

ISSUE 2
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Financial Opera Inspired by Social Media Debate

當金融遇上歌劇

The global financial crisis hit the world over ten years ago. The economy has recovered but it's hard to forget those difficult times. Composer Dr Eugene Birman, Assistant Professor from the Department of Music at HKBU, joined hands with librettist Mr Scott Diel to create an opera based on a dispute on the financial crisis. It became the first-ever opera to discuss financial issues. Since the dispute happened on social media, it is also regarded as the first "twitter opera".

十年前，金融危機席捲全球，即使經濟已然復蘇，人們對那些痛苦時刻卻依然記憶猶新。浸大音樂系助理教授、作曲家貝臻雅博士與劇作家Scott Diel先生合作，圍繞一場社交媒體上的辯論，譜寫出首部討論經濟問題的歌劇《Nostra Culpa》。

The opera, *Nostra Culpa*, is based on a row on social media between the then Estonian President Toomas Hendrik Ilves and the Nobel Prize-winning United States economist Paul Krugman on the austerity measures during the financial crisis in the late 2000s.

Dr Birman has first-hand experience of the financial crisis. When the crisis unfolded, he was studying economics in Columbia University in New York, where Wall Street is located. "In the past, many investment banks and financial services companies would come to the university and recruit fresh graduates, but with the housing crash, nobody came anymore. There were simply no jobs. The hopes, ideas, careers and financial prospects disappeared almost overnight," he recalled with a bitter smile. The financial crisis haunted many people, well after the peak of the crisis.

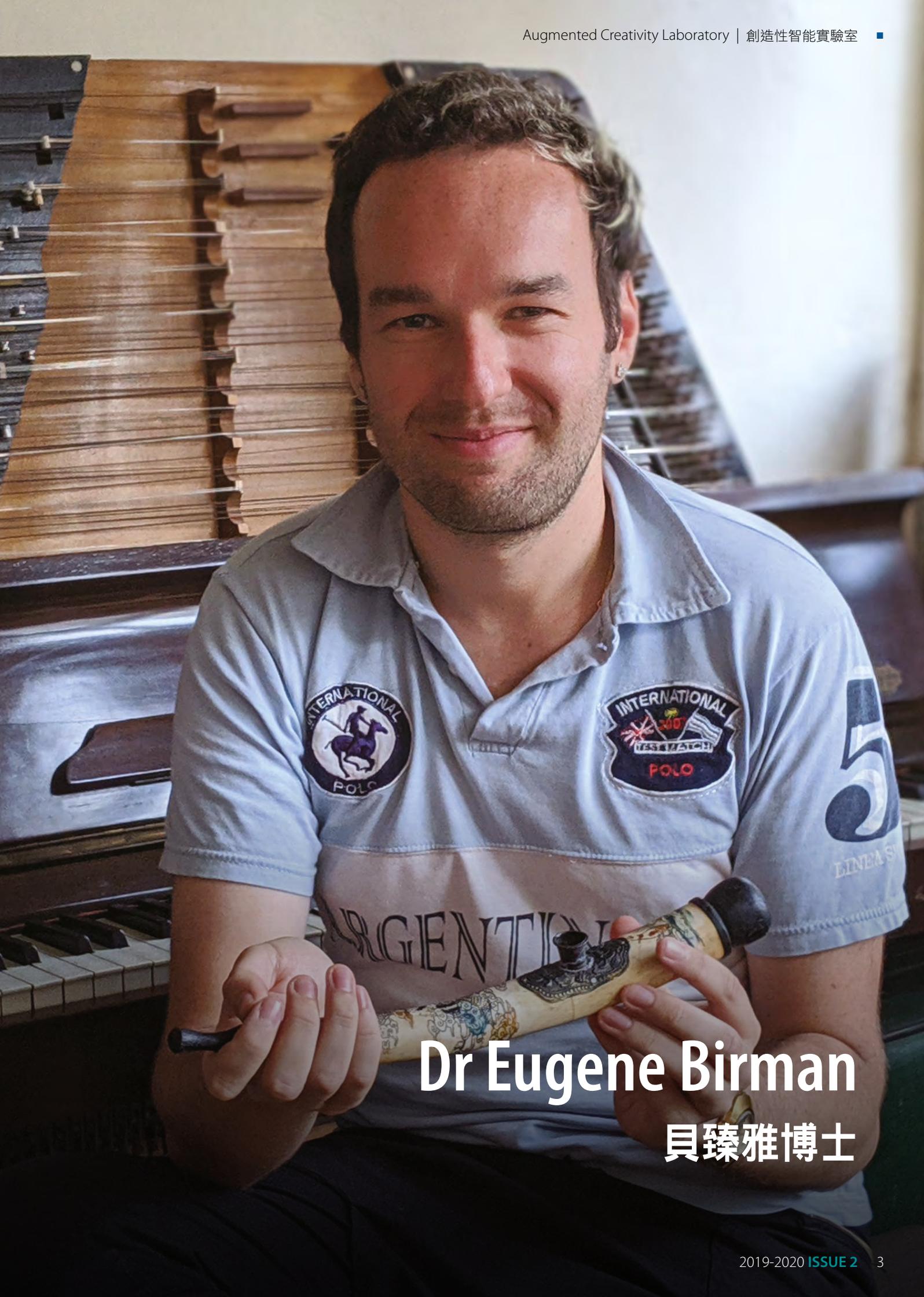
貝臻雅博士與Diel先生的創作意念，始於愛沙尼亞總統Toomas Hendrik Ilves與美國諾貝爾獎經濟學獎得主Paul Krugman於社交媒體上的一番爭辯，當時兩人就2008年開始的金融海嘯引發的緊縮問題爭持不下。

貝臻雅博士亦自言曾親歷金融危機的困境，當時他正於哥倫比亞大學修讀經濟學。「過去不少投資銀行與金融服務機構都會前來大學招聘應屆畢業生。但隨着美國資產市場泡沫突然爆破，此情此景不再，大學畢業生亦難以找到工作。所有人瞬間失去一切希望、念頭，職業、金錢頓成泡影。」貝臻雅博士憶起舊事時，臉上不免帶着一抹苦笑。儘管他沒有從事金融業的打算，但金融危機的影響無遠弗屆，至今依然歷歷在目。



Dr Birman and librettist Mr Scott Diel (right) | 貝臻雅博士與劇作家Scott Diel先生（右）合影





Dr Eugene Birman

貝臻雅博士



Dr Birman rehearses *Nostra Culpa* in Tallinn, Estonia in 2013 (Associated Press)
貝臻雅博士2013年時於愛沙尼亞首都塔林練排《Nostra Culpa》(美聯社)

“Our fault”

After ten years passed, Dr Birman wanted to find a way to talk about the crisis, which he considers an important moment in world history. At that time, he was working with Mr Diel on a music piece for Estonian Music Days, Estonia’s leading music festival. They hoped to create a piece that would be “both universal and personal”. It was during that time that the “Twitter war” came into sight.

Dr Birman and Mr Diel eventually produced the 16-minute *Nostra Culpa*. The opera title is Latin and means “our fault”, which was the remark made sarcastically by the President in his reply on who bears the responsibility of causing the financial crisis. Dr Birman explains that conflict emerged between big countries and smaller countries regarding the handling of the crisis, with a tendency for the US and other powerful countries to lecture the smaller countries because their experts thought that they knew better, even if those same experts have not visited Estonia before. Dr Birman emphasises that there isn’t one solution that is suitable for all. “The small countries usually do not have a way to respond. However, in this case, the (former) President of Estonia decided to speak up.”

「我們的過失」

十年過去，貝臻雅博士認為該次危機仍然是世界歷史的重要一筆，他希望尋找方法反思探討。當時他正與Diel先生正在為愛沙尼亞最大的音樂活動「愛沙尼亞音樂節」創作，並希望作品可以兼顧「普遍性與個人性」，然後，他們便留意到Ilves與Krugman的「Twitter論戰」。

貝臻雅博士及Diel先生最終創作了時長16分鐘的《Nostra Culpa》。據貝臻雅博士所說，*Nostra Culpa*是拉丁文，意謂「我們的過失」，摘自總統針對誰才是金融危機原兇的諷刺回應。貝臻雅博士解釋，大國與小國間的紛爭在金融危機中浮現，因為大國的專家自認對問題更為了解，大國往往指導小國應對。然而，這些專家可能甚至根本連愛沙尼亞也沒有去過，他亦質疑，單一經濟理論不見得適用於所有國家。即使如此，「小國通常沒有渠道回應。他們只是默默聽着，也許同意，也許不同意。但是，愛沙尼亞的情況有所不同，他們的（前）總統選擇反擊。」



The Tallinn Chamber Orchestra rehearses *Nostra Culpa* before the premiere with Estonian conductor Mr Risto Joost (rear left) and soprano Ms Iris Oja (rear right) (Associated Press)
塔林室內樂團與指揮家Risto Joost先生（後排左）、女高音Iris Oja女士（後排右）於首演前積極排練（美聯社）

Open to interpretation

There are only two characters in *Nostra Culpa*—the economist and the president. Both these roles were played by Estonian mezzo-soprano Ms Iris Oja. Dr Birman emphasises that they stayed faithful to the original text in twitter and blog posts. They did not change anything, and did not add any rhetoric or rhyme. “If you want something to be impactful, you have to give it the room to speak for itself. It doesn’t need to be dressed up, it’s already interesting.”

The music of *Nostra Culpa* is also unique. The opening seconds sound like glass shattering, which Dr Birman explains is a representation of the shattering of the global financial market. Like the music, “it happened quickly, but the consequences can go on for a very long time.” For the part when the economist talks about deflation, the duo found a way to “deflate” the music, so that all musicality is lost.

The words and the music in *Nostra Culpa* are neutral, allowing listeners to easily interpret it either way. “We have a discussion on how people misrepresent or misunderstand. It is just like social media, you can easily take something from it and use it.” Regardless of which side the listeners take, they think this opera is agreeing with their philosophy and applauding them. Dr Birman thinks this is an interesting way to talk about the financial crisis.



Ms Oja takes on the role of both protagonists (BBC News)
Oja女士一人分演劇中兩位主角 (BBC News)



Publications in the Baltic States on *Nostra Culpa*
波羅的海國家不少刊物皆有報導《Nostra Culpa》

觀眾任意詮釋

《Nostra Culpa》一劇就只有兩個角色——「經濟學家」與「總統」，兩個角色者均由愛沙尼亞次女高音Iris Oja女士演繹。貝臻雅博士表示，歌詞全部取自Ilves與Krugman於Twitter及《紐約時報》的博客文章，中間並沒有任何改動，甚至沒有添加任何修辭或押韻。「事實就是如此，只有充足的空間方可以讓文字顯得更強而有力，如此無需任何粉飾便已經足夠吸引。」

除此以外，《Nostra Culpa》的音樂亦別樹一幟。於開首的數秒，音樂便呈現宛如玻璃破碎的聲音。貝臻雅博士解釋，這是象徵國際金融市場的崩潰，正如劇中樂聲一樣，「情況轉瞬即逝，後續影響卻深遠無比。」他又提到，在經濟學家談論到緊縮問題時，他亦刻意設計一種「洩氣」(deflate)的音樂效果，使之失卻一切音樂性。

無論文字或旋律，《Nostra Culpa》始終保持中立，但聽眾卻往往可以基於自己的取態自行詮釋。「我們兩人曾就人們如何扭曲或誤解事情進行討論，但這就好像社交媒體一樣，您可以從中隨意取用一些資訊。」無論聽眾站於哪一立場，他們都不約而同認為，這部歌劇與他們的取態一致。貝臻雅博士認為，這是討論金融危機的一種有趣方式。

Sparking discussions around the world

As the first “financial opera” in classical music history, the premiere of *Nostra Culpa* in 2013 received wide media coverage, including articles by renowned media outlets Reuters, BBC, CNN, CBC and Le Monde. *Nostra Culpa* has since been performed in Estonia, Latvia, Hungary and Italy to thousands of people.

Prior to the premiere of *Nostra Culpa*, only international publications had discussed the debate between Krugman and President Ilves. After the premiere, the story became an international phenomenon. BBC World even made a TV documentary on the story. Estonian media was abuzz with discussions on the opera and the story that inspired it. SIRP, the leading Estonian cultural journal, called the piece “electrifying and earth-shaking” and asked the question, “Is our society more sharply seen from the outside? Or is the outsider simply more courageous to point out what is wrong?” The opera piece has stimulated discussion on the issue within and beyond Estonian society. As an Estonian herself, Ms Oja says, *Nostra Culpa* has created a “great impact on [the] whole [of] Estonian history” and it “defines modern Estonian traditions”.

At one stage, *Nostra Culpa* was on CNN primetime, with an average of 767,000 viewers per night, and BBC World, which reaches 400 million viewers across the world every week. The opera was later streamed online as well. Supported by HKBU Knowledge Transfer Office, CD copies of *Nostra Culpa* is now on pre-release to respected and influential journalists and musicologists before a wider public release. *Nostra Culpa* was recorded by the professional Italian orchestra ContempoArt Ensemble and conducted by Professor Nils Schweckendiek, Artistic Director of the Helsinki Chamber Choir and Professor at the Sibelius Academy of the University of the Arts, Helsinki. Prof Schweckendiek praises the creative piece, saying “in his musical setting, (Dr) Birman acknowledges the immediate, raw emotions engendered by these matters, but gradually moves them to a timeless, philosophical level. The listener experiences a cathartic journey from angst, cynicism, even rage, to transcendence and redemption.” According to Dr Birman, 2,000 CD copies will be released for the first stage, in seven places including Hong Kong. Even before its publication, news of the recording has already led to planned *Nostra Culpa* premieres in Argentina and Finland and renewed focus on the issue in the Baltic States, including Estonia, Latvia and Lithuania. The piece will also be released on popular music streaming platforms Spotify and Apple Music.

Future work on local issues

Dr Birman is now working on two new projects related to Hong Kong issues. One of them is being produced in collaboration with the Leisure and Cultural Services Department, with air pollution as the main theme. The other project will focus on the problem of continuous reclamation. In line with the key concept of “we create Atlantis”, this opera will be staged on barges, which are frequently used in reclamation. Unlike *Nostra Culpa*, Dr Birman says this opera will be more poetic and its core message will be more implicit. He also described this project as a “tech opera”, since it attempts to integrate technological elements in classical opera. Singers will all wear smart clothing made of e-textiles, which enable images to be projected onto their surface. Dr Birman considers this a great example of art meeting technology.

重掀國際討論

作為古典音樂史上第一部討論金融問題的歌劇，《Nostra Culpa》的首演在2013年時受到廣泛媒體關注，包括路透社、BBC、CNN、CBC、《世界報》在內的各大傳媒紛紛報導《Nostra Culpa》的表演。目前《Nostra Culpa》已於愛沙尼亞、拉脫維亞、匈牙利及意大利演出，吸引近千名觀眾欣賞。

在《Nostra Culpa》首演以前，只有國際刊物討論Krugm與Ilves總統之間的爭論，但在首演以後，這件事便廣受國內外關注，BBC World甚至還製作了一部以此為題的電視紀錄片。愛沙尼亞媒體則廣泛報導歌劇及其背後的故事，愛沙尼亞主要文化期刊SIRP稱讚《Nostra Culpa》「激動人心及帶來翻天覆地的變化」，並就主題提出思考：「在觀察社會時是否旁觀者清？抑或只是旁觀者更勇於指出問題？」由此可見，這部音樂作品成功激起愛沙尼亞社會內外對上述問題的迴響。本身是愛沙尼亞人的Oja女士亦指出，《Nostra Culpa》對整個愛沙尼亞的歷史產生了巨大影響，甚至「定義了愛沙尼亞的現代傳統」。

除了現場表演以外，《Nostra Culpa》亦嘗於CNN的黃金時段及BBC World播出，前者平均每晚收視約76.7萬觀眾，後者每星期則有4億觀眾收看。另外，該劇亦曾於網上平台供串流收看。在浸大知識轉移處的支持下，《Nostra Culpa》的實體唱片已預發行給評論家及記者。錄製將由意大利專業樂團ContempoArt Ensemble負責，並由赫爾辛基室內合唱團藝術總監、赫爾辛基藝術大學西貝流士音樂學院 Nils Schweckendiek 教授指揮。Schweckendiek教授讚揚道：「於貝臻雅博士的音樂設定下，Birman博士展示這些問題產生的直接而原始的情感，但同時逐漸把它們昇華至永恆但哲學的層次。從焦慮到憤世嫉俗，從憤怒到超越與救贖，聆聽者在過程中間經歷了一段宣洩之旅。」據貝臻雅博士所言，首階段將在包括香港以內的七個地方發行2,000隻唱片。於發行以前，該唱片已成功吸引阿根廷與芬蘭首演《Nostra Culpa》，並重新引起包括愛沙尼亞、拉脫維亞及立陶宛在內的波羅的海國家對上述議題的關注。貝臻雅博士亦預告《Nostra Culpa》將於Spotify及Apple Music等廣受歡迎的音樂串流平台上發布。

未來作品聚焦本地議題

貝臻雅博士目前正醉心於兩個有關本地議題的新項目，其中之一與康樂及文化事務署合作，主題為空氣污染；另一項目則聚焦持續填海帶來的問題，為配合「填海愈多，陸沉愈快」的主題，舞台與觀眾席皆會設於駁船之上，讓觀眾能更切身處地感受危機所在。貝臻雅博士表示，今次的作品有別於《Nostra Culpa》，其中會有詩的元素，核心訊息亦將較為隱晦。他又形容這部作品為「高科技歌劇」，因為這次將嘗試在古典歌劇中引入科技，歌唱家將穿上可把圖像投射於其表面的智能服裝。繼金融遇上歌劇，貝臻雅博士將繼續大膽創新，讓科技結合歌劇。

e-Resources Reclaim Joy of Language Learning

電子教材添樂趣



Dr Anita
Poon Yuk-kang
潘玉琼博士

Hong Kong is known for its examination-oriented culture. Taking English language education (ELE) as an example, teachers sometimes have to resort to spoon-feeding their students with vocabulary, grammar rules and sentence structure to fulfill curriculum requirements. Despite the fact that students may score high marks in exams, they are denied the joy of learning and may lose the motivation for self-learning. A team of HKBU scholars from the Department of Education Studies at HKBU is attempting to bring radical change to this situation.

香港向以考試文化見稱，填鴨式教育尤為普遍。以英語教育為例，老師於課上忙於灌輸詞彙、語法及句子結構等知識，以滿足評估需要。然而，囫圇吞棗下，縱然成績優異，學生卻鮮少感受到學習的趣味，對自學缺乏衝勁。浸大教育學系研究團隊透過應用電子學習技術，為情況帶來根本改變。

Potato Wedges

Hamburgers

Chicken Nuggets

French Fries

Pineapple & Sausage Skewers

Select the picture

Which 6 dishes are made of meat?

Pineapple & Sausage Skewers

Chicken Wings

Smoked Salmon Bites

Fish Balls

Each unit consists of tasks that are related and can only be completed in sequence | 每個單元細分為多個彼此關連的課題，學生須順序逐一完成

Commissioned by the Education Bureau (EDB), in 2010, Dr Anita Poon Yuk-kang, Associate Professor of the Department of Education Studies, conducted an evaluation of the ELE curriculum reform. The results showed that Hong Kong students lack self-learning ability and that schools do not adequately address learner diversity. Dr Poon and her team members, Professor Sandy Li Siu-cheung and Senior Lecturer Mr Tony Lai Kwok-hung of the Department of Education Studies thought the solution could lie in e-learning so they embarked on a research project with the EDB to build ELE online assessment resources with an emphasis on connecting reading and writing skills for primary students. Between October 2015 and January 2017, four primary schools took part in a trial run of the research output.

Dr Poon acknowledges that online materials are neither new nor rare in Hong Kong. Merely producing an electronic version of materials brings no fundamental change to ELE, so the team proposed integrating assessment with teaching and learning to create a “learning, teaching and assessment” (LTA) framework with the aim of changing the examination-dominant culture.

Ongoing task-based learning

The project produced two outputs: an online platform and e-packages for ELE. The online platform is a website that can be accessed via personal computers, tablets or smart phones. The e-packages include several units of theme-based tasks underpinned by Task-Based English Language Learning, a new method of teaching English. The learning process involves a set of communicative tasks that are directly linked to the curricular goals they serve, and aim at solving various communication problems. Each unit in the e-packages consists of more than ten reading or writing tasks, which are related and can only be completed in sequence. For example, a task requires the learner to read an email, and then based on the information in the email, the learner is requested to fill in a reply slip. The small progressive tasks help prepare the learner for the final task, which is usually a summative writing task with certain guidelines. This new pedagogy is able to integrate the teaching of reading and writing skills.

早於2010年，教育學系副教授潘玉琼博士受教育局委託，針對英語教育的課程改革進行評估。結果發現，香港學生自學能力不足，學習差異在現行教育制度下亦難以處理。潘博士及其團隊成員教育學系李兆璋教授與高級講師黎國雄先生相信，電子學習有望成為潛在解決方案，遂與教育局合作開展研究項目，透過建立一套供小學生使用的英語教育網上教材，重點連結其閱讀與寫作技能。項目於2015年10月至2017年1月期間於四家本地小學進行試驗計劃，以收集數據。

潘博士表示，網上教材於香港而言並不稀罕，如果純粹把內容從書本移植至網上，教學上根本不會出現改變。為改變以考試為主的教學文化，她的團隊提出「學習、教學與評估」(LTA) 框架，結合三者，減低評核對學生的影響。

課業為本 循序漸進

團隊為項目構建一個網上平台及電子英文教材套裝。網上平台實際上是一個支援個人電腦、平板電腦或智能電話的網站，而電子教材套裝則是基於嶄新的課業為本教學法設計，包含多個圍繞特定主題的單元。學習過程中要求學生完成一系列緊扣課程內容的課題，而且其重視溝通的特點可幫助學生解決生活上遇到的會話障礙。每個單元細分為十個以上的閱讀與寫作課題。這些課題彼此關連，學生只有按照預訂次序方可順利完成。例如其中一個課題就要求學生細閱電郵，再根據上面的內容填妥回條，這種漸進式的小課題協助學生積累知識與技巧，讓他們得以完成單元的最後課題，通常是一個篇幅較長的寫作題目。題目會給予指引，讓學生活用之前習得的知識完成寫作。此嶄新的學習法講求融匯讀寫技巧，故訓練亦有別於傳統個別進行，而是結合為一。

Dr Poon emphasises that e-tasks are different from boring and repetitive drills. They are designed to be interesting, motivating and related to daily life. Some tasks are graphic rich, training the learner to decode visual information instead of words. Other exercises involve interactive elements, such as instructions to drag and drop the correct answer instead of just circling it. Overall, the units simulate real-life scenarios, providing a sense of authenticity and helping the learner to deal with different real-life situations.

Mutual benefits for teachers and students

The website design promotes self-directed learning, and students are encouraged to complete the tasks outside of class. If they face any difficulties, the system provides instantaneous feedback in the form of annotations to help them address the problem, thus enabling students with different learning abilities to complete the tasks according to their own progress. Therefore, Dr Poon considers that this platform can help address learner diversity. Since the platform allows teachers to simultaneously review the progress of students when they are doing the e-tasks, teachers can provide extra support according to students' needs. Teachers can also compare and analyse the statistics across different classes and then assign level-appropriate e-tasks to their students.

"The online platform not only benefits the students, but also enhances the professional knowledge of teachers," says Dr Poon. The e-packages come with pre-tasks and post-tasks, which serve as a guide and help the teacher to prepare their students for the tasks. It also provides extra training on certain aspects and promotes teachers' professional development.

潘博士強調，與重複且沉悶的操練練習不同，電子課題着重趣味，以激發學生自主學習，而且必須與日常生活息息相關。部分課題一反傳統，以圖像代替文字，訓練學生圖像閱讀能力。另一些課題則加入互動元素，例如讓學生拖曳圖畫物件到特定位置，而非單調的圈選答案。此外，多數單元都模擬現實生活場景，營造真實感讓學生更容易投入其中，同時亦有助他們日後應對這些日常狀況。

教學相長

網上平台有助促進自主學習，學生可於課餘時間完成電子課題，倘若遇上困難，系統會以注釋形式提供即時反饋，幫助他們解決問題。如此，不同學習能力的學生皆可以依據自己的進度完成課題，故潘博士認為此平台有助解決學習差異問題。此外，由於教師可以透過平台檢視學生完成課題的進度，並了解哪些學生需要額外支援。系統亦提供功能讓老師分析、比較不同班級的統計數據，以便配合學生能力安排合適課題。

「網上平台不僅學生受益，亦可促進老師專業發展。」潘博士表示，電子教材套裝附設課題前後的延伸教材，協助教師於課題前為學生作好事前準備，事後如有需要，亦可再行闡釋補充。這些延伸教材可望作為指引，促進教師的專業發展。

EXAMPLE PUT THE BOOK BACK ON THE SHELF

Do's
IN LIBRARY

- 1 throw rubbish
- 2 Keep quiet
- 3 Line up

Continue

AT THE CIRCULATION COUNTER



PUT THE LITTER INTO THE BIN.



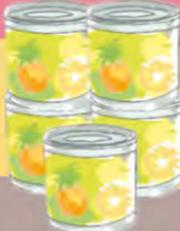
KEEP QUIET IN THE LIBRARY.



QUEUE UP AT THE CIRCULATION COUNTER



one pack of sausages



five cans of pineapples



three bottles of cola

can | box | packet | bottle | piece

e.g., one box of chocolate

The e-tasks are interactive, graphic rich and related to daily life | 電子課題重視互動，圖像豐富，而且與日常生活息息相關

A shift in exam-focused culture

The research project successfully developed and piloted two outputs. To carry out a systematic and in-depth impact assessment, Dr Poon's team launched a Knowledge Transfer Partnership project to introduce the website and e-packages to one class of students in a primary school for a whole school year, from September 2017 to August 2018. Interviews and surveys with teachers and students were conducted to gauge the impact. The results showed changes in the deep-rooted assessment culture. Students preferred assessment tasks on the e-platform to traditional textbook exercises because it eliminated unnecessary drills. The annotations also helped them develop their self-directed learning ability. Besides, the skills acquired from the e-tasks also helped students gain confidence and independence in English reading and writing. The teacher admitted that the "assessment for learning" orientation of the e-platform and the e-packages changed her perspective towards assessments. Through the data analysis provided, she could easily identify the weaknesses of her students and adjust the teaching method to suit their needs. Hence, the use of these e-resources led to improvements in both learning and teaching.

After the team successfully concluded the pilot project, the team organised a seminar and workshop to promote the new pedagogy. The event held in March 2019 attracted 56 English teachers from 39 primary schools. A survey conducted after the seminar showed that more than 80 per cent of the attendees thought that the e-packages are interesting and interactive, and can help promote self-directed learning. In fact, three schools were so impressed that they expressed interest in implementing the pedagogy in their schools. The five-month implementation was completed in July 2019 and the team recorded positive outcomes in line with previous trials.

In a testimonial letter, the EDB indicated that it would introduce the e-resources to primary school teachers in future professional development activities. Describing this project as "a small step to change the exam-oriented culture", Dr Poon hopes more schools and teachers will adopt the LTA framework to ease student stress and help them reclaim the joy of learning.

改變考試文化

研究計劃成功開發並測試上述教材，但為求更系統且深入的研究其效果，潘博士的團隊開展一個知識轉移合作計劃項目，在2017年9月至2018年8月的一整個學年之中，把研究成果實踐於一家小學的一個班級。團隊事後通過與老師訪談，及對學生進行意見調查審視效果，結果顯示根深柢固的評核文化出現若干改變。學生反映，相比傳統的教科書練習，他們更樂於做電子課題，因為毋須不必要的重複操練。另外，註解有助他們發展自主學習能力，從課題學到的技巧亦提升他們在英文閱讀與創作方面的自信與獨立性，讓他們更勇於活用英語。老師亦同意，電子教材的「為學習而評核」取態改變了她對評估的看法，通過數據分析，她可以輕易找到學生的弱項，並檢討教學方法以迎合其需要。因此，她認為電子資源有助改善教與學，學生與老師皆有所裨益。

研究成果的成功實踐以後，團隊為普及新教學法，於2019年3月舉辦講座與工作坊進行宣傳，吸引多達39家小學的56名英語教師參與。活動後的一項調查顯示，超過八成與會教師認同電子教材饒富趣味且有互動元素，有助促進自主學習，其中三家學校更表示希望試行新教學法。為期五個月的教學實踐於2019年7月完成，事後評估得到與之前試驗一致的正面結果。

有見於計劃成功實踐，教育局致函承諾，將於日後專業進修活動上，向更多小學教師推廣電子教材。潘博士形容，此研究僅為「改變考試文化的一小步」，她希望未來有更多學校與教師應用LTA框架，以減輕學生壓力，並幫助他們重拾學習樂趣。



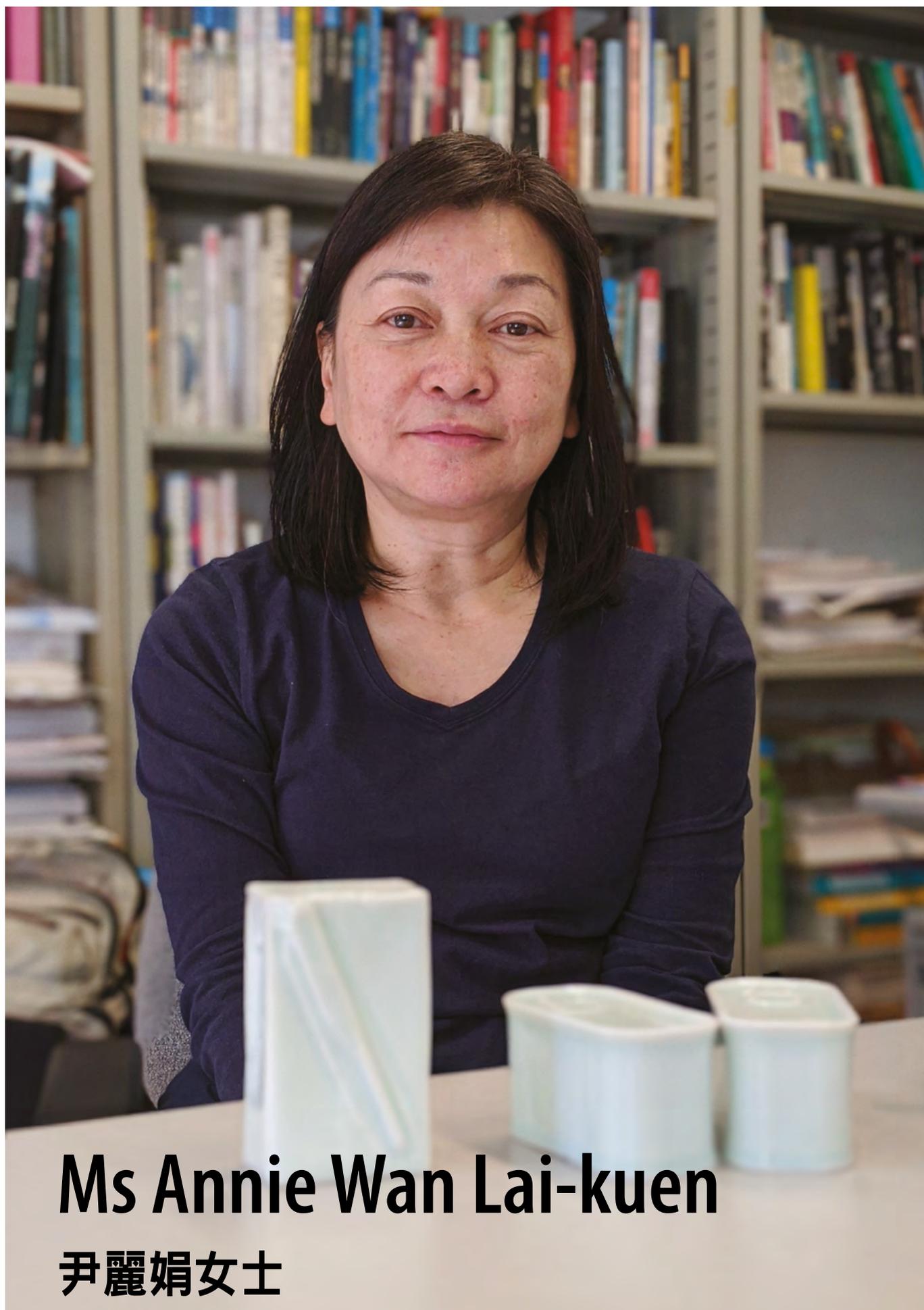
At the workshop, teachers try out the e-tasks | 教師於工作坊上試做電子課題

Zan Baak Fo: Exploring the Value of Art

藝術何價—《珍百貨》

Art is held in high regard in our culture, but an item's worth is often measured by its monetary value. Renowned ceramic artist Ms Annie Wan Lai-kuen, Assistant Professor of the Academy of Visual Arts at HKBU, tried to break the norm through her interactive exhibition, *Zan Baak Fo*, with ceramic items portraying daily commodities displayed alongside real merchandise on the shelves of a grocery store.

藝術於我們的文化中地位斐然，但價值卻往往只以金錢衡量。著名陶瓷藝術家、浸大視覺藝術院助理教授尹麗娟女士打破常規，作品《珍百貨》以仿製自日用品的陶藝，與真實雜貨商品並排，透過兩者的矛盾，與訪客探索藝術的真正價值。



Ms Annie Wan Lai-kuen

尹麗娟女士

Exhibited from mid-December 2018 to late January 2019, *Zan Baak Fo* was the first art exhibition of JOCKEY CLUB New Arts Power arts festival, and presented across the city by the Hong Kong Arts Development Council. Supported by The Hong Kong Jockey Club Charities Trust, the purpose of this arts festival is to showcase Hong Kong's most internationally celebrated artists to the community.

The exhibition name *Zan Baak Fo* is a phonetic transcription in Cantonese. "Zan" means "precious" in Cantonese, and is a homophone of "authentic". The word also implies artwork, often sold at a high price in auctions or art fairs. On the other hand, "Baak Fo" covers a range of affordable, everyday goods. Thus, the name fuses two contradictory concepts, representing the tension between them throughout the exhibition.

"Real" vs "fake"

"Does art come with a price?" This is a question Ms Wan wanted to explore with the public through *Zan Baak Fo*. She incorporated her art pieces into a local grocery store in Ping Shek Estate. Ceramic replicas of over 30 common grocery items, such as various types of vegetables, canned foods and cartons of milk, were created in Jingdezhen, a Chinese city famous for its porcelain. These ceramic pieces of art were displayed side by side with merchandise typically found in the store, highlighting the coexistence of art and daily life. The art pieces were also exhibited in an art gallery in Sheung Wan. The two contrasting venues played with the idea of the value of art, with pieces sold at the same price as the original consumer goods that inspired them. "When an art piece is sold at the price of a can of coke, everyone can experience being an art collector," says Ms Wan. She hopes visitors can rethink how we determine the value of art, beyond measuring it in monetary terms.

Another area Ms Wan set out to explore through *Zan Baak Fo* is the relationship between "real" and "fake". German philosopher Walter Benjamin suggested that "the aura of a work of art is devalued by mechanical reproduction". However, in the case of ceramics, the original objects, or the "real" objects, used as the prototype in moulding are much lower in price than their mass reproduced replicas, i.e. the "fake" objects. This seems to counter Benjamin's theory as the aura of the ceramic item is enhanced rather than devalued in the process. Ms Wan added that in *Zan Baak Fo* the "fake" objects were placed in their "real" setting of a grocery store so that people could easily relate them to their "real" counterpart, revealing yet another dimension of this art exhibition.

在香港賽馬會慈善信託基金慷慨捐助下，香港藝術發展局（藝發局）舉辦《賽馬會藝壇新勢力》系列展覽，展出一眾名揚海外的藝術家的作品，予本地市民欣賞。《珍百貨》作為首個展覽項目，於2019年12月中至2019年1月尾展出。

作品名稱中的「珍」，既取其「珍貴」之意，暗示價值連城的藝術品；同時亦因其為「真」之同音字，扣連展覽的重要命題。而「百貨」則意指生活中的各種日用品，價格低廉。因此，作品之名糅合了兩個意義相反的概念，營造出整個作品的張力。此外，其英文名字直接採用「珍百貨」粵語拼音，為作品更添幾分地道風味。

「贗」與「真」

「藝術何價？」是尹女士希望透過《珍百貨》與公眾探討的問題。她搜羅30多種常見的日用貨品，包括罐頭、盒裝牛奶及多種蔬果，倒模後於以瓷器見稱的景德鎮燒製成陶瓷。然後，她選址坪石邨的一家雜貨店，把陶藝品與真實貨品並排於貨架之上，融入藝術於生活之中。與此同時，尹女士亦於上環的一家藝廊展出相同的陶藝品。截然不同的選址，玩味着藝術之於生活的兩套價值。遊人離去之時，尚可以日用品的售價，購入現場的陶藝。「例如可樂造型的陶瓷便以可樂的售價訂價，所有人都可以一嘗收藏家滋味。」尹女士亦希望遊人在過程中反思，藝術品盛載的不同價值，如何以金錢計量。

「真」與「假」之間的關係是尹女士希望透過作品表達的另一主題。德國哲學家Walter Benjamin曾提出，「藝術品在機械複製下失去了本來的靈暈」。但於陶藝而言，用於倒模的原物雖被視為「真品」，價值卻遠不如批量生產的陶瓷複製品（亦即「贗品」），似乎顛覆了Benjamin的理論。尹女士亦補充，由於「贗品」被置於真實的雜貨店之中，讓人可以輕易聯想到真實貨品，這種聯繫在在展現作品的另一面向。

Ceramic art pieces on display alongside everyday consumer goods 陶藝品與真實貨品並列於貨架之上



Zan Baak Fo is incorporated into a local grocery store in Ping Shek Estate
《珍百貨》融入坪石邨的一家雜貨店之中



An art gallery in Sheung Wan serves as the other exhibition venue
另一選址為上環的一家藝廊

Community engagement

Zan Baak Fo is an extension of Ms Wan's exhibition *Everyday a rainbow* in the 11th Gwangju Biennale in South Korea. For that exhibition, she transformed a small cabin outside the exhibition hall into a visually attractive rainbow with colourful packaging from everyday products. For the second part of her exhibition, she replaced the everyday goods found in shops along the main road towards the exhibition hall with replicas made of blue green celadon. Since the entrance ticket to the Gwangju Biennale is quite expensive, Ms Wan hoped that by transforming this pathway used mostly by residents the local neighbourhood could enjoy her artwork free of charge.

Community engagement is a running theme of Ms Wan's work. For this reason she picked Ping Shek Estate as one of the venues of *Zan Baak Fo*. "Ping Shek Estate is close to my office at the Kai Tak Campus of HKBU. The neighbourly relationships captivate me. I hope to preserve this kind of social bond, which is increasingly rare in today's Hong Kong." Integrating art into a local grocery store successfully attracted people to visit this old estate and enjoy art with residents of the estate.

連結社區

《珍百貨》為尹女士於第11屆韓國光州雙年展的參展作品《Everyday a rainbow》的延伸作品。於該次展覽中，她利用日用貨品的多彩包裝，把展場外的一間小屋幻化成七色彩虹，展示商品包裝如何吸引眼球。她又於作品的第二部分，在通往展覽館的主要道路上，把商店中的部分商品，置換成以青瓷製成的複製品。透過把作品置於場地以外，她希望當地居民可以免費欣賞其作品，即使他們無法負擔昂貴的入場門票。

一如前作，社區參與是尹女士的關注點，亦是她選址坪石邨舉辦部分展覽的原因。「坪石邨毗鄰我在浸大啟德校園的辦公室，路過的時候見到邨內的社區人情，我很希望可以保留這種在今日香港日益稀罕的鄰舍關係。」與雜貨店的合作吸引不少外來遊人到訪這個懷舊屋邨，在欣賞藝術之餘，亦體會到當地人情。

Everyday goods in shops along the main road towards the Gwangju Biennale exhibition hall are replaced with replicas made of blue green celadon
通往光州雙年展展覽館的道路上，商店的部分商品被置換為以青瓷製成的複製品



Tung Zan Baak Fo is presented in the *Classics Remix: The Hong Kong Viewpoint* exhibition at the Hong Kong Museum of Art
《童珍百貨》作為《原典變奏——香港視點》展覽的一部分，展出於香港藝術館

A small cabin is transformed into a rainbow with the colourful packaging of everyday products in *Everyday a rainbow*
 《Everyday a rainbow》把一間小屋幻化成彩虹，展示商品包裝如何吸引眼球



Children's toys are transformed into ceramic items in *Tung Zan Baak Fo*
 《童珍百貨》展出一系列不同年代的兒童玩具的陶瓷複製品

Converting art into care

During the exhibition period, posts on *Zan Baak Fo* went viral on social media, effectively drawing public attention to local ceramic art. Almost 10,000 visitors visited the exhibitions, and a forum and three ceramic workshops were also held to foster art education. When the art pieces were available for purchase during the latter stage of the exhibition, in just two days around 1,000 pieces were sold, with the majority sold on the first day. Ms Wan noticed that some netizens created their own derivative works with the art pieces they bought, for example, a picture of a ceramic vegetable inside the refrigerator as if it was an edible plant. It would appear that the project's primary goal of promoting art was achieved.

In recognition of her creative work, Ms Wan was named Artist of the Year (Visual Arts) at the Hong Kong Arts Development Awards 2018. A successive work of *Zan Baak Fo*, *Tung Zan Baak Fo* ("Tung" means "children" in Cantonese), was exhibited at the Hong Kong Museum of Art as part of the *Classics Remix: The Hong Kong Viewpoint* exhibition. For this latest exhibition, Ms Wan transformed a range of children's toys, from yellow rubber ducks to a Buzz Lightyear doll, into ceramic items. Through *Tung Zan Baak Fo*, Ms Wan aims to reveal how art pieces are monetised, and how they can be converted to deliver humanistic care. By donating to a specified charity, visitors can obtain tokens to exchange for a piece of art, demonstrating the interchangeability of artwork and social care.

藝術轉化關懷

《珍百貨》於展覽期間錄得近10,000名訪客參觀，並於社交平台上引起熱話。不計其數的帖文與照片分享有關展覽的細節，成功引起廣大市民對本地陶藝的關注與討論。為促進藝術教育，主辦機構又舉辦一個座談會與三個工作坊，讓參與者對陶藝有更深認識。當陶藝品於展覽後段公開發售，近千件藝術品於短短兩天內便旋即被遊人搶購一空，其中絕大多數更是於首天已沽清。尹女士留意到，不少網民利用購入的心頭好進行二次創作，再張貼於社交平台，例如把陶瓷蔬菜置於雪櫃之中，彷彿它是真實的一樣。由此可見，計劃在推廣藝術方面的主要目標已然達成。

尹女士的創作廣獲好評，於「2018香港藝術發展獎」就榮獲藝術家年獎（視覺藝術）。她亦繼續利用藝術探索不同問題，最新作品《童珍百貨》作為《珍百貨》的延伸作品，以陶瓷仿製一系列兒童玩具，由小黃鴨至巴斯光年玩偶等不同年代的玩具一應俱全。尹女士希望，透過今次作品可以展示藝術品如何被轉化為金錢，另一方面又如何轉化為人道關懷。於今次展覽，只要訪客向指定慈善機構捐款，便可獲取代幣交換現場展出的陶藝，藉此展現藝術與社會關懷之間的互換。

Social Inclusion via Gymnastics

融和體操促進社會共融

Unified sports brings people with and without intellectual disabilities (ID) together on the same team. It is considered a good way to break down stereotypes about persons with intellectual disability. Prof Cheung Siu-yin of the Department of Sport, Physical Education and Health at HKBU invented a new sport that suits people with different physical conditions known as “unified Gymnastics for All (GFA)” to promote social inclusion.

融和運動是融合智障人士與一般人士於同一隊伍的體育活動，故被視為消除智障人士身上的刻板標籤的良好方法。浸大體育、運動及健康學系張小燕教授就發明了一種嶄新的「融和體操」，一方面宣傳共融理念，另一方面亦讓不同身體條件人士都可同享運動樂趣。

GFA is a type of recreational gymnastics that offers a varied range of physical activities for people of all ages and abilities. As the Chairperson of the Gymnastics Association of Hong Kong, China, Prof Cheung has years of experience in promoting GFA to different segments of the society, including children, older adults and people with ID. She thinks that GFA has huge potential as a means of promoting social inclusion by providing a platform for people with and without ID to develop interpersonal relationships while enjoying sports.

普及體操是一種較為輕鬆的體操，適合不同年齡層與體能條件的人士參與。作為中國香港體操總會主席，張教授一直致力把普及體操推廣至社會的不同階層，包括兒童、長者及智障人士。多年經驗讓她想到，普及體操於促進融和社會方面具有莫大潛力，通過讓智障人士與普羅大眾共同參與，從而讓彼此於體育活動中拉近關係。



Prof Cheung
Siu-yin

張小燕教授



Students with ID surprise everyone with their gymnastic moves | 不少特殊學生有力完成難度較高的動作，潛力遠超大家想像

Bridging students via fun day

Building on her past success, in October 2016, Prof Cheung launched a knowledge transfer project aimed at developing the first-ever inclusive GFA programme in a primary school setting with the support of KTO's Knowledge Transfer Partnership (KTP) Seed Fund. The unified GFA programme engaged 97 pupils from two mainstream primary schools and 106 students from two special schools. From the mainstream schools, Primary 4 to 6 students were selected as they are mature enough to understand the concept of individual differences and are able to get along with students with special needs. The students from the special schools who have mild intellectual disabilities were in the same age range as their mainstream peers.

Briefing and training sessions on GFA were provided to the students, with additional information on individual differences introduced to the students from mainstream schools. After four training sessions, each mainstream school paired up with a special school to participate in the Unified GFA Fun Day held at Shek Mun Campus of HKBU. The Unified GFA Fun Day had a party-like atmosphere and students were divided into teams made up of both mainstream and special students. Led by HKBU student volunteers who had received training from certified GFA coaches, team members worked together to choreograph their own gymnastic performances. Prof Cheung says that a competitive element was added to enhance participation. The scoring system was not based on difficulty or execution. What counted was the creativity and enthusiasm displayed.

「同樂日」互相交流

在浸大知識轉移處的知識轉移種子基金支持下，張教授於2016年10月着手開展首個融和體操計劃。是次計劃以小學生為對象，涉及兩所主流小學及兩所特殊學校，共計97名主流學生與106名特殊學生。所選定的主流學生就讀四至六年級，張教授認為這個年齡層足夠成熟理解個體差異概念，並能與有特殊需要的學生和睦共處。至於特殊學生則為輕度智障，年齡與主流學生相仿。

該計劃為學生提供普及體操的簡介與基本訓練，同時亦讓主流學生認識何謂個體差異。經過四節培訓課程，每所主流學校各自與一所特殊學校配對，參加於浸大石門校園舉行的融和體操同樂日活動。主流學生與特殊學生被安排組成隊伍，並於事前已接受相關訓練的浸大志願學生助理帶領下，合作創作屬於自己的體操表演。張教授表示，為了提高學生的參與，活動刻意以比賽形式進行，但勝負卻並非取決於動作難度或完成度，而是他們的投入程度與創意。



Dispelling misconceptions, fostering interaction

Though it was the first time the children met each other, their level of cooperation far exceeded Prof Cheung's expectations. She was particularly touched to see the students helping their peers from special schools to carry out some gymnastic moves. The potential of the special students also surprised Prof Cheung as she did not expect them to carry out certain gymnastic moves, such as cartwheel. Prof Cheung thinks that this demonstrates how gymnastics can serve as a platform to bring their talent into full play.

To measure the impact of the programme, the research team conducted a pre- and post-survey. The results showed that only 65 per cent of the mainstream students had previous interaction with students with ID. After participating in the unified GFA programme, students from mainstream schools showed better understanding and empathy towards students with ID, for instance, fewer students held the misconception that intellectual disability is transmissible. This result proves that unified GFA activities can help eliminate the boundary between mainstream and special students. Moreover, 82 per cent of the mainstream students had a positive view of the programme, but Prof Cheung reminds us not to neglect the fact that six per cent actually felt disappointed or unhappy, which suggests that more needs to be done to promote social inclusion. As for students with ID, 97 per cent of them felt happy about the experience. The student helpers from HKBU agreed that the activities improved their perception of people with ID and inclusion activities. The programme also enhanced generic skills such as leadership and communication skills, which help develop the HKBU graduate attributes. Lastly, 89 per cent of all participants indicated willingness to join similar activities in the future.

消除誤解 促進互動

雖然孩子於是次活動才初次見面，但他們的合作比張教授事前預期的更為出色。有主流學生更主動協助特殊學生完成體操動作，讓她尤為感動。張教授亦言，部分特殊學生的潛力遠超她的想像，例如她事前就未有想到他們可以完成側手翻這類難度較高的動作，故她認為，這恰好證明體操可以作為一個平台，讓他們一展所長。

為檢視成效，研究團隊於活動前後進行調查。結果發現，只有65%的主流學生過去曾與智障學生接觸，而參加過融和體操活動後，他們對智障學生的了解及理解都有所增長，例如更少學生誤解智障可以傳染，證明融和體操有助消除主流學生與特殊學生之間的隔閡。此外，82%的主流學生對活動反應正面，惟張教授亦提醒，我們不應忽視6%的主流學生於過程中感到失望或不快，意味仍有更多融和教育的需要。主流學生以外，97%特殊學生對是次活動的體驗感到滿意，而浸大的志願學生助理亦同意，活動有助提高對智障人士與融和活動的認識，並促進領導能力與溝通技巧等通用技能的發展，從而培養浸大的畢業生特質。所有參加者中，高達89%表示將來願意參與同類型活動，可見未來大有可為。



Students from mainstream schools help their peers from special schools to carry out gymnastic moves
主流學生主動協助特殊學生完成體操動作



All children, regardless of their abilities, find joy in unified GFA | 智障與否，無阻孩子感受融和體操樂趣



Unified GFA performance at the 2019 Hong Kong Gymnastics For All Festival in Queen Elizabeth Stadium

2019香港普及體操節期間的融和體操表演

Lack of resources impedes development

To extend the impact of her research, Prof Cheung launched a Research Impact Support and Enhancement (RISE) Fund project. Implemented in the community setting, the project targets adults with mild intellectual disabilities and the elderly, who have more free time. The project conducted in collaboration with the Chinese Young Men's Christian Association of Hong Kong (YMCA) and Hong Chi Association, involved two sheltered workshops and two elderly centres. While it was arranged in a similar way to the one in a school setting, this project provided a much greater incentive to the participants as the two best teams were selected to perform at the 2019 Hong Kong Gymnastics For All Festival in Queen Elizabeth Stadium. This was a memorable moment for the participants since most of them did not have any previous stage experience.

Despite the similar arrangement of the two projects, Prof Cheung says the challenges were quite different. In the school setting, the greatest challenge is the reluctance of mainstream schools to join the programme owing to the difficulty in squeezing extracurricular activities into an already tight schedule of their students. In the case of sheltered workshops and elderly centres, the biggest challenge was the lack of resources, such as exercise space and facilities. Prof Cheung thinks this must be addressed in order to further promote unified GFA in society.

Exemplary unified sports

The findings of the two projects were presented at two international conferences, namely the European Congress of Adapted Physical Activity in the United Kingdom and the Fédération Internationale de Gymnastique Gymnastics for All Colloquium held in Canada. Prof Cheung also introduced the unified GFA programme to members of the Special Olympics International and received positive feedback. Special Olympics Hong Kong praised unified GFA, calling it an exemplar of unified sports for individuals with and without ID which could further develop the field and promote inclusion through sports.

Due to the beneficial impact on society, Prof Cheung won the Knowledge Transfer Award 2017/18. Although she never expected to win, she happily accepted this award as an affirmation of her effort in the promotion of unified GFA. In the future, she hopes to showcase unified GFA in international events and promote it to the whole world.

資源匱乏成推廣絆腳石

為進一步拓展其研究影響力，張教授後續展開一個提升研究影響力資助基金項目。是次計劃於社區實施，對象為輕度智障的成年人，以及閒暇時間較為充裕的長者。張教授成功邀請香港中華基督教青年會與匡智會參與合作，計劃涉及兩家庇護工場及兩家長者中心。整體安排與上一個項目類同，但為求鼓勵參加者投入比賽，最佳表現的兩隊獲邀於2019香港普及體操節期間進行過場表演。由於大多數參加者此前都未有任何專業表演的經驗，因此能於可容納3,500名觀眾的伊利沙伯體育館表演，實屬難忘時刻。

縱然安排大致相同，但不同的環境卻讓張教授領略到截然不同的挑戰。於學校設置上，最大的難處是主流學生課業繁重，說服學校讓學生參與校外活動殊不容易。至於庇護工場及長者中心的情況，資源緊絀則是更大問題，適合運動的場地與設施都大有不足。張教授直言，上述問題未能解決的話，將成為今後推廣融和體操的絆腳石。



Lack of exercise space is the biggest challenge in promoting unified GFA in the community

場地資源是在社區推廣融和體操的巨大障礙

融和體育楷模

張教授的研究成果先後發表於兩個國際會議，包括於英國舉行的歐洲適應性運動會議以及於加拿大舉行的國際體操聯盟普及體操研討會。張教授亦向國際特殊奧林匹克成員介紹融和體操計劃，並獲得正面回響。香港特殊奧運會亦讚譽融和體操作為融和運動的模範，有助未來發展，讓大眾不論智障與否，都可同享體育樂趣，亦可藉此推廣社會共融。

基於上述研究對社會的重大影響，張教授榮獲2017/18年度知識轉移獎。儘管事前並未預期，但她亦言，獎項是對她致力推廣融和體操的肯定。展望將來，張教授期望可於國際活動場合上展示融和體操，以將其推廣到全世界。

Promoting a Family Doctor Healthcare Model

知識化為共鳴故事 推廣家庭醫生

“If we did not change doctors frequently, Hei Hei won't be so scared [of doctors],” said a desperate mother struggling to bring her sick child to the doctor. The scene is from the government's micro movie, *My Family Doctor*, which aims to promote the family doctor healthcare model in response to the common practice of doctor shopping. Based on his award-winning research in narrative persuasion, Dr Timothy Fung Kai-Fung, Associate Professor of the Department of Communication Studies at HKBU, collaborated with the Department of Health to produce the aforementioned movie.

「如果我們不是常常替希希換醫生的話，希希不會如此害怕（醫生）。」看著久病不癒的女兒堅拒去求診，束手無策的希希母親懊悔地說道。如同希希母親，不少人會經常換醫生求診，卻忽略了當中潛在風險。香港浸會大學傳播系副教授馮繼峯博士與政府衛生署合作製作微電影《我的家庭醫生》，藉由希希一家的故事，點出相關風險，並向公眾推廣家庭醫生醫療保健模式的好處。該合作項目的特別之處在於將馮博士獲獎研究中的學術知識轉化並應用至健康推廣，故此，影片可更有效說服觀眾採納其所傳遞的訊息。





**Dr Timothy
Fung Kai-fung**
馮繼峯博士

Have you ever consulted more than one doctor for a single illness episode? Such behaviour, known as doctor shopping, is common in Hong Kong. For instance, a recent study on the prevalence of doctor shopping among parents in Hong Kong found that 53% of respondents were doctor shoppers. Furthermore, more than 75% of surveyed parents are unaware of the potential dangers of doctor shopping, such as adverse drug interactions as a result of taking medications prescribed by different doctors.

A possible solution to the doctor shopping problem is to encourage the embracement of family doctors. Family doctors, as primary care service providers, are on the front line to serve the healthcare needs of the community. The greatest strength of family doctors is their comprehensive understanding of the medical history and lifestyle of the family. This enables them to offer personalised advice, continued care and become a life-long health partner to the family members. Evidence also suggests that family doctors help to save a household's healthcare spending.

Despite the benefits, the adoption rate of family doctors is low in Hong Kong. According to the data from the Census and Statistics Department in 2015, more than half of respondents do not have a regular family doctor. To address this societal problem, Dr Timothy Fung Kai-fung of the Department of Communication Studies partnered with the Department of Health (DH) to promote the family doctor healthcare model to the public. Guided by his research program in narrative persuasion, Dr Fung designed for the DH an Announcement in the Public Interest (API), My Family Doctor Walks with Me, as well as the aforesaid micro movie.

每逢生病要求診，你也會像希希母親一樣頻繁轉換醫生嗎？在香港，患者就同一病症同時向幾位不同醫生求醫的情況十分普遍。近期一項有關香港家長求醫情況的研究便顯示，有53%受訪家長曾帶子女向超過一個醫生求診，當中超過七成受訪者表示不了解轉醫生的潛在風險。而事實上，當患者同時服用不同醫生處方的藥物，可能會引發藥物不良交互作用，嚴重者需要接受住院治療，甚至可能致命，變相間接加重公共醫療系統的負擔。

為回應公共醫療的挑戰，政府近年積極倡導基層醫療，鼓勵市民向固定一位家庭醫生求醫。家庭醫生屬於基層醫療服務提供者，他們站在第一線，滿足社區對於醫療保健服務的需求。家庭醫生的優點在於他們對家庭的病歷和生活習慣瞭如指掌。正因如此，家庭醫生可以為家庭成員提供度身訂造的專業意見和持續護理服務，更可成為一家人的終身健康伙伴。除此以外，亦有證據顯示家庭醫生有助節省家庭的醫療開支。

儘管家庭醫生可帶來以上好處，香港人擁有家庭醫生的普及率卻偏低。根據政府統計處2015年的數據，超過一半受訪者沒有固定的家庭醫生。馮博士與衛生署合作向公眾推廣家庭醫生概念，正正回應了這個社會問題。除了文首提到的微電影，馮博士還為衛生署設計了政府電視宣傳短片《家庭醫生，有你，我放心》。為了更有效地說服觀眾，兩則影片的內容設計皆精心應用了馮博士一系列敘事式說服相關研究的成果。

Research-driven health promotion message design

As previous studies recognized, storytelling is an effective form of persuasive communication to motivate an attitudinal and behavioural change in health promotion. Yet, what enables the persuasiveness of stories is less understood. Therefore, Dr Fung has developed a research program to examine different story features and their underlying mechanisms to enhance the message persuasiveness in health promotion. One line of the research in his program on anticipated emotions in storytelling led him to initiate a knowledge transfer project on organ donation promotion. Acknowledging the achievement, Dr Fung's project was chosen as the winner of the HKBU Knowledge Transfer Award 2017.

Another line of Dr Fung's research program is to investigate how counterfactual thinking, as a story feature, can persuade patients to adhere to treatment procedures. Counterfactual thinking is a mode of thought in which people imagine about how things might have been different than what had happened. This mode of thought is often characterized in phrases such as "what might have been" (e.g., If I had studied, I would have passed the exam). His study found that stories with counterfactual thinking could trigger greater anticipated regret and mental simulation, which in turn, can change the audience's attitude and behavioural intention. In 2015, this research won Dr Fung a competitive grant from the General Research Fund of the University Grant Council. In 2018, his work also earned the Top Faculty Conference Paper Award, and in 2020, the Article of the Year Award in journal publication from the Association for Education in Journalism and Mass Communication, one of the prestigious academic associations in the field of communication. These achievements have laid the foundation for the family doctor project.

Accordingly, the promotional videos of the family doctor project have applied counterfactual thinking in the message design. In the movie, the mother regretted her child's suffering that resulted from her doctor shopping behaviour, and she pictured what she could have done differently. The counterfactual thought of the mother, in the movie, is likely to set off the audience's consideration of the healthcare benefits when having a family doctor.

The results of an evaluation study demonstrated the persuasive effect of the videos. After watching the videos, parents reported having an enriched understanding of the services provided by a family doctor. Parents within the experimental group even gained an inclination to look for a family doctor.



Using animation, Dr Fung's project increased young people's willingness to discuss organ donation with family members

馮博士曾透過動畫，鼓勵年青人向家人表達自己捐贈器官的意願

研究為本 設計打動觀眾的健康資訊

敘事式說服是說服傳播學的課題之一，探究如何利用故事說服並影響受眾。研究發現，運用故事向受眾傳遞健康促進訊息，確實可有效促使受眾態度和行為上的改變。然而，「是甚麼元素使得故事具有說服力」這一點卻有待更多研究解答。有見及此，馮博士展開一系列研究計劃，探討不同故事特徵以及它們說服力背後的心理機制，並將他的研究成果實際應用至提升健康促進訊息的說服力。計劃其中一個項目研究故事的預期情緒，相關研究不單促成馮博士一個推廣器官捐贈的知識轉移項目，更使他憑藉該項目榮獲2017年浸會大學知識轉移獎。



Without a family doctor, parents wonder what to do when their children get sick

缺少固定家庭醫生，孩子患病時，家長六神無主

研究計劃另一項目則重點探討，「反事實思維」作為故事元素，如何能說服病人遵循治療程序。顧名思義，「反事實思維」是一種與事實不符的思維模式，意指人在面對已經發生的事情時，想像有別於現況的另一種可能性。這種思維模式常見於日常生活中，例如學生面對考試成績不合格，就會想像當初自己如果有努力讀書，考試結果就可能會不一樣。馮博士的研究發現帶有反事實思維元素的故事或會觸發受眾的預期遺憾和模擬思考，從而改變受眾的態度和行為意圖。憑藉相關研究，他於2015年獲得大學教育資助委員會的優配研究金；於2018年和2020年，再先後獲傳播學領域中享負盛名的新聞與大眾傳播教育學會頒發最佳學會論文獎以及年度期刊論文獎。上述兩個獲獎的研究項目皆為今後的家庭醫生推廣項目紮下基礎。

在推廣家庭醫生的宣傳影片裡，我們亦能同樣發現「反事實思維」元素的身影。在微電影中，希希母親後悔自己當初帶著希希四處求醫，反而弄巧反拙，令希希受苦，於是開始想像當初還可以做些什麼令現狀可以有所不同。當觀眾看到影片主角的反思，很可能聯想到自身醫療保健需求，並對主角經歷產生共鳴，促使其思考擁有一位家庭醫生的好處。馮博士有就影片的說服效果進行評估調查，而實際結果也反映，參與研究的家長在看過影片以後，對家庭醫生提供的服務有了更深入的理解，實驗組內的家長更表示有意向要尋找家庭醫生。

Success in community outreach

Apart from the academic achievements, Dr Fung's community outreach project to disseminate his knowledge on health promotion is also remarkable. The major impact of his project has been the direct change in health professionals' practice of message design. The empirical evidence of his research program has shown practitioners the value of using counterfactual-based storytelling as a persuasive strategy, and it prompted them to deploy the strategy in health message design. His experience exemplifies how communication research can be put into practice, and thus make a tangible impact on our community.

Another noteworthy impact of his project is that through the DH's promotional effort, by adopting the family doctor videos, they have reached a wide audience. To give you an idea, the videos have been broadcasting since 2018 in major TV channels, including RTHK, TVB, ViuTV, i-Cable and Now TV. They also have been broadcasting in the lobbies of 187 public housing estates and 22 locations of government facilities, 10 dental clinics, and nearly 200 private clinics, all across Hong Kong.

On top of that, Dr Fung's attempt to integrate teaching into research and community outreach is thriving. He designed a class project for students to apply communication knowledge to look into the public's image of the family doctor. The idea proposed by a group of students was selected by the DH to further develop a new logo that would refresh the brand identity of family doctors. The new logo has been distributed in a city-wide campaign. The logo appears not only in outdoor advertisements but also on the front page of the Primary Care Directory (PCD), an electronic database for the public to search for a doctor. Over 1700 PCD enrolled doctors have used the posters, leaflets, hanging door signs or the e-copy of the logo at their clinics.

As mentioned in the testimonial letter from the DH, Dr Fung's work "could reduce the perceptual barriers to adopt the family doctor concept." It has also shown that evidence-based narratives are effective forms of communication in health promotion. The Hong Kong College of Family Physicians also praised the videos as well accomplished in achieving its goal to promote to the public the family doctor as their long-term health companion. It added that the use of stories to elaborate the idea of family doctor healthcare model is vivid, entertaining, but also very informative, to help the audience to better comprehend the importance of having a family doctor.



My family doctor (micro-movie):

微電影《我的家庭醫生》:

<https://youtu.be/vJ4bfAg65QA>



My family doctor walk with me (API):

政府電視宣傳短片《家庭醫生，有你，我放心》:

<https://youtu.be/IRIRneuVm8>



家庭醫生熟識我們一家人



你看，希希的電話卡比你的折扣卡還要多！
Hei Hei's follow-up cards are way more than your VIP cards



選擇適合你和家人的家庭醫生

In *My family doctor walks with me*, the protagonist, like the target audience, is a parent of young children. 《家庭醫生，有你，我放心》主角的背景與目標受眾同樣是幼童家長。

"Doctor shopping" is a common treatment seeking behaviour among patients. 病人就單次患病轉診不同醫生，甚至同時向多名醫生求診屬常見情況。

The new family doctor logo was based on students' ideas. 家庭醫生標誌設計參考學生的意念。

由學術圈走進社區 知識轉移創正面影響

學術成就以外，馮博士更成功將研究影響力拓展至社區健康推廣。通過實證研究，他發展出一套「將反事實思維元素寫進故事，再運用故事傳遞健康促進資訊」的說服策略。正因為研究成果證明了這套說服策略具備實用價值，可有效說服受眾採納背後訊息，故成功促使當局應用策略，直接改變了健康推廣專業人員設計健康資訊的取徑。他的經驗示範了如何活用傳播研究成果，為我們的社會創造出實質影響。

家庭醫生的宣傳影片在衛生署的推廣下，成功觸及廣大觀眾。相關影片自2018年起就在各大電視頻道播出，包括香港電台、無綫電視、ViuTV、有線電視和Now TV等。影片亦同時在全港187個公共屋邨大堂、22個政府設施所在地、10間牙科診所和近200間私人診所播放。

另一方面，馮博士亦積極將教學融入於研究。為了鼓勵學生應用傳播學知識和實作，他設計出一份課堂習作要求學生調查公眾對家庭醫生的印象，並為家庭醫生構思煥然一新的品牌形象。其中一組同學的設計理念被衛生署選中，進一步完善成家庭醫生的新標誌。新標誌蹤影遍及全港，不只現身於推廣家庭醫生的戶外廣告，還出現在提供市民查閱醫生資訊的電子資料庫「基層醫療指南」的網站首頁上。超過1700位基層醫療指南上的註冊醫生在他們的診所張貼了印有新標誌的海報、傳單，或使用了新標誌為門牌，或作其他電子用途。

誠如衛生署的薦書所言，馮博士的研究可減少公眾對於家庭醫生概念的心理抗拒，也顯示了實證為本的敘事能有效向公眾傳播健康促進資訊。香港家庭醫學學院亦讚揚相關宣傳影片，成功鼓勵市民以家庭醫生作為長期健康伙伴，並指通過故事闡述家庭醫生理念的方式生動有趣，又富資訊性，有助觀眾理解擁有家庭醫生的重要性。

AI Surveillance of Epidemics

疫症傳播 有跡可尋

Time is of the essence in preventing a disease outbreak. Prof Liu Jiming, Chair Professor of the Department of Computer Science at HKBU, and his team developed an active surveillance system with machine learning and data-driven modeling, which can predict the spread of disease and inform policy decisions.

對於傳染度高的疾病，控制疫情的關鍵就是快速追蹤病源。浸大計算機科學系劉際明講座教授及其團隊開發了一套主動監控系統，憑藉機器學習與數據驅動模型，準確預測疾症傳播為決策提供依據。

Malaria is a mosquito-borne infectious disease that is widespread in Southeast Asia and Africa. According to the World Health Organization (WHO), in 2018, there were an estimated 228 million cases of malaria worldwide, which led to about 405,000 deaths. In response to the call of the WHO and the United Nations to fight malaria, the Government of China in 2010 set a target to eliminate the disease within its borders by 2020. With quite a few indigenous cases reported for several years, China turned its attention to cross-border infection, especially in provinces bordering countries in the Mekong region. "The last mile is the most difficult," says Prof Liu. "If imported cases are not detected in a timely fashion, then local infections may rebound and malaria elimination by 2020 will not be accomplished."

瘧疾是一種由蚊傳播的傳染病，於東南亞及非洲尤其普遍。根據世界衛生組織數據，2018年全球估計多達2.28億宗瘧疾病例，當中逾40萬人因此死亡。應世界衛生組織和聯合國的抗擊瘧疾呼籲，中國政府於2010年定下目標，期望於2020年前消除瘧疾。雖然已多年罕有本地傳播個案，但跨境傳入個案未止，尤以與湄公河地區接壤的省份最為普遍。「對於消除傳染病而言，最後一段路往往是最困難的。如果傳入個案未能及時發現，則可能再次出現本地傳播，2020年前消除瘧疾的目標亦將難以實現。」





Prof Liu Jiming
劉際明教授

Prediction based on socio-economic and ecological factors

In 2011, Prof Liu and his team joined hands with the National Institute of Parasitic Diseases (NIPD), a national organisation under the Chinese Center for Disease Control and Prevention (China CDC) to tackle malaria. Prof Liu says that understanding the malaria problem specific to different regions is the key to finding a solution. According to observations by the disease control specialists, most cases of infection in Yunnan are imported from Myanmar through cross-border activities, which makes it extremely difficult to trace the spread of the disease. The mountainous terrain, which also implies a lack of resources, doctors and disease control specialists, adds extra challenges to disease control.

Instead of tracing infected individuals, Prof Liu's team takes a more proactive approach. They applied data-driven modeling to predict the spread of malaria based on available information. The reason Yunnan villagers cross the border is to work on the other side. Thus, their movement can actually be determined by socio-economic factors, i.e. their income status and distance from the border. On the other hand, the transmission of malaria is related to the life cycle of the mosquitoes that can harbour and transmit the disease. This is based on several ecological factors, including the amount of rainfall, temperature, and distance from water.

基於社會經濟和生態因素的瘧疾風險評估

為達成消除瘧疾目標，劉教授及其團隊與中國疾病預防控制中心寄生蟲病預防控制所（NIPD）自2011年起合作研究。劉教授表示，了解瘧疾於不同地區的成因是找出解決方案的關鍵。根據疾控人員觀察，雲南大多數感染病例都是經由跨境活動從緬甸輸入。跨境活動增加了追蹤疫病傳播工作的難度，而當地位處山區，資源緊絀，醫生及疾控人員亦嚴重匱乏，令瘧疾控制工作挑戰重重。

面對上述情況，相對於被動等待感染個案上報，劉教授團隊採取了更積極主動的方法。基於現有資訊，團隊應用數據驅動模型於預測瘧疾傳播。雲南村民之所以前往緬甸，主要原因是希望尋找工作。因此，跨境與否，很大程度基於社會經濟因素，收入越低、住址與邊界越近，便越可能前往邊界的另一邊找尋工作，感染瘧疾的風險亦隨之而增加。另一方面，瘧疾的傳播與帶有病原的蚊的生命週期相關，其中就涉及多個生態因素，包括降雨量、溫度以及與水源的距離。



Malaria is a mosquito-borne infectious disease
瘧疾是一種由蚊傳播的傳染病



Prof Liu's team members go on field trips to understand the local malaria problem
劉教授團隊實地考察了解問題所在



Yunnan's mountainous terrain poses special difficulties for resource allocation
雲南的山區地形為資源配置帶來額外困難

Effective resource allocation is vital

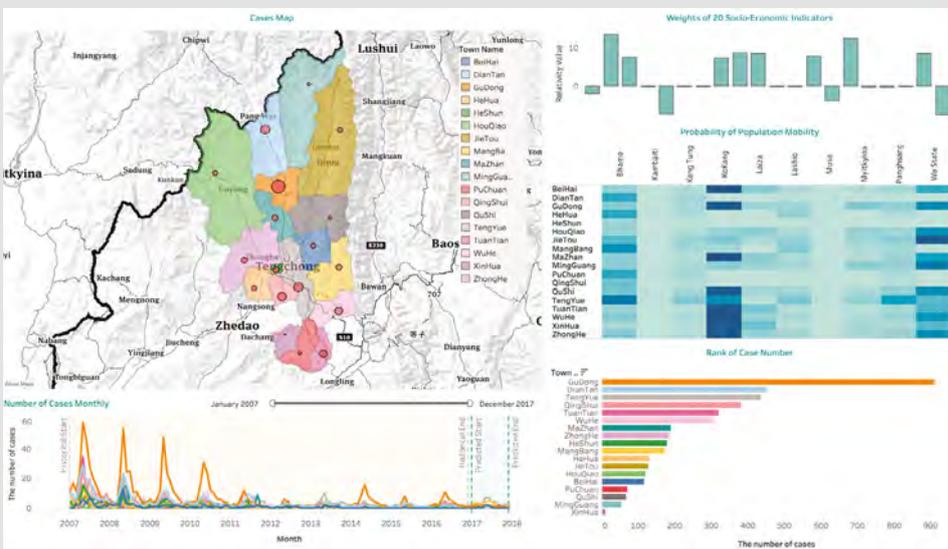
By analysing these socio-economic and ecological factors via data-driven modeling, the malaria transmission risk of different villages can be predicted and ranked. Once this is done, disease control specialists can be deployed to villages considered high risk before an outbreak and nip it in the bud. Prof Liu says the so-called "active surveillance" is particularly effective in the mountainous areas of China near the Mekong region, since one single city in Yunnan is already five times the size of Hong Kong or even larger, and a city might consist of more than 200 villages. Fewer than 10 disease control specialists are stationed in such a vast area, so effective allocation of human resources is the key to fighting malaria.

For Prof Liu, the most difficult part was the beginning. They had to identify the key factors behind malaria transmission in certain areas. To do this, the team had to work closely with the disease control specialists. Team members also went on field trips to understand the problem. Through their efforts, the prediction tool they developed is over 90 percent accurate.

有效調配資源

透過數據驅動模型分析上述社會經濟與生態因素，團隊成功預測不同村莊的瘧疾傳播風險並根據其高低進行排序。如此，早於疫情爆發之前，疾病預防控制中心便可以預先調派疾控人員前往高風險村莊，以達防患於未然之效果。劉教授表示，這種被稱為「主動監控」的方法於與湄公河地區接壤的中國山區尤為有效，因為單單雲南的一個城市已達香港面積的五倍甚至更大，而一個城市內可能多至兩百多條村落。於如此遼闊的地域，卻只有不到10位疾控人員，因此正確調配人力資源正是控制瘧疾疫情的關鍵。

劉教授謂，過程中最大挑戰是在一開始時，他們必須確定瘧疾於地區傳播的關鍵因素。其團隊一直與疾控人員緊密合作，並藉實地考察了解問題所在。團隊的努力亦得到回報，預測準確性高達九成以上。



The data-driven model predicts and ranks the malaria transmission risk of different villages based on socio-economic and ecological factors
數據驅動模型基於社會經濟與生態因素，預測不同村莊的瘧疾傳播風險 並根據其高低進行排序

Future plans in the Mekong region

Prof Liu's AI tools were deployed in Tengchong, a city in Yunnan with a long history of malaria. The city's malaria elimination policy was changed as a result of the team's research. In 2016, Tengchong was declared the first city in the China-Myanmar border to eliminate malaria, four years before the national target. NIPD and the China CDC then applied the same technology to tackle malaria in 20 cities along the border. Owing to the positive impact of the AI tools, Prof Liu received the Yunnan Health Science and Technology Award 2019. His team is continuing the joint research with NIPD in the hope of accomplishing the goal of ending the risk of malaria nationwide.

The next step for Prof Liu's team is to extend the research project to other countries in the Greater Mekong subregion and Southeast Asia which are affected by malaria and lack resources, such as Cambodia and Laos. The research team has presented their tools and findings to the WHO and other Greater Mekong subregion countries at the International Workshop on AI-enabled Malaria Control and Prevention. The WHO recognises the usefulness of the AI tools in assessing the malaria transmission risk in a timely manner for anti-malaria resource allocation. It also supports malaria control officers and field practitioners to learn how to use the tools. Prof Liu has also received collaboration plans from national-level Department of Health in Cambodia, Bhutan, and Sri Lanka to help fight malaria.

Among countries in the Mekong region, Cambodia has the most serious problem of malaria because infection cases there have been found to be resistant to antimalarial drug artemisinin. Prof Liu's team found that the key factors of malaria transmission may vary from region to region. For instance, the species of mosquito that carries malaria in Cambodia is different from the mosquitoes in Yunnan, and the forest, rather than bodies of water, is their natural habitat. Thus, different ecological factors should be used in the analysis to take into account these differences.

拓展至湄公河地區

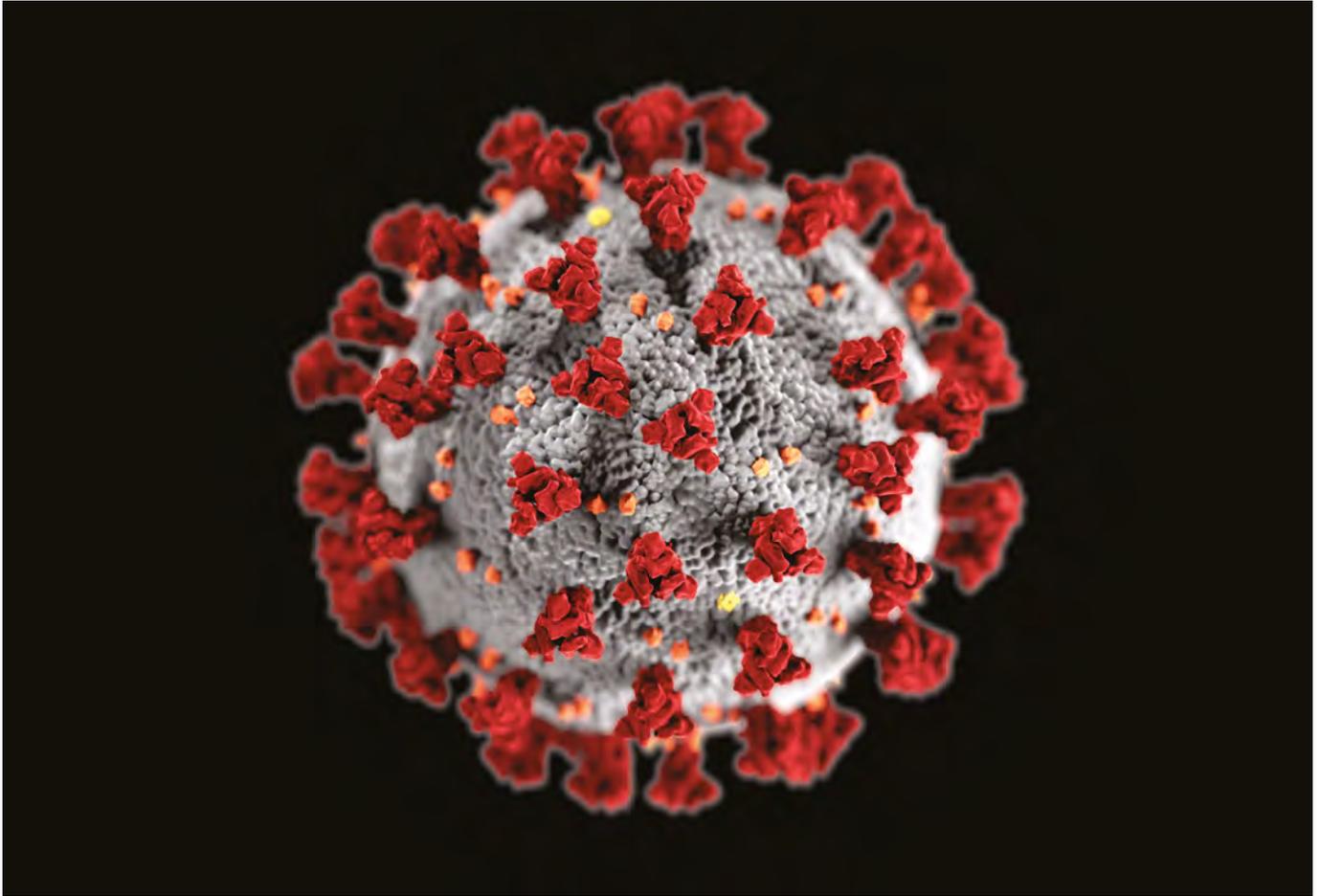
劉教授的技術成果被應用於雲南騰沖市，該地區的瘧疾疫情由來已久，一直未能根除。基於系統的分析結果，當地政府有針對性的部署防控措施，並於2016年成為中緬邊境地區第一個成功消滅瘧疾的城市，比國家既定目標提前四年。NIPD與中國疾控中心把相同技術應用於邊境20個城市的瘧疾防治工作。由於效果顯著，該技術榮獲2019年雲南省衛生科技成果獎。劉教授團隊正與NIPD繼續研究計劃，冀能實現全國消除瘧疾的目標。

劉教授團隊的下一步是把技術應用拓展至其他受瘧疾困擾且資源匱乏的國家，例如柬埔寨、老撾等湄公河流域及東南亞國家。研究團隊在基於人工智能的瘧疾控制及預防國際研討會上，向世界衛生組織及湄公河流域國家的代表介紹相關技術及成果。世衛認可此技術有助及時評估瘧疾傳播風險，以有效分配資源，並支持疾控人員及前線醫生學習應用。劉教授團隊亦與柬埔寨、不丹與斯里蘭卡的國家級衛生部門開展合作計劃，未來將攜手應對疫情。

於湄公河國家之中，柬埔寨的瘧疾疫情是一個尤其嚴重的問題。作為一種有效治療瘧疾的藥物，中國科學家屠呦呦發現的青蒿素一直被各國廣泛應用。但有報導指柬埔寨的瘧疾卻出現青蒿素抗藥性，故形成極大危機。當把人工智能分析技術應用於當地時，劉教授亦留意到，瘧疾傳播的關鍵因素因地而異，例如柬埔寨傳播瘧疾的蚊種就與雲南不同，其棲息地為森林之中而非水源。故此，團隊亦必須使用不同的生態因素進行分析，以配合當地情況。



The tools and findings are introduced to the WHO and other Greater Mekong subregion countries in an international workshop
研究成果於一個國際研討會上，介紹予世衛及其他湄公河流域國家代表



Prof Liu's team analyses COVID-19 transmission patterns
劉教授團隊分析新型肺炎傳播模式

Unveiling COVID-19 transmission patterns

In addition to his work on malaria, Prof Liu also contributed to the battle against the recent coronavirus (COVID-19) outbreak in mainland China. He led a new research on characterising and quantifying the underlying transmission patterns of COVID-19 among different populations using a data-driven modelling approach, in collaboration with NIPD and the Chinese Academy of Sciences. One key feature of the computational model is that it is able to estimate the number of infections per day. According to literature, COVID-19 has an average incubation period of six to seven days. Thus, the number of confirmed cases might not necessarily reflect the actual threat of the disease during that period of time. The computed infection numbers provide the disease control department a clearer picture of the situation. The estimate also aligns with the confirmed cases a few days later, which proves its accuracy.

To analyse the risk of transmission through interpersonal contact among different age groups, the computational model divided the population into seven age groups with their own specific social circles, gathering places and activity patterns. Four representative social contact settings, namely households, schools, workplaces, and public places, were considered. A contact matrix was inferred to describe the contact intensity between different age groups for each of the four settings, and this enabled the dynamics of disease transmission to be computed. The results revealed that age groups in public places and households are more scattered, which means it is easier for the virus to spread among different age groups in these places.

揭示新型肺炎傳播模式

中國自2019年底開始爆發新型肺炎疫情，劉教授團隊亦為抗疫貢獻自己的科研成果。在與NIPD及中國科學院合作下，他帶領團隊利用數據驅動模型描繪及量化新型冠狀病毒於不同群體之間的傳播模式。團隊建立的計算模型可估算每天的實際感染數字，因為根據文獻，新型冠狀病毒的平均潛伏期長達六至七天，故確診病例數字未必能夠如實反映該時期的情況，相反估算感染數字則更有利疾控部門準確掌握疫情。事後的確診數字亦與模型預測一致，足見其準確度。

為分析不同年齡層之間的人際接觸導致的傳播風險，計算模型把人口劃分為七個年齡組別，並考慮四個具代表性的社交接觸環境，即家居、學校、工作地點、以及公共和社區場所。透過建立計算模型，即可描繪出四個社交接觸環境中的不同年齡組別的接觸強度。結果發現，公眾/社區場所與居家場所的年齡層分布較為分散，顯示不同年齡層之間的傳播風險較大。



Social-distancing and lockdown measures are implemented in many cities to contain the spread of COVID-19
 新型肺炎疫情期間，不少城市實施社交隔離措施，甚至必須封城

Prospective analysis of work resumption plans

With the COVID-19 pandemic resulting in lockdowns in different parts of the world, there have been intense debates on when and how we can safely resume 'normal' life. The computational model was used to analyse six cities in mainland China—Wuhan, Beijing, Tianjin, Hangzhou, Suzhou and Shenzhen (located in three major economic zones in China)—on a case-by-case basis to estimate the disease transmission risk and the impact of different work resumption plans on local GDP growth. Confirmed cases, population sizes, and the intervention measures taken by each city were considered when building the model. The data-driven computational model provides a science-based analytical solution, enabling policymakers to design plans that can achieve both the containment of disease transmission risk and the safe, gradual reopening of affected cities.

The research was published in *The Lancet's EClinicalMedicine* journal. Prof Liu says their data-driven computational modelling and analytical tools have been openly shared with public health policymakers and researchers around the world. This will allow them to capitalise on the AI tools for decision making using their domestic epidemiological data and cope with the current situation.

前瞻不同復工計劃影響

隨着疫情肆虐全球，包括中國在內的多個國家俱採取嚴格措施減少社交接觸，何時恢復正常生活頓成疑問。透過運用計算模型分析武漢、北京、天津、杭州、蘇州及深圳等六個內地城市（座落於國內三大主要經濟區）的情況，審視不同復工計劃對疾病傳播風險，以及當地國內生產總值增長的影響。上述城市的確診個案數字、人口及干預措施俱被納入考慮，從而為決策部門提供一種以科學為本的分析工具，為受影響的城市制訂出安全的回復正常生活方案。

是次研究已於醫學期刊《刺針》子刊《EClinicalMedicine》上發表，劉教授亦已向社會公開計算模型及分析工具，以便公共衛生決策者及研究人員利用該工具配合當地的流行病學數據進行分析，應對疫情。

AI-developed Drug Receives US FDA Orphan Drug Designation

應用AI技術研發 玻璃骨孤兒藥

A research team of HKBU has successfully developed a novel aptamer for the treatment of osteogenesis imperfecta (OI) with the aid of artificial intelligence (AI) technology. This aptamer has also become the first drug in Hong Kong to be granted the orphan drug designation by the US Food and Drug Administration (FDA).

浸大研究團隊在人工智能 (AI) 技術協助下，成功研發一種嶄新的適配子，可用於治療罕見病成骨不全症 (OI)。是次為香港首次有藥物獲得美國食品藥物管理局的「孤兒藥」認定 (orphan drug designation)，屬本地醫藥研究的一次突破。



Dr Yu Yuanyuan
于媛媛博士

OI, also known as brittle bone disease, is a rare genetic disorder that prevents the body from building strong bones. Bone mass of sufferers is significantly lower than normal, resulting in bone fragility. There are six to seven cases per 100,000 persons worldwide, and in Hong Kong, an estimated 700 to 800 people have OI.

Currently, there is no effective drug treatment for the disorder. Past research suggests that a protein, sclerostin, is the negative regulator of bone formation. Genetic studies have demonstrated that inhibition of sclerostin can improve the symptoms associated with OI. In 2017, researchers found that monoclonal antibodies, a type of biological therapy, can inhibit sclerostin. However, recent clinical evidence suggests that their use can lead to increased cardiovascular risk as sclerostin is also responsible for protecting the cardiovascular system. Therefore, patients who have suffered a heart attack or stroke the preceding year are not recommended for this treatment.

Targeting a specific protein segment

The research team led by Prof Zhang Ge, Associate Director of HKBU's Law Sau Fai Institute for Advancing Translational Medicine in Bone and Joint Diseases (TMBJ), and Prof Lyu Aiping, Dr Kennedy Y.H. Wong Endowed Professor of Chinese Medicine, Dean of the School of Chinese Medicine at HKBU and Director of HKBU's Institute of Integrated Biomedicine and Translational Science made a breakthrough in tackling this dilemma. Structurally, proteins consist of several segments that are different in form. There are three domains in the core region of sclerostin, named loop 1, 2 and 3. "The function of loop 1 in sclerostin is as yet unknown. We know that both loops 2 and 3 are responsible for inhibiting bone formation, but only loop 2 protects the cardiovascular system. The monoclonal antibodies bind on both loops 2 and 3, thus causing the increased cardiovascular risk," explains Dr Yu Yuanyuan, Research Assistant Professor of TMBJ and a member of the research team. To avoid the side effect, the team decided to develop an inhibitor targeting only loop 3.

Aptamers are single-stranded deoxyribonucleic acid (DNA) or ribonucleic acid (RNA) molecules regarded as an alternative to antibodies. With three-dimensional structures, they can bind tightly and inhibit specific targets, in this case the sclerostin. Since the mechanism works like a lock and a key, aptamers have a high specificity and do not affect molecules other than their targets.

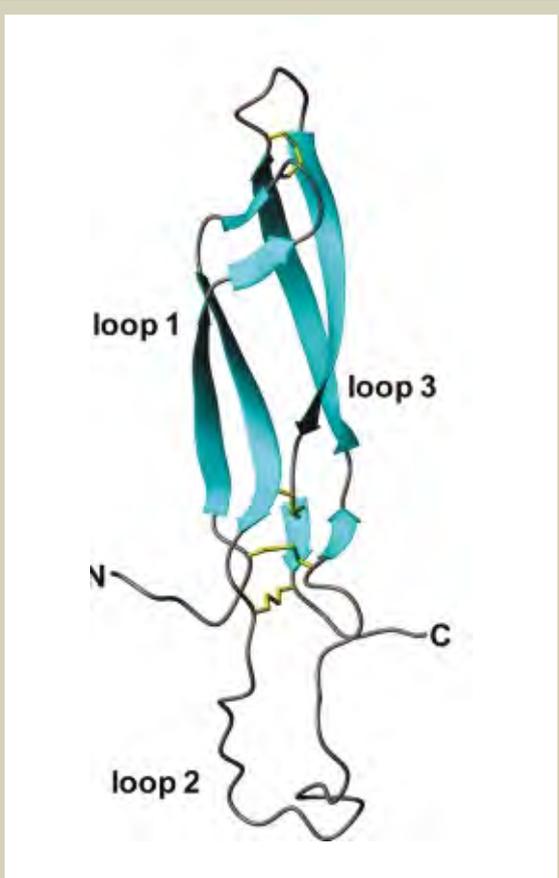
成骨不全是一種罕見遺傳病，俗稱為玻璃骨、脆骨症，顧名思義，患者因為骨量明顯少於正常人，無法形成堅硬的骨骼，造成容易骨折的問題。全球每100,000人中有6至7人患有此病；香港則估計共有700至800名患者。

目前成骨不全並無有效藥物治療，過去研究發現，一種蛋白質——骨硬化素是骨骼形成的負調節物，遺傳研究亦證明，抑制骨硬化素可以改善成骨不全的臨床表現。研究人員於2017年發現，透過使用單株抗體的生物療法，可有效抑制骨硬化素。然而，最近臨床證據發現，由於骨硬化素同時負責保護心血管系統，此療法將導致心血管風險顯著增加，故不建議前一年內曾有心肌梗塞或中風病徵的患者採用。

針對特定蛋白結構

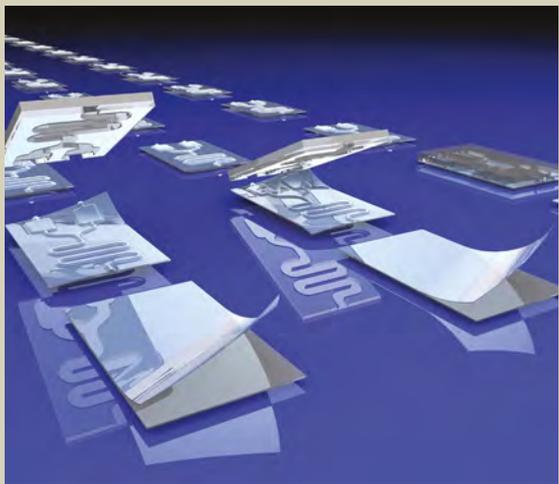
由浸大羅守輝骨與關節疾病轉化醫學研究所副所長張戈教授，及浸大中醫藥學院院長、浸大整合生物信息醫學與轉化科學研究所所長及黃英豪博士中醫藥講座教授呂愛平教授領導的研究團隊，致力解決上述難題。團隊成員、羅守輝骨與關節疾病轉化醫學研究所研究助理教授于媛媛博士表示，「骨硬化素結構上包括三個環狀結構域，其中一號環作用暫時未明，但我們發現，二號環與三號環皆抑制骨質形成，惟只有二號環兼具保護心血管系統功能。而單株抗體同時黏合在二號環與三號環之上，導致心血管系統保護亦受到抑制。」因此，只要療法僅針對三號環，便可以規避對心血管系統的風險。

被視為抗體治療以外的另一種選擇，適配子實際上是單鏈脫氧核糖核酸（DNA）或核糖核酸（RNA）分子。適配子通過其三維結構，能與包括骨硬化素在內的特定目標緊密結合，並發揮抑制作用。于博士形容，其機制恰如「鎖與鑰匙」一樣具有很高的特異性，故不會影響目標以外的其他物質。



Loops 2 and 3 of sclerostin are responsible for inhibiting bone formation, but only loop 2 protects the cardiovascular system

骨硬化素的二號環與三號環皆抑制骨質形成，惟只有二號環保護心血管系統



The application of microfluidic selection shortens the time required for SELEX

微流控系統大幅縮短SELEX所需時間

Use of AI boosts efficiency

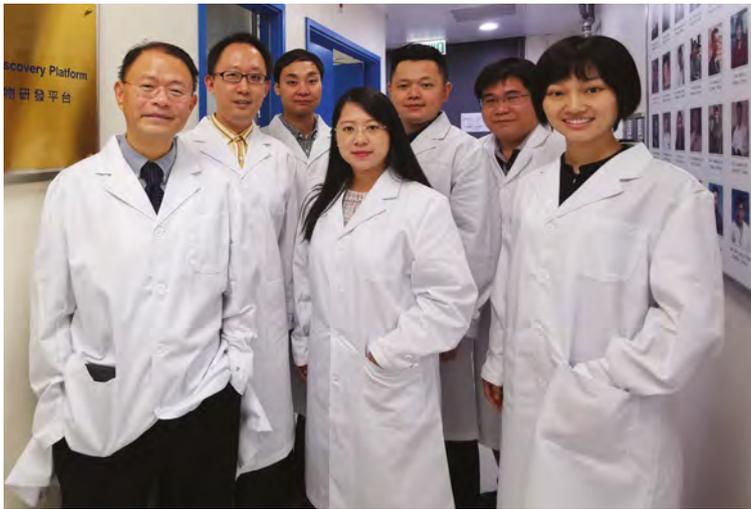
To find a suitable aptamer, the team screened aptamers from the single-stranded DNA library. Aptamers were selected, amplified and enriched through a process called Systematic Evolution of Ligands by EXponential enrichment (SELEX). Traditionally, SELEX is done manually and is very time-consuming. The process can take as long as three months to complete. For this project, the team cooperated with Dr Ren Kangning, Associate Professor of the Department of Chemistry at HKBU, to apply microfluidic system in the selection process. Microfluidics is a technique that can precisely control and manipulate fluid in the microlitre range (one millionth of a litre). The chip used in the microfluidic system is made of a new material that has an anti-fouling property and can avoid sample loss. After screening out tens of thousands of aptamers, AI technology was used to calculate the affinity, specificity and inhibition potency of molecules to identify the optimal candidates. Compared with the traditional method, the use of AI technology shortened the time for SELEX to just one week. It also saved manpower and reduced reagent consumption.

The research team then conducted an *in vivo* experiment to test the effect of the aptamer on mice with OI. The test group of mice were injected with the aptamer twice a week, while the other group of mice were the vehicle control group. After six weeks, the bone mass of the mice that received the aptamer injections increased significantly, compared to those that didn't. The results also showed that the aptamer did not increase cardiovascular risk. Dr Yu says that aptamers have other advantages over antibodies. Since antibodies are extracted from animals, their quality varies from batch to batch. The storage of antibodies also requires refrigeration because they easily become denatured. In contrast, aptamers are produced through chemical synthesis, therefore it is easier to ensure production quality control. DNA and RNA are also more stable and do not require refrigeration.

應用AI技術 提高開發效率

為找出合適適配子，研究團隊從單鏈DNA庫中進行篩選。團隊通過「配體指數增強系統進化技術」(SELEX)，對適配子進行篩選、擴增及富集。傳統上，SELEX需要人手調控，過程十分費時，可能需時長達三個月方能完成。但在今次研究中，團隊得到浸大化學系副教授任康寧博士襄助，為篩選程序設計合適的微流控系統，大大提高效率。微流控是一種能夠精確控制微升(百萬分之一升)流體的技術，由於今次使用的芯片利用防污染物料製成，亦可減低樣本流失而導致實驗失敗的機率。透用微流控系統篩選出數以萬計的抗骨硬化素適配子後，團隊再利用AI技術計算每個序列的特異性、親和力及活性，進一步鎖定理想的候選分子。相比傳統做法，利用AI技術可把所需時間縮短至一周，同時節省人力，並減少試劑消耗。

成功篩選以後，團隊下一步進行體內實驗，於患有OI的小鼠身上測試適配子的效用。小鼠分成不同的小組並給予不同處理，其中一組每週兩次被注射適配子，一組小鼠則只注射生理鹽水作為對照組。六周過後，相對於基線組，注射適配子的小鼠骨量顯著增加，而且未見增加心血管疾病風險，而注射生理鹽水組骨量則沒有變化。于博士又指出，由於抗體從動物身體提取，其質素因批次而異，而抗體因為容易變質，亦需要冷藏儲存。相反，適配子通過化學合成生產，質素控制相較之下容易得多，而DNA與RNA本質上也更穩定，並不需要冷藏儲存。



Prof Zhang Ge (first from left) and Dr Ren Kangning (second from left) pose with other team members
張戈教授(左一)、任康寧博士(左二)與團隊成員合影



呂愛平教授
Prof Lyu Aiping

Hong Kong's first FDA orphan drug

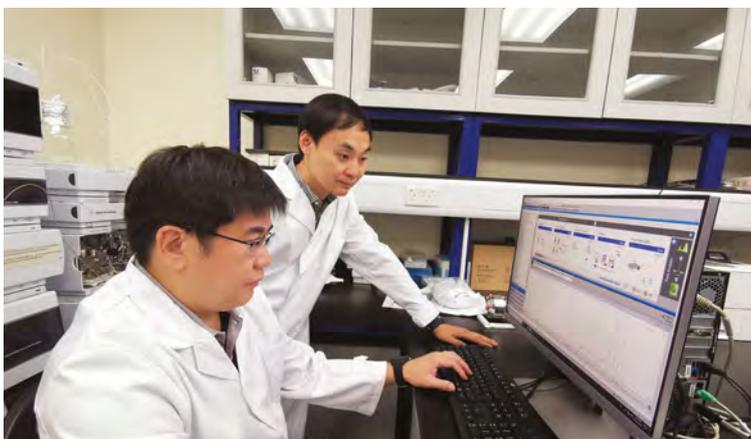
The aptamer against sclerostin was granted orphan drug designation by the FDA in August 2019. In the US, the Orphan Drug Act allows the FDA to grant special status to drugs for the treatment of rare diseases. Success in obtaining orphan drug designation brings a series of benefits to subsequent research and development of the drug, including faster FDA approval process and a waiver or reduction of application fee. FDA will also provide professional advice during the process and their approved product will enjoy market exclusivity for seven years. FDA recognition and market exclusivity are considered exceptional advantages in attracting investment for further research.

This project was conducted in collaboration with a local pharmaceutical company. Supported by the Innovation and Technology Commission, a HK\$1 million fund was granted to the research team from the University-Industry Collaboration Programme (UICP). According to Dr Yu, the research team is currently conducting pre-clinical research, including quality control and toxicity evaluation, to apply for a clinical trial.

香港首款FDA孤兒藥

抗骨硬化素適配子於2019年8月獲FDA認為孤兒藥。在美國《孤兒藥法案》下，FDA可給予治療罕見病藥物特殊地位。成功獲得孤兒藥認定將為藥物的後續研發帶來一系列好處，包括加快FDA審批流程及減免申請費用。FDA還將於過程中提供專業建議，而一旦獲批，產品將享有七年市場獨佔權。FDA認可與市場獨佔權對於吸引更多投資，以進一步推展研究開發工作有莫大裨益。

此項目目前正與一家本地製藥公司合作，研究團隊獲創新科技署的大學與產業合作計劃資助100萬港元完成研究第一階段的小鼠實驗，目前正進行臨床前研究，其中包括質素控制及毒性評估，以便下一步申請臨床試驗。



The laboratory for aptamer analysis, synthesis and modification | 用於分析、合成及修飾適配子的實驗室



New Fireworm Named by HKBU Biologists

發現新品種海毛蟲

Hong Kong waters are home to around 6,000 marine species. A fireworm was recently discovered by a team led by Professor Qiu Jianwen, Associate Head and Professor of the Department of Biology at HKBU. It is the latest to join the list of recorded marine life in Hong Kong.

香港水域蘊含豐富的海洋生物，單單已知的物種已有近6,000種，同時尚有無數的遺珍有待發現。由浸大生物系副系主任邱建文教授領導的研究小組，就成功發現並命名一種嶄新的海毛蟲物種，喚起大眾對此類較不為人知動物的關注。

Fireworms are common in tropical and subtropical shallow-water ecosystems. They belong to the Amphinomidae family, a group of marine polychaete, which comes from the Greek word “poly” meaning “many”, while “chaete” means “hairs” or “bristles”. Each body segment of a fireworm has a pair of fleshy outgrowths that bear many chaetae, which are brittle and hollow. Once broken, they release neurotoxins that can produce a painful burning sensation on the skin around the area of contact, giving the species its common name—fireworm.

In Hong Kong, individual fireworms have often been sighted underwater by divers, but in the summer of 2018, they were spotted near Tuen Mun and Tsuen Wan swimming beaches in large swarms never before seen. This triggered public concern, especially because no one knew the name of the species. Prof Qiu and his research team set out to collect specimens from local beaches and shallow-water sandy bottoms.

海毛蟲常見於熱帶和亞熱帶的淺水生態系統，屬「多毛綱」內的「仙蟲科」。海毛蟲是環節動物，每個體節都長有一對類似小腳的疣足，上面滿布剛毛。這些剛毛脆弱而空心，一旦斷裂，便會釋放其內的神經毒素。人體表面接觸到這種毒素，周遭皮膚會感到猶如燒灼的疼痛感。

在香港，潛水愛好者不時於水中發現單隻出現的海毛蟲，但過去從未見過牠們大群出現。2018年夏季，大批海毛蟲於屯門與荃灣泳灘的近岸遊動，引起公眾關注，但是卻無人知道牠們的種名。邱教授領導的研究小組遂從本地泳灘及淺水沙層底部收集樣本，以期鑑定海毛蟲的品種。

Chloeia bimaculata sp. nov.



Chloeia bimaculata gets its name from the signature double black spots found on each segment of its body

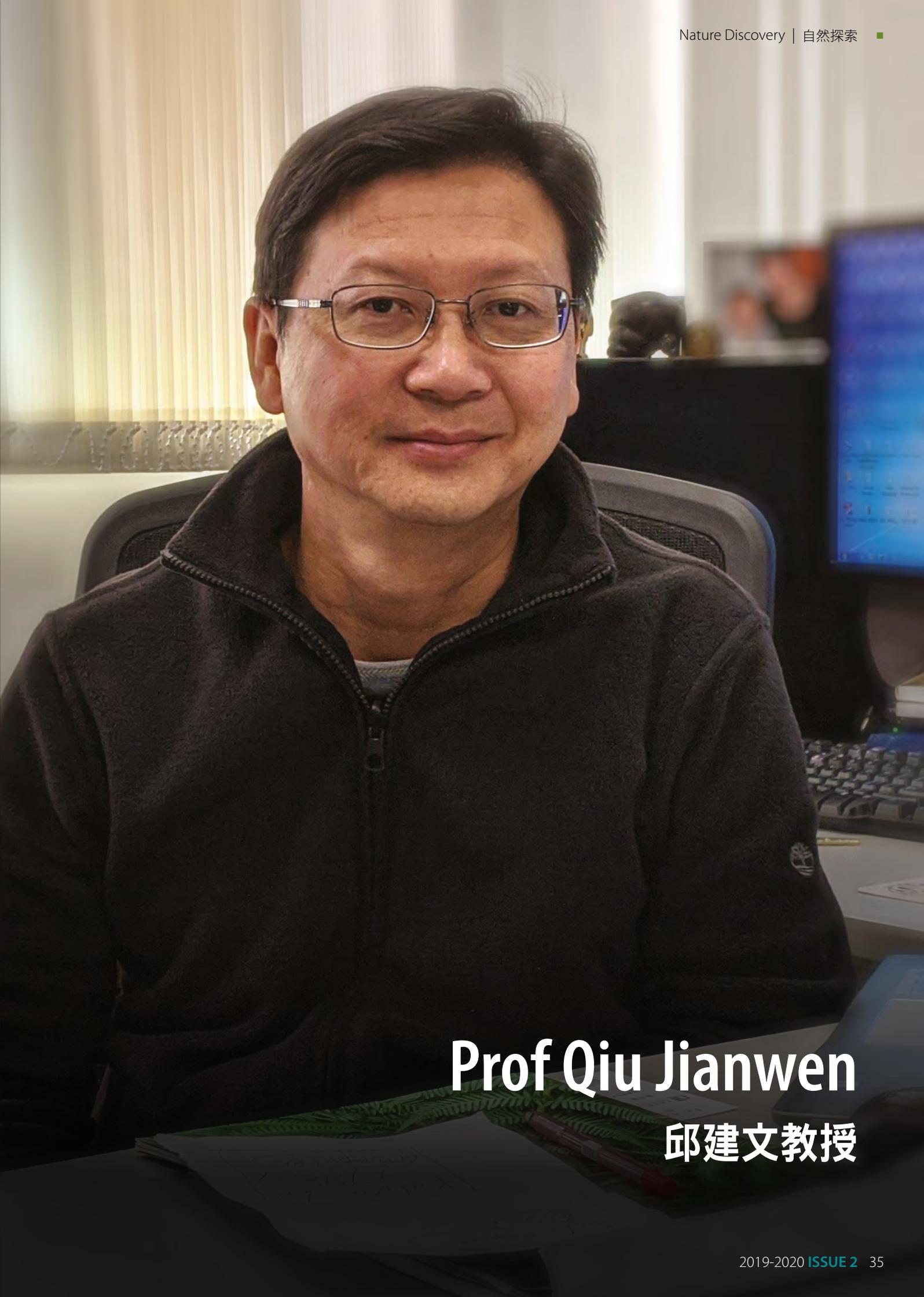
雙斑海毛蟲以每節身體一前一後的兩個斑點命名

Chloeia parva



Chloeia parva is the culprit in the recent local outbreak

梯斑海毛蟲為近期肆虐本港泳灘的元兇



Prof Qiu Jianwen

邱建文教授

Named after its signature double black spots

Identification of a species is not an easy task. First, the team has to identify the genus the specimen belongs to. After that, they compare the specimen with other species of the same genus. According to Prof Qiu, there were 27 species in the *Chloeia* genus. The team had to pore over past literature from other libraries. "Most literature on species under *Chloeia* genus are very old. Some even date back to the 19th century and were written in Latin! The other papers are in English, but the descriptions are too simple for identification."

To ensure the accuracy of the research, the team borrowed holotypes, i.e., the original single specimen upon which the description of a new species is based, from the Natural History Museum in London. After detailed comparisons with all other closely related species, the team found that the specimens they collected belong to two fireworm species, of which one is a new species that has not been reported before.

The team collected the undescribed fireworm specimens from the sandy bottom of a coral community in Sharp Island, Sai Kung. These specimens are fusiform in shape, measuring 28 mm to 39 mm long and 7 mm to 14 mm wide, with around 30 segments. They can be distinguished by the specific colour pattern on their mid-dorsum. Prof Qiu gave the name *Chloeia bimaculata* to this fireworm species. "*Bimaculata* means two black spots in Latin. We gave it this name because each segment of its body has two dark spots arranged one behind the other." This is the first fireworm species named in Hong Kong and only the fourth named species to be added to the fireworm genus *Chloeia* during the last century.

Based on the photos of fireworms posted on the internet by some local scuba divers, the team believes that this species has been seen before at other locations in the eastern part of Hong Kong, including the waters around Tung Ping Chau.

Identifying the culprits behind the recent outbreak

The team also succeeded in identifying the fireworm species in the recent outbreak. The team collected fireworm specimens from two beaches in Tsuen Wan and the subtidal waters of Tolo Harbour during an outbreak in June 2018. After checking past literature, Prof Qiu believes that the specimen is similar to a species known as *Chloeia parva*, which was named in 1868. The team tried to compare their specimen with the type specimen from the Natural History Museum in London, but the main body of the holotype was missing. Based on morphology of the chaetae and cirri on a parapodium (foot) of the type specimen, the team concluded that the specimens collected in Hong Kong during the outbreak are indeed *Chloeia parva*.

Chloeia parva are fusiform in shape, measuring 38 mm to 97 mm long and 8 mm to 20 mm wide, excluding chaetae. The original specimen record states that "along the centre of the back (of *Chloeia parva*), on each segment, there is a dark mark shaped somewhat like the Greek 'Y'". This matches the pigmentation pattern of the specimens the team collected during the outbreak. Since the original record missed certain characteristics of the species, the team described it in detail after dissection. The latest discovery was published in the international academic journal *Zoological Studies*.

The team believes that *Chloeia parva* are widespread in the South China Sea. Prof Qiu speculated that the cause of the outbreak may be related to climate change. However, since environmental data before the outbreak is absent, more research is required.

以背部雙斑命名

辨識物種並非易事，團隊首先確定標本的屬，然後便與整個屬的所有物種進行對照。據邱教授所言，海毛蟲屬下全世界原有27個物種，因此研究小組通過學校圖書館收集過去文獻以茲研究。他指出，「多數海毛蟲屬下物種的文獻皆非常古老，部分更可以追溯到19世紀，並以拉丁文寫成。即使部分文獻以英語寫成，但描述過於簡略，亦增加辨識的難度。」為確保研究準確，團隊亦從倫敦自然歷史博物館商借正模標本（即描述新物種時依據的原始單一標本）以作對照。經逐一仔細比對，團隊發現收集到的標本有兩個物種，其中一種為前人未有報導過的新物種。

研究團隊於西貢橋咀洲的珊瑚群落沙底收集到新品種海毛蟲的樣本，從標本可見蟲身呈梭形，長28至39毫米，寬7至14毫米，約有30個體節，最大特徵是背部的中央位置的獨特斑紋。邱教授因此為牠取名「雙斑海毛蟲 (*Chloeia bimaculata*)」：「*Bimaculata*是拉丁文，意謂『雙斑』。因為牠每節身體都有兩個深色斑點，以一前一後的方式排列，所以便以此為名。」這是首個於香港命名的海毛蟲物種，同時亦是全球近百年來僅第四次發現海毛蟲新物種。

辨識本港水域爆發物種

研究小組亦成功鑑別近來於本港水域爆發的海毛蟲物種。在2018年6月，即海毛蟲在香港爆發期間，團隊從荃灣兩個泳灘及吐露港的淺海水域收集海毛蟲樣本。比對過去文獻以後，邱教授發現樣本與早於1868年命名的「梯斑海毛蟲」(*Chloeia parva*)十分相似。團隊試圖以手上的標本與倫敦自然歷史博物館的原始標本比對，但該標本已失去頭部與軀幹的主要部份，只剩下一隻疣足（小腳）。團隊透過觀察疣足上的剛毛形態，最終仍能確認在香港水域爆發的海毛蟲標本特徵與梯斑海毛蟲一致。

「梯斑海毛蟲」呈梭狀，長38至97毫米，寬8至20毫米（不計剛毛）。倫敦借出的標本的原始記錄記載：「沿著（梯斑海毛蟲）背部的中央，每個身節上均有一個深色的Y形斑紋標記。」此斑紋特徵亦可見於香港爆發時收集的樣本，提供另一佐證。由於原始記錄缺少該物種的部分特徵，故團隊亦在解剖後對其進行詳盡描述。上述兩項發現皆發表於國際學術期刊《*Zoological Studies*》上。

研究團隊相信梯斑海毛蟲廣泛分佈於南中國海一帶，邱教授推測爆發的原因可能與環境變化有關，但由於缺乏爆發前的環境數據作比對，因此尚需更多的研究方可證實此推論。

Arousing public awareness of less familiar species

An ardent ocean researcher, Prof Qiu became the first Hong Kong scientist to participate in the Jiaolong deep-sea expedition in 2013. During that journey, Prof Qiu, together with mainland researchers, collected various specimens and discovered one new mussel species at a cold seep 1,000 metres below the sea level. Prof Qiu has also collaborated with mainland China and Hong Kong governments to prevent the destruction of biohabitat resulting from human economic activities by enhancing understanding of marine biology through research.

It is hoped that by describing a new fireworm species and redescribing a poorly characterised fireworm species found in Hong Kong waters, it will lead to increased public awareness of their existence. These species are often ignored when examining the environmental impact of various human activities such as reclamation. The destruction of their habitat may, however, result in a change in the whole ecosystem as they are part of the marine food chain. Moreover, he hopes this research will spur more studies on marine biodiversity. "Hong Kong has rich biodiversity. There are around 6,000 recorded marine species in Hong Kong, accounting for nearly one-fourth of the total number in China. This discovery reminds us that more species await discovery," says Prof Qiu.

Identification of the fireworm species that caused the recent outbreak has also laid the groundwork for the development of a cure against its toxin. Now that the species has been identified, the composition of the toxin can be recorded and an antidote may be found.



Prof Qiu is the first scientist from Hong Kong to take part in the Jiaolong deep-sea expedition

邱教授是首位隨「蛟龍號」下潛深海的香港科學家



Prof Qiu discovers a new mussel species at a cold seep 1,000 metres below the sea level
邱教授於海底1,000米的冷泉發現新品種青口

喚起公眾關注

邱教授一直醉心海洋研究，早在2013年，他就成為首位香港科學家乘坐內地潛水器「蛟龍號」下潛至深海，採集生物樣本進行研究，當中就包括一種於海底1,000米的冷泉生活的新品種青口。他亦與中國大陸及香港政府合作，研究各水域的海洋生物多樣性，以避免因為人類經濟活動而破壞生物棲息地。

此次研究鑑別出一個海毛蟲的新品種，以及重新描述另一個出現於香港水域卻資料不詳的海毛蟲品種，邱教授希望能引起公眾對鮮為人知的物種的關注。事實上，在檢視各種人類活動（例如填海）對環境的影響時，這些物種存亡與否往往受到忽略。然而，牠們作為食物鏈的重要一環，其棲息環境的破壞卻有可能導致整個生態系統發生劇變。此外，他亦希望這項研究能鼓勵更多人進行海洋生物多樣性研究：「香港擁有豐富生物多樣性，現時有近6,000個已知的海洋物種，約為全中國已知海洋物種的四分之一，但今次再發現新的物種，顯示香港尚有很多物種等待我們去發現。」

鑑別爆發的海毛蟲物種同時亦有助找出其毒素的療法，因為只有確定物種，方可以研究其毒素的成份，從而找出相應的治療方法。

