Research beyond Boundaries: Interdisciplinary collaboration in action
Since the establishment of the Research Divisions in 2019, six Divisions have been set up, including Chemistry, Earth and Planetary Science, Ecology and Biodiversity, Mathematical and Statistical Science, Molecular and Cell Biology, and Physics and Astronomy.

In this issue, Professor Aleksandra DJURIŠIĆ, Associate Dean for Research and Graduate Studies, would give us a preliminary idea of how far these Divisions have gone, and highlight a handful of approaches for the Faculty to foster interdisciplinary research and collaborations across Divisions, Faculties and other tertiary institutes in the future.

We also got a chance to hear the thoughts of two of our new Research Division Directors (RDD) – the RDDs of Mathematical and Statistical Science as well as Physics and Astronomy, who have been recruited globally to be facilitators, champions and mentors to boost research performance, to share their vision how they are going to embark on their journey to drive research excellence.

The implementation of Division structure has been underway for more than a year since its inception. Building a system from the scratch is never easy. The novel approach is still new and needs polishing, and Professor DJURIŠIĆ agreed that there is a need for more clear boundaries in responsibilities and roles between Departments and Divisions. Since existing administrative structure at university level has been tailored for Departments, it will take time to fix some minor administrative issues.

The best collaborations create something bigger than the sum of individuals’ contributions. The purpose of establishing Research Divisions is to enhance high-quality research by removing the barriers between Departments, facilitating more cross-fertilisation for interdisciplinary research within Divisions.

Professor DJURIŠIĆ emphasised that the role of the Faculty is to be a facilitator which takes part in the coordination of research activities proactively, in the hope of maximising participation of Divisions. “Take climate change or environmental-related research topics as examples, they will inevitably touch the fields of earth sciences, ecology and biodiversity, and to some degree attach to chemistry, physics, mathematics and statistics. So what we envision for the future, is to have people doing interdisciplinary research with the concerted efforts of multiple Divisions.”

Going beyond geographical boundaries is highly desirable in fostering collaborations. A lot of high-impact projects come from joint research teams with members around the world, yet it is also discipline-dependent. “It should point out that while interdisciplinary research is great, not all great research needs to go in this way. The same rule applies to collaborations – not all research needs to be collaborative. We should adopt a diversified approach of doing good science.”

It is like how gears work. The Faculty would formulate the overall strategy with the input from the Divisions, solicit budget from the University and provide support to Divisions, while the Divisions would put strategies in action. At the Faculty level, there are different kinds of funding available for enhancing the competitiveness of projects, be it conventional type, supplementary type or travel grant.

Each Division is overseen by a Research Division Director, who will carry out their own strategies for the Divisions. “I am not a believer in micro-management, so I don’t think at the Faculty level we should get involved in litigating matters in the absence of funding problems. It’s up to the Directors to manage their own Divisions.” In the past two years, the recruitment process for RDDs has been ongoing. Last summer, Professor Michael NG, the RDD of Division of Mathematical and Statistical Science was on board, this July, Professor Ho Kwong LO, RDD of Division of Physics and Astronomy, left Canada for Hong Kong to join in, and Professor Juha MERILÄ, RDD of Division of Ecology and Biodiversity has also been just on board in October. While the hiring of RDDs for other Divisions are at different stages, the developments are all at the good hands of our Acting Division Directors.

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Message from the Chief Editor

Director Edmund Chun Ming TSE
Assistant Professor, Department of Chemistry

You don’t need to push faculties to do more, because they actually want to – they believe their work conveys distinct value. They are doing good science, and it works pretty well so far.

Enhancing connections with industry and knowledge exchange

HKU Science is rich in its 80-year heritage and traditions, and our strong reputation is well regarded globally and in mainland China. Over decades, it has been seen as a research-oriented Faculty with strengths in basic research in particular. “While we need to maintain our strength in basic research, we also need to consider how to strengthen our knowledge exchange and establish closer connections with the industry,” Professor Djuriši remarked. In view of this, the Faculty has been bringing in business consultant to advocate knowledge exchange. “Since we do not have solid experience in this, and establishing startup companies here is not as common as in US and UK, we will be running training programmes for the staff. We will also talk to the Technology Transfer Offices, trying to identify the red tape barriers, streamline the process, and help interested parties to get involved.”

In 2019, HKU partnered with TCL to set up the “HKU-TCL Joint Research Centre for AI”, fostering research development in Artificial Intelligence (AI). Professor Djuriši saw it as a significant step forward. “It’s quite important for the entire Faculty because this is the first time we had a centre at this scale, getting our researchers to collaborate with the industry. Undoubtedly, funding support from the industry would bring great benefits to our postgraduate students. I’d be glad to see more projects in the future.”

In addition to HKU-TCL joint centre, the Faculty has also been successful in obtaining funding for two InnHop projects, which will also be a significant contributor towards strengthening applications of our research. Only self-motivated individuals would remain competent. “People are our greatest asset, and with those highly capable faculties, I’m sure we can catch up with our benchmark universities soon,” said Professor Djuriši. “Our staff have been quite proactive in pursuing research opportunities amidst the pandemic situation. Our chemists have been collaborating with LKS Faculty of Medicine on researches on the vanished COVID-19, we also have statisticians developing AI tools to screen suspected cases. So there are quite a lot of practical developments arising swiftly in response to the current situation.”

[Email: science@hku.hk]

https://bit.ly/2IwWX2t
Professor Michael Kwok Po NG

Director of Research for Division of Mathematical & Statistical Science and Chair Professor of Department of Mathematics

- 2020 - present Chairman, HKU-TCL Joint Research Centre for AI
- 2019 - present Director, Big Data Research Cluster, Faculty of Science, HKU
- 2017 Received Feng Kang Prize of Scientific Computing and was selected as a SIAM Fellow
- 2014 Received HKBU President’s Award for Outstanding Performance in Scholarly Work
- 2001 HKU Outstanding Young Researcher Award

A mission to empower researchers

Professor Ng formulated some goal-oriented strategies which require substantial collaboration with researchers of diverse interests. "Win-win cooperation facilitates mutual benefits for collaborating parties - we have skills and expertise that help divisions analyse a huge amount of data properly for disparate disciplines; on the other hand, we can also benefit from the findings and the process of developing new research applications. So it is all about collaboration."

Aiming at creating a thriving research environment, his first strategy is to mobilise and cross-fertilise expertise and facilitate knowledge sharing for core research areas. "Currently we have eight research groups with different interests and focus. Through fostering intellectual exchange, we aim to come up with more innovative research ideas, create more research frontiers, and be more competitive in attracting research fund."

While sharing of expertise can enhance both quality and versatility of research, networking can help apply research results into practical use and for the betterment of society. It is utmost essential research results can be realised through cooperation. Therefore, he is looking forward to strengthening our network through research partnership and collaboration. "It is a global approach, not limited to local or regional, and beyond geographical areas, we would also like to connect the academic circle to the world of business and the community, in order to create an Incredible ecosystem that can demonstrate strong commercial potential and address societal needs like data science and artificial intelligence."

Interdisciplinary approach in action

Aligning with the faculty and the university strategy, interdisciplinary approach is one of the indispensable strategies that Professor Ng is going to adopt and expand. In the past year, he has already put it into practice. This PhD student has been participating in a machine learning project for the development and validation of a diagnostic model of COVID-19 with medical doctors from Union Hospital, Wuhan and Beijing Chaoyang Hospital, Beijing. Some experts from the Department are collaborating with the MTR Corporation in an interdisciplinary cooperation for condition-based monitoring systems and artificial intelligence for the railway's safety. Internal collaborations involving cross-discipline experts have been carried out through the HKU-TCL Joint Research Centre for Artificial Intelligence and Big Data Research Cluster, and more joint positions within divisions will be created to enhance these kinds of activities. "We will strive to enhance our engagement in more innovative research projects with other disciplines, in the hope of sparking more creative ideas with new attempts," said Professor Ng.

"Do physics", make a big impact

Professor Hoi Kwong Lo has just entered a new chapter in his life - being appointed as the Director of Research Division of Physics and Astronomy. This is not only the first time he has taken up an administrative role in a university, but also the first permanent position that he has ever had in Hong Kong after 3 decades living abroad.

Professor Lo was born and raised in Hong Kong. His winning of the Prince Philip Scholarship in 1986 was a life-changing point for him, which allowed him to set sail and pursue his dreams in Cambridge. Since then, he has led a long and fulfilling journey in the UK and North America. "I'm very exciting to be back to my home town. There's quite a change, but I'm happy to embrace the new chapter in my life. It's like 'give and take' - I won a scholarship to Cambridge for undergraduate studies, and now I've got a chance to contribute back in some way," said Professor Lo.

What you wear speaks for you. The subtle yet eye-catching quote "something different" imprinted on Professor Lo's t-shirt on the interview day made a statement for him. "Yes, I want a change. As a top-notch scientist in the research domain of quantum information processing, he was among the first to demonstrate the impossibility of a whole class of quantum cryptography protocols including quantum bit commitment. Thus correcting an error that had been believed for a long time in the field. "I have achieved quite a bit throughout my research life, and now I hope I could make a bigger impact by influencing others."

Formulating new strategies for scientific research

The Division has been traditionally strong in two strategic research areas: condensed matter physics and astrophysics. Under the new strategic direction, the Division will continue to retain its traditional strengths while expanding substantially in two new areas: quantum information science (QIS) and optics and photonics. "Physics is very diverse. Our research portfolio is not just one particular group, but it really represents some of the most active areas of physics research today. QIS has become a strategic research initiative in many large firms, including IBM, Intel, Google, Microsoft and Alibaba, which are all investing heavily in quantum technologies as they see quantum computing as ‘the Holy Grail of communication security.‘" Besides the four strategic areas, the Division will also continue to support research in theoretical computer science. For the 17 years at The University of Toronto, I held a joint appointment across two faculties, trying to grow substantially on the experimental side in the next few years. "The primary mission of the Division is to create a good research atmosphere and maximize the potential of the Division. I encourage our faculty members to think big and be ambitious in their research plans. This is the only key of making a difference to the society," Professor Lo added.

The Division is in a strong upturn. Our success rate of the latest General Research Fund (GRF) grants is as high as about 93%. This is truly impressive!
Enrich biodiversity: helping corals survive and thrive

By Dr David BAKER, Associate Professor of School of Biological Sciences and The Swire Institute of Marine Science

Dozens of metres deep down the sea, there hides the habitat of coral reefs, stunning yet vulnerable. A group of dedicated marine scientists from The Swire Institute of Marine Science (SWIMS) and School of Biological Sciences are looking into the pressing issue via the following research projects.

Repopulating coral communities with novel 3D printed “reef tiles”

By Dr David BAKER, Associate Professor of School of Biological Sciences and The Swire Institute of Marine Science; Research Assistant Dr Phil THOMPSON, PhD Candidate Ms Virko YU, Mr Christian Johannes LANGE, and Assistant Lecturer Ms Lida RATOI from the Department of Architecture

Regarding conservation of marine biodiversity as its top-priority mission, marine scientists led by Dr David BAKER joined hands with the Faculty of Architecture to co-develop a novel method for coral restoration, making use of specially designed 3D printed artificial “reef tiles” tailored for coral attachment to enhance their chance of survival in the waters of Hoi Ha Wan Marine Park. Conservation efforts are never trivial. It is hoped that this project would become a vital contribution to the ongoing global efforts to save the degraded coral reef systems.

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Identifying areas of top priority for deep-sea monitoring

By Dr Moriaki YASUHARA, Associate Professor of School of Biological Sciences and The Swire Institute of Marine Science; and Professor Roberto DANOVARO, Stazione Zoologica Anton Dohrn Napoli, Italy

Always ask those who excel. An international team comprising marine ecologists including Dr Moriaki YASUHARA, created an expert-led list of priorities by surveying the world’s leading deep-sea scientists, shedding light on the key focus for future conservation and management strategies. This standardised monitoring framework can help highlight the priorities for monitoring, including large animals and habitat-forming species like deep-sea corals, and the impact of human activities on this vulnerable ecosystem.

Earth Sciences

Tropical forests’ carbon sink is already rapidly weakening

By Dr Alexander KOCH, Postdoctoral Fellow of Department of Earth Sciences

The ability of the world’s tropical forests to remove carbon from the atmosphere is decreasing, according to a study tracking 80,000 trees over 30 years, published recently as the cover story in Nature. An international team led by the University of Leeds, including Dr Alexander KOCH of HKU’s Department of Earth Sciences, reveals that a feared switch of the world’s undisturbed tropical forests from a carbon sink to a carbon source has begun. They measured the diameter and estimated the height of every individual tree in 565 patches, returning every few years to re-measure them. By calculating the carbon stored in the trees that survived and those that died, the researchers tracked the changes in carbon storage over time. The speed and magnitude of change in these forests suggests that climate impacts in the tropics may become more severe than predicted.

Unlocking the secret of corals’ tolerance to climate change: their diet

By Dr Inga CONTI-JERPE, Postdoctoral Associate of School of Biological Sciences and The Swire Institute of Marine Science

The research team led by Dr Inga CONTI-JERPE has developed a new method for determining which corals eat, and demonstrated that reliance on certain nutritional sources underpins their blooming susceptibility in warming oceans. They compared the stable isotope “fingerprint” of hundreds of corals collected in Hong Kong to that of their associated algae. The results showed that some corals have isotopic fingerprints that match that of their algae, indicating the two partners share nutrients. Other corals have fingerprints distinct from their algae due to a diet based on the capture and consumption of prey particles in the water. These results have implications for how coral reefs will change as climate change progresses. They help us predict which coral species are more likely to survive as oceans warm, and provide a solid ground for us to review efforts to be spent on coral reef restoration so as to ensure the long-term success of reef rehabilitation.
Dr Bin LIU, a Postdoctoral Fellow at the University of Finance and Economics, has developed a publicly available online COVID-19 diagnostic system by integrating AI technology, allowing individuals to understand the probability of being infected with COVID-19. This system has been shown to be effective in screening for COVID-19 using chest CT scans.

Sea-level rise is expected to continue. Dr. Nicole KHAN found that global mean sea-level rise could exceed 1m by 2100 and 2.3m by 2300 with unchecked emissions. These projections were derived from experts identified from a pool of the most active publishers of scientific sea-level studies.

A research team led by Professor Hongzhe SUN and Professor Kwok Yung YUEN has discovered a novel antiviral strategy for treatment of COVID-19 using existing metallodrugs. The findings provide a new and readily available therapeutic option with high clinical potential for infection with SARS-CoV-2. This ground-breaking work has been published online in a top-class scientific journal Nature Microbiology.

Computing effective diffusivity for particles moving in chaotic and stochastic flows is a fundamental problem in studying diffusion enhancement phenomenon in fluid advection. Its applications can be found in many physical and engineering sciences, including atmosphere science, ocean science, chemical engineering, and combustion. For instance, when there is an oil spill in an ocean, it is important to estimate the spread speed of the pollution. Many existing works use numerical methods (e.g. FEMs and spectral methods) to solve a convection-diffusion type corrector problem to compute effective diffusivity, which becomes extremely time-consuming and resource-expensive when the diffusion coefficient is small and/or flows are in 3D space. The research group developed structure-preserving schemes in Lagrangian framework to compute effective diffusivity for chaotic flows (including 3D ABC flow and Kolmogorov flow) and provided a sharp and uniform-in-time error estimate for the numerical schemes. Their work is the first one in the literature to develop Lagrangian numerical schemes to compute effective diffusivity in 3D chaotic flows.

Chemistry

By Dr Zhivhen ZHANG, Assistant Professor of Department of Mathematics (on the right), and Dr Zhongjian WANG, Norman & Cecilia Yip Professor in Bioinorganic Chemistry, Department of Chemistry, and Li Ka Shing Faculty of Medicine, Li Ka Shing Institute of Health Science.

As discovered in radiological research, CT scanning may serve effectively in testing for COVID-19, particularly amongst those with no symptoms.

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HKU’s "Lobster-Eye" X-ray Satellite

By Professor Quentin PARKER, Director of the Laboratory for Space Research and Professor of Physics, and Dr Meng SU, Associate Professor of Department of Physics

With the concerted efforts of the HKU Laboratory for Space Research (LSR), Physics Department and especially Dr Meng SU together with Nanjing University and their collaborators, the HKU Laboratory for Space Research (LSR) Physics Department’s "Lobster-Eye" X-ray Satellite was successfully launched into orbit at Taiyuan Launch Center on July 25, 2020, with the first signal received on the same day. It is the world's first smallsat space exploration satellite equipped with a "Lobster-Eye" X-ray imaging technology. Its long-term mission is to hunt for an elusive dark matter signal within the X-ray energy regime under earth orbit environment. This successful launch marks an important milestone in hope of the emergence of space science research at HKU and in the Greater Bay Area more generally and encouraging more scientists in the community to engage in research in the national space science programme.

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Quantum Material research discovered better materials that benefit our society

By Dr Zi Yang MENG, Associate Professor of Department of Physics

Quantum materials are becoming the cornerstone for the continuous prosperity of human society. Dr Zi Yang and his collaborators achieved accurate model calculations by using the world’s fastest supercomputers (Tianhe-I, Tianhe-II and Tianhe-III prototype at National Supercomputer Center of China), revealing the comprehensive properties of a rare-earth quantum material TmMgGaO_4. They found that the material, under the correct temperature regime, could realise the long-sought-after two-dimensional topological Kosterlitz-Thouless regime, which will certainly lead to more profound and impactful discoveries in quantum materials.

Internal Awards

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E-learning

Dr Jess KING
Co-ordinator of the Geology Major in the Department of Earth Sciences, has just finished running a virtual Field Camp for the Geology capturing course Integrated Field Studies. The field camp, usually run in June out of the Indiana University Geology Field Station in Montana, USA, was forced to cancel, due to travel restrictions, among other logistical issues. Geology field camps globally, due to tight travel restrictions as part of COVID-19, will be going virtual in the future.

Along with three colleagues of the Indiana University team, Jess began field camp filming in Montana, in mid June. In an effort to replicate the field experience, along with short instructional videos, she filmed short clips of actual rock outcrops, which combined with topographic maps and Google Earth Pro, enabled students to “fly around”, and examine the rock features of each field stop. Students then compiled this information onto maps, in order to synthesise the geology history of this area of the US.

Geology is the study of rocks, and although it is crucial for students to physically participate in field work, the virtual experience can bring students to see bigger pictures of geology. “At the student side, virtually getting on the ground, they do miss out the chance to be able to look up at a mountain or down a slope - to feel the scale, but in the virtual world they learn in a Google Earth Pro function, flying high up, above the exposures, to see how the large landscape develops and continues to develop on the ground where I am in the video. This helps students look at the big features first, then progressively go into the finer details, which help them avoid wasting time on small details, and missing the bigger picture!”

It is true that the production of e-learning materials is time-consuming and labour-intensive, but she still thinks it is worth doing. Jess also adds, “Even when we go back to face-to-face classes, I plan to pre-recorded lectures because I have been moving towards a flipped approach to teaching. However, it is not possible to recreate many tactile learning experiences via e-learning despite its obvious benefits.

Transforming learning experiences

Some might challenge that particular learning experiences might not be able to translate into e-learning. However, many e-courses have succeeded in conveying lab components across most subjects. “You can see examples crop up from physics to chemistry to experiment delivery. These learning experiences are challenges for e-learning that require innovation, but it can be very rewarding to teachers and students. For example, my own online teaching involves students in the Golde Desert and in Patagonia, and visits to overseas museums, places that I normally cannot take my students,” Dr Pittman explained.

It can be harder to engage with students across a screen, teaching needs to be e-learning specific. Dr Pittman stresses that it is a worthwhile learning opportunity despite the added effort. “It is not possible to recreate many tactile learning experiences via e-learning despite innovations like virtual reality and holographic projection,” he added.

Comprehensive measures

The Faculty E-learning Portal is currently being updated as a one-stop shop that curates e-learning related information from across the university including Technology-Enhanced Learning Initiative (TELI), Information Technology Services (ITS), and Centre for the Enhancement of Teaching and Learning (CETL). Training materials, equipment and facilities information, and a help section are the key portal features. Newer features include quickstart guides, a listing of upcoming HKU E-learning events, as well as an event digest that includes recordings and PowerPoint slides of past events. The portal’s navigation and content has been streamlined based on teachers’ feedback.

Some students prefer or learn better online. As teachers, we are constantly reflecting to refine our craft. My advice is to have an open mind and give e-learning a fair try, because it can benefit you and your students. “I sincerely wish him a well-deserved retirement!” Dr Pittman explained.

E-learning can complement and enhance the traditional face-to-face learning by using innovative tools. This teaching experience has given us opportunity to find ways to remotely access remote places, so that students can experience them without physically being there, and it is a very powerful thing to do.”

Dr Pittman

A virtual field trip: flying around by Google Earth

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The protracted COVID-19 situation has put an unprecedented strain on food supply chains globally. While the community has been finding ways to step up to the challenges imposed by the fallout, 10 science students were also committed to foster food sustainability and help reduce food waste in the community by taking part in the Food & Nutritional Science Internship Scheme at NGOs.

Without any hesitation to contribute towards a more sustainable food environment, Year 3 student Ms Tsz Kiu WONG (third from the right) whose major is Food & Nutritional Science, got a 3-month internship in Feeding Hong Kong last summer, where she worked as an operation intern in the food sourcing team, assisting in identifying prospective food donors by placing cold-calls and sending cold-mails. Tsz Kiu paid extra efforts in liaising with donors and took the opportunity to familiarise herself with the software “Salesforce”, a cloud-based platform for customer relationship management which she has been learning to use in classes. She also compiled reports on potential food donors, amount of food donated, management which she has been learning to use in classes. She also learnt to be more patient and caring after making numerous phone calls and working with people in need.

To further the evidence of Formerly Elusive Abrupt Sea-Level Jump

A study conducted by Ms Skye Yunshu TIAN, PhD student of School of Biological Sciences and Swire Institute of Marine Science, was published in Quaternary Science Reviews, revealing a robust evidence of formerly elusive abrupt sea-level jump event during the climatic warming from the last ice age to the current climate state.

The study presented evidence of abrupt sea level change between 11,300 – 11,000 years ago of 40m – 80m in Svalbard, the Arctic Ocean. High time-resolution fossil records indicate a sudden temperature rise due to the rebound of formerly suppressed lands underneath great ice load, the sedimentary environment changed from a bathyal setting to a more shallow setting with the pressure of economic turmoil. Nonetheless, difficulties and adversity make one grow, Tsz Kiu realised that the internship was a golden opportunity for her to get acquainted with how the food donation chain works. Other than hand-on working skills, she also learnt to be more patient and caring after making numerous phone calls and working with people in need.

Students' Achievements

Science student's team won 2020 Microsoft Imagine Cup World Champion

Mr Cameron van BRENDA, Year 4 BSc student majoring in Molecular Biology & Biotechnology, won the 2020 Microsoft Imagine Cup World Champion with some likeminded students in a team that they co-formed called “Hollo”. It is the first time a Hong Kong team took home the Cup, which is often called the “Olympics of student tech competitions”.

The team noticed that mental health aid was not reaching the younger generations effectively and envisioned a future of tech-based, accessible, and comprehensive mental health management tools. With this in mind, the team developed an interactive mobile app for users and a comprehensive case management dashboard for therapists & NGOs; it also presents a collaborative and scalable mental health platform which aims to cut the heavy cost of mental health care for youth and make support more accessible.

Students' Awards and Developments

Mr Huajing JIN (on the left) and Mr Chenyang ZHANG, PhD students from the Department of Statistics & Actuarial Science, received the Finalist Award of the SCT Thomas Callum Student Scholarship by the Society for Clinical Trials. The papers they presented at The Virtual 2020 Annual Meeting of SCT in May online were “Bayesian Nonparametric Analysis for Restricted Mean Survival Time” and “Bayesian Enhancement Two-Stage Design With Error Control for Phase II Clinical Trials” respectively.

Mr Zhongjian WANG, PhD graduate of Department of Mathematics, got the William H Kruskal Instructor position at The University of Chicago and will start his position in the fall of 2020. He was supervised by Dr Zhiwen ZHANG, Associate professor of Department of Mathematics, and his chosen field of study including Applied and Computational Mathematics and Uncertainty Qualification for Stochastic Differential Equations (SDEs).

Mr Cameron van BRENDA (on the right) and his teammate Ajit Krishna NAMAKKAL RAGHAVENDRAN.
The long-term success of a business hinges on the objective analysis rather than subjective insights, therefore, using a data-driven approach to make evidence-based decisions can always help in growing your leadership skill.

Leadership requires a combination of both science and business, and all the politics behind it.

Leaders with science backgrounds should humanise the science, and solve our problem with the help of technology.

Logical thinking can help identify problems, while recruiting a pool of talents with diverse backgrounds can amplify the synergy and solve many of them.

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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)

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Dr Ivan K CHU
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Ms Oi Lin LEE

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City University of Hong Kong (State Key Laboratory of Marine Pollution)
Ecosystems Ltd.
Elsevier (Global Publishing Development)
ETH Zurich (for The Branco Weiss Fellowship - Society in Science)
Geological Society of Hong Kong
Geological Society of London (HK Regional Group)
Globe Creative Ltd.
Guangdong Aglaia Optoelectronic
Hong Kong Proteomic Society
K C Wong Education Foundation
Ocean Park Conservation Foundation, HK
Pok Oi Hospital Chan Kwok Wai Primary School
TCL Corporate Research (HK) Co., Ltd.
The TUYF Charitable Trust
Wei Lun Foundation Ltd.