science@HKU 港理

FACULTY OF SCIENCE NEWSLETTER
香 港 大 學 理 學 院 通 訊

ISSUE NO. 5
第 五 期

www.hku.hk/science/news/newsletter.html

Diverse Learning Experience of Our Science Students

In addition to the traditional way of disseminating knowledge through lectures, tutorials and laboratories, the Faculty encourages our students to reach out to gain their unique learning experiences through the participation of the various learning programmes provided. These programmes may include exchange programmes, field trips, international forums, internships, or undergraduate research projects. We believe that these experiences can help them to broaden their horizon, enhance their communication skills and cultural understanding which can better prepare them to face the challenges in this ever-changing world. Let's hear from our students how they embarked their journey of diverse learning at HKU. None of their experiences are alike and that's how they make a difference.

Field Trip Participant

TANG Chin Cheung

Year 2, BSc (Environmental Life Science)
Joined "Inspire Antarctic Expedition 5" in 2007
Currently on exchange at the University of Auckland

Cheung (right in the middle) and his teammates of the Antarctic expedition.

"Nothing is more rewarding than experiencing the nature. Having acquainted Robert Swan, a British adventurer at a public talk at HKU, I was selected to join "Inspire Antarctic Expedition 5", the expedition to Antarctica last year. The objective of the trip was to establish an education centre in the Antarctica and to observe the environmental depletion in Antarctica.

During the trip, I had the chance to witness the collapse of a ten-level-high ice berg due to climate change. Another impressive scenery I found in Antarctic Peninsula was that more and more plants were growing there, which was also a chain effect of global warming.

What I experienced in the trip was indeed a mirror of the environment of Earth. As a student of Environmental Life Science, I really hope that I will be able to contribute in conducting research on the ecology of Antarctica in the future, and find out how to conserve the continent before it is too late."

Final Year Project Experience

Vivian was the student marshal of the Faculty Graduation Ceremony 2007.

LAM Vivian

BSc (major in Ecology & Biodiversity) Graduate 2007
Student Marshal of Faculty of Science Graduation Ceremony 2007
Vivian Lam is now pursuing a MPhil degree in Ecology & Biodiversity at HKU

"After these three amazing years, I am confident to say that I could not have made a better choice by choosing to study Environmental Life Science at the University of Hong Kong.

My challenging final year project did bring a lot of memories to me - it transformed myself into a "wet market lady", shopping for sharks early in the morning when the ships returned to dock. It also included the skills of stalking old fisherman in the parks to tell me all they know about sharks without being scolded. One might think that this is a weird project to be working on, but in fact, all these were done in order to shed light on the past shark fishery of Hong Kong and to prove the urgency of shark protection before they go extinct! I must admit that it is difficult and unconventional, but the successes of my supervisor and teachers continue to motivate me and keep me going. This is what we do.

Hoping to have a bigger impact on the conservation of sharks in this region, I am now furthering my project to include the reproductive biology of one of the most common sharks in the South China Sea - the Spadenose Shark. I believe that with our hard work and persistence, Hong Kong's biodiversity could be saved and this is not just the lives of animals, but also the livelihoods of thousands that depend on these resources."

FROM THE EDITOR

Dear readers,

We all agree that entering university is a milestone and university life is very different from secondary school life. But not all realize that university life itself has changed quite a lot in the past few years in HKU.

Students now have more opportunity to participate in various kinds of exchange programmes and activities. Some Students are even allowed to conduct supervised scientific research. In this issue of science@HKU, our students will share with you some of their wonderful experiences in HKU.

Yours sincerely,
Dr H F Chau
Chief Editor

Published in April, 2008

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Students with Unique Experiences

Mainland Student

XIA Xian Fang Donna

Year 2, BSc (double major in Chemistry and Biochemistry)
Student Ambassador of Faculty of Science

"Being a student of HKU is the starting point of my adventurous life. The liberality and freedom here allow me to make every single choice I desire, and open my eyes to pursue the career of scientist.

The University has offered various kinds of supports, ranging from excellent teachers, talented peers, advanced instruments and technology, and any other supports one can imagine. Fantastic! I had the chance to organize a series of seminars of different science disciplines with over 20 volunteers during the summer vacation, where we met 4 to 5 times each week, sharing the knowledge acquired from books and our teachers on topics ranging from chemical biology to physics. Together we explored this fascinating world and the underlying principles or mechanisms from different angles. Through these seminars, I have made friends with many passionate and talented students who are pursuing the same values.

Apart from studies, I have also engaged myself in different activities like being the student ambassador of the Faculty. No doubt, exposing to other cultures and experiencing the diversity in HKU have enriched my life and broaden my horizons. Legend starts here in HKU!"

Seminar held by Donna (in the first row) and other volunteers during summer vacation.

Participant of Internship Programme

KWAN Yue Hong Stephen

BSc (Actuarial Science) Graduate 2008
Joined internship programme at AIA (January-July 2007)
Now employed as Actuarial Assistant, AIA

"My university life has been filled with excitement and wonders. Through the internship programme offered by AIA, with the kind help from the Department of Statistics and Actuarial Science, I was able to explore the thrilling life of an actuary in a leading insurance company. Such experience has given me a vital link between my study and real life application. In addition, being an international university student, I was given chances to explore the world through overseas internship in New York and study trip in China. To me, every bit of the time I spent in HKU has equipped me well for the challenges ahead as an actuary in a global company like AIA."

Stephen (left) with Edgar, his supervisor in AIA, who is an alumnus of HKU Science.

Participant of Overseas Research Fellowship Scheme

LEUNG Hoi Tik Alvin

Year 3, BSc (Mathematics/Physics)
Participant of London International Youth Science Forum, summer 2006
Overseas Research Fellowship Scheme, Department of Physics at Stanford University, summer 2007

Alvin (left) and his fellow student at Stanford University

"Apart from traditional lectures, HKU offers many enrichment programmes to broaden the horizons of students. In summer 2006, I attended London International Youth Science Forum. It was a thrilling trip that allowed me to share my view and make friends with young scientists from all over the world. Last summer, I joined the Overseas Research Fellowship Scheme and worked with top scientists at Stanford University on a mini project in Biophysics and knew more about pursuing a career in scientific research.

During my 10-week stay at Stanford University, I had learnt not only the technical knowledge essential in handling my research project, but also experienced, for the first time in my life, the true American lifestyle. My research project was mainly on computer simulations of phospholipid bilayers, so normally I had to spend at least 7 hours a day in front of my laptop. Every Tuesday afternoon, I joined the seminars specially designed for undergraduate summer research students and normally small laboratory visits followed. Unlike normal lectures in which course materials are usually presented in a clear way, research projects often involve solving problems that nobody has ever tackled before. Perseverance is one of the key qualities I believe researchers need to possess.

After all these events, I have become more enthusiastic about my graduate study!"

London International Youth Science Forum

Field Trip Participant

CHAU Barry

BSc (Earth Sciences) Graduate 2007
Participant of Tibet Geological Research Field Camp 2006

"With all my 30 classmates and a dozen of professors and tutors, I was doing a Tibet geological research field camp in June 2006. While we were standing 4km above the sea level, safety is far beyond everything. We spent a few days for acclimatized the low-oxygen condition. Field-work was hard as we exposed directly to the wild, and have to get along with the arid, inclined and slippery rocks on the mountain, yet, it is still significantly interesting. We examined the rock types and traced the geological boundaries as well as deduced the history of the region. I had chance to visit the domestic family, saw the Mountain Everest and of course shot many astonishing pictures, which was absolutely an extraordinary experience to me ever."

Outgoing Exchange Students

CHAN Hoi Shan Queenie

Year 3, BSc (Earth Sciences)
Exchange study at Australian National University, Australia (January - June 2007)

"Earth Sciences intrigue me because it combines different parts of science into a single field of study. Studying Earth Sciences is fascinating and captivating. It has completely satisfied my thirst for science.

Some people say that studying science in Hong Kong is like "sailing against the current". But so long as a person is given the opportunity, while opportunities are never scarce at HKU, I believe that his hard work and enthusiasm in the subject will always allow him to forge ahead.
Hardly can I forget the most treasurable memories of my exchange life at the Australian National University in Australia. Learning outside the classroom is an imperative part of the university life to help one to think beyond the box, and this academic journey is exactly what it is. Nothing can make you as independent as when you are utterly away from your home. The magnificent terrain and the wonderful people in Australia have added up to the most cherished memories that I have gained in this fabulous academic journey.

Scholarship in Earth Sciences might well be regarded as a long winded expedition in pursuit of one's idealistic or romantic dream in Hong Kong. It is however the road that I am determined to set my feet on."

XUE Ying

Year 3, BSc (Actuarial Science)
Exchange study at the University of Waterloo, Canada (September 2006- June 2007)
Accepted by the Graduate School of Business, Stanford University as a PhD student in Finance

"The rigorous and interdisciplinary Actuarial Science curriculum at HKU has provided me with a good quantitative foundation for my future studies as a finance PhD student at the Stanford University Graduate School of Business.

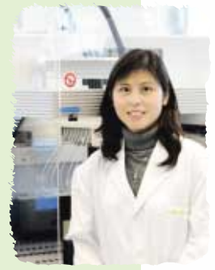
At HKU, not only have I had the opportunity to learn from the most accomplished Faculty which is constantly advancing the frontiers of statistics and actuarial science innovatively, but I am also glad to know a class of highly motivated, aspiring, and hardworking fellow students. My other exciting experiences include participating in the London International Youth Science Forum 2006 and studying at University of Waterloo through the HKU Worldwide Exchange Programme, where I had the opportunity to get exposure to a full range of quantitative finance courses and engage in fascinating research projects. At Waterloo, I also enjoyed the privilege of auditing postgraduate courses in risk management, which reinforced my intense interest in this discipline and prompted me to further my studies at Stanford.

Most of my classmates at HKU find their business careers as actuaries at prominent insurance companies and consulting firms, financial engineers and investment bankers at prestigious financial institutions, or asset managers at large mutual funds or hedge funds, while the remaining choose to pursue graduate degrees like I do. "

Hear from Our Alumni

HO Ngai Man Emmie

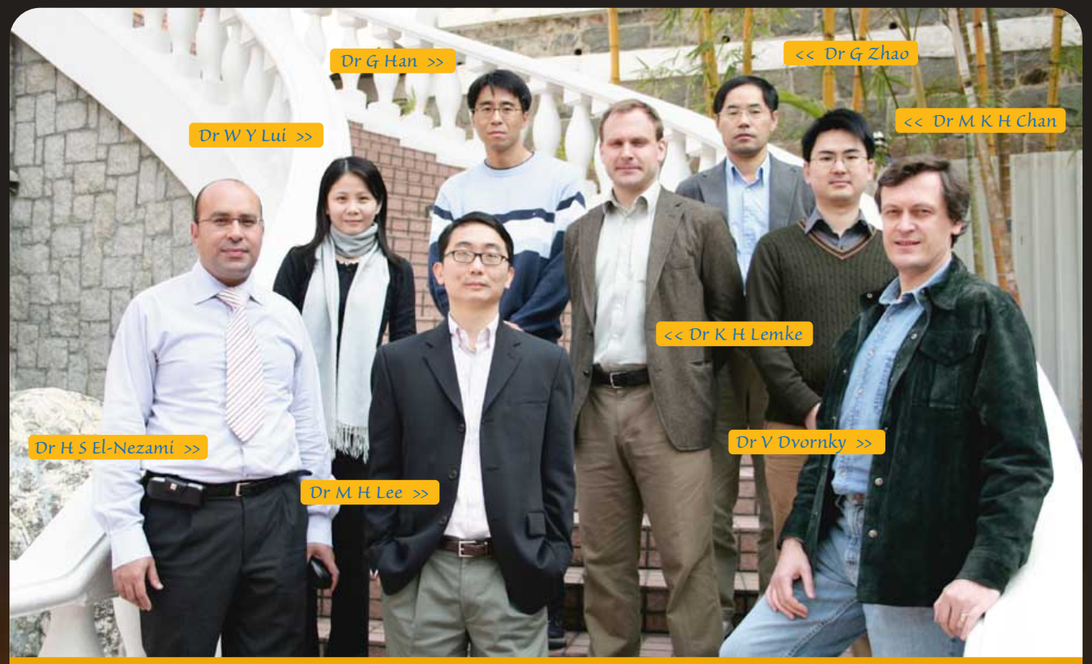
BSc (Chemistry) Graduate 1997
PhD (Chemistry) Graduate 2000
Racing Chemist, Hong Kong Jockey Club



"Studying Chemistry at HKU was truly an enjoyable and rewarding experience to me. It provided me with solid background in all disciplines of chemistry. Through the vigorous scientific training over these six years of study, I had equipped myself with the knowledge and skills to develop my career in chemistry. Currently I am working as a Racing Chemist in the Racing Laboratory of the Hong Kong Jockey Club. The major role of the Racing Laboratory is to detect and confirm the presence of prohibited substances in horse and jockey samples contrary to the Rules of Racing. I am glad that my lab and I could take part in **2008 Olympic Games** by contributing to the testing of horse samples from equestrian events.

The Bachelor and PhD degrees of Chemistry have paved me the way for a promising career. Without doubt I would make the same choice if I were ever to choose again. "

Meet Our New Teachers



Quite a few new faces have joined the Faculty since the University launched its Centenary Recruitment Plan in which 200 professoriate staff will be recruited in 2007 to 2009. The Faculty has 14 positions under Centenary Recruitment Plan and in the past few months, eight new colleagues from different countries, including Germany, Australia, Ukraine, Canada, UK, USA and China have joined us.

In the Department of Mathematics, we have ***Dr M K H Chan (Assistant Professor)*** whose research interest is scientific computing namely finite element modelling of spherical dynamos with application in Solar dynamos, geodynamics and planetary dynamos. Another colleague is ***Dr G Han (Assistant Professor)*** and his research interests are ergodic theory, probability theory and statistics, with an emphasis on their applications to information and coding history.

The three new faces in the Department of Earth Sciences are ***Dr K H Lemke (Assistant Professor)*** who investigates in a variety of topics that range from the basic understanding of biomolecule stability in natural hydrothermal systems to the structure and distribution of molecular clusters in low-density fluids, ***Dr M H Lee (Associate Professor)*** who is interested in computer simulations and analytic theory to study the formation and evolution of planetary systems, and the primary research interests of ***Dr G Zhao (Associate Professor)*** are two fronts - understanding the early evolution of the Earth through studying geological records of the North China Craton, and reconstructing the Paleo-Mesoproterozoic supercontinent Columbia (Nuna).

In the School of Biological Sciences, we have ***Dr H S El-Nezami (Associate Professor)*** whose research are on characterizing, assessing and developing approaches to reduce the risk of human exposure to food and environmental carcinogens, especially those risks associated with exposure to mycotoxins and hepatitis viruses. His ultimate research goal is to develop novel dietary approaches that would improve the quality of life of vulnerable populations (pregnant and lactating mothers, infants and young children), especially in developing countries. ***Dr W Y Lui's (Assistant Professor)*** research is focused on the molecular regulation of junction proteins and the ubiquitination pathways in the testis. ***Dr V Dvornyk (Associate Professor)*** is interested in the evolution of circadian clock systems in prokaryotes and eukaryotes, and also the genetic basis of menopause and menarche.

Share Their Pride

External Awards

The endeavours of teachers and researchers are always regarded as priceless assets of the Faculty. Recent prestigious awards received by our teachers do not only allow their contributions to be honoured, but also inspire us and the community to learn from their dedication to excellence. Congratulations to them !

Professor N Mok, Chair of Mathematics, was conferred *second class award of the State Natural Science Award 2007* on the basis of his research programme "Complex geometry on symmetric and homogeneous spaces".

Professor T W K Fung (right), Chair of Statistics and Actuarial Science, was awarded the *Croucher Senior Research Fellowship 2008-09* for his research distinction in statistical generics.

Professor C M Che, Hui Wai Hann Chair of Chemistry, Department of Chemistry, had won *the Leader of the Year 2007* award in the Education/ Research Category of Sing Tao News Corporation Limited and the The Standard Newspaper Publishing Limited.

Internal Awards

Professor Yam

Professor V W W Yam, Chair of Chemistry, was granted the highest research honour of the University, the *Distinguished Research Achievement Award 2006-07*, to recognize her research achievements in inorganic and organometallic chemistry.

Professor Leung

Professor F C C Leung, School of Biological Sciences, was appointed as the University *Teaching Fellow 2006-07*, in recognition of his commitment to promote excellence in teaching.

Professor Chye

Professor M L Chye, School of Biological Sciences, was conferred the award *Outstanding Researcher Award 2006-07* by the University, for her exceptional research accomplishments of international merit in plant molecular biology and plant biotechnology.

Professor Dudgeon

Professor D Dudgeon, School of Biological Sciences, was granted the *Award for Teaching Excellence 2006-07* by the Faculty to honour his outstanding teaching performance and promotion of teaching excellence.

Dr Wong

Dr A S T Wong, School of Biological Sciences, was granted the *Outstanding Young Researcher Award 2006-07*, for her research accomplishments and involvement in high-impact applied research work including cell adhesion and signal transduction in cancer.

Professor Chan

Professor L S Chan, Department of Earth Sciences, was granted the *Award for Service Contribution 2006-07* by the Faculty to recognize his devotion in serving the Faculty and the community.

Dr Chiu

Dr P Chiu, Department of Chemistry, was awarded the *Research Output Prize 2006-07* for her remarkable efforts in research on the total synthesis of pseudolaric acid A.

For details, please visit:
http://www.hku.hk/science/news/awards.html

Introduction of New Majors

Major of Astronomy

by Dr J C S Pun, Department of Physics

When you look at the beautiful starry night sky, have you ever wondered how it comes to its existence? For thousands of years, people have been amazed by the beautiful and seemingly eternal night sky. Ancient civilizations, including China, shared a long history of astronomical observations, making astronomy one of the oldest branches of science. Modern astronomy is about observing and explaining the various phenomena in the universe, such as the origin and evolution of planets, our solar system, and galaxies.

Since 1994-95, the Department of Physics has been offering introductory courses in astronomy. The courses have been immensely popular, regularly attracting over 500 students every year. In 2003-04, the Physics and Astronomy theme was offered to provide a systematic training in astronomy and astrophysics. Starting from 2008-09, the Faculty of Science will offer for the first time in Hong Kong a major in Astronomy. Students enrolled in this major are expected to receive trainings in both the theoretical and practical aspects of astronomy. We intend to equip the students with the knowledge both to operate a small telescope and to analyze the observations taken from large research telescopes, including the 40cm-diameter optical telescope and the 2.4m-diameter radio telescope on campus. We expect graduates of this major will be well equipped to pursue research in related scientific disciplines. Moreover, the graduates will also be prepared for careers as teachers, scientists in industry or government, and researchers in other fields.

Major in Microbiology

by Dr S B Pointing, School of Biological Sciences

Microbiology is at the forefront of many exciting developments in biology, biochemistry, medicine, environmental science and biotechnology. This new Major was specifically developed to train graduates in the skills sought by employers in science-related industries.

The Major provides a thorough training in microbiology with a strong emphasis on modern molecular and biochemical approaches. Study involves a range of core subjects but students also have the opportunity to select courses to match their own interests and career goals. Specialization is currently possible in immunology and basic medical microbiology, molecular microbiology, environmental microbiology and also applied aspects such as biotechnology and food microbiology. The Minor is designed for those following a Major in another discipline such as Biochemistry, Biotechnology or Food and Nutritional Science, who wish to enhance their skills in a complementary subject. All courses are fully supported by on-line material designed to maximize students learning potential plus a range of exciting practical classes where hands-on experience in modern laboratory techniques is acquired. Field visits to medical, forensic and industrial microbiology laboratories provide students with valuable exposure to potential employers in Hong Kong.

Microbiology will appeal to students looking for a thorough training in a growing scientific discipline recognized as of key importance in the 21st Century. The skills learned during this degree will create graduates that will be sought after as professional scientists both in Hong Kong and overseas.

For details, please visit: http://www.hku.hk/science/

IAU Symposium 251 - Pondering Origins of Life

One of the talks of IAU Sympsium 251

How did life begin on Earth? This is probably the most important question in science, but also the most difficult one to answer. About 170 scientists representing 24 nations gathered at HKU and took part in the International Astronomical Union (IAU) Symposium 251 to discuss new evidence collected for the controversial issue from February 18-22, 2008.

With the theme "Organic Matter in Space", the symposium had brought together an international interdisciplinary group of researchers in astronomy, solar system science, and laboratory spectroscopy to share and discuss a topic of very high current scientific interest, in the hope of stimulating new ideas and seek solutions to the many unsolved mysteries associated with the frontiers of origin, evolution, and distribution of organic compounds in space. The debate mainly fell into three categories: the nature of organic compounds in stars; the observation of organic compounds in the solar system, including comets, asteroids, meteors and planetary dust; and laboratory simulations of extraterrestrial organic compounds and their spectroscopic properties.

Heading to the Antarctic

by Dr S B Pointing, School of Biological Sciences

Research Team in the Antarctic Dry Valleys

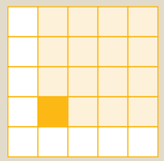
Two researchers from the School of Biological Sciences were participants in an international expedition to the Antarctic in January 2008. Dr Steve Pointing and Dr Maggie Lau joined a project jointly funded by Antarctica New Zealand and the United States National Science Foundation to map novel microbial biodiversity within the polar deserts of the Antarctic Dry Valleys, regarded as the coldest and driest environment on Earth. Their work will inform research in astrobiology where the goal is to understand the limits for life and its distribution in Mars-like habitats such as Antarctica. A further goal is to apply the data on diversity in these highly sensitive ecosystems to issues of climate change effects on the biosphere. During their work in Antarctica Pointing and Lau made several exciting findings, including the first record of an unusual symbiosis between an alga and fungus that survives in the harsh deserts of the Dry Valleys by growing within porous rocks.

Make a Guess:

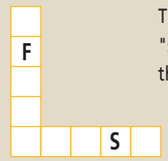
Can you identify this?

Prize : $50 book token
Deadline: Tuesday, June 10, 2008
Please email your answer together with your name and school (for students), to scinews@hku.hk. FIVE winners will be drawn randomly from the contestants who give the correct answer.

Answer to last Issue's Quiz:



When m = n, the winning strategy for the first player is as follow. The first player first selects the following black box and then removes it as well as those grey boxes.



Then what the first player needs to do is to "steal" the second player's strategy by using the symmetry of the L shaped board.

Winners of the last issue's quiz will be informed individually.

Summer Science Institute: an Inspirational Experience

Since its first launch in 2002, the Summer Science Institute (SSI) has become a centerpiece of summer science learning activities in Hong Kong which offers science-rich, fun-filled experiences to scientifically-talented secondary school students. Through the introduction of ranges of science-related activities, it helps the particiapants to broaden their perspectives on sciences and have a glimpse of the university life. Some of the students were even resolved to pursue their studies in Science after joining the camp.

Sharing of participants:

AU Ka Man

2007 BSc (Chemistry) Graduate
Au Ka Man is now pursuing a PhD degree in Chemistry at HKU
Secondary school attended: Belilios Public School

"In SSI, students are allowed to have hands-on experience in different fields of science through participating in a number of workshops, Plenary Lectures, mini project and a project presentation. Top scholars are invited to share their work with students. Students can therefore have a much deeper insight about the latest research and development in various scientific fields, and would definitely be able to clarify their interest in science. For me, SSI was one of the most remarkable events that I have ever joined."

LAM Hang Yee Chloe

Year 1, BSc (Biotechnology)
Secondary School attended: True Light Middle School of Hong Kong

"The fascinating experiences gained from campus, lectures, workshops, laboratories, and residential hall during SSI let me know that what I am looking for are science and the university life of HKU. Lectures and workshops were inspiring and ignited my passion towards science while group games and hall life were fun, and high table dinner was another unique experience.

After SSI, I knew that HKU Bachelor of Science was my choice. Not only because it allows me to declare major after being admitted, but also because I longed to be HKU science student after SSI."

Public Lectures

- **November 23, 2007:** "Euler and His Path from the 18th Century to the 21st Century" by Professor M K Siu, Department of Mathematics
- **January 23, 2008:** "Star Dust: the Cosmic Seeds of Life" by Professor S Kwok, Dean of Science and Chair Professor of Physics
- **April 9, 2008:** "The Next Great Extinction? Conservation of Freshwater Biodiversity in a Warmer World" by Professor D Dudgeon, School of Biological Sciences

Upcoming Events

- **April 25, 2008,** "Interfacing Chemistry and Biology to Discovery Molecules with Function" by Professor K D Janda, The Scripps Research Institute
- **May 14-15, 2008,** JUPAS interview

Talk@MySchool Programme

The Faculty of Science has launched the new round of Talk@MySchool Programme in September 2007 with the introduction of different science disciplines and our 16-in-One single admission policy. The programme was well received by secondary schools, and more than 65 talks have been delivered to secondary schools by our teachers and colleague by February 2008. While the programme is still ongoing, Science talks in Physics, Mathematics and Chemistry disciplines are most welcomed by secondary schools teachers and students.

The Faculty has also established the Science Student Ambassadors Team. Apart from helping in the Faculty-wide functions, the Science Ambassadors also assist in the School talks to share their life and experience at HKU.

Science Talk on Ecology and Biodiversity by Professor D Dudgeon

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