

Standing on the Sturdy Oak and Scale High in Next Decade

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FACULTY OF SCIENCE THE UNIVERSITY OF HONG KONG CIENCE香港大學理學院

Message from the Chief Editor

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Science Family Achieving Excellence in Every Aspect

Research Excellence Novel Pioneer to Create Impacts

Since second half of 2019, politics divergence in Hong Kong and outbreak of coronavirus have tested our endurance, our strength and our courage. Given our own challenges and concerns, how do we maintain our equilibrium in such trying times? It seems that most of us are feeling more isolated than ever. Are we still able to achieve our shared goals collectively? It may seem impossible in other times in history; yet now with our advancement in technology and communications, we can connect without pause or delay. Distance is no longer a barrier and our sharing and exchanges can continue. It may even possible that in this trying time, new synergy of ideas will arise and different channels of exchange might open up for all of us.

Reading this newsletter by our science family, I am sure you agree with me even more that the Faculty has reached a new level of achievement. We know our minds are compelling intricate instruments powered by will and determination. Our desire to achieve has never and will never be dwarfed by a few obstacles. In fact, when facing adversary, we work harder and learn to be better than ever before.

I remember in the beginning of planning for Faculty's 80th Oak Anniversary, we aspired to "Achieve, Connect and Educate". We are glad that strong network has been built in the anniversary year. The list of our supporters in this newsletter is clear evidence of our connection. The resources will be used for educating the new generations of students and creating new knowledge. Looking at "Achieve, Connect and Educate", we see that one fuels the other as a continuous cycle.

> Let this be an opportunity for our mighty oak to expand and grow with great speed, reaching into areas never explored and tap into power previously unknown.

> > **Message from**

Chief Editor

Yours sincerely,



Professor Billy Kwok Chong CHOW Chief Editor Professor, Chair of Endocrinology

Professor Chi Ming CHE

Zhou Guangzhao Professor in Natural Sciences; Head of Chemistry

cured a projected funding of HK\$500 million for e Laboratory for Synthetic Chemistry and Chemical ology through Health@InnoHK Programme

- Received the Luigi Sacconi Medal 2020 from the Inorganic Chemistry Division of the Italian Chemical Society and the Luigi Sacconi Foundation
- Received the First Class Award in 2019 Shenzhen Science and Technology Prize from the Shenzhen Science and Technology Innovation Commission (SZSTIC) in 2019
- Elected as the Founding Member of Hong Kong Academy of Sciences in 2015 Elected as Member (Foreign Associate) of National Academy
- of Sciences, USA in 2013 Received the First-class Prize of the State Natural Science
- Award (first Hong Kong scientist to win this award) in 2006 Elected as Member of the Chinese Academy of Sciences, China in 1995

O1 What is your vision in leading the Laboratory for Synthetic Chemistry and Chemical Biology?

The Laboratory aims to promote interdisciplinary research in Synthetic Chemistry, Chemical Biology and Medicines, and to develop strong international links between Hong Kong, UK, USA and mainland China. I hold the vision that it could be a Hong Kong premier research centre in "Innovative Translational Chemistry for Health Science and Medicines", and to become an incubation centre for innovative technology start-up companies in Hong Kong.

O2 What is the significance of securing the funding? In what ways does it facilitate your research?



The funding is important to develop an ecosystem in Hong Kong for interdisciplinary research endeavour. With such, we can foster critical mass of talents who share the passion and similar views to do innovative, translational Chemistry and Biology with impactful applications in Health Science and

Medicines, nurture the next generation of young scientists and establish the infrastructure facility and platform for interactive collaboration and dialogues between academics and industry.

Hong Kong is a world-premier research centre in Translational Synthetic Chemistry and Chemical Biology. One of the impacts I want to achieve is new medicines and new modalities for anti-cancer treatment. New platinum chemotherapy with selective targeting to cancer cells and relative non-toxic natural product compounds from traditional Chinese medicines for treatment of drug resistant and metathesised cancers, can be used in combination with precision radiotherapy and immunotherapy for cancer treatment to increase the survival outcome.

O4 You once mentioned that your golden era has just arrived, how would you continue to innovate in scientific research?

Yes, I am entering my golden era of research; I would very much like to see and contribute to the quest of relative non-toxic medicines for treatment of cancer patients with improved survival outcome becoming a reality. I hope that with my experience and networks, I can help to promote Hong Kong chemistry in biological sciences and medicine, and to make impactful contributions to health science and to the society

Research to me is just experience; there is nothing called success and failure. It is a journey that I would like to get involved. With my age of over 62, now apart from merely fulfilling my curiosity, I would also like to show the beauty of research to



Spotlight – Research Excellence

University is a platform for intellectual minds to meet and exchange. In HKU Science, we strive for excellence in both teaching and research. We create knowledge and nurture generations of scientifically literate alumni to benefit humankind. Here at home of Science, the fire to pursue growth and excellence never ceases burning.

Oak Anniversary is an opportune time for us to reflect how far we have gone. After eight decades, we see the fruits of our passion and devotion. Research of our academics are internationally recognised and our students have grown into persons who excel in various fields and give back to society. Science provokes innovative ways of thinking and cultivates mentality to contribute to the world. The achievements of our academics and alumni inspire us to scale new height in next decade.

Get to know the stories of our faculties and distinguished alumni and have your passion stirred up.



"The beauty of research is its impacts."

Q3 What do you wish to achieve in next decade in scientific research?

O5 Doing research will inevitably encounter obstacles and failures, what are the motto or philosophy reflecting your value to stay persistent?

> the society, that research could actually help and benefit the society. I hope I can achieve this point through this Health@InnoHK Programme.

O6 What is your advice to young people who are interested in science and doing scientific research?

To do scientific research, one has to stay focused, always has self-reflection and tries to learn from the best, and be prepared to endure loneliness.

Professor Guochun ZHAO

(CAS), what does it mean to you?

and mainland China.

Chair Professor of Department of Earth Sciences

Professor Guanhua CHEN

Professor of Department of Chemistry

Secured a funding for the Centre of Machine Learning for Energy Materials and Devices through AIR@InnoHK Programme

- Awarded the Croucher Foundation Senior Research Fellowship in 2016
- Elected as Fellow of American Physical Society, USA in 2014
- Received the First-class Prize of the Natural Science Award from the Ministry of Education, China in 2008 (Co-winner)

O1 Being elected as a member of Chinese Academy of Sciences

It is the biggest honour to me, recognising my academic

achievements in Earth Sciences. Meanwhile it also implies

more responsibilities and obligations I should undertake,

especially in making strategic plans for the development of

Earth Sciences and training young researchers in Hong Kong

I made up my mind to become a scientist when I studied at junior high school in late 1970s. During that time the society

was in the atmosphere of admiration toward scientists, for they

contributed greatly to the advancement of the society. I was also

deeply influenced by famous Chinese scientists at that time, who

O3 How do you develop your research interests from a wide range

Q2 How were you be inspired to become a scientist?

inspired me to pursue academic career.

of subject fields?

Professor CHEN has secured a funding for the Centre of Machine Learning for Energy Materials and Devices, of which he is the Lead Principal Investigator, from Innovation and Technology Commission, HKSAR in 2019. The Centre is a multi-disciplinary programme which combines big data/ machine learning, computational science and experiment to discovery new energy materials and devices, in particular, organic light emitting diodes and solid state lithium ion battery. It comprises a lab space of 12,000 sq.ft. in Hong Kong Science Park.

- Named as Highly Cited Researcher by Clarivate Analytics in 2014 - 2019 (formerly hosted by Thomson Reuters Essential Sciences Indicators (ESI))
- Received the National Natural Science Award (First-class Prize) from the Ministry of Education, China in 2018 (Co-winner)
- Astronomy and Space Sciences in 2018
- Received the State Natural Science Award (Second-class Prize) from the Ministry of Science and Technology, China in 2014 (Co-winner)

"You may encounter many defeats, but you must not be defeated."

Q5 What are the visions or impacts you would like to achieve via you research? What is your future research goal?

My goal is to establish a new geodynamic theory that can reasonably explain the origin of ancient continents, since current plate tectonics is unsuccessful on this respect. I also wish to set up an international research centre to foster international collaboration and accomplish this goal.

Q6 Doing research will inevitably encounter obstacles and failures, what is your philosophy to stay persistent?

Ambition, hard work, learning from failure, patience and persistence make an unbeatable combination for success.

O7 What is your advice to young people who are interested in science and doing scientific research?

Success takes time and do not give up when you make mistakes. Instead, you need to learn from failures and improve yourself. You may encounter many defeats, but you must not be defeated.

Named as Highly Cited Researcher by Clarivate Analytics in 2016 2019 (formerly hosted by Thomson Reuters Essential Sciences Indicators

 Received the National Natural Science Award (First-class Prize) from the Ministry of Education, China in 2018 (Co-winner)

 Received the State Natural Science Award (Second-class Prize) from the Ministry of Science and Technology, China in 2014 (Co-winner)

Geology. I found it fun to work in mountainous areas with fresh and healthy air while my wife had to work in a lab! "From Moon to Earth." Field investigation and careful geochemical studies enabled my team to publish a large number of articles to reconstruct geological history of several island arcs and micro-continents within or surrounding the Paleo-Asian Ocean. I am pleased that our research received worldwide recognition, which are great encouragement for our on-going commitment.

Professor Wang YAO Chair Professor of Department of Physics

云思理經 1~~

 Awarded Croucher Senior Research Fellowships 2020

"Inspire the young like you were inspired."

Waals heterostructures. The path to these research interests is, to certain extent, influenced by great people that I fortunately crossed paths with - my high school Physics teacher inspired me to choose Physics as my college major; my PhD advisor shaped my research interest and style. I believe this is the great value of being a teacher: inspire young people

like myself many years ago.

interesting issues to me are how ancient continents formed at the early stage of Earth, and how and when old continents met together to form supercontinents.

My current research focuses on the

early Earth and supercontinents in

Earth's history, which stemmed from

my curiosity to unknown geological

phenomena and unresolved issues

in Earth Sciences, of which the most

O4 What is the importance of doing Earth Sciences research?

Earth is our home and thus we should know how Earth was formed and developed from initial barren conditions to current habitable environments. Such knowledge is also important for predicting our planet's future.

My research focuses on dairy science and technology – basically the processing and utilisation of milk products to enhance human health and contribute technologies that lead to new food products.

My philosophy of research is to identify important and challenging problems and seek solutions with interdisciplinary approaches, coming up with answers to welldefined questions that have both fundamental scientific and practical value.

To me, the best contribution we can make as academics is to nurture the next generation. I strive to play a role in mentorship and development of all my students accommodating a stimulating environment conductive of learning and growth, ensuring that they are able to gain a theoretical and practical understanding of their relevant subjects, pushing them to challenge themselves both academically and personally.

Professor of School of Biological Sciences Named as Highly Cited Researcher by Clarivate Analytics in 2015-2019 (formerly hosted by Thomson Reuters Essential Sciences

Professor Nagendra P SHAH

- - Received the International Dairy Foods Association Research Award in Dairy Foods Processing in 2016
 - Received the William C Haines Dairy Science Award from California Dairy Research Foundation in 2009

"Seek solutions with both fundamental scientific and practical value."





My research interests are at the interface of synthetic chemistry, medicinal chemistry and chemical biology, ultimately aiming at developing novel therapeutics. Having synthetic chemistry as my research interest because I appreciate the power and beauty of creating things that do not exist in nature with chemistry.

Over the past decade at HKU, our research lab has developed several in-house chemical tools to study biology. For the next decade, we will continue exploring biological territory beyond traditional biochemistry and recombinant technology, towards understanding and tuning of naturals systems with synthetic biomolecules.

Fruits of research shall not be restricted in the lab. We are translating our fundamental scientific findings into applications. By doing so, we can use science to benefit the humankind







- · Received The World Academy of Science (TWAS) Prize in Earth,



Professor Min SUN

Professor of Department of Earth Sciences

When I was young, I dreamt to fly to the moon. Years later, my dream has definitely changed - to figure out what happened when the Paleo-Asian Ocean was closed after its 600-million-year's development. I am not an outgoing person and so my interest in doing fieldwork came many years later after majoring in

I was always curious to understand the nature, and physics is the most fundamental layer of it. My research interests lie in the physics of guantum degrees of freedom in condensed matter, with a current focus placed on exploring spin and valley pseudospin phenomena in atomically thin two-dimensional materials and their van der







• Elected to Hong Kong Young Academy of Sciences in 2019

- Received the Rao Makineni Lecturership from American Peptide Society in 2019
- Awarded Croucher Senior Research Fellowship in 2017
- · Received Wuxi PharmaTech Life Science and Chemistry-Scholar Award in 2013

"Put heart on what you can do; strive for what others cannot do; persist in what you like to do."

The complexity and exquisiteness of life have always fascinated me. My original training as an organic chemist has provided me unique angles to view and solve puzzles in biology.

Working at the interface of chemistry and biology, my lab develops chemical tools and approaches to address key questions in epigenetics. Our research is helping to improve our understanding of the link between errors in epigenetic regulation and the development of human diseases such as cancer.

I believe that a scientist should not be bound by current knowledge and previous experience, but always be ready to take new challenges to explore an unfamiliar field. With our team's relentless effort, I hope that our research will lead to new and improved therapeutic strategies.

Dr Jin WU

Assistant Professor of School of Biological Sciences

- Received China's Excellent Young Scientists Fund in 2019 Received Best Young Investigator Paper Award from the
- Sino-Ecologists Association Overseas in 2018 Awarded Glodhaber Distinguished Fellowship of Brookhaven National Laboratory in 2017
- Awarded NASA Earth and Space Science Fellowship in 2014

Professor Xiang David LI

Professor of Department of Chemistry

• Received China's Excellent Young Scientists Fund in 2019

 Received CAPA Distinguished Faculty Award from the Chinese-American Chemistry & Chemical Biology Professors Association in 2018



 Received HKU Outstanding Young Researcher Award for 2015 -16 Received Early Career Award from the Hong Kong Research Grant Council in 2013

and keep exploring."



"Impact the world with research and education."

In view of contemporary environmental challenges tied to global warming, I am inspired to understand how ecology of global plant community can be an

important and integral part of Earth's climate, with an ultimate goal to help mitigate global warming and build a more secure future that can increase our natural ecosystems' resilience and adaptability to climate change.

In retrospect, I was greatly inspired by my teachers who instilled in me their passions and enthusiasms. Now, as a teacher, I believe that higher education should equip students with self-learning and problem-solving skills, and instill in them a broad vision of the subjects and its connections with the society. I hope my teaching can help students to develop critical thinking and strong skillsets, prepare necessary mindsets that will benefit them for life.

Dr Binzheng Zhang

Assistant Professor of Department of Earth Sciences

Space exploration is one of the greatest human nature • Received China's Excellent Young Scientists Fund in 2019 driven by curiosity. Space weather poses impacts on

- Awarded McQueen Fellowship of High Altitude Observatory NCAR in 2019
- Received UCAR Science Achievement Award in 2016 Received NASA Space Grant Award in 2014

creativity is the key."

As a theorist, my research focuses on exploring the

our GPS navigation and radio communication etc., and

on the design and operations of satellite missions to

other planets.

changing environmental conditions beyond planetary lower atmospheres, aka space weather; it involves the use of the world's most powerful supercomputers. They will also be useful in the design of future spacecraft missions by creating "virtual space environment systems" for planetary missions.

Space exploration is borderless. My goal as a teacher is to educate the general public about the fantastic part of learning space science, and also to train the next generation of space physicists.

"Space exploration is borderless, so as curiosity and imagination."



Dr Yufeng WANG

Assistant Professor of Department of Chemistry

As a chemist, I have been always fascinated by the beauty and diversity of structures of molecules, crystals, and even DNA, but realise that such structures are rare for particles. To address this problem, one of my team's key strategies is to chemically synthesise LEGO-like particles. We focus on colloidal self-assembly, the aim of which is to put together colloids – particles one hundredth the width of human hair - to form 3D superstructures and

"On top of solid understanding,

 Received Croucher Innovation Award 2019

• Recipient of Early Career Award from the Hong Kong Research Grant Council

therefore create new materials. Our effort and discovery will make an impact on emerging applications including photonics, printing, drug-delivery and nano-machinery, etc.

In pursuing scientific goals, I emphasise "conceptual novelty", which often leads to big leaps in scientific progress, but would require creativity on top of solid understanding of existing knowledge of more than one discipline.

External Accomplishments

Professor Vivian Wing Wah YAM, Philip Wong Wilson

Wong Professor in Chemistry and Energy of Department of Chemistry, was conferred the Foundation Lectureship Award 2019 by the

Federation of Asian Chemical Societies (FACS), which comprises over 30 chemical societies across Asia. With one Foundation Lectureship awarded every two years among many brilliant chemistry academics across Asia, the fellowship is naturally competitive and prestigious.



Internal Awards

University Awards

- Professor Pauline CHIU, Professor of Department of
- Dr Caroline DINGLE, Senior Lecturer of School of Biological Sciences; also received Faculty Knowledge Exchange (KE) Award 2019 with Conservation Forensic Team



Dr David Michael BAKER.

Associate Professor of School of Biological Sciences, received Outstanding Young Researcher Award 2018 - 19

Professor Wai Ki CHING,

Professor of Department of Mathematics, received Outstanding Research Student Supervisor Award 2018-19





Professor Xiang David LI, Professor of Department of Chemistry, received Faculty Research Output Prize 2018 - 19



Dr Joseph R MICHALSKI, Associate Professor of Department of Earth Sciences, received Faculty Research Output Prize 2017-18





Spotlight – Faculty Achievements

Dr Moriaki YASUHARA, Associate Professor of School of Biological Sciences, was

by the Ecological Society of Japan, recognising his outstanding research achievements and societal contributions in the field of aquatic ecology.



Faculty Awards

Dr Jetty Chung Yung LEE, Senior Lecturer of School of Biological ciences, received Award for Te Excellence 2018-19

Excellent Teaching Assistant Award 2018 - 19

- Mr Ayon Ahmed HASSAN, PhD student of School of **Biological Sciences**
- Mr Cody Lee COLLEPS, PhD student of Department of Earth Sciences





Ms Jovce Sok Fan LEI, Clerk of Department of Mathematics, received Award for Outstanding Professional Services Staff 2018-19







Walking through 80 years, HKU Science nurtures generations of alumni, who devote their time and effort for the betterment of society. Distinguished Alumni Award 2019 was launched to honour their commitment in striving for excellence and creating impact by science knowledge and skills.

In this exercise, 18 Distinguished Alumni were selected in celebration of our Oak Anniversary. Together with the 43 Distinguished Alumni selected on the occasion of Faculty's Platinum Jubilee in 2009, we have 61 Distinguished Alumni who excel in their walks of life, inspiring the future generations.

Distinguished Alumni 2019 were selected based on one or more of the following criteria:

Distinguished Alumni with notable achievements in science education or scientific research

Prof Shuk Mei HO 1974 BSc graduate; 1977 PhD graduate

Vice Chancellor for Research of University of Arkansas for Medical Sciences, Arkansas, USA (2019 – present) Director of Cincinnati Cancer Centre and Hayden Family Endowed Chair for Cancer Research University of Cincinnati Medical Centre, Cincinnati, USA (2013 – 2019)



Prof Frederick Koon Shing LEUNG 1977 BSc graduate

Chair Professor and Kintoy Professor in Mathematics Education, HKU Changjiang Scholar of Ministry of Education, China Hans Freudenthal Medallist 2013

Prof Man Keung SIU 1966 BSc (General) graduate; 1967 BSc (Special) graduate

Retired Professor of Department of Mathematics, HKU Honorary University Fellow, HKU

Distinguished Alumni with impressive services & contributions to society



Dr Boon Ying LEE 73 BSc (Special) graduate; 979 PhD graduate

Former Director of Hong Kong Observatory

Prof Tze Leung LAI 1967 BA graduate in Mathematics Ray Lyman Wilbur Professor of Statistics, Stanford University



Prof Kam Biu LUK

1976 BSc graduate

University

Director of Financial and Risk

Modelling Institute, Stanford

Professor of University of California, Berkeley Hung Hing Ying Distinguished Visiting Professor in Science and Technology, HKU Laureate of China's 2019 Future Science Prize Fellow of American Academy of Arts and Sciences

HKU Science

Distinguished

Alumni

Award

2019

Prof Yum Tong SIU 1963 BA graduate in Mathematics

William Elwood Byerly Professor of Mathematics, Harvard University Member of National Academy of Sciences, USA Foreign Member of Chinese Academy of Sciences



Mr Jasper Yok Sing TSANG 1968 BA graduate in Mathematics

Former President of Legislative Council Vice Chairman of Hong Kong Policy **Research Institute**

Distinguished Alumni with outstanding services & contributions to HKU



Prof Kwan Ming CHAN 1959 BSc graduate

Professor Emeritus of California State University, Long Beach, USA President of USA Chapter, HKU Science Alumni Association

Distinguished Alumni with exceptional accomplishments in their professions



Mr Yim Kwong CHAN 1966 BSc (General) graduate

Senior Consultant of AXA China Region Insurance Co. Ltd. Instigator and Founding

Member of Hong Kong Insurance Industry Coalition

Prof Paul Kwan Sing LAM 1982 BSc graduate; 1984 MPhil graduate

Executive Director of Special Projects of City University of Hong Kong Director of State Key Laboratory of Marine Pollution

Prof Alexander Ping Kong WAI 1981 BSc graduate

Deputy President and Provost of The Hong Kong Polytechnic University Vice President (Research Development) of The Hong Kong Polytechnic University

More about Science Distinguished Alumni:



Awardees in 2009:





Member of Hong Kong Exchange Fund Advisory Committee, Hong Kong Monetary Authority

Non-Executive Director of Securities and Futures Commission





Highlights – Distinguished Alumni 2019

Prof Kin Fai CHENG 1964 BSc (General) graduate; 1965 BSc (Special) graduate

Emeritus College Principal of HKU SPACE Community College

Former Dean of HKU Science

Dr Anissa Lai Kuen CHAN WONG 1980 BSc graduate

Chairman of Task Force on Review of School Curriculum

- Founding Chairman of Hong Kong Principals' Institute
- Principal of St Paul's Co-educational College (2004 – 2017)

Mr Peter Wing Leung LAI 1980 BSc graduate

Financial Commentator Fellow of Hong Kong Securities and Investment Institute Fellow of The Hong Kong Institute of Directors

Ms Oi Lin LEE

1970 BSc (Hons) graduate

Former Deputy Executive Director of Vocational Training Council Life member, Past Vice Chairman and Current Academic Advisor of Hong Kong Surface Finishing Society

Mr Chee Kuen YIP 1981 BSc graduate

Advisor of H₂OPE Centre, Water Supplies Department (2015 – present) Chief Curator of Macao Science Centre (2007 – 2012)

Chief Curator of Hong Kong Science Museum (1998 – 2007)

Reconstructing Fossil Colour and Studying Fossils with New Technology

By Dr Michael PITTMAN, Research Assistant Professor of Department of Earth Sciences

Colour and patterns are critical to understanding animal life including their ecology, physiology and behaviour. Our international team including PhD student Arindam ROY has proposed a new framework for reconstructing palaeocolour. This framework overcomes past challenges by incorporating both the chemical signatures and fossilisation potential of different pigments as well as all fossilised anatomy preserved. Laser Stimulated Fluorescence (LSF) is an important tool in this framework. This in-

house technique developed with research associate Thomas G KAYE recently showed that the first discovered fossil feather was not from the iconic early bird Archaeopteryx and that extinct enantiornithine birds – the most diverse bird group of dinosaur times - were mostly precocial: they were born ready to move around.









The first discovered fossil feather was not from the iconic early bird Archaeopteryx: Left: feather under normal light; Middle: original 1861 drawing; Right: feather under LSF confirms quill in drawing permitting a complete identification (Image Credit: Michael Pittman / Thomas G Kaye)







Millions of species are at risk of extinction, pushing our planet

towards its limits and changing nature's contributions to people,

including food production and our health. Several authors from

School of Biological Sciences recently called for win-win strategies

for conservation, across multiple scales of time and space, to

address the growing, multiple and interacting threats to biodiversity.

They published an article in the journal Trends in Ecology

& Evolution, urging for the needs of large-scale, long-term

collaboration to tackle proximal and horizon threats to biodiversity,

instead of merely focus on protecting species from immediate

and localised threats. Funding and publishing models need to be

re-evaluated to find ways to encourage integrative research that

considers current and future threats.

Press Release:

https://bit.ly/2STNWSw

Win-win Strategies to Tackle Proximal and Horizon Threats to Biodiversity

By Dr Louise ASHTON (left), Assistant Professor of School of Biological Sciences (SBS); Dr David BAKER, Associate Professor of SBS; Dr Timothy BONEBRAKE, Associate Professor of SBS; Dr Caroline DINGLE, Senior Lecturer of SBS; Ms Fengyi GUO, MPhil graduate of SBS



Space-Time Templet to Identify Proximal and Horizon Threats to Biodiversity



Enantiornithine birds were born ready to move around Left: reconstruction of hatchling. Top: feathering revealed under LSF (arrows) indicates precociality. (Image Credit: Julius T Csotonyi / Michael Pittman Thomas G Kaye)

10cm

A pristine specimen of the feathered dinosaur Anchiornis showing its preserved colour patterns. (Image Credit: Xiaoli Wang)

Archaeopteryx tps://bit.ly/38x6KqV

Discovered Cell Division Requires a Balanced Level of Non-coding RNA for Chromosome Stability

By Dr Karen Wing Yee YUEN,

Press Release:

https://bit.ly/2vEmXCg

Associate Professor of School of Biological Sciences

Our genetic information, composed of deoxyribonucleic acid (DNA), is packaged in chromosomes. Not only the protein-coding genes are important, non-protein-coding RNAs copied from DNA are found to be have vital functions recently. To ensure the genetic code is maintained accurately in all cells, each cell must distribute its chromosomes equally to its two daughter cells. Errors in chromosome separation will cause chromosome loss or gain, which may result in spontaneous abortion, genetic diseases or cancers. One chromosomal region essential for proper chromosome segregation during cell division is the centromere.



Dr Karen Wing Yee YUEN's Lab from the School of Biological Sciences discovered that centromeric DNA is used as a template to produce a non-protein-coding, centromeric RNA (cenRNA), which is crucial for centromere function and chromosome stability. The findings were recently published in one of the top multidisciplinary journals, Proceedings of the National Academy of Sciences (PNAS) in USA, and recommended by F1000Prime, which represents the top articles in biology and medical sciences.

Evaluation of Bromodomain Inhibitors as Drug Candidates in Living Cells

By Professor Xiang David LI, Professor of Department of Chemistry

Bromodomains, whose malfunctions are associated with human diseases, have emerged as "hot spots" for drug discovery, attracting inputs from both academia and pharmaceutical giants.

In humans, there are 61 different bromodomains with high structural similarity. A comprehensive evaluation of a drug candidate's cellular selectivity is important to avoid off-target toxicity.

Recently, Professor Xiang David LI's team developed the first chemical proteomics platform to comprehensively evaluate bromodomain inhibitors in living cells. Several known inhibitors were examined by the platform. The results matched perfectly

with the reported selectivity. The researchers envision that this platform can facilitate the further development of novel bromodomain inhibitors as promising therapeutic agents.



Decoding a New Sign in Chromatin Maze

By Professor Xiang David LI, Professor of Department of Chemistry; Dr Karen Wing Yee YUEN, Associate Professor of School of Biological Sciences



signs". Professor Li's team discovered a new histone modification, glutarylation at histone H4 lysine 91, that locates at 'open' chromatin where genes are highly expressed - equivalent to a road sign in the maze showing 'expressway

H4K91glu.







Press Release: https://bit.ly/38DPtTf

The chromatin, in which DNA is packaged with proteins called histones, is like a maze. Different histone modifications serve as "road signs" that give order to chromatintemplated events, such as gene expression, DNA replication and

damage repair. In a search for new chromatin "road sign", Professor Xiang David LI's team, in collaboration with Dr Karen Wing Yee YUEN's and Dr Jason Wing Hong WONG's (Biomedical Sciences) groups, identified lysine glutarylation of histone H4 lysine 91 (H4K91glu) as a novel histone mark and unraveled its regulation and function in chromatin structure and dynamics, putting us one step closer towards deciphering the yet mysterious chromatin maze. The findings open opportunities for

the development of therapeutic agents for the treatment of human diseases associated with misregulation of histone



Development of a novel chemical proteomics platform for comprehensive evaluation of bromodomain inhibitors in living cells



Press Release: https://bit.ly/2uWYZSK

A Heavyweight Stellar Champion for Dying Stars

By Professor Quentin PARKER, Professor of Department of Physics



Press Release https://bit.ly/2UlyDEy



Planetary nebulae (PN) are the ejected, ionised envelopes of dying stars. Theory indicates that they emerge from stars 1-8 times the mass of our Sun. Until now the only

evidence to back this is from stars 1-3 times bigger than our Sun with nothing at higher masses. Professor Quentin PARKER and his PhD student Fragkou presented a PN emerging from a star born with 5.5 times the mass of the Sun, published in the prestigious Nature Astronomy in September 2019. Their results, based on the rare discovery of PN BMP1613-5406 in Galactic star cluster NGC 6067 and using data from the 10m SALT telescope, confirmed larger-mass stars can form PN. The finding is contributing to a better understanding of stellar and Galactic evolution.

Making Rice Grains **Bigger** and **Better**

THE UNIVERSITY OF HONG KONG

FACULTY OF SCIENCE 香港大學理學院

64 643 41 4.21 V 41

mg⁻¹)

Grain

By Professor Mee Len CHYE (middle), Wilson and Amelia Wong Professor in Plant Biotechnology of School of Biological Sciences

> Rice provides a daily subsistence for about three billion people worldwide and its output must keep pace with a

growing global population. Professor Mee Len CHYE's Lab has identified a rice acyl-CoA-binding protein (OsACBP2) that when overexpressed in transgenic rice enhanced grain size, weight and biomass by 10%. The research project, funded by the Research Grants Council of Hong Kong and the Wilson and Amelia Wong Endowment Fund, has yielded a paper in The Plant Journal and an international patent has been filed (Patent Application No. WO 2019/104509). OsACBP2 is a lipid-binding protein that binds lipids such as acyl-CoA esters, the major precursors in seed oil production. OsACBP2 overexpression also improved nutritional value with a 10% increase in lipid content of rice bran and whole seeds. As rice bran oil is considered highly valuable because it contains bioactive components that have been reported to lower serum cholesterol and possess anti-oxidation activities, this technology would not only help address food security but also elevate nutritional properties.

One Origin of Globular Clusters around Giant Galaxies being Unveiled

By Dr Jeremy LIM, Associate Professor of Department of Physics



20'' = 7.2 kpc

Globular Clusters (GCs) - containing up to ten million stars in a densely packed sphere – are thought to have formed soon after the Universe began 13.8 billion years ago. In work utilising images from the Hubble Space Telescope and published in Nature Astronomy, an international research team led by Dr Jeremy LIM has discovered that GCs are continuing to form, even at the present time, around a giant galaxy at the center of a galaxy cluster (which contains up to about one thousand galaxies bound together by gravity).

The GCs were produced in a complex filamentary network of cool gas that extends to the outer reaches of

the giant galaxy. This cool gas precipitated from an enormous reservoir of hot gas that infuses the entire galaxy cluster.



The discovery that GCs can form over cosmic history from cooled intracluster gas helps explain the enormous population of GCs around giant galaxies. Their large range in ages helps explain the unusually large range in colors of GCs around these galaxies. Finally, the disruption of the less massive GCs contributes to the growth in size of these galaxies, helping explain why these galaxies are so large.

Predict Disease-associated Mutations of Metalloproteins

By Professor Hongzhe SUN (second right), Norman and Cecilia Yip Professor in Bioinorganic Chemistry of Department of Chemistry

Metal ions play pivotal roles either structurally or functionally in the (patho) physiology of human biological systems. It was discovered that a mutation in human genome are strongly associated with different diseases. If these mutations happen in the coding region of DNA, it might disrupt metalbinding sites of the proteins and consequently initiate severe diseases in humans. Using a deep learning approach, the team predicted diseaseassociated mutations of the metal-binding sites in a protein. This is the first deep learning approach for the prediction of disease-associated metalrelevant site mutations in metalloproteins, providing a new platform to develop potential drugs more efficiently and economically



https://bit.ly/38ivKs2



格明



Details about Wilson and Amelia Wong Professorship in Plant Biotechnology https://bit.lv/20nYurA







learning model



Predict disease associated mutations of metal-binding site



Press Release https://bit.ly/3bCHV5g **Research Stories**

Short-term Ecological Risk of Palm Stearin to Marine Ecosystems

By Professor Kenneth Mei Yee LEUNG, Professor of School of Biological Sciences & The Swire Institute of Marine Science

Immediate action for removal of the palm

government and citizens was important for

-August

2017年8月

-November

2017年11月

minimising the long-term impacts to the

stearin from the shores jointly by the

marine environmen



A lot of palm stearin were found on the shore of Repulse Bay in early August 2017

洪聖爺灣 HSYB

In August 2017, a cargo vessel accidentally released 1,000 tonnes of palm stearin (PS) into the Pearl River Estuary and about 200 tonnes of them reached the southwest coast of Hong Kong. As their impact to marine ecosystems was largely unknown at the time, Professor Kenneth Mei Yee LEUNG and his team conducted a comprehensive investigation. They found all seawater and sediment samples collected from six coastal sites were heavily contaminated by PS within 1 week of the accident, and their levels significantly decreased to preaccident levels after 4 months. Waterborne exposure to PS can inhibit the growth of microalgae, copepod and fish, and cause mortality to brine shrimp, copepod and rotifer. Fortunately, the results indicated that the negative impact of PS was relatively transient and short-term.

ess Release:



Poor Dietary Habits May Increase the Risk Factors for AMD Development

By Dr Jetty Chung Yung LEE, Senior Lecturer of School of Biological Sciences

Poor dietary habits **Exudative AMD** Nutritional status ↑ omega-6/3 fatty acid ratio ↓ Carotenoids

By integrating the above findings, the research team conducted a scientific ecological risk assessment. The results indicated that the ecological risk was very high right after the accidental spill in early August 2017 (risk quotient (RQ) at all sites >> 1). Fortunately, the ecological risk was substantially reduced after 4 months of the incident (RQ < 1 in four sites; RQ < 2 in the other two sites)





Age-related macular degeneration (AMD) is one of the most common causes of vision impairment among the elderly in Hong Kong. The major symptom involves the gradual blurring of central sight, triggered by the multifactorial degeneration of retinal cells. As the disease progresses, certain patients with atrophic AMD (dry-form) might develop macular neovascularisation (wet-form), causing rapid loss of vision. In an observational study, wet-form AMD patients in Hong Kong were deficient in fatty fish (omega-3 fatty acid) and dark green vegetables (carotenoids), and had excessive red meat (omega-6 fatty acid) in the diet, which increased the risk of developing AMD. The poor dietary habits were also associated with the generation of fatty acid oxygenated products via free radicals/ROS, which promoted inflammation and further increased the risk factors for AMD development. It is the first of such research in Asia



Press Release https://bit.lv/39B9x97







HKU-Cambridge Undergraduate Recruitment Scheme (Natural Sciences)

Cambridge-Track for Selected YSS Participants in Natural Sciences Disciplines



Study Path for YSS Students in the Cambridge Scheme (2+2+1)

HKU Ca		Cam
	YEAR I YEAR 2	YEA
	HKU Undergraduate Degree	Cambri
	Available for students in the 6901 BSc Programme majoring in: • Biochemistry • Biological Sciences • Chemistry • Earth System Science • Ecology & Biodiversity • Environmental Science • Geology	Specialisat Cambridge Astroph Biochem Chemist Earth Sc Genetics Material Patholog Or a broac
	105	Biomedi

The Scheme requires selected YSS students to spend their first 2 years at HKU Faculty of Science, and the remaining 2 or 3 years at the University of Cambridge in science disciplines (288 credits in total for the fulfillment of HKU graduation requirements).

Our Young Scientist Scheme (YSS) provides outstanding students with ample early research experiences in 6901 BSc Programme. In 2019, we have formalised an academic collaboration with the University of Cambridge (Cambridge) to offer a joint recruitment scheme for talented students admitted to YSS,

SPECIAL FEATURE

Young

enabling them to earn up to 4 degrees in natural sciences in 4-5 years starting in fall 2020 - a BSc (2 years) from HKU, a BA (2 years), an MSci (1 year) from Cambridge, as well as an MA conferred by Cambridge upon application.

Features of this Cambridge-track: • Allows selected participants in YSS of the 6901 BSc programme to pursue studies in two renowned universities

- Allows students to study abroad and experience life and culture overseas
- Nurtures future science professionals to develop innovative solutions for global challenges
- Provides ample learning opportunities to YSS students:
 - Summer Research Fellowship
 - Overseas Research Fellowship
 - International scientific conference
 - Guidance by research mentor

nbridge

R 3

YEAR 4

Physiology, Development

idge Undergraduate Degree

tion for a Natural Sciences degree at e in year 4:

& Neuroscience

• Plant Sciences

Physics

Zoology

- vsics
- nistrv
- iences
- ls Science
- d Science programme:
- al & Physical Sciences ical Sciences

YEAR 5

Cambridge Master's Degree

- Astrophysics
- Biochemistry
- Chemistry
- Earth Sciences • History and Philosophy of Science
- Materials Science
- Physics
- Systems Biology



For more details, please visit: https://bit.lv/396IYIi



The International Genetically Engineered Machine (iGEM) Competition is a golden opportunity for students to push the boundaries of synthetic biology by tackling everyday issues facing the world. In 2019, we are proud that the iGEM team led by HKU Science students won the iGEM Silver Medal at the Giant Jamboree in 2019! Congratulations and let's hear what they say!

IGEM – be the Inspiration to Address Global Problems



iGEM Competition is an eye-opening experience that gave us the opportunity to tackle global problems with the advancements of synthetic biology. By providing a friendly international environment and a high level of flexibility, iGEM encouraged us to find creative solutions to global problems and spread our knowledge to the world.

This year our team embarked on a fascinating journey to develop a novel genetically engineered system aimed to improve existing treatments of a specific disease. The challenges we faced both inside and outside of the lab inspired us to build bridges

between rigid scientific research and the ever-transforming society. We thus learnt how to perform lab research and communicate our ideas to the general public - skills that are vital for any undergraduate students in pursuing a career in science.

The culminating point of our journey with iGEM was the trip to Boston, where we visited the world's most renowned universities and showcased our work to the judges and research teams from the globe. Walking past mighty oak and maple trees covered with beautiful fall foliage, we explored the campuses of Harvard University and the Massachusetts Institute of Technology (MIT) famous for high-end technologies and compelling research institutes. At the same time, we immersed ourselves in the inspiring and competitive atmosphere shared with hundreds of unique iGEM teams, each raising important questions and striving to make the world a better place to live.

In the end, we were genuinely happy to gain a silver medal for our hard work. The whole experience boosted our confidence in aspiring research-oriented career paths and reignited our passion for science. iGEM is an excellent platform for undergraduate students to gain life-long skills and make a contribution to the world.

Project objective: To construct DNA nanostructure and engineered salmonella targeting cancer stem cells

The team: Captains:

(BSc students) Peter Wing Ho LI & Munisa TABAROVA

Team members:

(BSc students) Samson Wing Ming CHEUNG, Karen CHING, Kai Ching LAM, Hui Yuan LIM, Huayue LIN, Roy Shui Cheung LO, Tsz Chun NG, Grace Shing Yan TSUI, Zihan WANG, Xinshu XU, Xiaotian ZHANG

(BBioMedSc students) Eun Kim JUNG, Ka Ki TAM, Chui Tung TSE, Chelsea ZAUNMAYR

(BBioMedEng student) Arthur Wai Kin CHENG



East Africa Wildlife Eco-Tour Conserve and Co-exist with the Nature with Appreciation

15 BSc students had taken the role as eco-leaders and paired up with 17 HKU alumni and HKU Foundation Members in a knowledge exchange East Africa Wildlife Eco-Tour, co-presented by Faculty of Science and HKU Foundation in July 2019.

Led by Dr Billy HAU, Principal Lecturer of School of Biological Sciences, participants had an once-in-a-lifetime opportunity to witness the Great Migration in Kenya, as well as breathtaking views of Mount Kilimanjaro in Amboseli and more. Apart from pure admiration of the fascinating nature, the Eco-Tour also aimed at bringing out the important message of nature conservation.

Student eco-leaders not just witnessed the amazing nature, but were inspired to re-think the relationship between human and nature, and even the impact of eco-tourism on wildlife animals. Many were motivated to pursue this academic field and vow to conserve nature after the tour.

An exhibition was held from September 24 to October 4, 2019 to present the stunning scenery and wonders of nature seen in this Eco-Tour (over 330 species of birds, 60 species of mammals and 15 species of reptiles and amphibians), captured by the lenses of student eco-leaders, who were trained in wildlife photography.

Awards and Learning Experiences

Three outstanding members from the Department of Chemistry have been awarded postdoctoral research fellowship and scholarships by the Croucher Foundation to pursue doctoral studies and postdoctoral research at world's top universities.

Dr Alan Kwun Wa CHAN (left): being awarded the Croucher Fellowship for Postdoctoral Research at the University of Tokyo.

5°0

Press Release https://bit.ly/20IS78c BSc students Mr Gerald Julius CHIK (middle) and Ms Katie Hiu Ting CHUNG (right): being awarded the Croucher Scholarships for Doctoral Study, and will go to The University of Oxford and UC Berkeley respectively.



Ms Yahui ZHANG, PhD student of Department of Earth Sciences, won the Best Paper Award for the paper "Numerical investigation of micromechanisms of thermal strengthening in rock", in The US Rock Mechanics/ Geomechanics Symposium annually organised by American Rock Mechanics Association (ARMA).

She also won the 2nd runner-up in The Young Persons' World Lecture Competition (YPWLC) (Hong Kong heat) in 2019.

Ms Yahui ZHANG (right) won the 2nd runner-up in Young Persons' World Lecture Competition (Hong Kong heat) 2019-2020



Mr Alfred AMRUTH, MPhil candidate of Department of Physics, was awarded a Kurt Gödel Gold Medal for being the Best Poster Presenter at the conference Kurt Gödel's Legacy: Does Future lie in the Past?

Led by Head of Mathematics Professor Tuen Wai NG, our undergraduate and postgraduate students from the Department of Mathematics gained valuable experience from Chinese and overseas mathematicians by engaging in the 8th International Congress of Chinese Mathematicians (ICCM 2019), which was jointly hosted by Yau Mathematical Science Centre (YMSC) and Department of Mathematical Sciences of Tsinghua University in Beijing during June 9 – 14, 2019.





Oral presentation by Ms Laura AGUSTO, postgraduate student of The Swire Institute of



Marine Science (SWIMS), on the role of bioturbating crab species in mediating important Greenhouse gas fluxes, was selected as the most interesting one at



Ecological Society of America Meeting and published in Science.

https://bit.ly/2RQfZ62

Mr Yongcun SONG, PhD student of Department of Mathematics, has won the Best Paper Prize in the 5th Graduate Forum of the Mathematical Programming Branch of Operational Research Society of China. The prizing-winning paper "An inexact Uzawa algorithmic framework for nonlinear saddle point problems with applications to elliptic optimal

control problem" has been published in SIAM Journal

MPhil candidate Mr Michael Chun Hei YEUNG went to Institute of Astronomy and Astrophysics, Academia Sinica (ASIAA) after finishing his bachelor degree at HKU. ASIAA is one of the leading astronomy research institutes in Asia; being a summer student Michael got an early taste of full-time research with intensive training in optical spectroscopy; the experience was rewarding with eye-opening experiences to regularly expose to different fields in astronomy through

on Numerical Analysis.

seminars and lectures by international experts, ranging from instrumentation to gamma-ray astronomy.

Michael (left) with his supervisor Dr Youichi Ohyama in the rooftop garden in ASIAA

Dr Sean A CROWE

Associate Professor, Department of Earth Sciences & School of Biological Sciences

Research interests: earth system science, biogeochemistry, microbiology





questions that are uniquely tractable through the interdisciplinary toolset of contemporary geobiology. My current and previous research works towards addressing he following questions: 1) how did the Earth come to support complex animal life and humans; 2) how will biogeochemical cycles respond to the emergence of humans as geobiological agents; and 3) how can we

harness the ingenuity of microbial communities to mitigate pain-points arising from increased human demands on water. energy, mineral, and agricultural resources."

Dr Jane Lixin DAI

Assistant Professor, Department of Physics

Research interests: high-energy astrophysics, black hole accretion disks and jets, transients,



general relativistic simulations and modellina "I am broadly interested in high-energy astrophysical phenomena happening

close to black holes and other compact objects, where general relativity is very important. I am excited to be back to

Hong Kong after studying at the Stanford University for my PhD and then having research experience in USA and Europe.

Dr Jian HE

Assistant Professor, Department of Chemistry

Research interests: catalysis, metal organic frameworks, photochemistry, radical chemistry, polymer chemistry, materials chemistry

"I finished my PhD study at Scripps Research and my postdoctoral training at Caltech. I seek to develop an interdisciplinary research programme at



catalysts for organic synthesis." Dr Zhongxing HUANG

the interface between organic chemistry

inorganic chemistry, and materials science, with a focus on design of novel

MOF- and polymer-based heterogeneous

Assistant Professor, Department of Chemistry

Research interests: organic synthesis

"Research efforts in my lab focus on the development of new organic transformations that are more efficient and sustainable than conventional approaches. Especially, new catalysts will

be devised to address long-standing challenges of organic synthesis, including control of enantioselectivity, chemica bond formation, and development of new metathesis reactions.

Dr Nicole Sophia KHAN

Assistant Professor, Department of Earth Sciences

Research interests: sea-level and coastal change

"The overarching theme of my research is the use of sedimentary, microfossil and geochemical indicators to produce and synthesise records of present and past storms floods and sea levels, and their extent of geological and ecological impacts. These records provide means to assess future risk, reveal the spatial and temporal variability of coastal inundation and decipher the relationship of these events to global climatic changes."



Dr Philip Yongxin LI Assistant Professor, Department of Chemistrv

Research interest: chemical biology, marine microbiome, synthetic

biology, big data mining, drug discovery

"My research focuses on developing a genomicsguided discovery approach of natural products by the combinational use of big data genome mining and synthetic biology, and applying this approach to harness the chemical potential of the microbiome to enhance the reservoir of potentially therapeutic small molecules."

Dr Ying LI

Assistant Professor, Department of Chemistry

Research interests: RNA localisation & modification **RNA-protein interaction**



person between DNA and protein I look forward to deciphering the interplay among RNA localisation, RNA modifications, and protein-RNA interactions that regulate RNA biological functions."



Assistant Professor, Department of Chemistry Research interests: organic synthesis, polymer chemistry, organic functional materials, organic electronic devices

'My research interests focus on the rational design, atomically precise synthesis, and detailed investigation of the exotic physical phenomena emerging from topological carbon nanostructures. We pursue a highly integrated multidisciplinary research programme including physical,

mistry and functional materials, founded on modular bottom-up organic synthesis at atomic level.

Dr Wei LIU

Research Assistant Professor, Department of Chemistry Research interests: biophotonics, bioanalytical

chemistry, chemical biology "After receiving my PhD in biophysical chemistry at Yale,



Dr Xin LUO

Research Assistant Professor, Department of Earth Sciences Research interests: hydrogeology, hydrology, limnology, reactive transport model and biogeochem

"I have spent nearly ten years of study and research at HKU. My core interest is about the physical and chemical understanding of hydrogeology, especially in extreme environment of permafrost, glaciers and pelagic seabed. I employ the approaches of multiple natural isotopes

and geo-tracers, mathematic and numerical models, in-situ observation, remote sensing, etc. to decipher the principles of hydrogeology.

Dr Tran Trung LUU

Assistant Professor, Department of Physics Research interest: ultrafast optics. strong-field physics, light-matter

interaction, attosecond science "In our group, we would like to develop and utilise the shortest laser pulses, ones that allow us to 'see' the electronic motion in its native time scale. In addition, these ultrashort laser pulses would enable

studies of electronic properties and dynamics of matter and novel ultrafast phenomena with the finest temporal . resolution available.

Dr Hannah Sue MUMBY Assistant Professor, School of Biological Sciences

Research interests: behavioural ecology and life histories of large mammals; human and animal dimensions of conservation, qualitative methods, African elephants, Asian elephants and wild boar

I am interested in the behavioural and evolutionary ecology of large mammals and how it links to conservation. My group takes a range of approaches to applying behaviour to conservation ncluding human dimensions, animal behaviour and qualitative methods. My study systems include African elephants, Asian elephants and wild boar

Professor Michael Kwok Po NG

Chair Professor, Department of Mathematics; Research Division Director of Mathematical and Statistical Science

Research interests: applied and computational mathematics, artificial intelligence and machine learning, data and imaging sciences and scientific computing

"I am interested to develop mathematical and statistical theory and algorithms for different applications in science and engineering. The combination of theory and applications leads to the most favourable results; not only does applications benefit, but the sciences themselves develop under the influence of





Dr Kou OKURO

Associate Professor, Department of Chemistry

Research interests: supramolecular chemistry, chemical biology, biomaterials

"My research focuses on designing new molecules and nanomaterials based on supramolecular chemistry for manipulating biological events. I believe that supramolecular chemistry will contribute a lot to the progress of molecular biology and medical science, as well as pharmaceutical science.

Dr Jeff Tsun Yu WONG Research Assistant Professor, Department of Statistics & Actuarial Science

Research interests: ruin theory, stochastic process

"Being a bachelor and master degree graduate of HKU, it is my pleasure to serve my alma mater after receiving my PhD degree in University of Waterloo. While focusing on my research, I sincerely hope to impact the next generation by passing on my knowledge and experience."



Research interests: number theory, homogeneous dynamics, linear

algebraic groups

"I am interested in problems that bridge nontrivial connections between number theory and other fields, such as dynamical systems, algebraic group theory and spectral graph theory.

Dr Yan ZHANG

Assistant Professor, Department of Statistics & Actuarial Science

Research interests: high dimensiona inference, statistical genetics, bioinformatics, Bayesian methods, public health and biomedical research



'After 8 years of study and work at USA, I am very happy to join HKU. As a quantitative scientist. my research focuses on developing statistical methods to solve scientific problems emerging in

netics, molecular biology, public health and medicine fields I wish to make contributions to enhancing communications and collaborations among interdisciplinary scientific communities, and further to building a promising future for public health and precision medicine.

News



14 HKU partners with TCL Corporation (TCL) to set up "HKU-TCL Joint **Research Centre for AI**". A Memorandum

of Understanding (MoU) was signed to signify this collaboration, which aims to synergise top-notched research and strength of enterprise, foster mutual exchange and translate research knowledge to creative and pioneering applications.



In loving memory of former Dean of Science Dr Kam Tim LEUNG, we Dr Leung in many aspects, be it his contributions for the Faculty development, or his relentless commitment in advancing mathematics education in the local community. Dr Leung will be dearly missed for his passion for education, devotion in Mathematics, care for his colleagues, students and friends.

Events



Co-organised with Lung Fu Shan Environmental Education Centre, the Eco-Tour allowed HKU Science alumni and their families and friends to take a break and learn more about local species and natural habitats in HK.



Voyager Journey to the Giant Planets and Interstellar Space" was delivered by **Professor Edward C** STONE, Shaw Laureate in Astronomy 2019, David Morrisroe Professor of Physics and Vice Provost for 5 Science

Special Projects at California Institute of Technology. Professor Stone shared how

he has led the Voyager project to explore Jupiter, Saturn, Uranus, and Neptune, which has transformed our understanding of the four giant planets and the outer solar system.





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News & Events



New face of Faculty of Science website had made a hat-trick by receiving the W³ Silver Award in the 14th Annual W³ **Awards** – its third recognition in international awards following its Award of Distinction at the 25th Annual Communicator Awards and University

In light of Oak Anniversary, a commemorative volume is published in November 2019. The publication brings the readers back to the past, revisiting our glorious history, showcases our achievements and 🤌 presents our future blueprints. Its coffee-read style will guide you through and read in a relaxing and enjoyable way.

> Scan to read: https://bit.ly/3attoYJ





Standard of Excellence award at the WebAward 2019. The website is also recognised as a "Friendly Website" under the Web Accessibility **Recognition Scheme** (2018/19).



In Loving Memory Dr Kam-Tim LEUNG (1932 - 2019)



An International Conference of UG research brought together outstanding science students from all over the world to have an academic exchange on research projects of diverse disciplines.





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A public lecture on "The Power of Data Analytics and AI Techniques in the Digital Sector" was delivered by Mr Alan CHAN, Executive Vice President of Lazada (Alibaba's SE Asia Commerce Business). In the lecture he explained the changes that the industry is facing in data analytics and AI techniques, now and in the future, and shared some tips on starting a career in data and analytics.



Public lecture "Chasing Fireworks from Black Holes" was delivered by Dr Jane

DAI, talking about the "fireworks" produced by black holes which light up their surrounding space-time; and discussing the black hole science that has been learnt from these successful endeavours

and that will be explored with new telescopes to be launched soon.

Two live lectures – "Science, Technology 27 and Us" and "Animal Voices: What can we learn when we listen to nature?", were conducted by Dr George AKOM and Dr Evan **PICKETT** respectively on ZOOM, attracting around 270 secondary school students to learn from home with HKU Science.





Back to earlier time in June 2019, when summer heat started to play its role, HKU Science Alumni Association (HKUSAA) hosted a halfday tour to Tsz Shan Monastery. Together with their classmates, families and friends, they spent a mindful afternoon there. Via appreciating the architectural design of the monastery, they sought to find inner peace and coolness.

> 2019 also celebrated the 30th anniversary of HKUSAA. With the newly selected executive committee members, the Association will continue to prosper and connect with more HKU Science alumni.

Alumni Corner

Acknowledgements



We would like to express gratitude to our donors for their recent support, which is paramount for us to grow and scale new heights. (in alphabetical order)

Individual donors

- Mr David Chi Wai AU
- Mr Hoi Hang AU
- Ms Beatrice Po Kam CHAN
- Ms Cindy Shi Tik CHAN
- Dr Fun Ting CHAN
- Ms Ka Man CHAN
- Mr Kin Ki CHAN
- Professor Kwan Ming CHAN and Mrs Karen Kung Mei CHAN LAK
- Mr Paul Kin Shing CHAN
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