

School of Pharmacy CUHK

Expanding the pharmaceutical universe,
Creating opportunities for life

FROM THE DIRECTOR

What Do You See in the School Logo?

1. The blue hand represents the School of Pharmacy and the green hand represents its students, staff, and alumni.
2. By working together (two hands joining) we will create a whole new world.
3. Not only do the two arms form the shape of a double helix, but together they also constitute the symbol of infinity, showing there is always more to discover.
4. The school and medicine in partnership complete the shape.
5. The holding hands represent caring and nurturing.

Elevating Pharmacy to Prime Time

The future success of the School will be measured by its impact on the level and diversity of pharmacy practice in Hong Kong and beyond, and by its ability to create a niche for Hong Kong in drug development in China and elsewhere in Asia. In the next three years, I am committed to devoting my efforts in two broad, but intersecting areas:

1. Enriching the Profession of Pharmacy to Make Personalized Drug Therapy a Reality
 - To educate the public about the value provided by pharmacists in disease management utilizing drugs.
 - To expand and diversify the career opportunities of pharmacy graduates in Hong Kong.
 - To transform and possibly expand the Bachelor of Pharmacy curriculum to prepare our graduates to engage in innovative, integrated pharmacy practice.
2. Engineering an Innovative Platform to Modernize Drug Development
 - To develop a University-wide research initiative with an overarching theme of 'putting drug safety first'.
 - To revitalize the postgraduate programme.
 - To develop new degree offerings to meet the professional development needs of pharmacists, other healthcare professionals, and colleagues in other sectors that are an integral part of the enterprise in wellness and assurance of quality medicine for the public.

The School of Pharmacy is poised to reach another level of excellence. Firstly, the School will set new standards for pharmacy education and, in turn, redefine pharmacy practice in a global, multi-cultural, value-conscious economy. The School will be credited for its leadership in increasing public awareness and acceptance of the value added by pharmacists and for its influence in pharmacy practice in the Mainland. Secondly, the School will be instrumental in catalyzing collaborative research, across departments and institutions, that helps transform the way drugs are discovered, developed, tested, manufactured, regulated, priced, and used therapeutically.

中文大學藥劑學院未來成功，將取決於學院在香港及其他地區藥劑專業內各個層面的影響力，並能否利用學院本身的實力為香港及中國，甚至亞洲地區，創造獨有的藥品發展模式。我致力投入發展兩大範疇：

1. 落實個人化藥物管理
 - 教育公眾藥劑師在疾病控制方面的貢獻
 - 擴大本地藥劑學畢業生的就業發展機會
 - 改革藥劑學學士課程內容，為畢業生投入創新及綜合性的藥劑專業作更好準備
2. 建構現代藥物發展平台
 - 倡議以藥物安全為大前題的學院合作研究
 - 重點發展研究生課程
 - 發展全新的教育學位課程，滿足藥劑師及其他醫護專業隊伍發展的要求，確保公眾正確使用藥物

藥劑學院致力追求卓越，未來成功可以在三方面衡量：在多元化及全球化經濟體系下，藥劑學院將為藥劑教育訂立新標準，從而重新界定藥劑專業。促成跨部門、跨機構間的合作研究，旨在藥物研究、發展、檢測、研製、規管、訂價及有效治療方面作出改善。增加公眾對藥劑師工作價值的認識及肯定，對國內藥劑專業產生正面影響。



Vincent H.L. Lee

Challenges and Accomplishments

Reflections by Moses S.S. Chow

Our School was only 6 years old when I started at CUHK in 1998. At the outset, I set three goals for the School: (1) to bring pharmacy education and practice in Hong Kong up to international standards; (2) to strengthen the School's research capabilities in drug discovery and development; and (3) to enhance the School's interaction and recognition among pharmacy organizations within Hong Kong and Asia.

To plan and carry out these developmental targets posed a special challenge for me, especially early on. I found it necessary to trade my American pharmacy working experience for Hong Kong culture. Then there was the perennial challenge of limited resources in the budget as well as restricted freedom to launch an aggressive fundraising campaign. Nevertheless, team effort and hard work sustained the growth of the School. We now have a clinically relevant B. Pharm curriculum with improved learning outcomes as perceived by our students, graduates, and the undergraduate programme review panel. In addition, the revised Master of Clinical Pharmacy Programme (MCP) is well received, as indicated by the enormous interest in programme enrollment. Further tailoring of the MCP to meet the needs of Hong Kong (e.g. coupling with a diploma programme) is in progress. The School has also taken a lead in implementing clinical pharmacy practice, in collaboration with the Prince of Wales Hospital Pharmacy, to develop role models for our pharmacists-in-training.

The launch of the Drug Development Centre in 2000 (with \$7.7 million of government funding and \$0.77 million matched from private sources) was an important step in fulfilling the second developmental target of the School. The Centre has now completed over 100 bioequivalence and quality control studies/tests of different drug products for local companies and the Hong Kong Hospital Authority. In addition, the Centre has conducted, for the first time in Hong Kong, several phase I clinical



Professor Moses Chow (5th from right), pictured with colleagues at this farewell dinner

trials. The quality of research at the Centre is best illustrated by its publication of several high impact papers within the category of pharmacy and pharmacology. Several new formulation products are also in progress with one already licensed to an outside firm.

Additionally, the School has established a strong working relationship with peer pharmacy groups in Hong Kong and Asia. For example, the School acted as convener of the Pharmacy Consortium, which was formed by leading pharmacy groups to address issues pertaining to education and training in Hong Kong. Leading input was also provided to the Asian Association of Schools of Pharmacy (in which I served as Founding President).

I am gratified that the School went through a very positive growth phase under my leadership. I am certain that Professor Vincent Lee, the current director, will take the School to another level of excellence. Professor Lee is a world-renowned pharmaceutical scientist with strong academic credentials as well as industry and regulatory (FDA) experience in the USA. The School is in good hands, and I am prepared to contribute my part in my new capacity as Adjunct Professor in the days ahead.

2007 Pharmacy Exhibition



Officiating guests at the Opening Ceremony



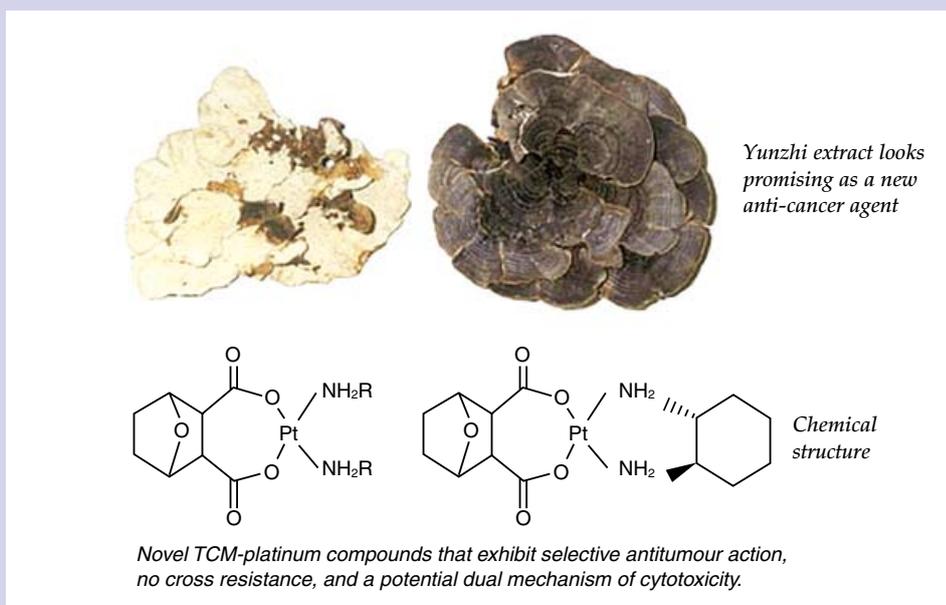
Alumnus, Michael Yim, took centre stage at the health talk

The School of Pharmacy's stature is measured not only by its high-quality teaching, but also by the quality of the research activity conducted by its faculty members. Present research in the School covers the entire spectrum from drug discovery to monitoring. This column serves to report on the latest discoveries in selected research laboratories.

A prominent University-wide research area at CUHK, traditional Chinese medicine (TCM) is also an integral component of the research profile in the School. Our focus is in the medicinal chemistry, pharmacology, biopharmaceutics, formulation, and quality assurance of TCM products. This issue will introduce you to the research directed by **Professor Clara Lau**, a pharmacognosist who has been on our staff since 2000, and **Professor Yee Ping Ho**, an accomplished medicinal chemist, who has been with the School since 1993.

Chemistry and Pharmacology of Traditional Chinese Medicine

With over 10 years of experience studying natural products, Dr Lau's research focuses on gathering scientific evidence to support the traditional uses of selected Chinese herbs. Her current research interests include *in vivo* and *in vitro* investigations on the potential anti-cancer and anti-diabetic activities of certain Chinese herbs. In collaboration with the Institute of Chinese Medicine and the Department of Biochemistry, a research platform comprising various *in vitro* and *in vivo* models for studying the anti-diabetic effects of Chinese herbs was



established. Among the various Chinese herbs tested, the compound paeonol, isolated from Cortex Moutan, was shown to have potential anti-diabetic activity. In another project supported by an ITF University-Industry 50:50 matching grant, the potential anti-cancer effects of a standardized aqueous ethanol extract of *Coriolus versicolor* (Yunzhi) were investigated. Results to date have revealed that the Yunzhi extract attenuated human leukaemia cell proliferation *in vivo*. *In vitro* mechanistic studies suggest the possible induction of apoptosis through the mitochondrial pathway.

Innovative Drug Design Strategies

Utilizing an innovative approach, Dr Ho applied an 'East meets West' drug design strategy to improve the safety and efficacy profiles of cisplatin, a platinum drug

commonly used in cancer chemotherapy. In collaboration with CUHK colleagues from the Departments of Chemistry (Steve C.F. Au-Yeung) and Pharmacology (Ge Lin), a novel series of single chemical entities were generated upon integrating a platinum (Pt) moiety with demethylcantharidin (DMC). DMC is a synthetic modification of cantharidin, the active principle of "blister beetles", a TCM that has been used to treat liver, lung and digestive tract tumours. The compounds have been extensively evaluated preclinically (*in vitro* and *in vivo*) and exhibit superior properties to classical Pt-based anti-cancer drugs. This invention is protected by five patents (one US and four Chinese).

We plan to feature the research or scholarly activities of other staff members in future issues.



The enthusiasm of the School's undergraduates was clear to see



Thank to all the hard-working volunteers for making the event such a success

Chinese Medicine – An Industrial Perspective



Dr Kevin K.W. Chu

Dr Chu is currently Technical Director of a local GMP TCM company whose manufacturing facilities are based in Nanning, Guangxi province.

As one of the first batch of BPharm graduates, as well as the first PhD graduate from the CUHK School of Pharmacy, I feel greatly honoured to have been given the opportunity to contribute the first article from the alumni in the current issue of the School's newsletter.

My interest in Chinese medicine dates back to 1997 when I embarked on my postgraduate research studies in the formulation of traditional Chinese medicine (TCM) under the tutelage of Professor Albert Chow. Being trained in Western drugs, I must confess that I was not familiar with TCM at the time and I was somewhat skeptical about its value and potential benefits. However, after spending 5 years on a research project aimed at developing *Coriolus versicolor* (Yunzhi) extract into an evidence-based commercialized immunotherapeutic product for cancer patients, I was finally convinced of the unrealized values of TCM in disease treatment. I became determined to dedicate myself to the humane quest for longer, healthier and happier life through innovation and modernization of Chinese medicine. I was also fortunate to find a research and development position in a Good Manufacturing Practice (GMP) TCM-manufacturing company right after my PhD graduation, and so was able to pursue my career aspirations.

TCM Development in Hong Kong and Beyond

Chinese medicine is an integral part of Chinese culture. In Hong Kong, it has been used for the prevention and treatment of diseases for quite some time and has made a significant contribution to the health of the public despite the fact that Western orthodox medicine is still the mainstream therapy. Before 1997, the practice of TCM was largely unregulated and its acceptance by the general public was low. After 1997, the Chinese Medicine Council of Hong Kong was set up to regulate the practice, use, and trading of Chinese medicine. All proprietary Chinese medicinal products now need to be assessed for safety and quality before registration is permitted. The dispensation, storage, and labelling of Chinese herbal medicines is also regulated.

Another milestone in the development of TCM in Hong Kong was the gradual introduction of Chinese medicine into the public healthcare system. This included providing outpatient TCM services in the public sector, piloting the practice of TCM in selected public hospitals, supporting clinical research, and facilitating the development of standards and models of interface between Western and Chinese medicines. In the near future, there will be a total of 18 Chinese medicine clinics under the auspices of the Hospital Authority.

TCM is now becoming popular in Hong Kong and approximately 22% of all medical consultations in Hong Kong are currently provided by Chinese medicine practitioners. Being more health conscious, Hong Kong's higher socioeconomic class, comprising mostly professionals, have emerged as new TCM users in recent years. It can be envisaged that as more scientific documentation on treatment effects becomes available, the various modalities deployed by TCM will no longer be viewed as being "alternative", but rather as an integral part of modern medicine.

While the modernization of TCM appears to hold promise, the development of proprietary TCM products with proven quality and safety in Hong Kong is not without hurdles or problems. Without a sophisticated Chinese medicine regulatory system and stringent regulatory control, products of substandard safety, quality, and efficacy would still dominate the TCM market. As the product's quality and efficacy are not readily discernable by the consumers in the short run, most companies choose to invest money in the product's media exposure rather than R&D and brand building. The lack of long-term investment among companies could seriously hamper the future development of TCM in Hong Kong.

Potential To Be Realized

TCM recognizes that health is more than just an absence of disease, and it has a unique way of maintaining and enhancing our capacity for well-being and happiness. In view of the increasing demand for improved quality of life in developed countries, TCM, with its unique benefits across disease prevention, health maintenance, and the treatment of many chronic diseases, has a tremendous potential for globalization. Hong Kong has the right environment to assume the pivotal role of establishing links between East and West for the advancement of Chinese medicine. Optimizing the use of Chinese medicine for global healthcare will require the concerted efforts of professionals, health officials, and industries to uphold the highest possible standards of professionalism as well as tight regulatory controls.