



# CHINESE UNIVERSITY BULLETIN

Autumn • Winter 1999

From University  
to Community

## How New Technologies Are Transferred





# CHINESE UNIVERSITY BULLETIN

Autumn • Winter 1999

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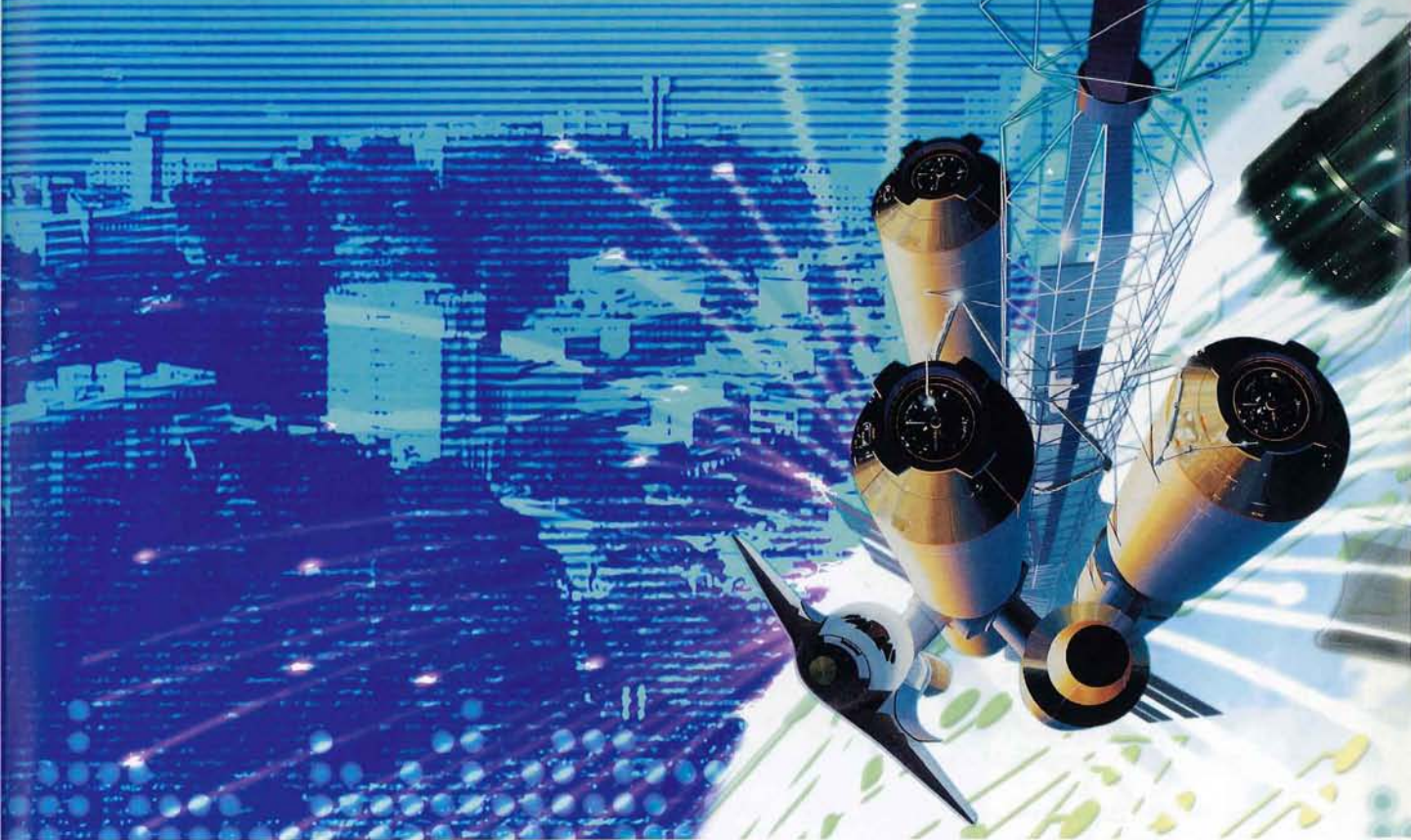
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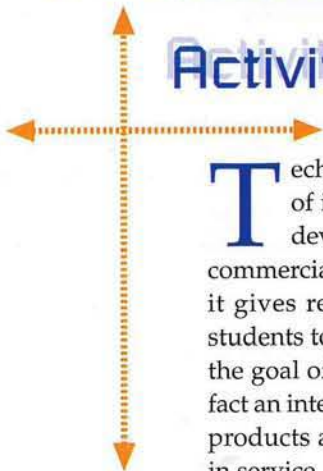
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# Technology Transfer

## Activities at CUHK



**T**echnology transfer refers to the transfer to the community of ideas, inventions, technologies, methods and processes developed in the University, with a view to exploiting these commercially. It gives incentives and direction to applied research; it gives relevance and vitality to teaching in related subjects; students too may be involved in applied research that is driven by the goal of eventual commercialization. Technology transfer is in fact an integral part of the University's function—by bringing novel products and processes to society, it discharges its responsibility in service.

Technology transfer activities at CUHK have increased dramatically over the last few years, bringing recognition to many outstanding researchers, providing incentives for them to work on topics of relevance to society, and sometimes generating income to support R&D activities. In this issue the *Bulletin* introduces readers to University policies and strategies for promoting and encouraging technology transfer, and some success stories (see pages 6 to 17).



## To Encourage and Regulate Technology Transfer

The University's technology transfer activities are a relatively recent development, and to encourage and regularize such activities among faculty members, the University adopted a *Policy on Research, Consultancies and Intellectual Property* in 1995 to clarify the ownership of intellectual property arising from different kinds of work done by its staff members. It also approved a set of *Further Guidelines on Patents and Licensing* in July 1997 to delineate the distribution of gross proceeds from the licensing of patents or technologies. Generally speaking, the inventors are entitled to 25 per cent of such proceeds, but if they choose to use all or part of the money to support their department or project, the University will provide a dollar-to-dollar match as encouragement.

The University also expanded its Research Administration Office into a new Research and Technology Administration Office to serve as the central point in coordinating the administration of research and technology transfer activities.

And in 1999 the Faculty of Engineering launched a Centre for Innovation and Technology to promote applied R&D and help transfer the technologies developed by teachers of the faculty to industries and businesses.

University support is also given in the form of allocations for applied R&D, and reflected in its personnel policy which gives recognition to applied research work of originality and merit when considering substantiation or promotion cases.

## Different Routes of Technology Transfer

Technology transfer appears in various forms—licensing, the setting up of spin-off companies, joint ventures, or cooperation with public bodies.

To license the technology to a user under contract is the most straightforward method. In return for the right to use the technology, the contracting party would pay to the University an up-front fee, or a royalty based on turnover or profit, or equity in the company, or a combination of these.

However, unlike developed countries and regions where technologies would be licensed to companies willing to take them up without the universities being involved in either the incorporation or the management of the company, Hong Kong is still relatively unprepared in this aspect. Thus there is a gap in midstream, where inventions originating from universities are not effectively taken up by the industrial sector. In cases where ready licensing to existing companies is not viable, the University has found it beneficial to either incubate these projects in-house, launch spin-off companies on its own, or encourage the launch of start-ups by project staff.

### To Ensure Proper Use of Public Money

And in the launch of spin-off companies, the University has certain policies to adhere to, to prevent relevant enterprises from gaining an unfair market advantage. First, it is a rule that no public funds will be invested into these companies. It is also strictly observed that any company formed by the University or in which CUHK takes an equity is operated independently, ensuring that public funds for education are insulated from enterprises. Last but not least, the University recognizes that the ultimate goal is to seek commercial partners; once that is achieved

it will pass the management and majority share of the relevant company to other investors at the earliest opportunity.

### How Success is Gauged

Some may view the success rate of commercialization of research products as a performance indicator for universities. However, experience world-wide shows that only a small percentage of applied research is ever commercialized, and of these only a small percentage will be commercially successful, with failure more often than not attributable to factors other than the merits of the technology. Therefore it is important not to judge the entire technology transfer sector simply in terms of eventual commercialization or profitability. As the stories that follow on pages 6 to 17 show, other impacts on the University and on the community are equally if not more important. Such impacts may include closer collaboration between academic institutions and the industries for the promotion of innovation and high technology, increased foreign investment to stimulate value-added economic activities in Hong Kong, improved services from the public and private sectors, and a much heightened interest among Hong Kong students to engage in academic and applied research.

### Research and Technology Administration Office

The Research and Technology Administration Office (RTAO) is the primary office responsible for research administration and technology transfer. All intellectual property rights, unless and until assigned, are administered through the office.

Apart from assisting staff members in introducing their new technologies to industries and exploring the commercial potential of their research products, the office is responsible for the management of all contract-related matters such as advising and vetting licensing and contracting arrangements. Its director has delegated authority to sign contracts on behalf of the University, subject to approval by the supervising pro-vice-chancellor.

As a central point in coordinating the administration of research and technology transfer activities, RTAO is ready to assist all who approach them for help.



An agreement being reached between the University and Molecular Technology Innomed Limited (MTI), allowing MTI to use and further develop a technology developed by the University to identify Chinese medicinal materials and differentiate them from their adulterants, using DNA. From left: Mr. Thomas Cheng, chairman & chief executive officer of MTI; Mrs. Alice Yip, director of RTAO; Prof. Jun Wang of the Department of Biochemistry.

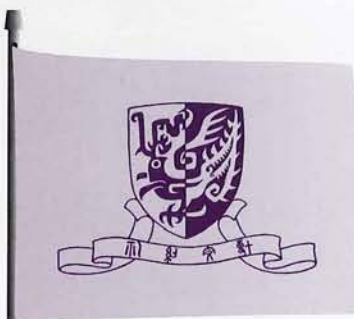
## Centre for Innovation and Technology



An Innovation and Technology Fair was organized from 30th April to 1st May to mark the establishment of CINTEC and to promote better understanding between academia and industry. The fair highlighted the research expertise and accomplishments of the Faculty of Engineering in six areas, namely Chinese communication, Chinese computing, Internet technology, multimedia, speech and image processing, and intelligent automation.

The Centre for Innovation and Technology (CINTEC) was established in January 1999 under the Faculty of Engineering to promote technology transfer activities in the faculty. Its major task is to establish links and strengthen communication and collaboration with industry and business. It helps faculty members sell the fruits of their research to industry; it also identifies expertise available in the faculty to help different industries solve their technical problems.

According to Prof. P.C. Ching, chairman of CINTEC's management committee, RTAO and CINTEC complement each other in promoting technology transfer. While RTAO concentrates on looking for 'buyers' and rendering a comprehensive range of support services, CINTEC pays particular attention to seeking advice from industry to ascertain the potential of relatively immature products and technologies.



### The Way Ahead

Technology-intensive industries and their synergy with academic institutions have become the direction of development for Hong Kong. The University will actively promote high value-added economic activities by bringing novel technologies and innovation to society, and technology transfer will continue to be an important function of the University. □

## Powerful Chinese Search Engine Can Find a Needle in a Haystack

# MoLi & ANSeRS Attracts the Interest of IT Companies Worldwide

### What a Good Search Engine Can Do

Nowadays, finding the information we need on the Internet means having to navigate through a sea of webpages using a search engine. A good search engine can boost the number of hits to a webpage as well as its economic value. Hence companies which develop such engines tend to keep them for their own use. Search engines up for licensing are few in the market. Even fewer are those designed for Chinese applications. The University's MoLi & ANSeRS is exemplary of this kind of search engine.

### Features of MoLi & ANSeRS

Developed by Prof. Wong Wing-shing of the Department of Information Engineering and his former Ph.D. student Dr. Qin An, MoLi & ANSeRS is a software platform for automated Chinese text analysis with a search engine. Recipient of the Certificate of Merit in Consumer Product Design in the 1997 Hong Kong Awards for Industry, it has great appeal for companies interested in exploring the commercial potential of Chinese Internet applications. Its commercial possibilities are being tapped by IT companies dispersed throughout Hong

Kong, mainland China, the US, and Europe, which have been licensed by the University to use the system.

The system features a Chinese word processing system and a network searching robot system. The former has the functions of automated segmentation and part-of-speech tagging needed for advanced text processing. The latter, using artificial intelligence, searches by topic rather than by word or phrase. For instance, if you search for 'real estate', ordinary search engines will list webpages with both or either of the Chinese characters for 'real estate' whereas MoLi & ANSeRS will list webpages on related topics such as 'buildings', 'property', arranged in order of relevance.

### From Basic Research to Downstream Development

MoLi & ANSeRS may be a shining star in the IT field but Prof. Wong said that he and Dr. Qin were 'passive' at first when it came to transferring their brainchild to industry. Prof. Wong said his interest and motivation lay in the exploration of academic theories, and not the tapping of commercial possibilities of his creation. Academic research and downstream development are two different things,



<http://www.jansers.com>



he pointed out, demanding very different expertise, skills, and resources. With the support of the University, and the assistance of the Research and Technology Administration Office, MoLi & ANSeRS was licensed to industry. The University provides basic training for staff of the relevant companies to use the system, but does not interfere with its commercialization.

### Significance of Technology Transfer

Prof. Wong found that technology transfer can help generate ideas for improving the original system while income generated can be re-invested in research. Increased contact with industry in the process also benefits students when they seek jobs. In MoLi & ANSeRS's case, it also helped to retain China's brainpower. He explained, 'A company based in Beijing has been granted the license to use MoLi & ANSeRS. They wanted to further develop the potential and uses of the system and decided to recruit Dr. Qin to do the job. This was why Dr. Qin has given up the opportunity to work in the US. He's now stationed in Beijing.'

That industry would pay for a license is testimony to the value of his invention. But what pleases Prof. Wong most is that more people will now be able to find the websites they need with MoLi & ANSeRS. He also admitted that its development has exceeded his original expectations, thanks to all who helped to transfer the technology. □



Dr. Qin An and Prof. Wong Wing-shing on the foot-bridge to the Ho Sin-Hang Engineering Building

*Dr. Qin's interest in Chinese word processing brought him to CUHK where he did research under Prof. Wong Wing-shing. He had never expected MoLi & ANSeRS to have generated so much interest. During his days at CUHK, he was more absorbed in his doctoral thesis than in its commercial potential.*

*Nonetheless he is now very pleased that MoLi & ANSeRS is one of the first technologies to be transferred to society by the University.*

*Upon graduation, Dr. Qin had intended to assume duty at an American company which was offering him a job. But then his path crossed with that of MoLi & ANSeRS a second time. He now heads the technology development section of a Beijing-based company which has obtained license for using the system.*

*Dr. Qin realizes while working in that company that the results of academic inquiry need to be packaged well in order to become a useful and valuable commercial product. A question he often asks himself now is: 'Is this product useful? Will people like using it?' He also takes part in administration and management and in fact discovers that he is quite interested in this aspect of his job. Dr. Qin brought MoLi & ANSeRS to the world of the Internet, a world with endless possibilities. Conversely MoLi & ANSeRS has opened up new career frontiers for Dr. Qin.*

# Extending Half-Life to Extend Life:

## Method for Drug Improvement Transferred to Biotechnology Company

### What's Half-Life?

Prof. Michael Tam of the Department of Physiology has developed a method for protein drug improvement wherein the drug's time inside the human body, or 'half-life' as it is medically called, is lengthened while the level of its desired effects is maintained.



The method was developed in a project, begun in 1995, to extend the half-life of trichosanthin, a protein in the tuber of *Trichosanthes kirilowii*, a climbing plant which grows wild in eastern China. Trichosanthin has been found to inhibit the reproduction of the human immunodeficiency virus (HIV) in infected cells without affecting normal cells. However its curative effects are short-lived as it remains in the body for only a very brief period.



### Benefits of Extending half-Life of Drugs

The technology aroused the interest of LeaderGene, a Hong Kong-based biotechnology company which has a related company in Shanghai that produces interferon, an anti-viral protein drug for non-A and non-B hepatitis. Interferon, if administered in time, can prevent complications such as sclerosis and cancer of the liver. However a dose of interferon costs tens of thousands of dollars. Extending the half-life of interferon would lengthen the drug's activity in the body, and hence lower the number of doses required, thereby reducing costs and also the drug's side-effects.

### From Trichosanthin to Interferon

LeaderGene approached the University to discuss the use of the technology. This resulted in the signing of a licensing agreement between the two in September 1998 under which Prof. Tam and his researchers will work with the research and development department of LeaderGene to extend the half-life of interferon, using the technology which he has developed to extend the half-life of trichosanthin.



The climbing plant *Trichosanthes Kirilowii*

Prof. Tam's technology is based on a very simple rationale. Protein molecules with a molecular weight less than 60,000 daltons are quickly got rid of by our kidneys. Hence, interferon, like trichosanthin and their predecessor penicillin, all with molecular weights of only about 20,000 daltons, passes quickly through our kidneys. (Incidentally this explains why in the olden days, during wartime, penicillin was recycled from patients' urine.) The way to lengthen the molecules' time in the body and subsequently their curative effects is to make them heavier. To increase the molecular weight of interferon, PEG, a harmless polyethylene glycol, is attached to interferon molecules. But here's where it becomes tricky. PEG can be attached to any part of the molecular configuration and it would extend half-life. However if it is attached too close to sites where the drug's activity takes place, it would hinder the activity of the drug. If, say, half-life is quadrupled but drug activity is reduced by four times, the whole purpose would be defeated. So the aim is to find the right sites to attach PEG so that half-life is increased and reduction in drug activity minimized.

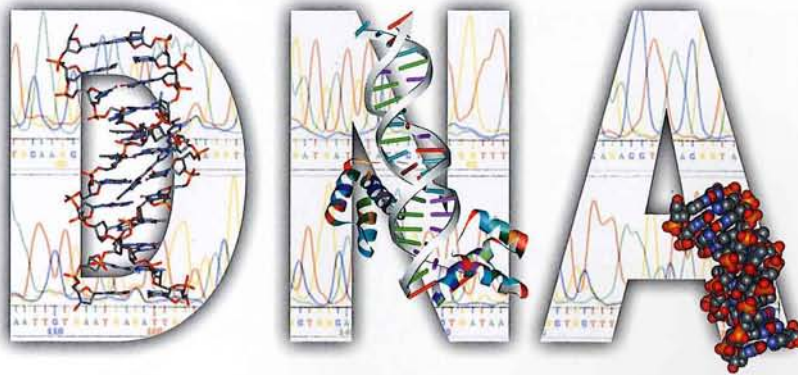
The prediction of potential sites is done using a special formula on the computer. With trichosanthin, Prof. Tam

and the other researchers found two optimal sites among the initial seven to nine possible ones. These are now undergoing clinical trials. With interferon, they have now identified five possible sites. The testing of one site takes about half a year, during which many complications may occur such as cross-linkage of interferon molecules and other unforeseen problems.

### All to Benefit

But things are looking promising and the success of these endeavours will bring enormous benefits to Hong Kong and the rest of the South China region where hepatitis is prevalent. Hepatitis, like all diseases, makes no class and national boundaries. Treatments and cures should likewise be equally accessible to all. If the project succeeds, the costs of producing interferon will be reduced by at least half to two-thirds, which means that it will be affordable to more, its side-effects will be minimized as fewer doses will be required, and fewer people will die unnecessarily from sclerosis and liver cancer.

The project is also exemplary of the University's contribution to Hong Kong's biotechnology field, and in line with the policy of the HKSAR government to encourage innovation and technology. □



## Speedy Decoder of Genetic Secrets Receives US Patent

Company in Silicon Valley Gains License and Agrees to Help Develop Technology

### New Technology for DNA Sequencing

Prof. Wong Wing-hung of the Department of Statistics has developed a technology which greatly increases the speed for DNA sequencing. The technology has successfully obtained a US patent. And Affymetrix, a famous DNA chip manufacturer headquartered in Silicon Valley in the US, has signed a licensing agreement with the University to use the technology in industry in order to develop products that will further advance scientific research.

### What's Hidden in Our DNA Sequences?

DNA sequencing is a basic step in much of biomedical research. Large amounts of genetic information is encoded in the DNA of an organism. DNA can be considered as a long polymer of four types of nucleotides (represented respectively as A, T, G, C in research) arranged in a particular order. Human beings each have about three billion base pairs of genetic information encoded in our DNA, including virtually the complete set of instructions governing the development of

an individual from a single fertilized egg cell to an adult. Moreover the DNA sequence of any individual is unique except in the case of identical twins. Differences in DNA sequences are the main determinants of different skin colours, body shapes, responses to allergens and pathogens, and susceptibility to various diseases. Being able to determine DNA sequences therefore has enormous implications for the advancement of life science and medicine.

### How Fast Can We Decode Them?

Yet this is easier said than done. Although scientists found effective methods for DNA sequencing in the late 70s, those methods, which studied one DNA clone at a time, were laborious. It took years to determine the sequence of a small virus with less than a hundred thousand letters in its genome.

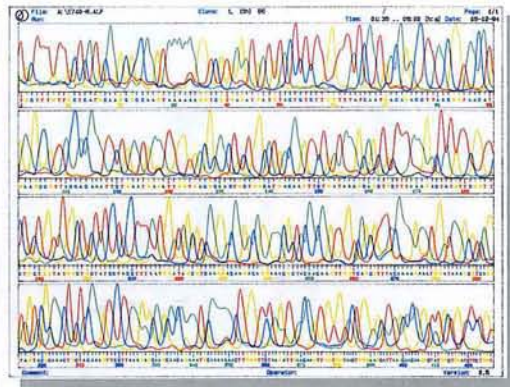
The situation, however, improved significantly with the development of automated sequencing machines in the late 80s. Current models of automatic sequencers can analyse 96 DNA clones in a single two-hour run, producing up to 60,000 base pairs per run.



High-throughput automated DNA Sequencer



A researcher loading DNA samples into the sequencer



Output from the DNA sequencer

Yet a lot remains unknown about our DNA. Prof. Wong's method is to use short stretches of DNA of known sequence as molecular tags to identify a large number of clones being sequenced. This, when combined with the current method of sequencing, can analyse up to 100,000 DNA clones at a time. Prof. Wong pointed out that the aim of developing this technology is to drastically increase the speed for DNA sequencing so as to enable researchers to sequence megabase-sized regions in routine scientific and medical studies. This approach can also help identify disease-susceptible genes. It is expected to play an essential role in the future development of molecular medicine that aims to tailor medical treatment to the individual genotype of the patient.

### Sequencing Technique Successfully Transferred

The University recognized the great potential and commercial value of Prof. Wong's technology and helped him apply for a US patent. The Research and Technology Administration Office, through its American consultant Mr. Niels Reimers, also helped promote the results of Prof. Wong's research to Affymetrix, a dominant company in commercial DNA chip production. The latter, finding Prof.

Wong's technology very promising, signed an agreement with the University under which it was given an exclusive license for use of the technology in industry. Affymetrix has also agreed to collaborate with the University in further developing the technology and applying for patents for the different products that may result.

### Significance of the Transfer

Prof. Wong's technology was developed in Hong Kong, patented in the US, and transferred through licensing. The process may seem simple yet its implications are far reaching. From a scientific perspective, Affymetrix, a leader in the field, will no doubt be adept at realizing fully the potential benefits of the technology. From an economic perspective, by attracting the investment of an international corporation, it serves as a positive stimulus to Hong Kong's value-added innovative technology. Besides Affymetrix has also expressed the wish to invest in the Asian market. If it does eventually set up production plants in Hong Kong, it will create more employment opportunities for the local people and attract and train more experts in the field. □

**D4** Artificial Intelligence Crime Analysis and Management System

Hong Kong Police to Use Artificial Intelligence Technology Developed by CUHK to Track Down Culprits

Prof. K. P. Lam

**Moving Ahead in Customisation**

- For large-scale implementation
- Coordinated effort with HIBES
- For marketing potential
- Encouraging to stimulate developer for exploring existing opportunity of an integrated product workflow.

**Moving Ahead in R&D**

- From AICAMS-EIT to face recognition
- Finding suspects from photos and check album
- From AICAMS-MAP to voice recognition
- Finding out surveillance and control
- Simplifying team entry
- Enhancing AICAMS-EIMS for crime pattern discovery

**AICAMS (V. 2.0) OBJECTIVE & APPROACH**

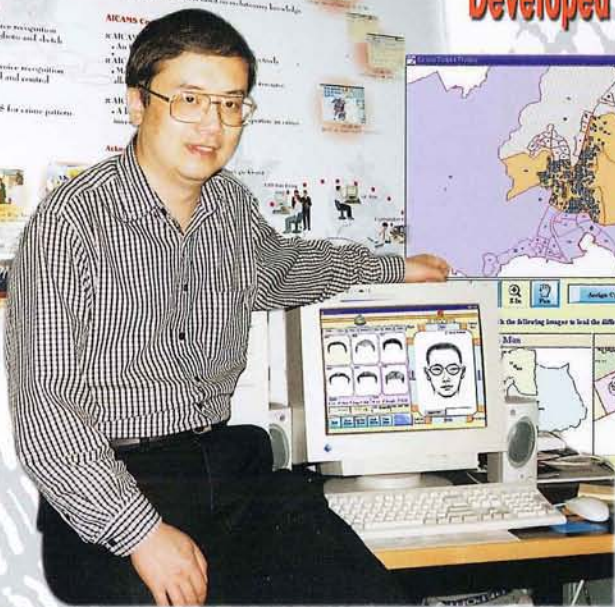
- The AICAMS objective is to formalise existing knowledge, experience, skill and long-hand technical expertise for crime analysis and management.
- The AICAMS approach is based on combining knowledge

**AICAMS CAPABILITIES**

- AICAMS-EIT
- AICAMS-MAP
- AICAMS-EIMS

**AICAMS ADVANTAGES**

- AICAMS-EIT
- AICAMS-MAP
- AICAMS-EIMS



**Technology to Be Extensively Used by the Police**

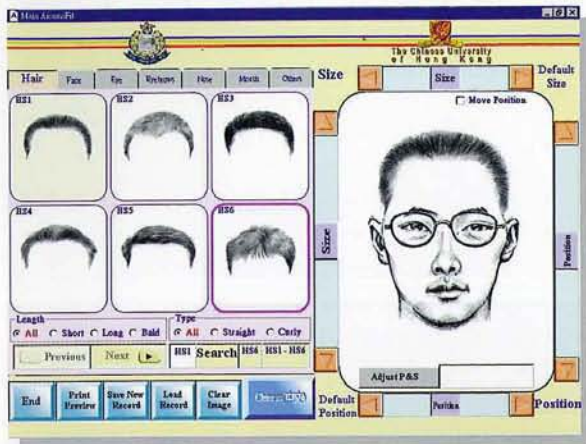
From the year 2000, Hong Kong's 52 police divisions will be adopting the Artificial Intelligence Crime Analysis and Management System (AICAMS) developed by Prof. Lam Kai-pui of the Department of Systems Engineering and Engineering Management. The Hong Kong Police Force and The Chinese University renewed their memorandum of understanding in April 1999 to reaffirm their joint ownership of the right to let third parties use AICAMS, and to entrust CUHK with the task of further research and development.

The success of AICAMS points to the fact that technology transfer not only benefits commerce, industry, and value-added innovative technology, but also contributes to the maintenance of law and order by helping the government to fight crime.

## From Academic Research to Application

Prof. Lam began research on artificial intelligence crime analysis in 1996 and received grants totalling HK\$150,000 from the University to develop the system in 1996 and 1997. He approached the crime wing of the Police Headquarters in person to invite their participation in his project, but due to funding and privacy issues, it was not pilot tested until 1997. Tuen Mun new town, a newly developed residential area, was chosen as the pilot site and the target crimes included car theft, burglary, robbery, sexual assault and rape.

## 'Intelligent' Features of AICAMS



The Facial Identification Tool, based on an extensive library of facial features, is effective in composing a suspect's face from memory recall



Zooming into details of building blocks and street information, with a map inset to give an overview of the Central District in Hong Kong

The key components of AICAMS are a Knowledge Database System, a Facial Identification Tool, and a Map-based System.

The Knowledge Database System is supported with artificial intelligence. A user has only to input information about a case and the system will make analyses and deductions of the case based on preset case parameters and information stored in its database. In the case of a car theft, for example, an officer only has to punch in crucial details such as the time and venue of the crime, the make and model of the missing car, and AICAMS will deduce whether it was done by an individual or a syndicate, and will also supply a list of

suspects and forecast where such a crime will hit next.

The Facial Identification Tool contains a library of facial features which enable officers to produce accurate and infinitely variable personal images of suspects. Each image takes about 15 minutes to produce with 80 per cent accuracy. Officers on patrol, if equipped with a hand-carry computer, can produce a facial sketch based on the verbal description of witnesses immediately after the crime. It also does away with the need for witnesses to visit police headquarters for facial sketching. During its testing period, the tool in fact helped in the capture of the suspect of a swindle.

The Map-based System provides front-line officers with a digitized map furnished with the names and locations of buildings, public facilities, public vehicle stations, carparks, telephone kiosks, shops etc. as well as the latest information about crime in the area such as the nature and sites of the crimes committed, and crucial statistics. An officer can simply punch in his/her personal code and be provided with crime-related information of his/her beat within a minute. This information is especially useful for helping to familiarize freshly transferred officers with their new district. Senior officers can also do combined analyses of the system's data before making manpower allocation decisions.

After a two-year trial of the project, the police have mastered the necessary operation techniques of the systems. They are of the belief that the Facial Identification Tool and the Map-based System are immensely useful for crime fighting and hence have decided to implement them throughout the territory. The Knowledge Database System will not be implemented for the moment because it requires input of huge amounts of data which have to be renewed continuously in order to be able to perform effective and up-to-date analyses. The police are however convinced of its enormous potential for combatting crime and fully support its further development by the University.

In fact an earmarked grant from the Research Grants Council was awarded to Prof. Lam in 1998 to carry out further research on AICAMS.

### **Experience in Technology Transfer that Others Can Share**

Although AICAMS has been successfully adopted by the police, Prof. Lam said that the process of transferring

this technology has not been all smooth sailing: 'Initially both parties concentrated on technological development at the expense of legal issues such as patent registration and permitted use, in which neither had much experience. There were also discrepancies between our understandings of right of use and right of handling. We spent a lot of time working out the best arrangements.' All these issues were eventually resolved fortunately, thanks to the assistance of the Research and Technology Administration Office (RTAO).

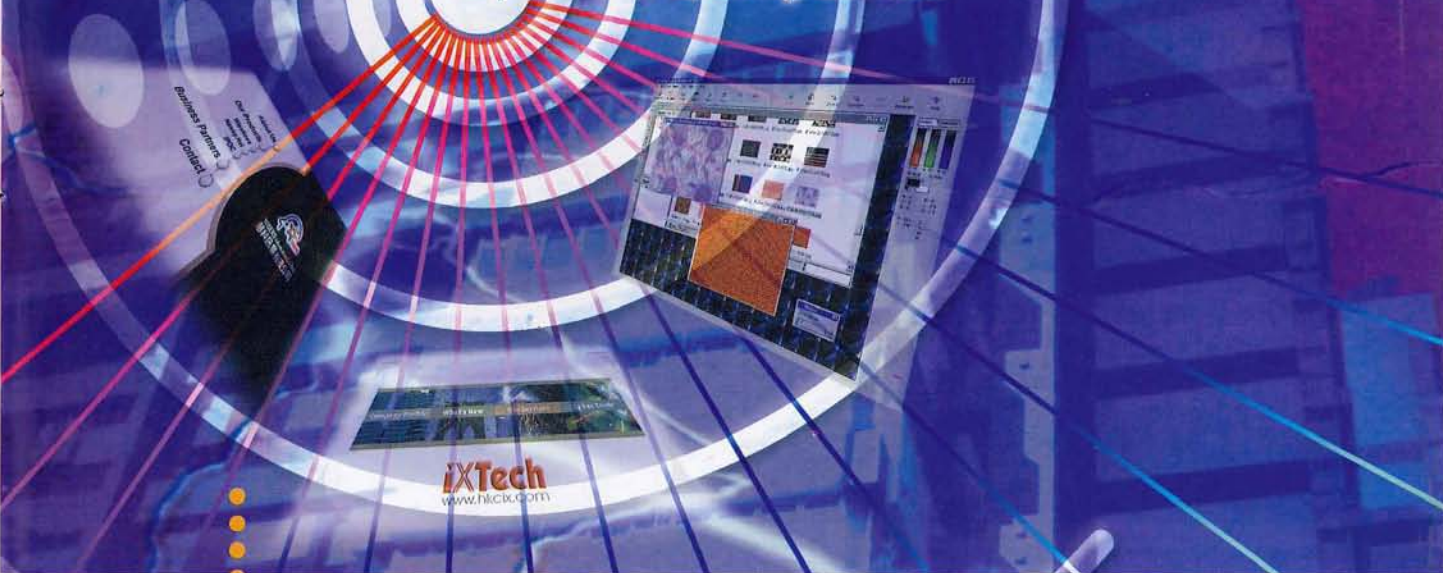
'The police had also expected us to provide after-sales services such as support and maintenance, and staff training. But as an academic institution, our interest and forte lie in research. We cannot take care of downstream work without over-stretching ourselves. We thus had to leave it to the RTAO to collaborate closely with the police in identifying a private company specializing in services of this sort,' said Prof. Lam.

He added that the experience of AICAMS serves as a valuable reference for other technologies with potential for transfer. From its trial use by the Tuen Mun District police to its widespread implementation involving the full participation of Police Headquarters, the success of AICAMS shows that all worthy technologies will eventually receive the attention they deserve. A crime-analysis system like AICAMS, in fact, has many potential clients: the Independent Commission Against Corruption (ICAC), the Customs and Excise Department, and mainland police units.

Prof. Lam recently received another grant from the Research Grants Council to embark on research related to money-laundering detection in collaboration with Hongkong Bank. □



# Spinning Research to a Different Plane: Technology Transfer by Spin-off Companies



## Three Examples

Since the mid-90s, many of the University's technology inventions have been transferred through spin-off companies. Examples include Wisers Information Ltd., IXTech Ltd., and Montimedia Co. Ltd. These companies have all found business partners or attracted external investment, with the University gradually relinquishing equity and management control. The latter two are now completely independent, and the University's involvement in Wisers has been reduced to the bare minimum.

The technologies transferred were respectively Intelligent Processing of Chinese (IPOC), The Chinese University Broadband Internet Exchange (CUBIX), and Montage. All three originated from research projects conducted at the Faculty of Engineering. The researchers and students involved in the projects realized their commercial potential and felt it would be a great loss if it were not realized. After discussing with the University, they set up companies and obtained license for the inventions to start their own businesses.

The HKSAR government established the Applied Research Fund in 1993 to encourage the establishment of local hi-tech companies. In 1998, it injected a further HK\$750 million into the fund and selected three international venture capital companies to be responsible for managing the portfolio.

Wisers Information Ltd. received an investment of US\$1 million from Walden International Investment Group, one of the three venture capital companies, in September this year, becoming the first spin-off among Hong Kong's tertiary institutions to have received funding indirectly from the Applied Research Fund.

Investigator of the IPOC system, Prof. Wong Kam-fai said, 'This form of technology transfer is more than a transfer of technology. It is also a transfer of knowledge and expertise. The original research team remains intact and goes on to develop and improve the technology. It also takes care of downstream work such as marketing and product development which cannot be well taken care of if it stays a part of the University.' Issuing licenses to spin-off companies are therefore ideal arrangements for both the University and the research team.

There is a gap between research and application. 'The chances of a successful transfer are higher if the technology is packaged as being reliable, marketable, and usable. Researchers need to have a feel for the market,' Prof. Wong continued. The marketing strategy of Wisers Information Ltd. was to present the information search engine as an electronic news stand and an electronic newspaper clipping service that provide tailored information to clients.

General manager of IXTech Ltd., Mr. Wu Chang-ming agrees with Prof. Wong. A graduate of the Department of Electronic

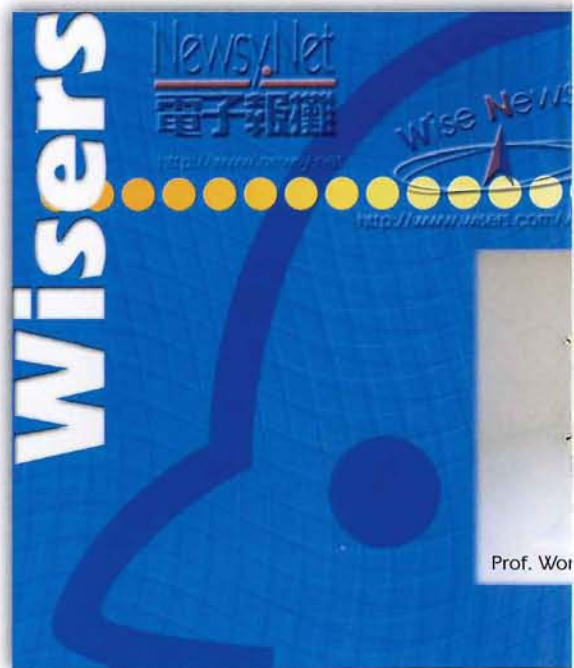
Engineering of the University, Mr. Wu had intended to pursue master's studies at the University. He gave up after becoming involved in the CUBIX project. He said, 'Technology on its own is lifeless. Human beings are its source of life. By simply being transferred, a technology may not necessarily flourish. Spin-off companies have a greater chance for success if they retain the researchers who invented the system. For students and researchers, this is also a good chance for learning about marketing and sales and developing their potential as entrepreneurs.'

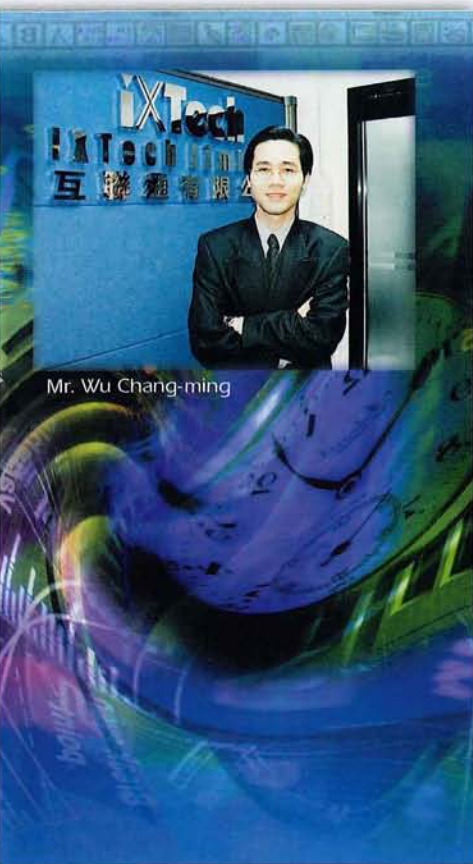
Researcher of the Montage project, Prof. Irwin King of the Department of Computer Science and Engineering, is also supportive of technology transfer via spin-off companies. 'It allows students to practise what they have learnt as well as to nurture an enterprising spirit and culture. It may also attract more graduate students to engage in applied research. For the teachers it is highly encouraging as it proves that they are not building castles in the air but can actually contribute to the well-being of society,' he remarked.



### Wisers Information Ltd.

- Year founded:** 1998
- Technology:** Software tools based on IPOC as core for the integration of different desktop publishing systems for the local electronic news media and publishing industry.
- Services:** Newsy.Net—performs round-the-clock searches in newspaper archive databases, indexes, auto-categorizes, tracks, and stores information in tailored databases for subscribers;  
WiseNews—a personal electronic newspaper clipping service including articles from most electronic newspapers and magazines for individual users.
- Awards:** 1998 Hong Kong Information Technology Prize; 1998 Hong Kong Federation of Industries Consumer Product Design Certificate of Merit of the Hong Kong Industry Awards
- Inventors:** Prof. Wong Kam-fai of the Department of Systems Engineering and Engineering Management, and Prof. Cheung Kwok-wai of the Department of Information Engineering





Mr. Wu Chang-ming

**IXTech Ltd.**

**Year founded:** 1998  
**Technology:** Using The Chinese University innovative broadband network technologies and multimedia applications in the operation of Internet Exchange  
**Services:** Provide free local Internet exchange service to Internet service providers, and router port leasing and routing management services at a fee.  
**Inventor:** Prof. Joseph Y.N. Hui of the Department of Information Engineering



Ms. Kam-fai



Prof. Irwin King

**Montimedia**

**Montimedia Co. Ltd.**

**Year Founded:** 1999  
**Technology:** Montage image bank and search engine  
**Services:** Set up image bank and search engine for textile, publication, and graphic design industries. Images can be stored/retrieved by colour, shape, pattern, and texture.  
**Inventors:** Profs. Irwin King, Ada W.C. Fu, Chan Lai-wan, and Xu Lei of the Department of Computer Science and Engineering



# Using Biotechnology to Feed, Cure, and Improve Life

*The University Grants Committee (UGC) announced the results of the first round of the Area of Excellence (AoE) scheme on 20th September 1999. Three projects from all local tertiary institutions were selected for funding support for long-term development with the aim of achieving an international standard of excellence. One of these is 'Plant and Fungal Biotechnology' coordinated by Prof. Samuel S. M. Sun of the Department of Biology, which has been awarded HK\$38.8 million. The project employs state-of-the-art genetic engineering and related technology to improve the quantity and quality of food and health products to meet the needs of Hong Kong, mainland China, and other parts of the world.*

One of Three  
UGC-Supported AoEs  
in Hong Kong



Prof. Sun and a researcher doing a gene transfer experiment using a gene gun



Prof. Sun and the proud parents of super hybrid rice plants

## Food Shortage Poses Challenges

Little do we know it but we human beings are steadily eating our way to our demise. The population of planet earth has been increasing by 2 per cent per year while staples have been increasing by only 1.1 per cent. The output of important crops will have to increase by 80 per cent from that in 1990 in 25 years or we will be faced with famine. And China, which has to feed 22 per cent of the world's population with 7 per cent of the world's cultivated land, will bear the brunt of it. Rapid economic development in China has already led to more farm land being turned into roads and factory sites, and a population that demand more meat, a previous luxury. The incentive to raise livestock is therefore higher, but then to produce a pound of meat, some 7 pounds of grain is consumed, as animal feed is also made from crops.

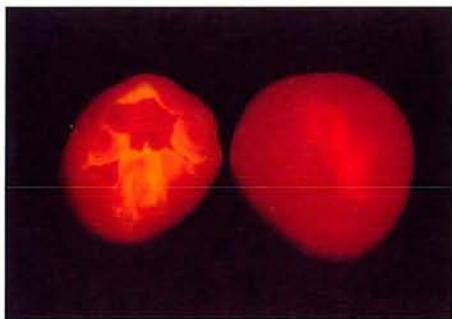
The human race underwent its first green revolution in the 60s. Improvements were made to the irrigation system, pesticides and fertilizers were used, the area of cultivated land was expanded, and crops were genetically improved through cross-breeding to render

them higher in yield and more resistant to disease. However the effects of the revolution have gradually levelled off: pesticides have been found to be harmful to the environment, water sources are lacking or have been contaminated, the total area of arable land has shrunk, fertilizers are expensive and not sustainable.

## Role of Biotechnology in the Second Green Revolution

Hence a second green revolution is desperately needed, one that solves the problem of feeding the earth by means of biotechnology. Unlike in breeding, there is no sexual barrier in gene transfer; any gene can be transferred directly into any crop. Even animal genes can be inserted into plants. Thus a much larger gene pool is available for crop improvement. Using the old method, back-crossing, it may take several generations to select the right offsprings with desirable genes. But with sex out of the way, the time is shortened, and scientists can control precisely the number and kind of genes to transfer into the offsprings.

The increase in human population entails also greater burden on medical care. Biotechnology can be used to produce medicinal products and high-valued health products, such as vaccines and antiviral proteins, using plants as chemical or drug factories.



An ordinary tomato (left) and a genetically modified tomato (right)

## Four Focus Areas

The AoE project will capitalize on the existing strength and expertise of the University in plant and fungal research and on the rich germplasm and vast agricultural lands of China to address the specific needs of the region. Upstream research and product development will be carried out in Hong Kong whereas downstream production will be carried out on the mainland. Prof. Sun himself has had extensive management experience in industrial research and development working for the ARCO Plant Cell Research Institute in the US in the 80s. He was also the first biologist in the world to successfully clone a plant gene in 1980. His project will concentrate on four research areas:

- (1) Improving the yield and nutritional quality of crops, particularly that of super hybrid rice.
- (2) Functional genomics—finding out the functions of genes, after cloning, by using DNA chips to identify useful genes and molecular markers.
- (3) Using plants as bioreactors or drug factories, and applying plant gene transfer and tissue culture, to produce high-value pharmaceutical products.
- (4) Fungal biotechnology—producing, by cell culture, natural food colouring and pharmaceuticals or nutraceuticals, e.g. producing a carbohydrate-protein complex from *lingzhi* that can boost the immune system and fight cancer.

Prof. Sun explains that plants are ideal bioreactors as they are not at risk of animal viral or bacterial contamination the way human or animal cells are. They are also cheaper. On the other hand, they have all the functions that high living organisms have, and which microbes and bacteria do not. Besides they can be produced on a massive scale, in pounds and kilograms, as opposed to milligrams as in the case of other microbial and animal cells.

## Intellectual Property Rights

The team may eventually apply for patents to protect their inventions. However Prof. Sun points out that these rights may be better complied with in some countries than in others. To avoid abuse, some producers of genetically modified food products will take care of the whole production line themselves, from research to planting and growing. Some choose to have farmers sign a contract before going to the fields. Another controversial alternative is to produce seeds which will make the plant self-annihilate if harvested a second time.

Prof. Sun's team will consider all possible alternatives in due course.

## Safety a Top Priority in Research

There is a huge resistance in Europe towards biotechnology and bioengineered foods with many countries banning them or requiring labels. According to Prof. Sun, the only known side-effect of consuming these products so far has been that people who are allergic to the Brazil nut may also be allergic to soybeans when the latter

contain a particular Brazil nut gene. However this discovery was made during laboratory trials by serum and skin-prick testing. The development of this soybean was halted and the product was never brought to the market.

Prof. Sun personally advocates labelling as a more immediate solution, as educating the public about biotechnology will take much time. However he points out labelling is not easy either as tracing the ingredients of food to their origins is a complex task. In fact his team has been taking every precaution in ensuring safety and that no freak crops emerge as a result of their experiments. They adhere strictly to all regulations set out by the University's Safety Committee; they carry out experiments in labs and greenhouses with approved biological and physical containment; they plant experimental crops on isolated plots; they use non-flowering plants, or wrap the flowers in plastic bags or pluck them before pollination can take place; they will also test all new products carefully for toxicity or allergenic effect, and for their composition and nutritional value to make sure that they meet all safety requirements.

## Aims of the Project

The three aims of the project are to produce high-value agricultural and health products, develop and transfer new technologies, and train biotechnologists and experts in the field.

Apart from crops, products that will result from the project include *Toxoplasma gondii* P30 surface antigen, human granulocyte colony-stimulating factor, human erythropoietin, malaria surface antigen F1gp42, and fish and shrimp growth hormones, all of which will be of use in medicine, agriculture, and fishery.

Including Prof. Sun, the core of the team consists of 11 teaching staff from the University's Department of Biology. Four additional plant scientists are drawn from the University of Hong Kong, the Hong Kong University of Science and Technology, and Hong Kong Baptist University. The project is expected to train over 10 researchers including postdoctoral associates and about 50 M.Phil. and Ph.D. students. □





## Super Hybrid Rice

**S**uper hybrid rice originates from hybrid rice, developed by Prof. Yuan Longping at the China National Hybrid Rice Engineering Research and Development Centre in Hunnan in the 60s. Dubbed the 'father of hybrid rice', Prof. Yuan discovered that hybrid seeds, formed by pollination across two different varieties of rice plants, show hybrid vigour like the children of mixed couples: they have a larger yield, by 31 per cent, and demonstrate greater immunity to diseases and other stresses than regular seeds. Hybrid rice was first grown for mass consumption in the 70s. It now occupies 51 per cent of the total rice cultivation area in mainland China. The increased output is sufficient to feed 100 million more Chinese each year, valued at about 100 billion RMB a year.

Super hybrid rice, expected to be ready for consumption in 2005, is estimated to increase the yield by a further 15 to 20 per cent. This is done by rendering it morphologically—by making the leaves narrow and erect and having its panicles, or cluster of seeds, positioned close to the ground. Narrow and erect leaves enable the plants to absorb more light, strengthen their resistance to wind, and allow them to be planted more densely. The lowered panicle prevents the plants from collapsing.

The only setback to super hybrid rice, like hybrid rice before it, is its nutritional value, taste and texture—both are classified Grade 2 in those aspects. The CUHK team will join the China National Hybrid Rice Engineering Research and Development Centre in improving the quality of super hybrid rice. They will improve the nutritional value by transferring a gene rich in an essential amino acid, lysine, from winged bean, a staple in tropical regions, into super hybrid rice. Then they will improve the stickiness and the texture of the rice by increasing the straight chains and the branch chains in starch. The more branches the rice has, the stickier the rice will be. Using molecular markers, the researchers will not have to wait till maturation to know if the crops possess the desired qualities. All they have to do is to run fingerprinting with a tiny sample when the plant is still young to find out what it will be like when mature.

# Movers and Shakers in World Higher Education Meet at CUHK

*The Vice-Chancellors' and Presidents' Forum  
on Global Tertiary Education Development*

The heads of 47 prestigious universities from different parts of the world gathered at the University from 19th to 22nd April 1999 to explore the developments of global tertiary education at the Vice-Chancellors' and Presidents' Forum sponsored by the Association of University Presidents of China and organized by The Chinese University of Hong Kong. The forum was one of the largest of its kind in Hong Kong in recent years.



## *Opening Ceremony*

### **A Gathering of Distinguished Guests**

Officiating at the opening ceremony were the Honourable Tung Chee Hwa (left 2), Chief Executive of the Hong Kong Special Administrative Region (HKSAR); Dr. Wei Yu (front right 2), vice-minister of the Ministry of Education of the People's Republic of China; Dr. Yang Fujia (right 1), founding president of the Association of University Presidents of China; and Dr. Lee Hon-chiu (left 1), chairman of The Chinese University Council. Distinguished guests included Mr. Wang Feng-chao, vice-chairman of the Hong Kong Branch of the Xinhua News Agency; Mr. Chu Zhi-nong, head of the Agency's Education and Science Department; the Honourable Andrew Li Kwok-nang, Chief Justice of the Court of Final Appeal; the Honourable Mrs. Rita Fan, President of the Legislative Council; and Dr. Alice Lam, chair of the University Grants Committee.

## Opening Speeches

*In his opening address, Mr. Tung Chee Hwa urged all participating institutions to capitalize on the comparative advantages of different countries and universities and share good practices, and called for greater inter-institutional collaboration at the international level.*

*Dr. Wei Yu pointed out that to rejuvenate China, technology education is an important strategy. To become a strong country in terms of global higher education, China needs to make more profound institutional reforms to enhance the healthy development of its higher education sector.*



## Predicting the Future of Higher Education

### Three Special Lectures

Distinguished professor-at-large of the University, Prof. Yang Chen-ning, spoke on 'Science, Technology, and Universities'. Quoting examples from the last two centuries, he observed that the staggering growth in human productivity would not have been possible without technological advances. He pointed out that the US government's policy of pooling large amounts of money into university research has had positive effects on knowledge creation, human productivity, human welfare, and is an important factor in America's becoming a major economic power. It is clear to all university presidents that, beyond the primary responsibility of education, all universities must participate rigorously in the inter-related activities of science, technology, and economics, and to stimulate innovation.



Dr. Wei Yu, speaking on 'Developing Modern Distance Education and Constructing a Life-long Learning System', said the most advanced elements of the human society will be built on the Internet—the knowledge platform for the fields involving economy, politics, and culture, with super-speed circulation of information and a wide connection to the world. Developed and developing countries alike either hop on to this platform or risk being washed away by the tide. She believes that a developing country like China must develop long distance education to solve the problem of inadequate educational resources and gradually build a life-long education system.

In his speech 'Education for the New Millennium—Education Reform in HKSAR', Mr. Antony Leung, chairman of the Education Commission, briefly described Hong Kong's plans for education reform for the coming century as well as the role of tertiary institutions in it. He pointed out that in this age of advanced information technology, Hong Kong is facing unprecedented competition as a result of global economic integration. To stay ahead of the game, Hong Kong needs quality human resources. In a knowledge-based economy, those who succeed must be creative, versatile, knowledgeable, and multi-talented. They cannot be conformists or followers.

### Eight Themes for Discussion

Discussions were spread over eight sessions in three days. The topics included universities and information technology, science park, the optimum size of university, management of university, university research, international relationships, preparing students, and university education and lifelong education. A total of 24 vice-chancellors and presidents presented speeches on relevant topics and all took part in the subsequent discussions.

### Fruitful Experience

The forum went very smoothly and was praised for its meticulous planning and organization. In the short span of three days, all participants were given sufficient opportunities to express their views and exchange ideas with one another. Some indicated that the forum was the best of its kind they had been to.

The participants of the forum came from Hong Kong, mainland China, Taiwan, Australia, Canada, England, Wales, and Scotland. Vice-Chancellor of the University, Prof. Arthur K.C. Li, said in his capacity as vice-president of the Association of University Presidents of China that the association will continue to host this kind of activity. Due to the great number of excellent universities in the world, not all countries could be invited to participate in the same year. Next time round they plan to invite the heads of American universities to explore how universities should face up to the challenges of the twenty-first century.

Dr. François Tavenas 11

Prof. Yang Fujia 17

Prof. Sir Ronald Oxburgh 32

Dr. William C. Leggett 9

Prof. Philip N. Love 40

Prof. Wang Sheng-hong 17

Prof. Chen Jia-er 24

Prof. Mary O'Kane 3

### On the Sidelines

(from left)

Mr. Tung Chee Hwa sharing a joke with the participants

Students of the Department of Music performing at the banquet hosted by the Association of University Presidents of China on 20th April

Participants visiting the Art Museum





Dr. Martha C. Piper 12



Prof. Sir Colin Campbell 43



Prof. Arthur K.C. Li 15



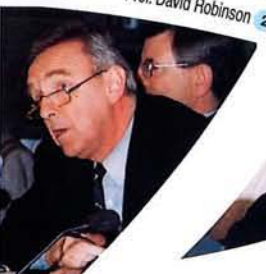
Prof. Arthur M. Lucas 33



Prof. David Robinson 2



Prof. Pan Yun-he 30



Prof. Alan G. Wilson 39



Prof. Sir Alec Broers 36

47 University of Warwick

- 1 The Australian National University
- 2 Monash University
- 3 The University of Adelaide
- 4 The University of New South Wales
- 5 The University of Queensland
- 6 The University of Sydney
- 7 The University of Western Australia

- 8 McMaster University
- 9 Queen's University
- 10 Université de Montréal
- 11 Université Laval
- 12 University of British Columbia
- 13 University of Waterloo

- 14 Chiao Tung University (Hsinchu)
- 15 The Chinese University of Hong Kong
- 16 City University of Hong Kong
- 17 Fudan University
- 18 Hong Kong Baptist University
- 19 The Hong Kong Polytechnic University
- 20 Hong Kong University of Science and Technology
- 21 Jiao Tong University (Shanghai)
- 22 Jiaotong University (Xi'an)
- 23 Nanjing University
- 24 Peking University
- 25 Taiwan University
- 26 Tsing Hua University (Hsinchu)
- 27 Tsinghua University (Beijing)
- 28 The University of Hong Kong
- 29 Yang-Ming University
- 30 Zhejiang University

- 31 Cardiff University
- 32 Imperial College of Science, Technology and Medicine
- 33 King's College London
- 34 University College London
- 35 University of Birmingham
- 36 University of Cambridge
- 37 University of Edinburgh
- 38 The University of Glasgow
- 39 University of Leeds
- 40 University of Liverpool
- 41 The University of Manchester
- 42 University of Newcastle
- 43 University of Nottingham
- 44 University of Oxford
- 45 The University of Sheffield
- 46 The University of Southampton

### About the Sponsor

The Association of University Presidents of China was founded in 1997 by the heads of Jiao Tong University (Shanghai), Peking University, Jiaotong University (Xi'an), Fudan University, Nanjing University, the University of Hong Kong, The Chinese University of Hong Kong, the Hong Kong University of Science and Technology, Zhejiang University, and Tsinghua University (Beijing). The association's aim is to make contributions to the development of higher education in China in the twenty-first century. Its founding chairman is former president of Fudan University Prof. Yang Fujia, and the vice-chairmen are president of Tsinghua University, Prof. Wang Da-zhong, and vice-chancellor of The Chinese University, Prof. Arthur K.C. Li.





## University Gets Pat on the Back from UGC

*After months of information collection and analysis of the University's management processes, on-site visits by a review panel, and interviews with administrators and teaching staff of the University, the University Grants Committee (UGC) issued in October 1999 a management review report which has many good things to say about the University. The University has also issued an official statement in response to the report. The full text of the report and the University's response has been posted on the CUHK website (<http://www.cuhk.edu.hk/mgtreview/>) for public viewing.*



Vice-Chancellor Prof. Arthur K.C. Li

### Praise on All Fronts

The Chinese University's management was highly commended in all six areas under review: strategic direction; resource allocation; implementation of plans; roles, responsibilities, and training; service delivery; and management information and systems. Vice-Chancellor Prof. Arthur K.C. Li is pleased to note that the University has fared the best among the eight UGC-funded tertiary institutions that have been reviewed, a conclusion he draws after reading review reports of other institutions as well as an overarching report (yet to be published) summarizing the management practices of the institutions.

'All the reports were rather discreet in tone. One hardly finds any harsh criticisms. But reading between the lines one can easily discern that The Chinese University has impressed the reviewers the most. We received the most praises and there were more good practices cited from CUHK than from any other institution,' Prof. Li said.

## Highlights of the UGC's Comments

### About strategic direction

CUHK's mission and overall strategic plan enjoy widespread ownership; management structure is clear and can ensure consultation and review at various levels; planning process is participatory in nature; academic, resource and administrative planning are clearly linked through the committee structure.

### About resource allocation

Resource allocation process is performance-based, transparent, effective, and flexible; the New Funding Model is working well and provides incentives for achieving value for money; management is lean and efficient; administrative cost is one of the lowest among local tertiary institutions.

### About implementation of plans

Processes to ensure the implementation of plans are effective; procedures to monitor the progress of implementation are clear and allow wide participation.

### About roles, responsibilities, and training

Staff members understand their roles and responsibilities well and have a strong sense of identity with CUHK; the vice-chancellor has a clear leadership style and is able to strike a good

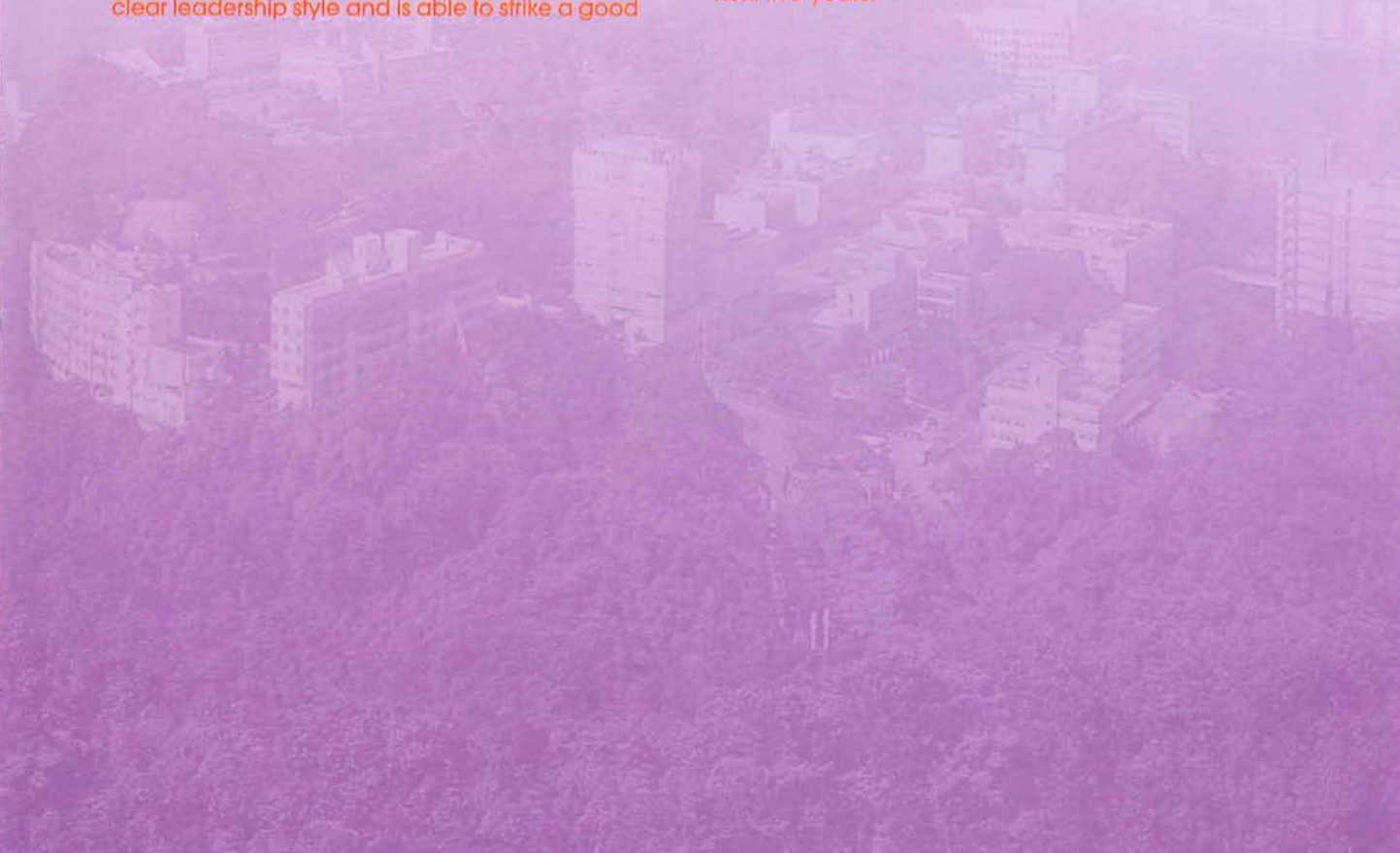
balance between strong executive leadership and maintaining a spirit of collegiality; management structure and reporting lines are clear and well-defined; the colleges play a unique and important role in the provision of a balanced education and the generation of useful resources; the enhanced staff appraisal scheme can facilitate communication and human resources planning, training, and development.

### About service delivery

A service culture is in place, especially among administrative units, to provide satisfactory services to users; review mechanisms are well-established across the university; the internal management efficiency reviews have been successful in achieving a 10 per cent productivity gain or a 10 per cent cost savings in relevant units via re-engineering and reorganization.

### About management information and systems

There is widespread and effective application of information technology across the University; CUHK has been conscientious in assessing and addressing user requirements; the IT Strategic Committee has been successful in mapping out an over-arching competitive IT strategy for the next five years.



## Suggestions and Responses

Apart from commendation on the University's management practices, the UGC report also contains constructive suggestions for each of the review areas.

Most of the suggestions were in fact to encourage the University to achieve continuous improvement in areas that are already working well. Such recommendations and the University's response to them are summarized below:

### 1 Strategic Direction

Greater formality in integrating its plans, for example, by developing an institutional development plan which documents all its strategic initiatives; more external input for the University's planning process.

CUHK: Will continue to review and update its overall strategic plan and increase the range of external input for planning purposes.

### 2 Resource Allocation

Maximize the potential of external funding sources; greater flexibility in space allocation.

CUHK: Will make good use of opportunities to bring in external funds; will review the allocation process and encourage greater flexibility, but has difficulty meeting all demands due to the dire lack of buffer space and the long time-lag between the identification of needs and UGC/government approval for new space and new buildings.

### Implementation of Plans

Formalize the best practice in implementation and monitoring across the University by installing a framework of milestones and performance indicators.

CUHK: Clear milestones and performance indicators already exist in many units but will continue to be developed across the University.

### Roles, Responsibilities, and Training

a. Develop the dean's post into a full-time and appointed position.

CUHK: The issue has been debated at the University with the majority of its members favouring elected deans working on a concurrent basis, but the University will continue to review the system, which is working well currently.

b. Ensure proper delineation of roles and compatibility between the School of Continuing Studies (SCS) and faculties; give more representation to the development of continuing education on the Administrative and Planning Committee (AAPC).



CUHK: Has adopted an updated policy in February 1999 to set strategic directions for different professional development and continuing education programmes and has installed mechanisms to ensure synergy between SCS and academic departments over the offer of programmes; is in the process of making statutory amendment to include the director of SCS as a full member of the Senate; will consider how the development of continuing education can be better represented on the AAPC.

- c. Coordinate staff training and development programmes more formally, ensuring greater linkage between performance appraisals and the identification of training needs.

CUHK: This is already being done with the launch of an updated policy and structure for staff training and development matters.

Comparison with other institutions locally and overseas to identify best management practices in order to improve continuously; expand its management efficiency reviews to cover academic departments.

CUHK: Will step up efforts at bench-marking and will consider whether to extend management efficiency reviews to teaching departments.

Continue to develop a coherent IT strategy and coordinate responses to management information requirements.

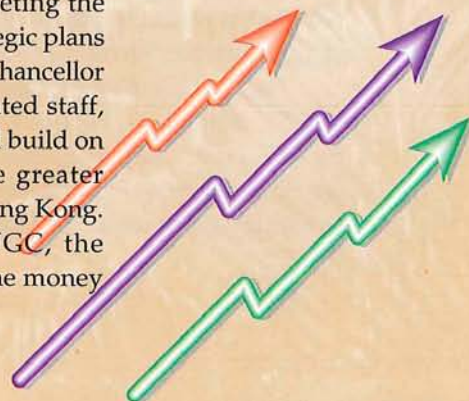
CUHK: Will build on an excellent start and continue to improve its IT strategy for the benefit of all academic and administrative units as well as all students and staff as they march into the 21st century.

Service Delivery

Management Information and Systems

## Credibility Established

The UGC's review report bears testimony to CUHK's strong commitment to excellence, its proactive approach to meeting the needs of Hong Kong, and the fact that its mission and strategic plans are widely owned by the University community. The vice-chancellor is confident that with its team of high calibre and dedicated staff, the University will continue to strive for improvement and build on its existing strengths to achieve excellence and make greater contribution to the development of higher education in Hong Kong. 'We have firmly established our credibility. The UGC, the government, and tax-payers can now be confident that the money they give us will be put to good use,' said Prof. Li. □





# Research News

## CUHK Fares Excellent in AoE Scheme

The Areas of Excellence Sub-Committee of the University Grants Committee (UGC) announced the results of the first round of the AoE scheme on 20th September 1999.

'Plant and Fungal Biotechnology', a proposal submitted by the University, was among the three projects selected for funding support for five years. It is awarded HK\$38.8 million in the form of earmarked grants. Team leader of the proposal is Prof. Samuel Sun of the Department of Biology. For details please refer to pp. 18-23.

'Information Technology', a joint proposal submitted by The Chinese University, the University of Hong Kong, and the Hong Kong University of Science and Technology, also won an allocation of HK\$51 million. Prof. Liew Soung Chang of the Department of Information Engineering represents CUHK in this joint project.

CUHK thus lays claim to 44.3 per cent of the UGC's \$126 million budget for the first ever AoE exercise in Hong Kong.

In assessing projects shortlisted from a total of 99 submissions from local tertiary institutions, the UGC paid special attention to the potential of the proposed AoE in achieving an international standard of excellence, its relevance to the social and economic development of Hong Kong, and whether it is built on the existing strengths and achievements of its mother institution.

The concept of identifying areas of excellence in UGC-funded institutions was first put forward by the UGC and endorsed by the HKSAR government in 1997. The institutions were invited to submit applications in early 1998.



## Two more 'Excellent' Research Projects

Two more CUHK projects supported by earmarked research grants were rated 'excellent' by the Research Grants Council, bringing the total number of CUHK projects so rated since 1988 to 30. The two projects are:

- **Immunohistochemical, Molecular, and Neurochemical Studies Using Neurons from Developing and Adult Cerebella of Rodents and Humans Under Normal and Pathological Conditions**

*Principal investigator:*

Prof. David Yew, Department of Anatomy

- **An Integrated Approach for Improving Urban Housing Quality in China**

*Principal investigators:*

Prof. Brian D. Sullivan\*, Dr. Ke Chen\*, and Prof. Tunney Lee\*, Department of Architecture

\* former staff member

## HK\$81.7 Million from the RGC for Research 1999–2000

A total of 141 research proposals submitted by academic and research staff of the University have been awarded competitive earmarked grants to the tune of HK\$81.7 million from the Research Grants Council (RGC) in 1999. The number of proposals supported is the highest among all local tertiary institutions. The University also received a direct allocation of HK\$16.7 million to finance small projects.

For 1999–2000, the government has made available HK\$324 million in the form of competitive earmarked grants in support of selected research proposals submitted by academic and research personnel in the UGC-funded institutions, HK\$70 million for direct allocation to the institutions to finance small projects, and HK\$17.5 million to support new initiatives aimed at encouraging group research and strengthening the research base of these institutions.

The 141 CUHK projects selected for support fall into four subject disciplines: biology and medicine (45); engineering (40); physical sciences (13); and the humanities, social sciences and business studies (43).

### Other Research Grants Add up to HK\$47.9 million

Research grants totalling some HK\$47.9 million from various local and overseas sponsors for CUHK projects were recorded during the period May to October 1999:

Sponsors	Amount Involved	Number of Projects
The Croucher Foundation	HK\$900,300	4
Health Services Research Fund	HK\$1,832,356	3
Hong Kong Society of Nephrology Ltd.	HK\$30,000	1
Industrial Support Fund	HK\$20,568,450	7
Language Fund	HK\$620,403	1
Quality Education Fund	HK\$19,523,500	9
Services Support Fund	HK\$3,499,000	1
The Rockefeller Foundation	US\$106,000	1
United Nations Educational, Scientific and Cultural Organization	US\$5,807	1
Population Council of the United States	US\$2,000	1

### Research Highlights

The *Chinese University Bulletin* regularly carries articles on research projects funded by the Research Grants Council. Three such articles can be found on pp. 34–45. □



# Doing Chemistry with Computers

A New Approach Independent of Experiments

**W**hile chemistry is an experimental science, theory (or calculation) is now playing a role of increasing importance with the use of the computer and the development of new calculation methods.

The key to theoretical chemistry is molecular quantum mechanics, which deals with the transference or transformation of energy on a molecular scale. Soon after the formulation of quantum mechanics in the 1920s, it was recognized that, in principle, the application of quantum mechanical principles could lead to accurate predictions of many chemical phenomena. This approach of studying chemistry is called *ab initio*—Latin for ‘from the beginning’, an approach independent of any experiment other than for the determination of fundamental constants such as the mass and charge of an electron.

Yet although the quantum mechanical principles for understanding the electronic structure of matter had been recognized, the mathematics involved in the application of these principles was intractable at best in the 50 years that followed. But with the steady development of new theoretical and computational methods, as well as the availability of bigger and faster computers with reasonable price tags in the last 20 years or so, calculations have sometimes become more accurate than experiments, or at least accurate enough to be useful to experimentalists. Calculations are also less costly, less time-consuming, and easier to control. And computational results often serve as a guide to experimental chemists attempting to synthesize or discover new molecules.

An indication that calculations in chemistry have been receiving increasing attention in the science community was provided by the award of the 1998 Nobel prize in chemistry to Profs. J.A. Pople and W. Kohn for their contributions to quantum chemistry.

## Apt for Studying Transient Chemical Systems

In a project conducted by Profs. Li Wai Kee and So Suk Ping of the University's Department of Chemistry, *ab initio* calculations were employed to study the structures and energetics of novel chemical species, in particular, chemical systems known as 'transient reaction intermediates'. As their name suggests, the lifetime of these species is exceedingly short, usually in the order of 0.000,000,000,000,1 second. Hence, experimental investigations of them are extremely difficult and expensive, and high-level calculations offer the least costly, and very likely, the most reliable way to study them. Indeed, as testified by the project, in the study of transient intermediates, experiment and calculation frequently complement each other.

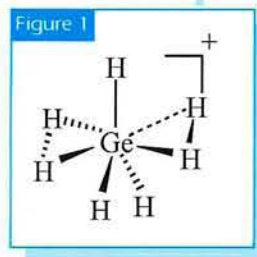


### Some Typical Results

The CUHK researchers, in collaboration with their counterparts from Iowa State University in the US and the University of Science and Technology of China, studied many novel chemical systems using the earmarked grant of HK\$502,000 from the Research Grants Council.

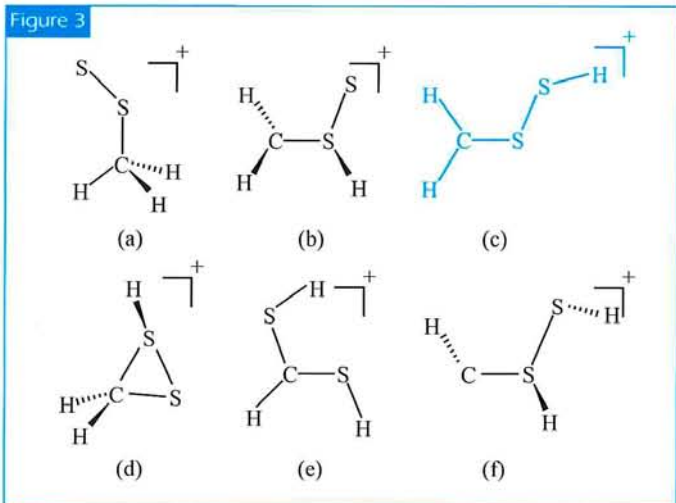
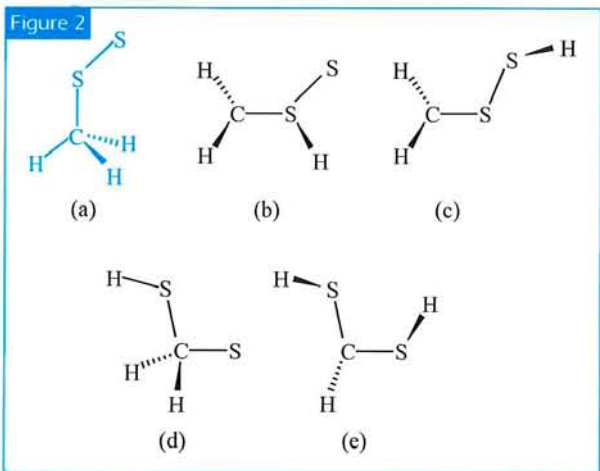
In the first part of the project the researchers studied unstable and short-lived novel chemical species. In one representative study, they attempted to predict the structure of the cation  $\text{GeH}_7^+$  (a species consisting of one germanium atom and seven hydrogen atoms with an overall charge of +1), which has never been observed experimentally, using the analogous species  $\text{CH}_7^+$  (one carbon atom with seven hydrogen atoms with a charge of +1) and  $\text{SiH}_7^+$  (one silicon atom with seven hydrogen atoms with a charge of +1) which are known to exist. The cations, i.e., ions with a positive charge, are considered analogous because germanium, carbon, and silicon are elements of the same family.  $\text{GeH}_7^+$  is expected to be detected in the foreseeable future since its analogous species have already been detected.

It is recognized that the eight atoms in  $\text{GeH}_7^+$  may be arranged in numerous ways and that  $\text{GeH}_7^+$  will adopt a structure with the least electronic energy simply because the most comfortable configuration or shape for any object is the one requiring the least energy. The researchers' calculations indicated that this species has the structure shown in Figure 1, similar to that of  $\text{SiH}_7^+$  but different from that of  $\text{CH}_7^+$ . Furthermore they predicted that it only takes about 5 kcal mol<sup>-1</sup> of energy, slightly more than room temperature, to break



up  $\text{GeH}_7^+$  into  $\text{GeH}_5^+$  and  $\text{H}_2$ . This means that  $\text{GeH}_7^+$  is not a very stable species but one which should exist long enough for experimental detection and characterization, as it has been found that  $\text{SiH}_7^+$ , with a corresponding dissociation energy of about  $4.6 \text{ kcal mol}^{-1}$ , can be observed spectroscopically.

In the second part of the project, Profs. Li and So targeted novel chemical compounds which were pollution causing such as organosulfur compounds. Experiments have shown that the organosulfur compound  $\text{CH}_3\text{SSCH}_3$  breaks up into  $\text{CH}_3$ , whose structure is well known to chemists, and the sulfur-containing fragment,  $\text{CH}_3\text{S}_2^+$ , whose structure is unknown.  $\text{CH}_3\text{S}_2^+$  has many possible structures, some of which are shown in Figure 2. Combining experimental data from Iowa State University and their own computational results, the CUHK researchers deduced that the  $\text{CH}_3\text{S}_2^+$  fragment has the structure shown in Figure 2 (a). This knowledge is useful for understanding the dissociation channels of the air pollutant  $\text{CH}_3\text{SSCH}_3$ .



In a related experiment by the Iowa State researchers, light was shone on  $\text{CH}_3\text{SSCH}_3$  to simulate what happens in the atmosphere when the sun shines on pollutants in the air. This caused a reaction known as 'dissociative photoionization' wherein  $\text{CH}_3\text{SSCH}_3$  broke up into the fragments  $\text{CH}_3$  and  $\text{CH}_3\text{S}_2^+$ . (Note that the only difference between  $\text{CH}_3\text{S}_2^+$  and  $\text{CH}_3\text{S}_2$ , mentioned earlier, is that the  $\text{CH}_3\text{S}_2^+$  has one fewer electron.) Once again, while experimentalists knew that  $\text{CH}_3\text{S}_2^+$  was formed, they did not know its structure. Valence theory, which explains relations between atoms in compounds, predicts many structures for  $\text{CH}_3\text{S}_2^+$ , some of which are shown in Figure 3. By combining the quantitative data in the dissociative photoionization experiment with calculations, the researchers identified the structure of  $\text{CH}_3\text{S}_2^+$  to be the one shown in Figure 3 (c).

Another organosulfur compound related to  $\text{CH}_3\text{SSCH}_3$  is  $\text{HSCH}_2\text{CH}_2\text{SH}$ . The researchers, using calculations, discovered that  $\text{HSCH}_2\text{CH}_2\text{SH}$  requires  $77 \text{ kcal mol}^{-1}$  to split up into two  $\text{CH}_2\text{SH}$  units, and  $72 \text{ kcal mol}^{-1}$  to fragment into  $\text{HS}$  and  $\text{CH}_2\text{CH}_2\text{SH}$ . The latter dissociation is more likely to occur since it requires less electronic energy. Such 'bond energies' are important properties of these compounds.

### Where Their Significance Lies

*Ab initio* calculations provide both qualitative and quantitative results for novel chemical species. Many of these results are important in their own right and, more significantly, they are often useful in helping researchers to interpret and analyse the data they obtain from experiments done in their laboratories. Knowledge about the structure and energetics of air polluting compounds also has important implications for environmental chemists in their attempt to reduce air pollution.

Profs. Li and So were motivated to do the project because doing chemistry with computers is economical and it provides accurate results as well as reliable predictions. As the subjects of their studies are transient species, their computational results should prove to be helpful to experimentalists.

A total of 17 publications in international journals have resulted from this project. □

*Prof. So Suk Ping, professor in the Department of Chemistry, obtained his B.Sc. and B.Sc.Sp. Hon. from the University of Hong Kong in 1963 and 1964 respectively, and his Ph.D. from McMaster University in 1969. He joined the Department of Chemistry of The Chinese University in the same year.*



*Prof. Li Wai Kee, professor of chemistry, obtained his BS from the University of Illinois in 1964 and his Ph.D. from the University of Michigan in 1968. He joined the Department of Chemistry of The Chinese University in the same year.*





# Crisis in Midlife ?

## The Quality of Marital Life, Parent-Child Relations, and Mental Health of Midlife Adults

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Popular Chinese wisdom has it that 'when a person reaches the midlife years, everything is sad.' Portrayals abound in Woody Allen films of men and women in middle adulthood — awkward, bored with life, beset with fears of their own mortality and an array of other feelings of insecurity...in short, having what is known as a 'midlife crisis'.

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### What Is Midlife Crisis?

The concept of 'mid-life crisis' originates from the observations made by a French business theorist and psychologist, Elliott Jacques, on a group of artists. Jacques noticed that his subjects, in their fervent strive to reach new heights in their career, felt by the time they were in their forties that time was running out. Plagued by different psychological problems, lacking interest in life, and even doubting the meaning of existence, they had all the symptoms that constituted a 'midlife crisis'. If unresolved it may lead to doubts about one's choices in marriage and career. The combination of anxieties may also lead to insomnia and depression.

Despite the numerous stories and stereotypes surrounding midlife crisis, there has been a paucity of scientific data and research literature on the phenomenon. Systematic research on midlife began only 15 years ago.

To make up for this gap in social research, Prof. Daniel Shek, Prof. M.C. Lam, Prof. K.W. Tsoi, and Miss C.M. Lam of the Department of Social Work began investigating the midlife adjustment of Hong Kong Chinese with a grant of HK\$490,000 from the Research Grants Council (RGC). Their project, entitled 'Marital Adjustment, Parent-Child Relations, and the Psychological Well-being of Midlife Married Adults in Hong Kong', was rated 'excellent' by the RGC in 1997.



## Developing Sound Assessment Instruments

Due to the dire lack of tools for assessing marital adjustment and parent-child relations, the researchers had to first develop assessment tools before they set questionnaires to collect data. This was the most difficult part of the study. Over 10 scales were developed in this study. While some were borrowed from studies conducted overseas, most were designed by the researchers themselves.

- Before using each scale, the researchers conducted a validation and a reliability study to ensure that it is valid and reliable.

Reliability refers to the consistency of measurement. If the same test administered several times to the same respondents yields significantly different results, the reliability of the test is low. The scales used in the project had been tested and retested on the same pool of middle-aged subjects at a two-week interval to find out if the results were consistent.

Validity refers to whether the scale can really measure what it sets out to measure. Scales for measuring marital adjustment, for example, should be able to detect differences in marital quality. The researchers gave related scales to two different groups of people, one with members who were inclined to divorce or receiving marriage counselling, and hence, were assumed to display undesirable marital quality; and the other with members whose marriages were considered exemplary or had not sought marital help for the previous six months. If the scales were valid, they should be able to distinguish between members of the two groups.

To ascertain the validity and reliability of the scales, the researchers conducted a validation study with 172 participants and a test-retest reliability study with 90 participants. They found that the instruments developed were acceptable.

They then sent purpose-trained students to gather information about marital adjustment, parent-child relations, and psychological well-being of 1,501 respondents through the administering of questionnaires and face-to-face interviews.

## Major Findings

### *Impact of Marital Quality and Parent-Child Relation on Midlife Adjustment*

The researchers discovered that respondents who displayed more signs of marital maladjustment showed more psychiatric and midlife crisis symptoms. On the whole, the quality of family life was more predictive of the well-being of women than men. And compared to parent-child relations, marital quality had a stronger impact on adjustment to 'midlife crisis'.

### *Impact of Marital Quality on Parent-Child Relations: the Spill-over Effect and the Compensatory Effect*

The results indicate that respondents with better marital quality also had better relations with their children and a more positive attitude to the value of children. These findings support the spill-over hypothesis which states that when a marriage deteriorates, it would adversely influence parent-child relation and the parents' perception of the value of children. No support was found in this study for the opposite compensatory effect, i.e., the worse the marital quality, the better the parent-child relation.

### *Women the 'Losers'?*

Another interesting finding is that married men displayed fewer psychiatric and midlife crisis symptoms, and had better mental health than married women. Women were less satisfied with their marriages and displayed less positive mental well-being, probably due to the greater burden and pressure on them engendered by their social roles. On the whole married men contribute less to but benefit more from marital relations. Hence, from the viewpoint of gains from marital or family life, married women appear to be the 'losers'. The findings on gender differences in marital quality and psychological well-being are given in Figure 1 and Figure 2.

### *How Prevalent is 'Midlife Crisis'?*

Some theories posit 'midlife crisis' as a universal developmental phenomenon in adult development. However the researchers found that although some respondents were dissatisfied with their work and

personal achievement, the majority did not display excessive midlife crisis symptoms. Hence, the findings do not lend strong support to the existence of a normative midlife crisis in Chinese culture. Besides research conducted within the last 10 years in the West indicate that 'midlife crisis' does not necessarily have to be a 'crisis'. If the adults prepare in advance for the pressures brought about by changes in their physical condition, family, and children, they can turn a 'crisis' into an 'opportunity'.

### The Value of Children

While the participants generally agreed that children have positive implications for their personal growth, spousal relations, and the happiness and sense of wholeness of their family, they also associated parenthood with increased financial burden and personal sacrifice. The researchers also found that, in contrast to the emphasis attached to the economic and posterity values of children in Chinese culture, Chinese parents in Hong Kong clearly do not give strong emphasis to such values.

### Midlife Adults Do Not Seek Help

The results also showed that the majority of the respondents showed meagre knowledge and understanding of family casework service and family life education programmes in Hong Kong. Close to 20 per cent of the respondents felt that seeking help was 'embarrassing'. When encountering family problems, over half did not seek help and those who did seldom did so from social workers. Prof. Shek pointed out that because of the desire to 'save face', Chinese people do not like to 'wash their dirty linen in public'. As they value being able to 'pull themselves up by their own bootstraps', they have a lot of hangups to overcome before they can seek help for their own troubles.

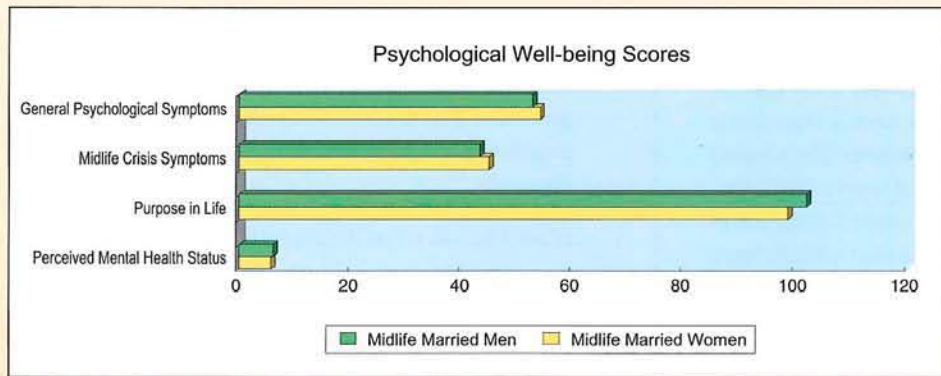
### Attitude to Life and Midlife Adjustment

Does having different attitudes to life have any effect on midlife adjustment? The researchers found that participants with a more positive attitude towards life had better mental health, marital quality, and perceived relationship with their children. They also had a more positive perception of the value of children.

The researchers believe that having a positive attitude towards life in midlife is an important factor in midlife adjustment.



**Figure 1** Marital quality of married men and women—women have a relatively poorer perception of their marital lives than men



**Figure 2** Psychological well-being of married men and women—women display more psychological symptoms and have a lower level of positive mental health

## Academic and Practical Contributions

What do the researchers think is the greatest contribution of this study? Prof. Shek said that it is the first study exploring midlife adults in a Chinese cultural environment. It deepens understanding of the midlife adjustment of Chinese people, and enables social scientists to assess the applicability of Western models to Chinese people, as well as to construct models with specific relevance to the Chinese.

Prof. Shek also believes that the findings have applied relevance in the prevention or reduction of midlife maladjustment, offering insight into various treatment and intervention possibilities. For example, since it has been shown that married women in midlife are under greater pressure than their spouses, more work can be done along the lines of marriage counselling for women; since it has been shown that marital adjustment is a major factor influencing the mental health of midlife adults, they should be encouraged to raise the quality of married life and build up a positive attitude towards life. Last but not least, the instruments developed in this project can be used to identify in advance which married individuals are 'at risk', alerting them to the need of preparing for midlife adjustment. □

**Prof. Daniel Shek** (Ph.D., JP) is a psychologist with special interest in human development, mental health, social science research methods and psychosocial assessment. He has published extensively on the mental health of Chinese people, parenting, and the role of the family on adult and adolescent development. He is a consulting editor of the *Journal of Clinical Psychology* and a member of the editorial board of *International Journal of Adolescent Medicine and Health*, *Research on Social Work Practice*, *Journal of Youth Studies*, and *Hong Kong Journal of Social Work*. He is a fellow of the Hong Kong Psychological Society.

**Prof. Lam Mong-chow** received her undergraduate education at The Chinese University, and obtained her MSW from the University of Minnesota and her Ph.D. from the University of Southern California. In 1976 she joined the Social Work Department of The Chinese University as a field instructor, becoming lecturer in 1980, and senior lecturer in 1989. Her research interests are mainly in clinical social work practice, families, child rearing practices, midlife adjustments, and issues related to new arrivals from the mainland.



From left: Prof. Tsoi Kcon-wah, Prof. Daniel Shek, Miss Lam Ching-man, Prof Lam Mong-chow.

**Prof. Tsoi Kcon-wah** received his training in social work at The Chinese University and obtained his B.S.Sc. in 1979. After working in Caritas-Hong Kong as a social worker for three years, Prof. Tsoi went to study social planning at the London School of Economics and Political Science where he received his M.Sc. in 1983. Prof. Tsoi joined The Chinese University as a full-time field instructor in social work in October 1983 and became a lecturer in social work in 1987. Prof. Tsoi's research interests are income security for seniors, the service needs of new arrivals from the mainland, and social work with drug abusers.

**Miss Lam Ching-man** graduated from The Chinese University and furthered her training at McGill University in Canada, where she obtained her master degree in social work in 1986. Miss Lam joined The Chinese University in 1987 as a field instructor in the Department of Social Work. Her research interests are in adolescence and family studies, process and outcome evaluation in family therapy, and the exploration of cultural issues in social work practice.

# Cross-border Corruption in International Marketing Decisions

Analysing the Dilemma of Business Executives

## Threat to Business Integrity

**B**ribery has been the leading ethical issue in business activities. International bribery is more complicated and has greater repercussions than bribery within one country. Cross-border corruption has become a serious issue in international business especially in Asia's commercial activities. It is threatening the integrity of all cross-border business transactions. If not dealt with properly, it will undermine the effectiveness and efficiency of business in Asia and the world.



Prof. Lee Kam-hon, professor of marketing, began studying cross-border corruption in the US-Hong Kong-China mainland context with a grant of \$161,000 from the Research Grants Council (RGC) in 1994.

## Concern for Cross-border Bribery

Cross-border bribery is bribery aimed at manipulating business decisions made by a public official or a corporate employee across the national border in such a way that they are no longer motivated by the interest of the employer.

Since World War II, the US has been a major force in the world economy. The issue of cross-border bribery by American companies was first brought to public attention by the Foreign Corrupt Practices Act (FCPA) in 1977. It was recognized that many American companies were involved in questionable foreign payments in order to gain an edge over their competitors. It remains unclear, however, whether the Act has had any detrimental effect on the competitiveness of American companies in international business. In the context of US-China business, again little is known about the impact of the Act.

Cross-border corruption exists also in business activities between mainland China and Hong Kong. According to a press release issued by the Independent Commission Against Corruption (ICAC) in July 1993, in some 50 Hong Kong companies with a production base on the mainland, payments intended to bribe accounted for three to five per cent of their operating costs. While the Prevention of Bribery Ordinance in Hong Kong gave the ICAC the power to combat corruption in Hong Kong, there has been no legislation similar to the FCPA that deals with cross-border corruption.

Mainland Chinese authorities too show much concern about the issue. The Premier's Office has issued Corruption Prevention Directives to tackle the problem. In theory such directives should, together with the measures taken in the US and Hong Kong, be able to wipe out cross-border corruption among these three places. However this is far from the reality.

## Corruption Perception Index Indicates Worsening Situation

Transparency International, a non-government organization headquartered in Berlin, compiles regularly Corruption Perception Indices (CPI) for different economies in the world. Literally a poll of polls, the CPI combines the subjective evaluation of businessmen, political analysts, and ordinary citizens. With 10 being the highest score, and meaning the least corrupt, corruption in Hong Kong, China mainland, and the US has been on the rise over the last 15 years (see Table 1). It would be worthwhile to study the factors behind this phenomenon.

	CPI score			
	1980-85	1988-92	1996	1997
US	8.41	7.76	7.66	7.61
Hong Kong	7.35	6.87	7.01	7.28
China	5.13	4.73	2.43	2.88

*Source: Transparency International*

Table 1

## How Ethical Norms Operate

The influence of ethical norms on cross-border business transactions can be examined from three different perspectives: cultural relativism, ethical imperialism (universalism), and the development of contextualized hypernorms.

Cultural relativism in this study means that business executives from different countries have different ethical convictions, while universalism refers to the tendency in executives to observe the same moral principles regardless of where their business operations take place. The development of contextualized hypernorms means that while business executives may consistently uphold the same moral principles, they will also take environmental factors into consideration when evaluating how to react to an ethical issue.

To investigate which perspective best describes business executives' attitude towards cross-border corruption, one must assess the impact of their cultural background, the nature of the bribe, the business environment, and the inter-relationships between these three variables.

If cultural background is found to have an obvious influence on cross-border corruption, cultural relativism prevails: business executives with different cultural backgrounds do go by different cultural norms. For example, corruption is frowned upon in Hong Kong and Singapore but in many southeast Asian countries, it is seen as a normal way of getting things done.

If business executives are found to behave very similarly under different business environments, universalism prevails. For example, employees of American companies may remain uncorrupt no matter whether they are operating in the US or in other business environments.

If the interactive relationship between the nature of the bribe and the business environment is found to have a significant impact on cross-border corruption, contextualized hypernorms prevail because the executives tend to react to each bribery proposal differently in the context of the specific business environments. For example, some transnational European companies train their employees to follow a strict code of behaviour regarding bribery when operating in developed countries, but to relax their adherence when operating in relatively less developed regions.

## Research Results

The subjects in Prof. Lee's study were three groups of 60 business executives each from mainland China, Hong Kong, and the US respectively. Prof. Lee designed an in-basket questionnaire with simulated business situations to solicit managerial decisions from the respondents. Would they resort to bribery to gain an edge or a favour under such and such circumstances?

The results of the survey clearly show that the respondents' cultural background, the nature of the bribe, and the interactive effect of the nature of the bribe and the business environment have a significant effect on the respondents' behaviour. Business environment alone, however, has negligible impact.



The results of the study support cultural relativism since cultural background is found to play a significant role; they also support universalism since the same ethical convictions were upheld in different business environments. Prof. Lee furthermore detected a strong interactive effect between the nature of the bribe and the operating business environment, with the respondents taking environmental factors into consideration when deciding how to respond to an ethical issue. This provides support for the perspective of contextualized hypernorms.

From such findings, it can be said that cultural relativism, universalism, and contextualized hypernorms are complementary rather than competing concepts in explaining the behaviour of the respondents.

### Education the Most Effective Way Against Corruption

The findings of the study have important implications for combatting cross-border corruption. For instance education can be used to shape people's attitudes towards corruption. This is a time-consuming process but its effects are long-lasting. An expedient alternative would be to pass legislation to deter business executives from giving or receiving bribes. It is widely believed that the FCPA has been useful in policing the behaviour of American businessmen abroad. And many in Hong Kong, including the ICAC, have considered using similar legal measures to combat cross-border corruption. Such legislation can also give ethical businessmen a legitimate excuse to decline a bribe.

However Prof. Lee's study also shows that American business executives as well as their counterparts from Hong Kong and mainland China behave much the same way in a foreign country as they do at home — executives who do not practise bribery at home do not do so abroad while those who do at home do so abroad. This indicates that such behaviour has little to do with the existence or absence of legal control. It would, therefore, be more effective to launch education programmes to cultivate an anti-corruption culture, and to explain how corruption is defined in different business environments. The ideal scenario, of course, is for us to exercise creativity in turning legally and ethically controversial proposals into acceptable business arrangements. □



*Prof. Lee Kam-hon obtained his B.Com. and his M.Com. from The Chinese University in 1967 and 1969 respectively, and his Ph.D. in marketing from Northwestern University in the US in 1975. He joined the University as assistant lecturer in business administration in 1969, becoming lecturer in marketing and international business in 1975, senior lecturer in 1981, and reader in 1987. He was appointed professor of marketing in 1992. His research interests include business negotiations, cross-cultural marketing, and marketing ethics.*



# 5



## Members Old and New Celebrate New Asia's

New Asia College was founded in 1949 by the late Dr. Ch'ien Mu and a group of scholars from mainland China. Throughout the years, the college has upheld its founders' ideals of preserving traditional Chinese culture, and balancing it with Western learning, and has produced many outstanding graduates to serve Hong Kong.

To celebrate the college's Golden Jubilee this year, the college itself and relevant departments, alumni associations, and student bodies organized an array of celebratory activities running into the new millennium. They include the Golden Jubilee Public Lectures, academic conferences, an art exhibition, a dramatic performance, an expedition to poverty-stricken regions in mainland China, a photography contest, and an alumni homecoming. All reflect the college's teaching ideals, the founders' contributions, and the students' concern for the community they live in.

The Golden Jubilee Seminar on 13th and 14th July was a major event in the celebrations. Profs. Yu Ying-shih (left 1), Ambrose King (right 1), and S.H. Liu (left 2) were the officiating guests.

### Golden Jubilee Lectures

Highlights of the celebration were four Golden Jubilee Public Lectures delivered by Prof. Lee Yuan Tseh, Nobel laureate in chemistry, Mr. George Yong-Boon Yeo, Minister for Trade and Industry in Singapore, Prof. Ambrose King, pro-vice-chancellor of the University, and Prof. Yang Chen-ning, Nobel laureate in physics. The theme of the lectures was the relationship between Chinese culture and education, politics, society, and science respectively.

In Prof. Lee Yuan Tseh's lecture on 24th September, he pointed out that current education systems in Chinese societies tend to emphasize only conformity and uniformity which will stifle the development of talents. He believed that the Confucian precepts of 'In instruction there is no grading into categories' and 'Each according to his talent' should be upheld to look after different aspects of the students' development. Education for all is a prerequisite of progress, and we should start by examining the interaction between our own culture and our education system.



Mr. George Yeo spoke on 'Chinese Culture and Politics' on 29th October from various aspects: artificial stability; the idea of one China; the stability of the Chinese family; weakness of the independent Chinese civil society; genius of Chinese statecraft; and Confucianism – past, present and future.



### Academic Activities

The New Asia Fund was established in 1998 to sponsor academic activities held in celebration of the Golden Jubilee. Over 20 events covering the areas of medicine, safety, literature, nursing, culture, biology, art, library studies, biochemistry, chemistry, and social science, benefited from its sponsorship.



Over a hundred overseas and local writers and scholars attended the International Conference on Hong Kong Literature, the largest conference of its kind in the territory, from 15th to 17th April. About 60 papers were presented investigating the past, present, and future of Hong Kong literature. Seen here is Prof. P.C. Leung (standing), head of New Asia College, speaking at the opening ceremony.





# Golden Jubilee

## Student Activities

Many of the celebratory activities were targeted at students, specifically at nurturing their interests and increasing their social awareness. Student-organized events included a dramatic performance, relief services for the poor in mainland China, an astronomy camp, a photography contest, a martial arts night, and a concert.

Twenty members of the New Asia Social Service Group visited the town of Baiwan in Guangdong Province for five days in May. During the period, they visited peasant households (right), and also set up a reading room and a book lending system for a primary school with funds they had raised earlier.

The New Asia Social Service Group also hosted a seminar on 'How to Eradicate Poverty in China' on 31st July.



The New Asia Drama Society performed two short plays, *Star Falling Across Yellow Earth* and *Missing Person*, both original pieces by New Asia students, in Sha Tin Town Hall in mid-May. Above is a shot from *Star Falling Across Yellow Earth*.



## Alumni Activities

The Golden Jubilee celebrations also offered the occasion for an alumni reunion. The college alumni association hosted a homecoming ball and a Golden Jubilee banquet (left) on 10th and 14th July respectively.

## Re-experiencing the New Asia Spirit

Head of the college, Prof. P.C. Leung said that, seen in a certain light, the Golden Jubilee celebrations have a special significance, as the vast majority of the college's students and teachers since its founding days were able to attend them if they so wanted. This will certainly not be the case for its centennial celebrations.

He hopes that through the activities, all members of the college will re-experience the New Asia spirit and pass on the college's unique tradition to the next generation of students and teachers. □





### **New Council Members**

- Mr. Lee Woo-sing has been elected by the Board of Trustees of Shaw College to serve as a member of the University Council for three years from 10th September 1999, succeeding Prof. Ma Lin.
- Ms. Yan Hau-yee, Lina has been elected by the Convocation as a member of the Council for three years from 1st September 1999, by virtue of her capacity as chairman of the Convocation, succeeding Mr. Lee Kam-chung.

### **New Faculty Deans**

#### **Faculty of Medicine**

Prof. Sydney Chung, professor of surgery, was elected dean of medicine for three years from 1st July 1999.



#### **Faculty of Business Administration**

Prof. Japhet Law, professor in the Department of Decision Sciences and Managerial Economics, was elected dean of business administration for three years from 1st August 1999.



### **Distinguished Researcher in Plant Taxonomy Awarded Honorary Professorship**

Dr. Hu Shiu-ying has been appointed honorary professor of Chinese medicine from 19th August 1999.

Dr. Hu is a distinguished research scientist in the field of plant taxonomy. She received her undergraduate education in mainland China and obtained her Ph.D. from Harvard University in 1949. In the 50 years that followed, she played a leading role in plant taxonomy research at Harvard's Arnold Arboretum. Currently she is an Emeritus Senior Research Fellow at Harvard University and Honorary Senior Research Fellow at the CUHK Department of Biology.

At the age of 92, Dr. Hu remains an active researcher, travelling extensively to study plants and herbs and continuing with research writing. She has been influential in shaping the development of Chinese medicinal research at CUHK, contributing to the establishment of the Chinese Medicinal Material Research Centre in the 1970s. She has also been instrumental in the setting up of the new School of Chinese Medicine at the University.

### **University Members Honoured**

Three members of the University were recently honoured for their contributions to their respective fields and to the community.

- Prof. Liu Pak Wai, pro-vice-chancellor and professor of economics, was awarded the Silver Bauhinia Star of the HKSAR on 1st July 1999.
- Prof. Joseph C.K. Lee, former dean of medicine and professor of morbid anatomy, was presented the Gold Medal and Certificate, the highest award of the International Academy of Pathology (IAP), for his 'outstanding contribution to international pathology education and research' at a ceremony held in June 1999. IAP is an international organization primarily concerned with the education of pathologists.
- Prof. Alexander Molassiotis, assistant professor in the Department of Nursing, was conferred the award of Eminent Scientist of the Year 1998 by the Asia-Pacific Chapter of the International Research Promotion Council (IRPC) for his work in the field of health care and nursing. IRPC is a non-profit international organization started in 1993 to promote and encourage research activities in science and medicine.

## Outstanding Achievements of CUHK Students

### Another Rhodes Scholar from CUHK



Daniel T.Y. Hui, a graduate student of the University, has been chosen as this year's Rhodes Scholar from Hong Kong. He graduated with first class honours in his BA studies in English at CUHK and completed his MA studies in Applied English Linguistics in June, and will be leaving for the UK to start his M.Phil. studies in general linguistics and comparative philology at Oxford University in October 1999.

Daniel has maintained consistently outstanding academic performance

throughout his academic career, and is an outgoing young man of great integrity.

The Rhodes Scholarships were established in 1902. Since 1985, one Hong Kong student has been honoured with the award each year. Daniel is the third CUHK student to have won the award in four years since 1996.

### Computer Programming Champion

Engineering students from the University won the eighth Association for Computing Machinery (ACM) Hong Kong Scholastic Programming Contest and the Computer Chinese Checkers Competition held in June 1999.

The members of the programming team who captured the championship were computer science and engineering students Justine Wan, Kwok Chi-leong, and Wong Ho-yin. They were required to write programs on the spot to solve as many problems as they could within three and a half hours. The team also represented Hong Kong to participate in the ACM Far East regional programming contest held in Bangladesh in November 1999 and came first among a total of 34 teams. They will automatically qualify for the ACM/ICPC World Finals to be held in Orlando, Florida, in March 2000.

Kenny Lam, a Ph.D. systems engineering and engineering management student, won first prize for the third time in three consecutive years in the Computer Chinese Checkers Competition. He had to write a program which was played against other programs in the competition.

### Brilliant Student Investors

Emil K.Y. Wong, an MBA student of the University, won the University Elite Investor Competition organized by the *Hong Kong Economic Journal* in June. Two BBA students Lai Chi-ho and Yuen Chi-lok also won outstanding prizes. The three students were



From left: Yuen Chi-lok, Prof. Andrew Chan of the Faculty of Business Administration, Emil K.Y. Wong, Lai Chi-ho

awarded their prizes at the award presentation ceremony held on 30th June 1999 at the Furama Kempinski Hotel.

Part of the education programme of the *Hong Kong Economic Journal*, the competition aims at encouraging university students to acquire financial knowledge and think creatively through writing investment portfolios, securities analysis reports, and corporate business plans. The panel of judges include academics, bankers, and journalists.

#### *More Victories for the Rowing Teams*

CUHK rowing teams beat their counterparts from HKU to capture the championship trophy in both the men's and the women's races in the Thirteenth Intersvarsity Rowing Championship held on the Shing Mun River on 19th September 1999. It was the third



consecutive win for the men's team in the coxed-eight 3,000-metre race and the fifth for the women's in the coxed-four 1,500-metre race.

#### *Medical Student and Scientist Receive AACR Young Investigators Award*



Two members of the Nasopharyngeal Carcinoma Research Group of the Department of Anatomical and Cellular Pathology, Mr. Andrew S.C. Chan (left) and Dr. Wang Guoli (right), were recently awarded the Young Investigators Award by the American Association for Cancer Research (AACR).

The awards enable them to present their papers at the AACR annual meeting held in Philadelphia and give them the opportunity to forge relationships with scientists in the field from different parts of the world.

Mr. Andrew S.C. Chan is a graduate student doing research on 'Genetically Abnormal Clones in Normal Nasopharyngeal Epithelium from Southern Chinese' under the supervision of Prof. Joseph C.K. Lee. Dr. Wang Guoli is working on a project entitled 'Inhibiting Tumourigenic Potential by Restoring Functional p16 in NPC Cells'.

## Awards for Staff and Alumni

### Book Award for Sociologist

The book *Gender and the South China Miracle*, written by Prof. Lee Ching-kwan of the Department of Sociology, has won this year's Outstanding Book Award of the American Sociological Association (Asia and Asian Americans Section).

### Distinguished Young Scientist Award

- Dr. Chen Xiao Ming, an alumna of the University, won the 1999 Distinguished Young Scientist Award of the Qiu Shi Science and Technologies Foundation in China. He studied for his Ph.D. under the supervision of Prof. Thomas Mak of the Chemistry Department from 1989 to 1992. He is currently professor and associate dean of the School of Chemistry and Chemical Engineering at Zhongshan University.
- Dr. Ronald C.C. Wang, a graduate of the University, has been awarded a post-doctoral scholarship from DAAD, the German Academic Exchange Service. The first Hong Kong student to have won the



award, Dr. Wang completed his Ph.D. studies in Obstetrics and Gynaecology at the University in February 1998. He then joined the Biosciences Special

Programme at the Institute of Biochemistry at Germany's Humboldt University from May to August 1999 as a visiting post-doctoral fellow.

## Professorial Appointments

### Professor of Chinese Medicine



Prof. Kong Yun Cheung has been appointed professor of Chinese medicine from 1st August 1999.

Prof. Kong obtained his doctoral degree from The Free University of Brussels in 1965, and has held various research fellowships and visiting professorships in institutions in Europe, the US, and mainland China. He joined The Chinese University as lecturer in biology in 1968, becoming senior lecturer in biochemistry in 1974, reader in 1979, and professor of biochemistry in 1989. He was appointed director of studies of the Bachelor of Chinese Medicine Programme from 1997 to 1998 and director of the School of Chinese Medicine in February 1999.

Prof. Kong's current research interests are active principles in Chinese medicines, endocrinology of reproduction, natural product immunomodulators, protein growth factors, and the history of Chinese science and medicine.

### Professor of Anatomy

Prof. David T. Yew has been appointed professor of anatomy from 1st August 1999.



Prof. Yew obtained his B.Sc. from The Chinese University in 1969 and his Ph.D. from Wayne State University in 1974. He also obtained a D.Sc. and a Dr.Med.(habil) from Universität der Rostock in 1988 and 1995

respectively. He joined the University as senior lecturer in anatomy in 1981, and became reader in 1990.

Prof. Yew's research interests include the visual system, laser-biological investigations, and the development and ageing of the human central nervous system.

### *Professor of Paediatrics*



Prof. Fok Tai-fai has been appointed professor of paediatrics from 1st October 1999.

Prof. Fok obtained his MB BS from the University of Hong Kong in 1975 and his MD from CUHK in 1997.

Prior to joining The Chinese University in 1984, he taught paediatrics for six years at the University of Hong Kong. He then joined the CUHK Department of Paediatrics as lecturer, was promoted to senior lecturer rank in 1987, and reader in 1995. His research interests are focussed on neonatology.

Prof. Fok is currently associate dean of the CUHK Faculty of Medicine, chairman of the training sub-committee (paediatrics) of the Hospital Authority, vice-president of the Hong Kong College of Paediatricians, and vice-president of the Hong Kong Society of Neonatal Medicine.

### *Professor of Chemistry*

Prof. Li Wai-kee has been appointed professor of chemistry from 1st October 1999.

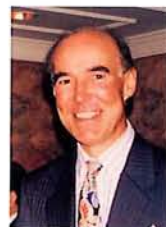


Prof. Li obtained his BS from the University of Illinois in 1964, and his Ph.D. four years later from the University of Michigan. He joined The Chinese University as lecturer in chemistry in 1968, becoming senior lecturer in 1976, and reader in 1987. He was visiting research professor to Brock University in Canada from 1977 to 1978.

Prof. Li has some 120 publications under his name and his recent research focus is computational chemistry.

### *Professor of Medicine and Therapeutics*

Prof. John Elsby Sanderson has been appointed professor of medicine and therapeutics from 1st October 1999.



Prof. Sanderson obtained his BA from Cambridge University in 1970, his M.B. B.Chir. in 1973, his MA in 1974, and his MD in 1981.

Prof. Sanderson held a visiting senior lectureship at the Department of Medicine of The Chinese University in 1992-93, was appointed senior lecturer in 1993, and promoted to the rank of reader in 1997.

His current research interests include heart failure and dilated cardiomyopathy, hypertension, ischemic heart disease, angina, and syndrome X.

### *Professor of Chemistry*

Prof. Chi Wu has been appointed professor of chemistry from 1st October 1999.



Prof. Wu received his BS in chemical physics from the University of Science and Technology of China in 1982, and his Ph.D. in physical chemistry/polymer physics from the State University of New York (SUNY) at Stony Brook in 1987. He worked as research associate at SUNY at Stony Brook from 1987 to 1989, and supervisor of the Laser Light Scattering Laboratory in the Department of Solid State Physics and Polymer Physics, BASF, in Germany from 1989 to 1992. He joined The Chinese University as lecturer in chemistry in 1992, becoming reader in 1996.

Prof. Wu specializes in using various scattering and optical techniques to study the properties of macromolecules, polymer networks and colloids. He has published extensively in reputable international journals. Recently, due to his scientific contribution to the study of single homopolymer chains in solution, he has been elected as Fellow of American Physical Society.

### **CUHK and HKUST Formalize Academic Partnership**



Prof. Arthur Li (left) and Prof. Chia-wei Woo (right)

An agreement on academic partnership was signed by vice-chancellor of The Chinese University, Prof. Arthur K.C. Li, and president of the Hong Kong University of Science and Technology, Prof. Chia-wei Woo, on 28th September 1999.

With the aim of establishing closer linkages with each other so as to be able to make greater contributions to tertiary education, the two universities formed the alliance which allows students to enrol in the other party's courses, and which encourages staff and departments to conduct joint research, organize joint seminars and conferences, and share academic resources.

### **A New Supercomputer to Support Data-intensive Research**

In order to accommodate the ever increasing volume of data intensive research work at the University, the Computer Services Centre/ Information Technology Service Unit recently installed another high performance supercomputer, a Sun Enterprise 6500. With ten 336MHz UltraSparc CPUs, four gigabytes of memory, and more than 240 gigabytes of usable disk storage, it can perform high-speed data retrieval as well as data mining and data analysis.

The Sun Enterprise 6500 is suited for use in data-intensive research requiring high computing power to draw focussed information and classification from large pools of raw data.

### **Conferences/Workshops/Seminars**

- Symposium on Corporate Governance and Disclosures, 27th March 1999, School of Accountancy;
- Symposium on German as a Second Foreign Language in East Asia — New Horizons, 27th to 30th April 1999, Department of Modern Languages and Intercultural Studies and Goethe-Institut Hong Kong;
- Meeting of WHO Partners on Active Ageing, 30th April and 1st May 1999, the CUHK World Health Organization Collaborating Centre for Sports Medicine and Health Promotion;
- Telemedicine Conference, 6th May 1999, Faculty of Medicine and Shantou University Medical College;
- Conference on 'How to Build a New Life for Ex-Offenders and Drug Abusers', 11th May 1999, Chung Chi College, Centre for Asian Pacific Studies and the Centre for Public Policy Studies of Lingnan University;

- National Symposium on Foetal Monitoring, 19th to 21st May 1999, Department of Obstetrics and Gynaecology and the Chinese Association of Obstetrics and Gynaecology;
- Workshop on School Leadership in Hong Kong: A Profile for a New Century, 19th to 24th May 1999, Hong Kong Centre for the Development of Educational Leadership;
- Summer Course for Mainland Microbiologists, 31st May to 14th June 1999, Department of Microbiology;
- Conference on Psychology in Hong Kong: Entering the 21st Century, 5th June 1999, Hong Kong Psychological Society and Department of Psychology;
- International Conference on Tradition and Change: Identity, Gender, and Culture in South China, 3rd to 5th June 1999, Department of Anthropology and New Asia College;
- First Pan-Pacific Nursing Conference, 9th to 11th June 1999, Department of Nursing;
- Annual Meeting of the Asia-Pacific Decision Sciences Institute, 9th to 12th June 1999, Department of Decision Sciences and Managerial Economics;
- Second Asian Pacific Psychological Forum, 21st to 25th June 1999, Department of Biology and New Asia College;
- Interdisciplinary Conference on 'In Search of Boundaries: Communication, Nation-States and Cultural Identities', 25th and 26th June 1999, School of Journalism and Communication and New Asia College;
- First Regional Conference on College English Teaching, 15th to 17th June 1999, English Language Teaching Unit and the College English Teaching and Research Association of Guangdong;
- The 1999 IEEE Hong Kong Symposium on Robotics and Control, 2nd and 3rd July 1999, Department of Mechanical and Automation Engineering;
- International Conference on Global Supply Chain Management: Into the 21st Century, 13th and 14th August 1999, The Chinese University and the Hong Kong University of Science and Technology;
- Eighth International Symposium of the Society of Chinese Bioscientists in America (SCBA), 14th to 19th August 1999, The SCBA and the University's Department of Biochemistry;
- First Hong Kong Diabetes and Cardiovascular Risk Factors: East Meets West Symposium, 21st August 1999, Department of Medicine and Therapeutics;
- Seminar on Hong Kong Childhood Obesity, 28th September 1999, Department of Sports Science and Physical Education, Department of Paediatrics, and Health Promotion and Education Department of the Adventist Hospital.

## Lectures

### Wei Lun Lecture



Prof. Vaclav Smil, FRSC, distinguished professor in the Department of Geography of the University of Manitoba in Canada, delivered a lecture entitled 'Long Term Perspectives on China's Energy 1950-2050' on 7th October 1999.



### Sir Edward Youde Memorial Fund Public Lecture



Prof. Lee Kuo Hsiung (left 4), Kenan Professor of Medicinal Chemistry at the University of North Carolina at Chapel Hill in the US, gave a lecture on 'Structural Modification of Active Principles from Chinese Medicine' on 25th August 1999.

### Professorial Inaugural Lecture



Prof. Joseph Sung, professor of medicine and therapeutics, delivered his inaugural lecture entitled 'Eat, Drink and Be Happy' on 26th March 1999.

## Medical News

### New Treatments, New Findings, and New Inventions

#### Innovative Treatment for Bleeding Peptic Ulcers

Bleeding peptic ulcers are a common medical emergency with a mortality rate of around 10 per cent. Hong Kong has one of the



Demonstrating the use of heater probe for thermal treatment

highest incidences of the condition in the world. While surgery used to be the only effective means to stop bleeding, the Endoscopy Centre of the Faculty of Medicine has developed a new treatment method which reduces mortality rates and speeds up patient care.

The centre's research during the past 10 years demonstrated that the injection of adrenaline via the endoscope reduces the need for blood transfusion and surgery. Recently adrenaline injection was complemented by heater probe thermal treatment. Now only about three to four per cent of patients require surgery and overall mortality is around four to five per cent compared to 10 per cent reported by medical centres in the West. The treatment is especially suited for elderly patients.

#### Milestone for Paediatric Minimally Invasive Surgery

The Department of Surgery performed the world's first laparoscopic operation in May

1999 on a two-month-old infant with nesidioblastosis, a rare condition involving the excessive growth of certain pancreatic cells that results in uncontrolled insulin secretion.

Ninety-five per cent of the baby's malfunctioning pancreas was removed after a three-hour operation, allowing the output of insulin to be controlled and saving the baby from possible brain damage. In the past many infants with this condition became mentally retarded because both medical and surgical treatments were less than optimal.

#### Light Shed on Sudden Infant Death

The majority of sudden infant deaths do not have pathological cause and knowledge of the problem is limited. However genetic research carried out by the Department of Chemical Pathology and the Department of Paediatrics at the Faculty of Medicine has successfully identified a genetic disease which can cause sudden infant deaths. The findings were reported in *Human Molecular Genetics*.

What triggered intensive research into the phenomenon at the University was a case in which two infants from the same family died suddenly. Primary carnitine deficiency, an inherited metabolic disease, was diagnosed for both deaths. Further research led to the identification of a gene associated with primary carnitine deficiency, now called OCTN2. It is believed that mutations in OCTN2 lead to this disease. Now early genetic diagnosis of affected children is possible and appropriate treatment can be provided in advance.

#### Patent for New Invention

The University has successfully applied for the US patent for a teaching model for beating heart coronary artery anastomoses newly invented by Prof. Mohammad Bashar

Izzat of the Department of Surgery. It was the ninth US patent that has been granted to the University to date.

The instrument is a model of a beating heart consisting of a moving platform which holds the model of a coronary artery. It allows training surgeons to practise performing anastomosis within a preset time.

### New Training and Research Centres

#### The Orthopaedic Learning Centre

The Orthopaedic Learning Centre of the Faculty of Medicine was officially opened on 26th April 1999.



The centre, located at the Prince of Wales Hospital, is the first of its kind in Hong Kong to train professionals to utilize new technology in the management of various musculoskeletal conditions. It was established with generous donations from Li Ka Shing Foundation Ltd., the estate of Mr. Tang Yuk Wai, and Stryker-Howmedica International.

Equipped with the latest information technology and a bioskill laboratory, this innovative and comprehensive training centre provides hands-on bioskill training for orthopaedic surgeons.

#### Epithelial Cells Biology Research Centre

The University has established the Epithelial Cell Biology Research Centre jointly with the



Academy of Military Medical Sciences in mainland China.

The epithelium, the uppermost layer of skin cells, protects body cavities and exocrine glands. Disturbance of epithelial cell functions may lead to a wide spectrum of common disorders from diarrhoea to cancer. The study on the mechanisms underlying epithelia-related diseases can lead to better treatments and drugs.

The centre was officially opened on 5th July 1999 at a ceremony held at the University. Guests attending included Prof. Arthur K.C. Li, vice-chancellor of the University, Major General Zhao Dasheng, president of the academy of Military Medical Sciences, Prof. Zhang Xinshi, vice-president of the National Natural Science Foundation of China and academician of the Chinese Academy of Sciences, and Mr. Chu Zhi-nong, Head of the Department of Education, Science and Technology, Xinhua News Agency (Hong Kong Branch).

#### Joint Research Centre for Biomedical Engineering

The Chinese University and Zhejiang University have established the Joint Research Centre for Biomedical Engineering to promote interdisciplinary collaboration among researchers in engineering, medicine, and science.

Biomedical engineering is an evolving field of engineering that applies innovative engineering technologies to solve medical and health care problems. Biomedical engineers are involved in the development of innovative methods for reliable and non-invasive diagnosis, monitoring, and treatment of diseases and injuries. Joint research projects between the two universities cover biomedical information engineering such as telemedicine and cyber-hospital, bio-electronics, engineering in Chinese medicine, medical visualization, medical instrumentation and drug delivery devices, neural engineering, and the development of biomaterials.

Officiating at the opening ceremony of the centre held on 4th August 1999 were Prof. Zhang Junsheng, chancellor of Zhejiang University, Dr. E.K. Yeoh, chief executive of the Hospital Authority, and Prof. Arthur K. C. Li, vice-chancellor of the University.



Guest touring the centre after the opening ceremony

## Art Exhibitions

### Art Museum Exhibition

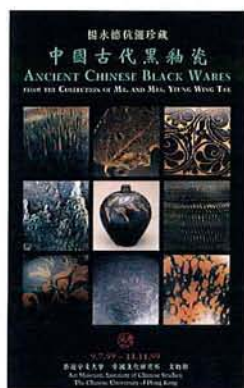
**Ancient Chinese Black Wares from the Collection of Mr. and Mrs. Yeung Wing Tak** took place at the west-wing galleries of the Art Museum from 9th July to 14th November 1999.

The exhibition featured a fine selection of over 100 pieces of Chinese black wares — ancient Chinese ceramics with black or blackish-brown glaze.

The exhibits date from the Six Dynasties to the Ming period. The great variety of glaze effects demonstrates the stylistic diversity of black wares produced in various periods and regions in China.



Vase with stenciled plum blossom reserved against black glazed ground, Jizhou ware, Jiangxi, Southern Song



## Art Exhibitions



The Department of Fine Arts staged three exhibitions from May to June 1999.

- Graduation Exhibition 'Tsui Hau Kam Tin' took place from 29th May–27th June 1999 at the west-wing galleries of the Art Museum.
- The Fifth Master of Fine Arts Thesis Exhibition took place from 29th May–13th June 1999 at Cheng Ming Building, Hui's Gallery, and Humanities Building.
- Annual Exhibition 1999 of the Department of Fine Arts: 'Pending Repair' took place from 29th May to 13th June 1999 at 2/F and 3/F, Cheng Ming Building. □

### Inspiration-Exploration Exhibition

The exhibition displayed work produced by the 46 architecture students enrolled in the micro 3-D design course initiated by the Department of Architecture in collaboration with the Industrial Centre of Hong Kong Polytechnic University. The exhibition was held from 19th to 25th May 1999 in Pao's Gallery of the Hong Kong Art Centre.











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