持續發展打下了堅實基礎。

2009年，沈教授擔任上海市衛生局副局長兼任上海市中醫藥發展辦公室主任。在任期間，他主持策劃並發佈了《上海市人民政府關於進一步加快上海中醫藥事業發展的意見》，並同步實施了上海市中醫藥事業發展三年行動計劃，為上海市的中醫藥事業高質量發展注入強大的動能。

自2008年起，沈教授開始投入中醫藥國際化發展工作中。根據國家要求，他負責組織世衛ICD-11 ICTM項目中國專家組的管理工作，為以中醫藥為基礎的傳統醫學病證分類體系進入世衛全球衛生管理體系作出貢獻。

2009年底，沈教授受命承擔國際標準化組織/傳統醫藥技術委員會（ISO/TC 249）的工作。沈教授堅持ISO的原則，憑藉其卓越的領導力和國際化的格局，秉持求同存異的理念，成功將ISO/TC 249建設成為一個和諧高效、平穩發展的國際組織平台。目前TC 249已擁有45個成員國，並已發佈125項中醫藥國際標準，成為ISO全球組織中的成功典範。

2025年，根據國際標準化組織技術管理理事會的決議，ISO/TC 249面臨重大變革。沈教授再次把挑戰視為機遇，通過多方溝通協調，成功推動新TC 249形成良好的組織架構。未來，TC 249將繼續引領全球傳統醫藥的國際標準化發展，為中醫藥的國際化發展作出新的貢獻。

Systems Biology of Chinese Herbal Medicine

中藥的系統生物學

Professor Thomas Efferth

Chinese herbal medicine and natural products have always been valuable sources for drug development (Efferth, 2017). Systems biology is a rapidly developing interdisciplinary field that focuses on understanding complex biological systems and their interactions at various levels (cells, tissues, organs). Instead of examining individual genes, proteins, or metabolites, systems biology considers the big picture and how these molecules interact with each other to enable the functioning of entire living systems (Zhou, et al., 2021). Systems biology is primarily based on genome sequencing, omics technologies, and bioinformatic modeling of big data.

Personalised medicine aims to tailor a patient's individual characteristics (genome, lifestyle, exposome) to diagnostics and targeted personalised therapy at increased efficiency and reduced side effects. Artificial intelligence (AI) is used to analyse large datasets and identify patterns relevant to diagnosis and treatment. AI can help further refine personalised medicine by predicting individual treatment approaches more accurately.

We use virtual drug screening, which employs computer-based models and algorithms to predict the interaction of natural products and chemical molecules with target structures (such as proteins, receptors, or enzymes) (Efferth and Barth, 2025). Supported by the Mainz supercomputer "MOGON", we analyse data from chemical databases with over 200,000 substances to identify potentially promising drug candidates (Kadioglu et al., 2021, 2023). Advanced models are applied for the experimental verification of bioinformatic results (Elbadawi and Efferth, 2020; Mahmoud et al., 2022). AI-assisted virtual screening can optimise drug development by identifying potentially toxic compounds or adapting active ingredients to specific cancer cells. We integrate multi-omics data to enable more accurate prediction of drug effects and interactions in the body. Using next-generation sequencing, we have determined the individual profile of clinical tumor biopsies with high precision. We have created personalised predictive models of how a specific patient might respond to a particular therapy.

Genetic diseases also benefit from advances in DNA sequencing and molecular docking for disease prevention. Patients with G6PD deficiency can be genetically tested to prevent severe poisoning by drugs and food (Efferth et al., 2004).

In addition, environmental factors influence human health (exposome). Plastic waste degrades to microplastic compounds, affecting fauna and flora and, thereby, human food. Recently, microplastics have been detected in blood, breast milk, and placenta, underlining their potential effects on human health (Efferth and Paul, 2017).

In conclusion, systems biology complements classical pharmacology but does not replace it. Nevertheless, it is often more suitable for explaining the complex mechanisms of action of Chinese herbal medicine. The scientific explanation of Chinese medicine using modern high-tech methods represents an important step towards its integration into academic medicine.

中藥與天然產物一直是藥物開發的重要來源 (Efferth, 2017)。系統生物學是一個迅速發展的跨學科領域，著重於理解複雜生物系統及其在不同層次（細胞、組織、器官）間的相互作用。系統生物學不同於僅僅檢視單一基因、蛋白質或代謝物，而是思考整體全貌，以及這些分子間的互動如何驅動整個生物體的功能 (Zhou et al., 2021)。此領域主要以基因組測序、組學技術及大數據的生物資訊建模為基礎。

個人化醫學則針對每位患者的個人特徵（基因體、生活型態、外在暴露組）進行診斷，並制定高效率、低副作用的目標個人化治療。人工智能 (AI) 則用於分析大量數據，並辨識與診斷及治療相關的模式。人工智能有助提升個人化醫學，能更精確預測個別患者的治療方案。

我們運用虛擬藥物篩選技術，利用電腦模型與演算法，預測天然產物和化學分子與目標結構（如蛋白質、受體或酶）的相互作用 (Efferth and Barth, 2025)。我們利用德國美因茨約翰內斯-古騰堡大學超級電腦「MOGON」分析化學數據庫中超過20萬種化合物，以篩選具有潛力的候選藥物分子 (Kadioglu et al., 2021, 2023)。先進模型亦被應用於對生物資訊學結果的實驗驗證 (Elbadawi and Efferth, 2020; Mahmoud et al., 2022)。人工智能輔助的虛擬篩選可優化藥物開發流程，能及早辨認可能有毒化合物，或將活性成分調整為特定癌細胞專用。我們結合多組學資料，以期更精確預測藥物在人體內的效應與互動。藉由次世代定序技術，我們能高精度解析臨床腫瘤活檢的個體分子特徵，並建立個人化預測模型，模擬某特定患者對某種療法的反應。

基因疾病亦可受惠於DNA定序與分子對接技術在疾病預防方面的進展。例如，葡萄糖-6-磷酸脫氫酶 (G6PD) 缺乏症患者可接受基因檢測，以預防藥物和食物引致的嚴重中毒 (Efferth et al., 2004)。

此外，環境因素（外在暴露組）亦會影響人類健康。塑膠廢棄物降解為微塑膠，影響動植物，進而進入人類食物鏈。近期在血液、母乳與胎盤中也檢測到微塑膠，顯示其對人體健康的潛在影響 (Efferth and Paul, 2017)。

總結來說，系統生物學能補足傳統藥理學，但無法完全取而代之。儘管如此，對於解釋中藥複雜的藥理機制，系統生物學往往更為適用。運用現代高科技方法對中醫藥進行科學解釋，是中藥融入學術醫學的重要一步。

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Contributions of International Standards to the Internationalisation of Traditional Chinese Medicine (TCM)

—— 論國際標準對中醫藥國際化發展的貢獻 ——

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Nowadays, with the transformation of the human disease spectrum and the aging of the population, the status and role of TCM in maintaining human health are increasingly significant. Under the new circumstances, how to apply TCM more safely, effectively, and scientifically has become a major issue of global medical concern. Due to the lack of a unified global standard for the quality and safety control of TCM, its internationalisation has encountered obstacles and challenges. Upon application by the Standardisation Administration of China (SAC), the International Organisation for Standardisation (ISO) established a technical committee for Traditional Medicine (ISO/TC 249) at the end of 2009.

ISO is the world's most authoritative international standardisation organisation. ISO standards serve as a global common language, aiming to break down trade "technical barriers", promote global trade and facilitate social and economic development. So far, ISO/TC 249 has 45 member bodies, and published 125 ISO standards for TCM. Among them, 51 standards published for more than five years have passed ISO systematic review. Moreover, the standards published by ISO/TC 249 have become a successful model for ISO standards to promote social and economic development. For example, the Shanghai Municipal Government invested RMB 500 million to establish the Shanghai Academy of International Standardisation for Traditional Chinese Medicine to support the work of ISO/TC 249 Secretariat. The international standards such as *Ganoderma lucidum* and *Dendrobium*, acupuncture needles and herbal decocting apparatus, and the coding system for Chinese medicines, have made outstanding contributions to promoting the import and export trade of TCM and improving its quality and safety control.

International standards are the synthesis of mature experience and advanced scientific research. The achievements of ISO/TC 249 have promoted the modernisation and internationalisation of TCM. In line with ISO's strategic adjustments in 2025, ISO/TC 249 has now been elevated to serve as the international standardisation platform for global traditional medicine. Seizing this new opportunity, ISO/TC 249 will share the experience gained from TCM standardisation with other traditional medicine systems and take a leading role in driving the development of international standards for global traditional medicine.

當今時代隨著人類疾病譜的改變和人口的老齡化，中醫藥在維護人類健康方面的地位和作用正日益增長，在新形勢下，如何更加安全有效和科學地應用中醫藥成為全球醫藥界關注的重大問題。由於缺乏全球統一的中醫藥質量和安全控制標準，中醫藥的國際化發展受到了障礙和挑戰，經中國政府申請，國際標準化組織於2009年底成立了國際標準化組織/傳統醫藥技術委員會（ISO/TC 249）。

ISO是全球最具有權威性的國際標準化組織，ISO國際標準是一種全球的共同語言，它是以打破貿易「技術壁壘」，促進全球國際貿易、社會和經濟發展為宗旨的國際組織平台。自ISO/TC 249成立至今，目前有45個成員體，並已發佈了125項中醫藥國際標準。其中發佈五年以上的51項國際標準全部通過ISO總部評估。ISO/TC 249發佈的部分國際標準已成為ISO標準促進社會和經濟發展的成功範例，如上海市政府為加強ISO/TC 249秘書處的建設投資5億元人民幣創建了上海市中醫藥國際標準化研究院，靈芝和石斛的中藥材國際標準，針灸針，煎藥機，以及中藥材的可追溯二維碼標準等，為促進中醫藥進出口貿易和提高質量和安全控制做出了卓越的貢獻。

國際標準是成熟經驗和先進科研成果的總結，ISO/TC 249的工作成就促進了中醫藥的現代化和國際化發展。2025年，在ISO戰略調整背景下，ISO/TC 249已提升為負責承擔全球傳統醫藥國際標準化平台，ISO/TC 249在新的機遇面前，將與其他傳統醫藥分享中醫藥國際標準化的經驗，並引領全球傳統醫藥國際標準化發展。

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