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umagazine 澳大新語

大數據＋人才 ＝智慧未來

Big Data + Talented People = A Smart Future

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UM Annual Report 2016/2017 enclosed

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編者的話　Editor's Words

發展智慧城市，培養大數據人才已成為全球熱門的議題，馬雲更揚言未來30年，人類的生活將會被大數據徹底改變。澳門特區政府今年也與阿里巴巴簽訂了建設智慧城市的合作協議，意味著澳門將因此迎來重大的轉變，同時也需要大量的大數據人才去配合城市的發展。

澳大不乏大數據領域的頂尖專家，其中包括趙偉校長和倪明選副校長兩位物聯網和大數據的專家；大學也有計劃推出大數據課程，培養具有大數據思維和創新能力的複合型人才。今期封面故事專門請來上述兩位大數據專家，剖析澳門如何建設智慧成市，以及澳大應培養甚麼人才，才能面對智慧未來的挑戰。

澳門特區政府近年鼓勵人才回流發展，澳大更成為不少學者回流的首選高等學府，本期特別專訪了四位土生土長，在外地讀書後回澳發展的老師，暢談他們回澳發展的原因和機遇。

澳大大師雲集，在國際學術上取得卓越的成就，本期也專訪了獲得「長江學者講座教授」榮銜的語言學家徐杰教授、混凝土專家李宗津教授，以及幹細胞研究專家徐仁和教授，分享他們如何一步一腳印在學術研究路上逐步取得今天的驕人成績。

2018年將至，在送舊迎新的時刻，謹祝各位讀者在新一年有更好的開始。

Creating smart cities and big data experts has become a subject of intense interest around the world. Jack Ma, the founder of Alibaba, predicts that big data will completely change people's way of life in 30 years. Earlier this year, the Macao SAR government signed a collaboration agreement with Alibaba to develop Macao into a smart city. This means that Macao will undergo significant changes, and that a large number of big data professionals will be needed to support the project.

There is no shortage of leading experts on big data at the University of Macau(UM). For example, Rector Wei Zhao and Vice Rector Lionel Ni are both experts in big data and the Internet of Things. In fact, UM plans to create a programme in big data to develop interdisciplinary graduates who possess big data thinking and creativity. In this issue, we interview Prof Zhao and Prof Ni, who share with us the significance of Macao's smart city project and suggest what UM can do to produce big data experts to embrace a smart future.

In recent years, the Macao SAR government has launched various incentives to encourage overseas-educated residents to return to Macao. As a leading tertiary institution in Macao, UM has naturally become the first choice for many returning expatriates. Four UM faculty members disclose why they chose to return to Macao and what opportunities they foresaw at the university.

UM boasts many preeminent scholars with outstanding achievements in their fields, such as Prof Xu Jie, a renowned linguist and a Chang Jiang Scholar Chair Professor; Prof Li Zongjin, a concrete expert; and Prof Ren-He Xu, an expert on stem cell research. Some of these world-renowned experts have arrived where they are from very humble beginnings. Check out their touching stories in this issue's exclusive interviews.

I hope you enjoy reading this issue of *umagazine*, and I wish you a great start to the year 2018.

張惠琴　Katrina Cheong

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大數據＋人才＝智慧未來

Big Data + Talented People = A Smart Future

文 Text｜張愛華 Ella Cheong
圖 Photo｜編輯部 Editorial Board

科技令社會不斷前進，10 年前誰會想到智慧城市、智慧房子、智慧汽車等將會是人類智慧未來生活的一部分。在面對人工智慧將覆蓋各個領域的大潮，大學需要培養具備哪些競爭力的人才來迎接新科技、新智慧所帶來的種種挑戰呢？

澳門特區政府今年宣佈要將澳門發展成一個「以數字引領科技，智能服務民生」的智慧城市。大數據在發展智慧城市擔任著重要的角色，可以說，若沒有大數據，也就沒有智慧城市。在澳門大學領導層中有兩位專門研究物聯網和大數據的專家——校長趙偉教授和副校長（學術）倪明選教授。今期訪問了他們兩位，分析澳門建設智慧城市的意義，以及澳大如何培養可迎接智慧未來的大數據人才。

Science and technology drive social progress. Ten years ago, who would have imagined that smart cities, smart houses, and smart cars would become part of our everyday lives in a smart future? In an age where artificial intelligence permeates every social sphere, what are the essential skills college graduates must possess in order to rise to the challenges presented by these new, smart technologies?

Big data plays an important role in managing smart cities. Indeed, without big data, there would be no smart city. Perhaps that is why, when the Macao SAR government announced earlier this year a plan to develop Macao into a smart city, it clearly defined the smart city as characterised by data-driven technology and artificial intelligence that is used to improve residents' quality of life. In this issue, we interview two members of the University of Macau's (UM) management team, Rector Wei Zhao and Vice Rector for Academic Affairs Lionel Ni, who are both world-renowned experts on big data and the Internet of Things (IoT). They share with us the significance of Macao's smart city project and suggest what UM can do to produce big data experts to embrace a smart future.

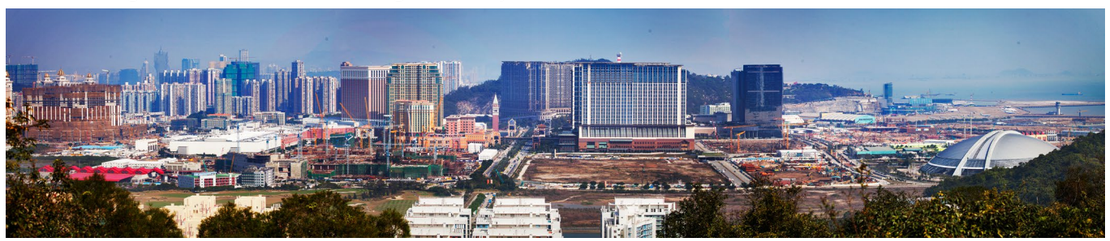
澳門如何建
智慧城市

根據維基百科資料，「智慧城市」（Smart City）的概念源於美國 IBM。該機構在 2008 年提出「智慧城市」概念，探討如何善用資訊及通訊科技來優化城市功能。「智慧」的理念就是透過新一代資訊技術的應用使人類能以更加精細和動態的方式管理生產和生活的狀態，通過把感測器嵌入和裝備到全球每個角落的供電系統、供水系統、交通系統、建築物和油氣管道等生產生活系統的各種物體中，使其形成的物聯網與互聯網相聯，實現人類社會與物理系統的整合，而後透過超級電腦和雲端運算將物聯網整合起來，即可實現。

澳門特區政府與阿里巴巴集團在 2017 年 8 月簽署了《構建智慧城市戰略合作框架協議》，為澳門建設智慧城市踏出重要首步。負責「澳門智慧城市發展方向及策略研究」的倪明選教授指出，智慧城市已成為城市及產業發展的重要領域，美國、西班牙、日本、香港等地紛紛啟動計劃，而在內地「十二五」規劃中，有 320 多個城市啟動建設智慧城市。從當前全球城市發展的規劃來看，發展智慧城市已經是大勢所趨。

副校長（學術）倪明選教授
Vice Rector (Academic Affairs) Prof Lionel Ni

澳門開啟建設智慧城市的新篇章
Macao is taking the first steps towards building a smart city



How Does Macao Create a Smart City?

According to Wikipedia, the ‘smart city’ concept originated with IBM. In 2008, the company proposed the concept of a ‘smart city’ when discussing how to make good use of information and communications technologies to improve various city functions. The idea behind the ‘smart city’ is that through the application of new generation information technology, authorities will be able to manage manufacturing processes and other facets of everyday life in a more precise and dynamic manner. By embedding sensors into various physical objects scattered around the world, such as power supply systems, water supply systems, transport systems, oil and gas pipelines, and buildings, we can create an IoT connected to the internet. With the support of super computers and cloud computing, we can then realise a seamless fusion between the actual physical world and the virtual cyber world.

In August 2017, in an important first step towards creating a smart city, the Macao SAR government signed a framework agreement with Alibaba Group on strategic collaboration in this area. Prof Lionel Ni, who is in charge of strategy research for Macao’s smart city development, points out that ‘smart cities’ have become a focus of intense interest in urban and industrial development, and many cities in the United States, Spain, Japan, and China have already launched plans to develop smart cities. According to the 12th Five-Year Plan released by the Chinese government, over 320 cities in mainland China have started the process of transitioning to smart city status. Indeed, smart city development appears to have become an inexorable global trend.

澳門要如何建設智慧城市？倪明選教授建議如下：「智慧城市的建設既需要立足澳門特色、進行宏觀構思，又要突破發展瓶頸，將政策、理論、實踐和產業相互貫通，構建具有全域觀的智慧城市生態系統。與已開展智慧城市建設的國家或地區比較，澳門處於起步階段。澳門要發展智慧城市，最急於改善的問題，是要規劃智慧城市的架構理念，制定優先發展方向及策略，探討管理體制、運行機制、法律法規及技術創新的實踐性和可行性。」

根據智慧城市面臨的多維視角、多評判標準、多層次分析的特點，倪明選教授建議澳門特區政府在建設智慧城市的規劃中，採用統一規範、技術融入的方式，以城市發展為主線，頂層設計為指導，技術架構為支撐，智慧應用為特徵，探索澳門智慧城市頂層設計方案，逐步展開城市創新實踐，有序實現智慧產能落地。

倪明選教授說：「澳門建設智慧城市的探索中，需要注重城市建設品質與城市經濟效益相結合，短期項目創新與長期可持續發展相結合，多元產業發展與互聯網＋相結合，政府引導決策與公眾參與監督相結合，自上而下目標引導與自下而上問題引導相結合，從規劃設計、治理運營、監督發展三個層次確立《頂層設計》，實現「技術融合、業務融合、數據融合」的全面提升。

澳大致力培養從容面對社會轉型、不畏挑戰的複合型人才。
UM is committed to producing interdisciplinary graduates who can rise up to the challenges of a constantly changing world

How does Macao become a smart city? Prof Ni offers the following suggestions: ‘We should build a smart city with distinctive local characteristics. We need to adopt a holistic approach in planning and overcome the bottlenecks in development. We also need to integrate policies, theories, practice, and industrial development in order to create an integrated ecosystem for a smart city. In this area, Macao is still in its infancy compared to countries and regions that have already started the process. The most urgent tasks for the government now include developing a theoretical framework, identifying the priorities and strategies, and studying the practicality and feasibility of administrative systems, operational systems, laws and regulations, as well as technological innovations.’

The process of designing a smart city is usually approached from multiple angles, measured against multiple standards, and analysed at multiple scales. For this reason, Prof Ni suggests that the Macao SAR government should employ uniform standards and integrate technologies in the planning process. Ni believes the effort should focus on city development, and be guided by top-level design, supported by a technological framework, and featuring applications of smart products, in order to gradually carry out innovative projects and ensure that smart products and capabilities can be delivered in an orderly fashion.

‘In the process of building a smart city, Macao needs to strike a balance between five pairs of seemingly contradictory priorities, namely the quality of city development versus economic benefits, short-term project innovation versus long-term sustainable development, economic diversification versus Internet Plus, decision-making by the government versus participation and supervision by the public, as well as the top-down goal-based approach versus the bottom-up problem-based approach,’ he says. ‘Top-level design should be done on three levels: planning, operation, and monitoring, in order to achieve better integration in technology, business, and data.’

智慧城市離不開
人才

澳門智慧城市的建設並非一日之功，而是一個長期的、系統的過程。倪明選教授說：「智慧城市的建設涉及廣泛領域和多項專業，需要大量的公共行政、經濟、法律、科技等方面的專業人才，特別是具有綜合素質的高水準創新人才。在這個過程中，澳大除了不斷探索技術的創新路徑，深度配合政府的未來施政方向，為城市規劃及管理提供決策支援之外，更著力以教學、研究和實踐並重的發展路徑，加強資源整合，以『四位一體』的教學模式為澳門培育高素質人才。」

澳大作為澳門的公立大學，有責任培養推動和引領澳門社會發展的人才，趙偉教授表示大學已有大數據人才培養計劃，「大學正規劃成立大數據課程，著重培養具有大數據思維和創新能力的複合型人才。大數據課程項目將結合理論知識和課堂實踐，實現多元學科交叉，既讓不同學科背景的學生具備紮實寬廣的理論基礎，同時注重結合社會需求，積極提升同學們大數據的挖掘、分析和管理能力。前期專業方向將集中於：金融大數據、健康大數據、城市大數據、數據素養以及數據隱私法。」

「現今是萬物互聯的時代，澳門建設智慧城市是一個不可錯過的機會。」趙偉教授強調說：「建設智慧城市，離不開數據科學，數據工業，以及數據貿易，背後更重要是要有智慧與人才的配合。一個國家或城市是否能跟上大數據的時代，最重要是取決於對人才的培養和吸引力。智慧城市和智慧產品要靠數據驅動，而數據驅動須靠軟件與互聯網經濟進行，目前世界各地都缺這類型人才。」

澳大計劃開辦大數據課程
UM plans to create a programme in big data

趙偉校長
Rector Wei Zhao

Talented People Are Indispensable in Creating a Smart City

Smart cities cannot be created overnight. Rather, it is a long, systematic process. Prof Ni puts it this way: 'Building a smart city requires expertise in different areas and a lot of professionals in public administration, economy, law, and science and technology, especially high-calibre, interdisciplinary, innovative professionals. In the process, UM needs to constantly explore new ways for technological innovation, align with the future direction of government policy, and provide support for decision-making in city planning and management. Aside from that, UM must also place an equal emphasis on teaching, research, and practice, enhance resource integration, and produce high-quality professionals for Macao through the "4-in-1" model of education.'

As a public university in Macao, UM shoulders the responsibility of producing graduates who can advance Macao's development. Prof Zhao discloses that UM has already formulated a plan for nurturing big data experts. 'The university plans to create a programme in big data, with the aim of producing interdisciplinary graduates with big data thinking and creativity,' he says. 'The programme will combine theoretical knowledge and practice in the classroom and will cover different disciplines. We hope that students of this programme, regardless of their academic background, will have a solid grasp of theoretical knowledge and improved skills in data mining, analysis and management, as these skills are in high demand in today's world. The early part of the programme will focus on big data for finance, health, and cities, as well as data literacy and data privacy law.'

具備真正的實力，年輕人才能在新的產業變革中百戰百勝。
Only when young people possess real skills will they be able to emerge victorious from the new industrial revolution

趙偉教授一直強調大學不應該是簡單的職業訓練所，以培養學生找工作為目標，他強調說：「大學應該培養學生不僅具備專業知識的硬實力，還要具備包括領導能力、團隊合作精神、溝通技巧、責任感、終身學習等所有關乎個人修養與價值觀的軟實力，使學生畢業後在面對任何挑戰的時候都能從容面對。人類第一次工業革命後，逐步用機器替代體力勞動，譬如汽車的出現，讓人類可以走得更遠、更快。現在出現新一輪的產業革命，並以人工智能、大數據和互聯網為標誌。這意味著我們將要用機器替代人類（至少一部分）的智力勞動。這場新的產業革命將給我們年輕一代帶來極大機遇的同時也帶來極大的挑戰。幾乎整個產業界將重新洗牌，許多產業會消失、重組，或者出現新的產業，年輕一代更要注重個人素質的培養，包括領導力、批判力等思維的訓練，只有具備這些真正的實力，才能在新的產業變革中百戰百勝。」

'We are living in a time where everything is connected to everything else, and creating a smart city is an opportunity Macao cannot afford to miss,' says Prof Wei Zhao. 'But this goal cannot be achieved without the data industry, data trading, and more importantly, talented people. Whether a country or a city can keep pace with the challenges in an age of big data depends, above all else, on whether it can nurture and attract talented people. Smart cities and smart products are driven by data technology, which in turn relies on software and internet economy. The shortage of professionals in these fields is a universal problem faced by countries around the world.'

Prof Wei Zhao has repeatedly stressed that a university should not become a glorified vocational school, whose goal is merely to prepare students for the job market. A university, he believes, should help students acquire not only hard skills in the form of professional knowledge, but also soft skills pertaining to personal qualities and values, such as leadership, teamwork, communication skills, a sense of responsibility, and a commitment to lifelong learning, to ensure that students can rise up to any challenges they might encounter after graduation. 'After the first industrial revolution, machinery replaced manual labour. For example, the invention of cars allowed people to move faster and farther,' he says. 'Now we are entering a new industrial revolution, characterised by artificial intelligence, big data, and the internet. What this means is that machinery is about to replace (at least part of) intellectual labour. This new industrial revolution will bring young people both enormous opportunities and enormous challenges.' 'Almost every industry will be reshuffled,' he adds. 'Many industries will disappear or be restructured, or new industries might appear. This makes it more important for young people to develop competitive personal qualities, including leadership and critical thinking. Only when they possess these real skills will they be able to emerge victorious from the new industrial revolution.'

澳大將設第三個國家重點實驗室，培養大數據人才。
UM is preparing for the establishment of a third state key laboratory, which will focus on big data and the Internet of Things.

建設國家重點實驗室

澳大現正籌備第三個國家重點實驗室，而且正正是研究全球關注的物聯網和大數據，趙偉教授說：「數據是國家政治經濟與社會文化生活領域重要的基礎性資源和財富，亦是進行各項科學研究的基礎。物聯網則是城市建設和管理中，多源數據的有效採集方式之一。多源數據積累而成的大數據，將為城市的規劃者、管理者、決策者、持份者提供科學決策的重要基礎。因此，國家實驗室的建設意義重大。」

Establishing the Third State Key Laboratory

Currently, UM is preparing for the establishment of a third state key laboratory, which will specialise in IoT and big data. 'Data are an important resource and asset of a country in political, economic, social, and cultural arenas,' says Wei Zhao. 'They also form the basis for scientific research. IoT is an effective way to collect multi-source data in city construction and management. Big data from multiple sources can serve as the basis for scientific decision-making by city planners and managers as well as other stakeholders. Therefore, creating a state key lab in this area is of great significance. '

趙偉校長
Rector Wei Zhao

趙偉教授是國際知名的計算機科學家，電子與電氣工程師協會（IEEE）會士，在分散式計算、即時操作系統、計算網路和資訊與網路安全等研究領域作出了突出貢獻。曾先後擔任紐約州倫斯勒理工學院理學院院長、美國國家科學基金會計算機與網絡系統分部主任及美國德克薩斯農工大學主管科研工作的資深協理副校長。他所領導的科研團隊獲得了多項榮譽，包括 IEEE 分佈式計算系統國際會議最佳論文獎、IEEE 美國國家航空航太與電子會議最佳論文獎、IEEE 國際通信會議最佳論文獎以及美國國防高級研究項目局頒發的技術轉移獎等。2011 年獲中國科技部委任為國家 973 計劃物聯網項目的首席科學家。

Prof Wei Zhao is a world-renowned computer scientist and a fellow of the Institute of Electrical and Electronics Engineers (IEEE), with significant contributions in distributed computing, real-time systems, computer networks, and cyberspace security. He was the dean of the School of Science at Rensselaer Polytechnic Institute in the United States, the director of the Division of Computer and Network Systems in the US National Science Foundation, and the senior associate vice president for research at Texas A&M University. His research team has received numerous awards, including the Outstanding Paper Award from the IEEE International Conference on Distributed Computing Systems, the Best Paper Award from the IEEE National Aerospace and Electronics Conference, the Best Paper Award from the IEEE International Conference on Communications, and a technology transfer award from the US Defense Advanced Research Projects Agency. In 2011, he was appointed by the Ministry of Science and Technology of China as the chief scientist for an IoT project under the National 973 Programme.

副校長（學術）倪明選教授
Vice Rector for Academic Affairs Prof Lionel Ni

倪明選教授是國際知名的計算機科學家。於 1980 年獲得美國普渡大學電機工程博士學位。長期從事普適計算、移動計算、大數據、無線傳感網絡、高性能體系結構、並行計算、分佈式計算、高速網絡等研究，已指導完成 69 個博士生。從 1998 至 2001 年，他在美國創立了 CC&T 技術公司並擔任執行長，他領導的團隊設計了一系列網絡電話有關的產品。 倪教授從 2002 年回到亞洲後， 積極參與內地的學術活動。他在 1994 年由於在並行和分佈式系統領域的貢獻被評選為 IEEE Fellow，在 2008 年被評選為香港工程科學院院士。曾擔任過多個國際一級期刊編委及 30 多個國際會議的大會主席。2006 年獲中國科技部委任為國家 973 計劃「無線傳感網絡的基礎理論及關鍵技術研究項目」首席科學家。

Prof Lionel Ni is a world-renowned computer scientist. He received his PhD degree in electrical and computer engineering from Purdue University in the US. His research interests include pervasive computing, mobile computing, big data, wireless sensor networks, high-performance computer architecture, parallel computing, distributed computing, and high-speed networks. Prof Ni has supervised 69 doctoral students to completion. He co-founded CC&T Technologies, Inc in the US in 1998, and served as the CEO of the company from 1998 to 2001. His team has developed a series of products related to internet phone systems. Since returning to Asia in 2002, Prof Ni has been actively involved in academic events in mainland China. In 1994, he was elected fellow of the IEEE for his contributions to parallel processing and distributed systems. In 2008, he was elected fellow of the Hong Kong Academy of Engineering Sciences. He has served on the editorial boards of numerous top-tier international journals and has served as the chair or co-chair of more than 30 international conferences.In 2006, he was appointed by the Ministry of Science and Technology of China as the chief scientist for a project on the basic theories and key technologies in wireless sensor networks, under the national 973 programme.

政府鼓勵海外人才回澳 澳大成為學者回流首選

The Government Encourages Overseas-educated Residents to Return UM Becomes the First Choice for Returning Expatriates

文 Text｜ 李巧雲、校園記者關詠瑜 Albee Lei，UM Reporter Christy Kuan
圖 Photo｜ 何杰平、張愛華、部分由受訪者提供 Jack Ho，Ella Cheong，with some provided by the interviewee

海外人才回流，可為一個地區帶來新的動力，從而提升競爭力。因此，澳門特區政府近年紛紛推出措施支持和鼓勵人才回流，而澳門大學也為本地的學術教研人員提供了許多發展和晉升的機會，吸引在外國打拼的人才回澳，並到澳大尋求事業新高度。

Encouraging overseas-educated, talented citizens to return and serve their home city can provide a fresh impetus for the city's development and increase its competitiveness. The Macao SAR government has launched various incentives in recent years to achieve this very purpose. In an effort to support the government policy, the University of Macau (UM) tries to lure overseas-educated Macao residents by offering attractive working conditions and career advancement opportunities. As a result, many overseas-educated scholars have joined UM, hoping to advance their careers.

科技學院副教授莫昇萍
Greta Mok, associate professor from the Faculty of Science and Technology.

研究自由，迎來豐收

優秀人才看重能否更好地發揮自身潛力，而發展空間、創新的條件和環境就是幫助他們發揮的關鍵。科技學院副教授莫昇萍說：「回來是正確的選擇。」

Research Freedom Bears Fruit

The best people want to go where they can achieve their full potential. So career prospects and an environment conducive to innovation are their key considerations. UM obviously meets these two criteria for Greta Mok, associate professor from the university's Faculty of Science and Technology. She says, 'I made the right decision to come back.'

Mok developed a strong interest in medical imaging at a young age. After graduating from college in Taiwan, she skipped master's studies and was admitted directly to a doctoral programme at Johns Hopkins University in the United States. Five and a half years later, bored by life in the US, she went to Hong Kong to explore career opportunities. But after staying in Hong Kong for some time, she realised that she had very limited career options there, so she began to look elsewhere. It was then that UM appeared on her radar.

莫昇萍與團隊的研究獲三個世界級獎項
Greta Mok and her research team have won three international awards

年輕時對醫學影像有濃厚興趣的她，在台灣讀完大學後跳過碩士到美國約翰霍普金斯大學直攻博士，五年半後有感於外國生活較乏味，澳門又沒有相關工作便轉到香港。由於香港的工作發展空間有限，她開始尋求其他機會，便把目光投到發展空間更多的澳大。

在澳大工作七年，莫教授得到大學信任和支持，讓她進行新的研究。從零開始努力多年，今年是豐收的一年，她所帶領的團隊今年獲得三個世界級獎項：亞洲核醫學學術一等獎、美國核醫年會的國際最佳論文獎與青年研究家獎（電腦與儀器類別）第三名，其中青年研究家獎是大中華地區首次有科研隊伍在此類別入圍並獲獎，同時是目前亞洲地區在此類別的最佳成績。莫昇萍表示，能夠代表國家和澳門獲獎意義重大，這是她研究生涯的一個里程碑，但沒有政府、澳大和學生的支持不可能做到：「能取得成果，要有好的構想、好的學生、好的老師，團隊要清楚世界當前最新的問題，也要得到多方的支持。澳門地方小，團隊間距離較近，不同部門可互相合作。」

在做好研究和教學的同時，莫教授還成立了澳門核醫與分子影像學會，推動澳門的核子醫學和臨床發展，希望能造福澳門，如標靶核素治療對多種原發和轉移癌症有顯著療效，口服放射性碘是治療甲狀腺癌的其中一種最佳方法，她正努力推動澳門引入。未來一年，她將帶著學生到麻省州立大學醫學院做研究，提升研究水準和國際視野，再一次把新技術帶回來。

莫教授認為，家庭因素是海外人才回歸本土的最大動力；其次就是社會的進步，這是吸納人才的最佳方法，行業多元化才讓人才有對口的工作和位置，建議政府推行類似內地的「千人計劃」，以廣納賢能、造福社會。

Prof Mok has been working at UM for seven years. She appreciates the trust and support she receives from the university, which has enabled her to constantly explore new frontiers in her research. This year, her hard work came to fruition. Her research team received three international awards, including a first prize at the Asian Nuclear Medicine Academic Forum, as well as an International Best Abstract Award and a third prize of the Computer and Instrumentation Council (CalC) Young Investigator Award at the 64th Annual Meeting of the Society of Nuclear Medicine and Molecular Imaging. They were the first team from the Greater China region to be shortlisted for and receive the Young Investigator Award. It represents the best result Asia has ever achieved in this categotry.

Prof Mok says that receiving these awards for China and Macao is of great significance and marks a milestone in her career. She adds that none of this would have been possible without the support of the government, UM, and students. 'To produce good results, we need to have good ideas, good students, and good teachers,' says Mok. 'The team must have a clear idea about the new issues in the world that need to be addressed. They must also garner support from various parties. Macao is a small city. Different teams are geographically close, which makes inter-departmental collaboration easier.'

Besides being an educator and researcher, Prof Mok is also the founder of the Macao Society of Nuclear Medicine and Molecular Imaging, which is dedicated to promoting the development of nuclear medicine and its clinical applications in Macao. Prof Mok hopes that the research findings from the society will benefit Macao residents. For example, targeted radionuclide therapy has noticeable effects on various primary and secondary cancers. Radioactive iodine therapy is one of the best ways to treat thyroid cancer. She is now working towards the introduction of this therapy in Macao. Next year, Prof Mok and her students will conduct research at the Medical School of the University of Massachusetts. She expects the experience to improve her team's research capability, and help them develop a global mindset and bring back new technologies.

曹光彪書院院長劉潤東
Lau Yun Tung, master of Chao Kuang Piu College.

引先進教育，育多元人才

海外人才回流可帶來不同視野和新技術，促進社會在全球化浪潮下不斷前進。曹光彪書院院長劉潤東說：「培養人才，由書院做起。」

機緣巧合，在美國 30 多年的劉院長參加澳門特區政府人才發展委員會的交流活動訪問澳大，並獲邀任訪問學者：「我在書院住了兩個星期，與學生參加活動和交流，對書院體系有更深一步認識，希望能把自己的經驗帶來。」

對物理有濃厚興趣的劉院長，大學畢業後憑著出色的成績及實力成功進入美國麻省理工學院深造，曾在美國國家航空暨太空總署（NASA）研究物理，及後在上市科技資訊公司擔任管理層多年。劉院長表示：「到美國留學主要與興趣有關，因為當時澳門的大學沒有合適的理科類選擇，而且澳門亦沒有相關工種可做，因此決定到美國發展。」

澳大實行學院及書院並行，劉院長認為澳大的書院系統是培養新一代人才的架構，讓學生早點接觸書院制度，更能幫助他們多元發展，這是劉教授回澳工作的原因之一。「我希望透過書院培養不同學系學生的軟實力以及創新理念的想法，例如讓學生組成團隊共同合作，去構思可行的手機程式應用在實際生活如澳門旅遊、餐飲等行業的使用。」另外，他也強調學生選科要從興趣出發，學生要多培養自學能力，不斷學習新事物，培養多方面的技能，希望書院制度能讓本地學生逐漸達成這個目標。大學是培養人才的基地，因此劉教授亦想透過書院讓學生有機會到澳門以外的地方實習，多看外面的世界及規劃未來的人生版圖，幫助澳門多元化發展。

劉院長還認為，澳門政府可透過不同方法吸納年輕及年長的精英人才，「剛開展事業的年輕一輩都優先考慮自己的專長能否在澳門有事業發展空間，政府可以在某些配套方面給予優惠及幫助；而接近退休年齡的年長人才通常有穩定的事業及管理方面經驗，他們未必考慮繼續做回同一行業，因此政府可以在不同行業設置相關政策，讓年長人才參與行政方面的職責。」

劉潤東在美國麻省理工學院完成物理博士學位
Lau Yun Tung holds a PhD degree in physics from the Massachusetts Institute of Technology in the United States

難得機遇開展教育生涯

社會進步，促進行業多元化，是吸引人才回流的重要因素。教育學院助理教授麥紫均說：「澳門的吸引之處，在於澳門推行政策規則比較人性化，會因應情況需要而做個別調整。」

Prof Mok believes that family-related factors are the greatest magnet that attracts overseas-educated locals, followed by societal progress. And the combination of both is the best way to attract the best people. She suggests that the Macao government should diversify the city's economy and implement a programme that is similar to the 1,000-Expert Programme in mainland China, so as to create more job opportunities that match the expertise of overseas-educated people.

Introducing Advanced Education to Produce Well-rounded Students

Introducing overseas-educated people can bring different perspectives and new technologies, which will in turn promote social progress amid the trend of globalisation. As Lau Yun Tung, master of UM's Chao Kuang Piu College, puts it, 'Talent development starts with the residential colleges.'

After working in the US for more than 30 years, Lau visited UM through an exchange activity organised by the Talent Development Committee of the Macao SAR government. During the visit, he was invited to serve as a visiting scholar at UM. 'I lived in one of the residential colleges for two weeks, and joined the students in various activities, which helped me gain a deeper understanding of the residential college system. I hope to apply my past experience to my current job,' he says.

Passionate about physics, Lau was admitted to the Massachusetts Institute of Technology after graduation from college. He was a physics researcher at the National Aeronautics and Space Administration of the United States. He has also worked in a management position at a listed IT company for many years. He says, 'My decision to go to the US for further studies was driven by interest. At the time the science majors offered by universities in Macao didn't interest me, and career options that matched my interest were also nonexistent, so I decided to go to the US. '

UM implements an academic faculty system and a residential college system. Prof Lau believes that the RC system at UM provides a framework for training the next generation, and that exposing students to the RC system as early as possible can help them achieve well-rounded development. This is one of the reasons why Prof Lau decided to return to Macao. 'I hope that the RC system can help students from different faculties and departments to develop soft skills and creative thinking,' he says. 'For example, we can encourage students to work in teams to develop feasible mobile phone applications for tourism and catering industries in Macao.' He also stresses that students should select courses based on their interests, become self-driven learners, constantly learn new knowledge, and develop skills in various areas. He hopes that the RC system can help local students gradually achieve these goals and provide students with internship opportunities outside of Macao to help them learn more about the outside world and plan their future, so they can contribute to the diversification of Macao's economy.

Prof Lau thinks that the Macao SAR government should try attracting the best people in different age groups through different policies. 'Young people who have just started their careers will first consider whether there are career opportunities in Macao that match their expertise, so the government can consider providing some preferential policies and support in this respect,' he says. 'People who are approaching retirement age, on the other hand, tend to have an established career with rich managerial experience, and they may not want to continue doing the same job, so the government can consider developing relevant policies to allow senior citizens to participate in administrative duties. '

A Rare Opportunity to Pursue a Teaching Career

Social progress and economic diversification are key to attracting overseas-educated people. Miranda Mak, assistant professor from the Faculty of Education, says, 'What's attractive about Macao is that the policies and regulations in Macao are people-oriented, and they are adjusted according to specific circumstances.'

麥紫均教授在美國雙主修室內設計與心理學。留學美國期間，麥教授在密蘇里洲春田（Springfield）讀了一年半，繼而轉到奧斯汀德克薩斯州（Austin Texas）繼續學士課程。大學畢業後在美國一間設計公司實習一年，讓她更清楚去留的決定及未來的方向。回澳門從事中學教師及高等教育研究工作三年後，又到香港中文大學深造心理學碩士及教育心理學博士。看到澳大遷到新校園的難得發展機遇，麥教授毫不猶豫地到澳大開展教育生涯。

對於全家移民並已建立事業和家庭的人來說，回流澳門涉及太多因素。麥教授指出許多已在外國生活多年的朋友都覺得外國的基礎教育比港澳的相對輕鬆，這是希望子女能留居在外的原因之一；而且澳門樓價高企，要放棄原有的物業回澳重新開始令人卻步；加上留居海外太久，令他們有感澳門的整體配套如住屋、 交通、教育、醫療、薪金和福利與外國的相比可能存在一定差距。

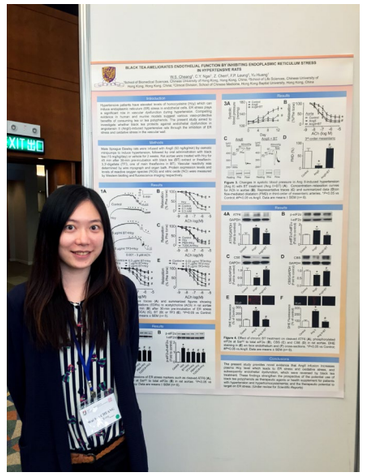
麥教授認為澳門年輕人不會特別比外地人遜色，「現時年輕人比較強的方面未必是傳統的那套標準，他們也有很多創新的想法。」因此，政府更要「以家為本」吸引人才回澳，完善配套設施、教育制度及解決居住問題。

教育學院助理教授麥紫均
Miranda Mak, assistant professor from the Faculty of Education.

Prof Mak majored in interior design and psychology in the United States. During the six years she studied in the US, she spent one and a half years in Springfield before transferring to Austin, Texas to resume her undergraduate studies. After graduating from college, she worked as an intern for a year at a design company in the US. That experience helped her gain a clearer idea about her future direction, including whether she should stay in the US or return to Macao. After returning to Macao, she worked for three years, first as a secondary school teacher, and then as a researcher on higher education, before pursuing further studies at the Chinese University of Hong Kong, where she received a master's degree in psychology and a PhD degree in educational psychology. Optimistic about the career opportunities at UM with the university's relocation to the new campus, Mak decided to pursue a teaching career at UM.

For those who have migrated to another country with their family, or those who have established careers and started families abroad, there are many factors to consider when deciding whether to return to Macao. Prof Mak points out that many of her friends who have lived overseas for many years feel that basic education is less burdensome overseas than it is in Hong Kong and Macao, and this is one of the reasons why many parents want their children to stay overseas. The second reason is the skyrocketing housing price in Macao. The prospect of starting from scratch while giving up affordable overseas housing is not very appealing. A third reason is that expatriates who have lived abroad for a long time worry about the gap between Macao and other locales in many areas, including housing, transport, education, medical care, salary, and fringe benefits.

But Prof Mak believes that young people in Macao do not fade in comparison with their counterparts overseas. 'Young people these days may not necessarily excel when measured against traditional standards, but they have many creative ideas,' says Mak. Therefore, she believes it is more important for the government to attract talented people by addressing family-related factors, improving support facilities and the educational system, as well as providing accommodation.



鄭慧珊現在聖地牙哥加利福尼亞大學進行為期兩年的訪問
Anna Cheang at the University of California San Diego for a two-year research stint

鼓勵人才回澳，澳大推濠江學者計劃

為配合澳門特區政府鼓勵人才留澳和回澳發展的政策，推動區域性及國際間的人才培養合作，澳大於 2014 年推出「澳大濠江學者計劃」，鼓勵在著名大專院校修讀高等教育課程的本澳居民在取得碩士或博士學位後加入澳大。

該計劃為期三年，已有 11 名學者成功獲聘。「濠江學者」可到外地著名大學或機構擔任訪問學者或研究員。此外，澳大的資深教學人員會就如何成功建立研究項目、開展研究、發表研究成果、以及如何成為專業教學人員等，為年輕的「濠江學者」提供適時的建議和指引。通過評核後，「濠江學者」有機會透過公開招聘成為澳大的助理教授。

在香港中文大學完成生物化學學士和生物醫學科學哲學博士學位的鄭慧珊，現在中華醫藥研究院負責中藥產品國際化開發的研究工作。在獲聘為「澳大濠江學者」後赴聖地牙哥加利福尼亞大學進行為期兩年的訪問 。她說：「該計劃對我在澳門進行科研很有幫助，因此決定回澳工作，這計劃也體現了特區政府對本地人才培養和科研學術發展的支持。」

短片：澳大人愛回家：麥紫均教授
Video: UM Members Return to Their Hometown: Prof Miranda Mak

Encouraging Talented People to Return with the 'Macao Fellow' Programme

To support the Macao SAR government's policy to encourage overseas-educated expatriates to return to Macao and to promote collaboration in talent development at regional and international levels, UM launched the Macao Fellow Programme in 2014, which aims to encourage Macao residents who have completed master's or doctoral degrees at well-known universities to join the university after graduation.

Over the past three years, 11 Macao Fellows have been appointed under this programme. In addition to the opportunity to serve as visiting scholars or researchers at renowned universities or institutions overseas, Macao Fellows will also receive guidance from experienced faculty members at UM on a variety of matters, including how to successfully start research projects, how to conduct research, how to publish research findings, and how to become professional academic. Upon passing the relevant appraisal, Macao Fellows will have the opportunity to seek appointment as assistant professors at UM through open recruitment.

Anna Cheang from UM's Institute of Chinese Medical Sciences received her bachelor's degree in biochemistry and a PhD degree in biomedical sciences from the Chinese University of Hong Kong. She is currently responsible for the international development of products based on traditional Chinese medicines. After being appointed a Macao Fellow, she went to the University of California San Diego for a two-year research stint. 'I decided to return to Macao because I felt this Macao Fellow Programme would be very helpful if I wanted to conduct research in Macao. This programme shows the SAR government's commitment to talent development and its support for scientific research,' she says.

短片：澳大人愛回家：莫昇萍教授
Video: UM Members Return to Their Hometown: Prof Greta Mok

短片：澳大人愛回家：劉潤東博士
Video: UM Members Return to Their Hometown: Dr Lau Yun-Tung

古今聲音交織的長廊

Galleries of Time – honoured Voices

文 English text ｜ 余偉業 Kelvin U
圖 Photo ｜ 李思 Manuel Jacinto Dos Reis
翻譯 Chinese Translation｜ 蘇恩霆 Anthony Sou

歷史的鑽研，為人類的記憶保存留下最大的詮釋空間。設於澳門大學人文社科樓歷史系走廊，由聯合國教科文組織世界記憶計劃教育研究委員會支持的常設展覽「文化長廊：史料、聲音、歷史」，讓觀者穿梭於不同的時空，傾聽歷史長河中經他人詮釋的聲音。

History is a fascinating enterprise which aims to sustain the widest possible interpretation of memory. 'The Galleries: Sources, Voices and Histories' – a permanent exhibition in the hallways of the Department of History, Faculty of Social Sciences, University of Macau (UM) – not only invites visitors to stroll through time, but also demonstrates how to understand and interpret voices that transcend time. This collaborative project, under the aegis of the Subcommittee on Education and Research, UNESCO Memory of the World Programme, aims to cultivate the greatest gift in students – curiosity.

王笛教授指展覽向公眾展示以史實為據的研究方式
'This project shows how we conduct evidence-based research intertwined with thought-provoking queries and interrogatory skills.'
—Prof Wang Di

多視野探索歷史

文化長廊以新穎的策展方式，呈現多視野的歷史文化敘述。展覽破天荒運用室內長廊，結合富美感的空間佈局，讓觀者從恬靜中豁然開朗，探索和思考澳大豐富多元的歷史研究。來自世界各地、穿越不同時空的史料，按時序於長廊展出，當中有中國史、東西交流史、東南亞以及海事史，著重歷史知識傳授和運用。

長廊裡，澳大歷史學家盡顯所長，有如偵探般牽引途人，翻看歷史紀錄、考古工藝品，從蛛絲馬跡中把往事重塑眼前。歷史系主任王笛教授表示：「展覽不但強化公眾與小城歷史的情意結，也從多角度讓學生知道鑽研歷史的美學，而且也讓他們感受豐碩成果是用不眠不休努力換來的。」

王教授又指，展覽向公眾展示以史實為據的研究方式，既提出富啟發性的課題，又有尋根究底的精神。王教授說：「展覽也都想學生明白對史料作批判性考察是很重要的，這樣才參透出合情理的詮釋，瞭解人類文化、政治、生活方式、信念、思維的轉變。」

Pioneering Dynamic Exhibition

Adopting cutting-edge and multi-perspective ways of presenting history and culture, The Galleries is a pioneer project that makes use of long hallways to allow visitors to savour the tranquillity of its well-embellished surrounding, whilst exploring the dynamic and diverse portfolio of historical research produced at UM. The exhibition presents findings from source-based research studies of the history of China, East-West interactions, and Southeast Asia and Maritime history, in chronological order, with an emphasis on the pragmatic usefulness of historical knowledge that goes beyond esoteric academic purposes.

The Galleries showcases various exciting journeys of detectives of time, who hunt through archival records and archaeological artefacts, seeking clues that might help construct a vivid picture of something which happened long ago. 'Not only does it empower public connection with the past of our home city, The Galleries also introduces our students to the enthralling world of research on history in a wide range of perspectives, meanwhile making them realise the fact that solid outcomes could be only achieved through diligent efforts,' says Prof Wang Di, head of the Department of History.

'This project shows how we [faculty members] conduct evidence-based research intertwined with thought-provoking queries and interrogatory skills, ' says Prof Wang. 'And in some ways, it tells our students that it is of great importance to look at historical data in a critical manner so as to reconstruct a sound interpretation of ever-changing human cultures, politics, lifestyles, beliefs, and creativity.'

多語背景的史學大師
Historians with a multilingual background

多語背景史學大師

沒有歷史系的大師，就沒有文化長廊。歷史系的老師來自全球各地，有來自內地，也有來自歐美，每位都經過嚴格挑選，學術資歷深厚，且敢於創新。多語、別樹一幟的學術視野，更是澳大歷史系一大特色，可對多種語言史料作出研究，包括中文、日文、滿文、拉丁語、葡語、西班牙語、意大利語、法語、英語、荷語及德語。

長廊設計、統籌工作均由該系助理教授白雅詩博士包辦，她也是聯合國教科文組織教育研究委員會通訊委員。她表示，展覽要讓學生知道，從事歷史研究是一門史學工匠的藝術，需有多語背景支持，也具跨學科的視野，以作更深入分析。「展覽所顯示的，是歷史學家認真看待史料研究的一份執著，把不同文明接觸交融的足跡找出來，加以立體化的脈絡梳理，也呈現被邊緣化的弱勢聲音。」

謹循上述態度，長廊把中國古今有區別的歷史敘述出來，也著眼於東西方文化交流，當中涉及澳門研究、航海時代海事史、科學史、技術史、藥物史、地圖史、藝術史、南亞史、東南亞史等。

Distinct Scholarly Exploration

The Galleries is only possible because of the department's impressive human capital – the carefully-selected and globally-connected group of renowned, competitive and innovative senior and junior scholars from mainland China, the United States, and Europe. Their multi-lingual competence and distinct academic vision enables the team to undertake source-based research in Chinese, Japanese, Manchu, Latin, Portuguese, Spanish, Italian, French, English, Dutch and German.

'The Galleries aims to transmit to our students the double role of a historian – scholar and artisan, who need to master multilingual and interdisciplinary skills to analyse archival materials,' says Dr Beatriz Puente-Ballesteros, an assistant professor of the Department of History, a corresponding member of the UNESCO's Subcommittee on Education and Research, and the designer and coordinator of The Galleries. 'This exhibition explains that it is only by means of painstaking source-based research that historians can open new horizons of theoretical exploration that define, concretise and contextualise the extent of contacts on both sides of inter-civilisational encounters, but also give voices to marginal and marginalised actors,' she says.

Based on these approaches, The Galleries narrates differentiated histories of China from the past to the present, with a special focus on East-West interactions: Macao studies; maritime history in the Age of Sail; the history of science, technology, medicine, maps and art; and the history of South and Southeast Asia.

長廊空間佈局設計取材自「珍奇屋」概念
The design is inspired by the Renaissance Kunstkammern, which literally means 'art rooms' or 'cabinets of curiosities'

靈感源於「珍奇屋」

置身於長廊中，不難聯想起博物館的空間佈局，一邊漫步，一邊近距離欣賞趣味盎然的展品，彷如在不同的歷史時空中穿梭。白博士指出，長廊的空間設計取材於文藝復興時期，歐洲貴族用「珍奇屋」收藏稀品的概念。她說：「珍奇屋就像一個袖珍宇宙，展藏如百科全書般包羅萬有，如大自然產物、人類產物、科學產物（人類克服自然的見證），以展示主人學問淵博，富人文精神。」

白博士在空間佈局上借用了這些概念，營造出具美感的中西文化交滙氛圍，從視覺上羅列出歷史系林林總總的研究活動。長廊原本空白的牆壁，好比一塊白畫布，讓每位教授佈置自己的「珍奇屋」，展示與研究相關的物件及圖片。長廊從此也變成一個讓人駐足學習的地方，展出從世界各地檔案館和圖書館搜羅三百多幅的圖片複製品，如信函手稿、歸檔文件、記錄、地圖、繪畫、插畫、人物畫像、照片和海報等，配有相關歷史簡介。

白雅詩博士說：「史料就是歷史的聲音。」
Sources are the voices of history — Dr Beatriz Puente-Ballesteros

Renaissance Wonder-Rooms

Strolling through the hallways, one is reminded of the spatial arrangement of museums, where intriguing exhibits allow one to travel through time and space. According to Dr Puente-Ballesteros, the design of the exhibition's conceptual dimension is inspired by the Renaissance *Kunstkammern*, which literally means 'art rooms', but are also known as 'cabinets of curiosities' or 'wonder-rooms'. 'Those "wonder-rooms" were conceived as a universe in microcosm in which the collector displayed his broad humanist learning by showing an encyclopaedic collection of objects mostly comprised of *naturalia* (products of nature), *arteficialia* (or *artefacta*, products of man), and *scientifica* (testaments of man's ability to dominate nature),' she says.

Playing around with these display concepts, Dr Puente-Ballesteros constructed a space of thematic and aesthetic encounters between China and the West, visually articulating the manifold activities carried out in source-based research from the Department. The formerly empty white walls of the long hallways functioned much like an empty canvas, on which professors could showcase their own *Kunstkammer* with objects and images related to their own research projects. The Galleries creates an inspiring promenade, displaying over 300 reproductions of images from archives and libraries all over the world, with information about the historical sources, including manuscripts of letters, archival documents, printed records, maps, drawings, illustrations, portraits, photographs, and posters.

啟發學生思考

今次展覽又怎能少了學生的投入和參與？因此，長廊盡頭處預留了空間給研究生發揮，鼓勵他們向同學和公眾分享所學及研究成果，題材為學生研究的課題，並定期更換。白博士指，這樣安排是想學生對感興趣的歷史進行深入考察，梳理和分析收集到的史料，並以生動活潑方式把研究發現呈現眼前。她說：「我常對學生講，史料就是歷史的聲音。咀嚼史料時，須懂得比較技巧，從跨文化、全球視野角度觀察，嚴謹且成熟地把這些聲音還原。」

鄧穎欣和薛惠的「五彩斑斕的廣告世界：香菸、醫藥與美酒」
' Beautiful Adverts: Cigarettes, Drugs and Wines ' by Deng Yingxin and Xue Hui

畢業作品展「五彩斑斕的廣告世界：香菸、醫藥與美酒」由兩位已畢業的研究生鄧穎欣和薛惠製作，描繪了西方性別觀對內地五、六十年代廣告影響，以及消費文化對中國現代史的衝擊。兩位學生收集大量當年的廣告海報及油畫，有力展示西方的推銷策略如何打開國內市場，標誌著現代中國的開端。鄧穎欣說：「我們帶來了許多經典的廣告海報， 從而窺探出當時的消費美學。」薛惠說：「這些海報深受西方影響，多刻劃旗袍少女在沙發上的嫵媚，這畫風當時很流行，某程度上反映那時中國女性地位。」

Contributions from Students

The Galleries would not be complete without contributions from students. Thus, a prominent corner of The Galleries is reserved as 'The History Students' Space' to inspire and motivate MA students and PhD candidates from the department to introduce their own research projects to other students' and the general public. The theme varies from time to time, depending on the students specific projects. 'This Space allows our students to examine thoroughly the history they are interested in, consolidate and analyse the collected data, and demonstrate their skills in laying out their research findings in an intriguing manner,' says Dr Puente-Ballesteros. 'I always say to my students that sources are the voices of history and therefore we must honour them by using rigorous interpretation and sophisticated methodological approaches from comparative, transcultural and global perspectives'.

An inspiring panel entitled 'Beautiful Adverts: Cigarettes, Drugs and Wines' by Deng Yingxin and Xue Hui, two graduate students from the department, offers their own explanation of how the Western conception of gender roles greatly influenced Chinese advertisements in the 1950s and 1960s, and how consumer culture shaped Chinese modernity. A substantial number of advertising posters and paintings of the time are collected and displayed as eloquent evidence, offering guests a glimpse of how Western advertising tactics conquered Chinese markets and marked the beginning of modern China. 'We brought a lot of time-honoured advertising graphics that witness the aesthetics of Chinese consumers of the time,' says Deng. 'These posters were influenced by Western advertisements and were successful in advertising and giving recognition to the artists. From these commercial posters, you might see lots of portrayals of elegant young ladies dressed in cheongsam, sitting on a sofa, which were exceptionally popular and in some way reflected the social status of Chinese women at that time,' Xue says.



文化長廊中展示的老師作品
Works by faculty members exhibited in the hallway

長廊的順利策展，學生付出功不可沒。他們過程中的全情投入，不但有助學習，更能培養具批判性的世界觀。歷史系大二學生盛佳參與了多個「珍奇屋」製作，如湯開建教授的「澳門：一處東西方文明交匯的十字路口」、茅海建教授的「天朝的隕落」和「近代中國的建立」。她對 Gaspard Duché de Vancy（1756-1788）手繪的「中國澳門風景」油畫印象深刻。她說：「畫中的小城海港，只見小漁船幾艘，若與當時商船滿泊的廣州十三行相比，便可推斷澳門自 18 世紀中葉起已不再是繁榮的貿易港口。可見，照片隱藏很多歷史的線索。從林林總總的史料中，有的相互關聯，有的互相矛盾，我們須大膽假設，小心求證，才能發掘更多詮釋歷史的可能。」

The involvement of students in organising The Galleries not only fosters a commitment to learning but also prepares them to be critical and well-informed global citizens. 'These kaleidoscopic insights from my professors increased my curiosity,' says Sheng Jia, a second-year history major, who contributed to the panels including 'Macau: A Crossroad between East and West' by Prof Tang Kaijian, and 'The Collapse of the Heavenly Dynasty' and 'the Construction of Modern China' by Mao Haijian. For instance, a painting from *View of Macau in China* by Gaspard Duché de Vancy (1756 –1788) always impresses Sheng. 'Just take a closer look at the harbour in this painting – just a few small fishing boats berthed there. Then we compare it with the "thirteen factories" (Shisanhang) in Guangzhou during the same time period, where many vessels crowded there for trade. We could see that Macao was no longer a vibrant trading port from the mid-18th century onward, and there's a lot more to tell [from the picture],' she says. 'There could be connections or contradictions when we put sources together. Analysing them systemically has been a big challenge,' says Sheng. 'In some ways, that's how we verify the narratives and offer more ways of interpreting history.'

短片：澳大歷史文化長廊，聯合國教科文都支持
Video: UNESCO Supports UM Faculty Members and Students to Build History Galleries

Bred in the Bone Passionate to the End

Chang Jiang Scholar Chair Professor Xu Jie 's World of Chinese Linguistics

不忘初心，方得始終

长江学者講座教授徐杰的汉语语言学世界

文 Text｜校園記者馮煒玥 UM Reporter Lesley Feng
圖 Photo｜張愛華、部分由受訪者提供 Ella Cheong，with some provided by the interviewee

多少人於青蔥年少，抱擁最初的夢想。然而在似水流年的光陰旅程中，在跨海越洋的地理變遷裡，那顆曾經炙熱的「初心」便杳然湮沒在滾滾紅塵中。鐘靈毓秀的澳門大學校園中，有一位不肯隨波逐流，專注書齋 30 餘年，獲長江學者講座教授榮銜的漢語語言學家。「明澈而天遠」是他的心境，「抱初心而不忘，執信念而有終」是他的堅持。他便是今次記者拜訪的學者——澳門大學中國語言文學系系主任徐杰教授。

In the flush of youth, many are consumed by their personal dreams. But with the passage of time, and the inevitable change of environment, that red-hot heart of youth invariably cools and gets buried in the routines of life. But such is not the case with a scholar, who, over a span of more than three decades, ploughs ahead uncompromisingly in his scholarly pursuits. You will find him on a campus in full bloom, a Chang Jiang Scholar Chair Professor that brightens the University of Macau (UM), a towering figure in Chinese linguistics. His mental landscape is lucid and boundless, his faith unchanging. He is the head of the Department of Chinese Language and Literature at UM, Prof Xu Jie.

鮮活的 語言博物館

來到徐杰教授的客廳，除了滿屋的書報之外，茶桌上還有一杯美式咖啡。雖然徐教授是位學術大師，言談舉止卻十分風趣、親切，既可面對學術話題談笑風生，亦不乏生活的品味與情趣。

徐杰教授 15 歲時通過「文革」後的首屆高考進入河南大學學習，並在美國馬里蘭大學語言學系獲得博士學位，而後任教於新加坡國立大學。

大學畢業照
Graduation photo

旅居海外 20 餘年，徐教授在 2008 年到了澳門從事語言學的教學和研究。他跟記者分享了自己的人生感悟：「我經過了一個迴圈，海外經歷使我打開了世界視野、看到了西方的先進和長處。但是，我們中國學術傳統也有很多營養和智慧值得我們發掘和繼承。我自己經歷了從中國看世界，然後回過頭來從世界看中國的一個完整過程。所謂『走出廬山看廬山』，希望可以將我們中國的語言和方言放進全世

1988 年在美國獲得第二個碩士學位——東亞語言比較
In 1988, Xu Jie receives his second master's degree in the US, in comparative studies of East Asian languages.

A Living Language Museum

In Prof Xu's living room, covered wall to wall with books, a cup of steaming Starbucks coffee awaits. He may be a university professor, but every fiber of his being is alive with a sense of humour, bubbling with irrepressible warmth. He wears his scholarship lightly, his sense of *joie de vivre* oozing from every pore in his body.

Xu was admitted to Henan University at the precocious age of 15, after passing the national college entrance examination that was restored after the Cultural Revolution. This was eventually followed by a doctoral degree from the Department of Linguistics, University of Maryland. Later, he joined the National University of Singapore as a faculty member.

界人類語言這個大框架裡來審視。澳門雖是彈丸之地，但幾百年來，不同的語言文化、多元的民族人群，在此彙集、互相影響。有中文、葡文，英文，還有廣東話、福建話……。所以我把澳門叫做「鮮活的語言博物館，天然的語言實驗室。」

為何把澳門叫做鮮活的語言博物館？徐教授提到有個不無誇張的說法頗為傳神地說明了這一點：「在澳門新馬路一帶，你隨便用任何一種語言罵一句，當即就會有人用同樣的語言給你罵回來。我們一定要用好這個鮮活博物館和天然實驗室，這既能為世界學術界貢獻優質的澳門元素，也反過來讓我們進一步看清自己，發展自己，提高自己。」

徐杰教授對學術與人生都抱持熱情與執著
Prof Xu Jie is passionate and persistent, both in life and in his scholarly pursuits.

不爭一時 爭千秋

徐教授多年來做學問的原則與方式跟時下一些潮流並不完全一致。他雖然常常在核心期刊發表論文，卻從不刻意追求將所有的論文都發表在所謂的核心期刊；雖然常常在英文期刊發表論文，卻從不刻意追求在英文期刊發表論文。將論文提交哪一份期刊，用甚麼語文來撰寫，他考慮的首要因素是相關文章討論的問題可能對哪份刊物的讀者群最有價值以及哪些讀者習慣於以哪種語文來閱讀。另外，他寫文章重視精雕細刻，速度慢。「其實這是一種很『奢侈』的行事方式。我是做好了為自己學術上的『瀟灑』付出代價的心理準備的。有句話我覺得對我很重要：心甘情願吃小虧，不爭一時爭千秋。做學問精益求精，即使不出量，也要出精品。」

Having lived overseas for more than 20 years, Xu returned to China in 2008 and began his teaching and research career in Macao. 'I have come full circle. My overseas experiences have opened my eyes to what's good about the West, but I am now more acutely aware that there are many good things about our own language and culture that are worth studying and preserving,' he says. 'At first I looked at the world from within China, and then I looked at China from the outside. It's like admiring a mountain after you get out of it. I hope we can study our Chinese language and the various dialects within the context of all the human languages in the world. Macao is tiny, but over the past few hundred years, different languages, cultures, and ethnic groups have co-existed and influenced one another in Macao. Many languages are spoken here, including Mandarin Chinese, Portuguese, English, Cantonese, and Hokkien. That's why I say Macao is a living language museum and a natural language lab.'

Why does the professor call Macao a living language museum? He has a graphic, if somewhat exaggerated, example to prove his point: 'If you go to San Ma Lo and curse in any language, someone would curse you back in the same language right away. We must make good use of this living museum and natural lab. This will not only allow Macao to contribute to the world in linguistic studies, it will also help us to know and improve ourselves.'

徐杰教授與家人攝於新加坡國立大學，1997 年。
Prof Xu Jie and his family at National University of Singapore,1997.

1991 年在美國馬里蘭大學攻讀博士
Xu Jie studies for a PhD degree at the University of Maryland in the US in 1991

徐教授回想今年獲頒長江學者講座教授榮銜，他感到很意外，「這次面對長江學者評審近乎殘酷的競爭和大考時，我的特立獨行居然得到那麼多學界高人的認可和肯定。可見，社會風氣雖浮躁，人心還是有杆稱的。」

深入淺出 物我兩忘

語言學學科表面看起來有些枯燥，但徐杰教授的課堂卻以趣味橫生、引人入勝著稱。談及如何達到這種效果，擁有豐富教學經驗的徐教授說：「上課時至少要做到深入淺出，最好能出神入化，達到物我兩忘的境界。當老師要掌握好兩項本領：其一是要把複雜的道理講簡單。別人扯不清的複雜問題，你最好能三言兩語把它的本質點出來。其二要引導學生發掘出看似簡單的現象背後的價值和深意。一滴水、一粒沙都可以看到大千世界。」

在當今人文社會科學領域，語言學佔有獨特且重要的地位。正如徐教授所說：「在人類所有能力中，語言能力是最重要的能力。語言能力強，其他方面差不到哪裡去。」

徐杰教授的學術研究領域大致分為語法理論、語言教育、語言規劃、語言特區四個方面。他說傳統的語言規劃只關注國家和社會這個「群體」層面，範圍太窄了，應擴大到家庭和個人這個「個體」層面。他還提出語言運用中也存在「特區」現象，指的是

Slow and Steady Wins the Race

Xu is a curious anomaly in the way he publishes articles. He never obsesses about publishing in the so-called key journals or English journals, although his articles do often end up in these learned publications because of their high quality. When deciding the language of his papers and where to submit them, his first consideration is which journal has the readership for whom the paper would provide the greatest value, and which language the said readership is accustomed to reading. He is also extremely meticulous and slow in producing papers. 'Some might say they couldn't afford the luxury of writing so slowly, and I was mentally prepared to pay the price for indulging in my own idiosyncrasy,' he says. 'But I believe sometimes to lose is to gain. Slow and steady wins the race. Scholarship is all about quality. I'd choose quality over quantity any day.'

Xu was pleasantly surprised when he was elected Chang Jiang Scholar Chair Professor earlier this year. 'The competition for this prestigious title is cutthroat,' he says. 'Given my idiosyncrasy, I never thought I would earn the approval of so many famous scholars. This shows that even in a restless world, quality weighs heavily on the human heart.

Explaining Complicated Concepts in Simple Language

At first blush, linguistics seems boring. But Prof Xu's classes always leave his students hanging on his every word. What is his secret? 'Two things. First, I try to explain complicated concepts in simple language. Second, I try to help students see beyond the obvious,' he says. 'There is a whole universe in a tiny drop of water or a grain of sand.'

In the field of humanities and social sciences, linguistics enjoys a unique and important status. To use Prof Xu's words, 'Of all the skills within the grasp of mankind, language skills are the most important. If you have excellent language skills, then you won't be a slouch at other skills.'

徐杰教授以校友身份獲邀回河南大學演講
Prof Xu Jie speaks at Henan University as an alumnus at the university's invitation

可以合法違規的語言運用領域。對「語言特區」進行系統深入的研究有著深刻的理論意義和現實的實用價值。他還提出要從理論和技術上引導「漢外雙母語」教育新理念的實施，從而造福千家萬戶，將億萬青年學生從沒完沒了的外語學習苦海中徹底解放出來，讓他們把美好的青春年華淋漓盡致地揮灑到對自然、對自身無窮奧妙的高深探索中去。

用世界語言講澳門故事

徐教授在 2017 年 8 月再次出任中國語言文學系系主任，他在七年前已擔任過該系系主任，如今再獲委以重任，他對中文系的未來發展有更新的視野。

中文系是澳大優先發展的重點學系之一，師資力量強，學術水準高。徐教授說：「世界上各學府的中文系大體可分為兩類，一類是西方大學裡辦的中文系或者中國研究系，一類是中國內地大學的中文系。前者是外國人看中國，叫『漢學』；後者是中國人看自己，叫『國學』。港澳都是中國的特區，身處國內境外這個特定時空環境，中文系不屬於上述兩類中的任何一類，但是要取二者之所長，並形成自己的特色。具體來說，我們的學術取向是：中國立場，世界視野。要以中國人的立場和情懷為基礎，將我們對中國語言文學的案例研究置於世界人文科學主流理論體系中。用世界語言講中國故事，用世界語言講澳門故事。」

Prof Xu's main research interests include grammatical theory, language education, language planning, and linguistic 'special zone'. According to him, traditional language planning is conducted only at the national and regional levels, which he believes is not enough. Instead, he suggests extending the scope of language planning to include families and individuals. He also points out that there are linguistic 'special zone', areas where one can legitimately break linguistic rules. He believes that systematic and in-depth studies of such 'special zone' has both theoretical significance and practical value. Speaking of the new education concept that advocates Chinese-English bilingualism, he suggests guiding the implementation of this new concept at theoretical and technical levels, so as to liberate hundreds of millions of young students from the shackles of endless drills and allow them to devote the best years of their lives to more worthwhile activities.

Telling Macao's Story in a Language the World Understands

In August 2017, Xu assumed office as the head of UM's Department of Chinese Language and Literature for the second time. Having been reappointed to the same position he served seven years ago, Xu now has a brand-new vision for the department's future.

Chinese is one of the key disciplines that sit high on UM's academic agenda, deservedly so as the Chinese department has a strong faculty team and high academic standards. 'Chinese departments around the world can be broadly divided into two categories. There are those Chinese departments or China studies institutes at Western universities, and then there are Chinese departments in mainland China. Studies conducted at the former are called "sinology", while those conducted at the latter are called national literary studies,' he says. 'Both Hong Kong and Macao are special administrative regions in China, which means they are part of China but they are physically outside of mainland China. Therefore, our Chinese department doesn't fall into either of the two categories. But we must combine the strengths of both and develop our own characteristics. Specifically, our academic stance is: "rooted in China, oriented towards the world." We should conduct case studies in Chinese language and literature from a Chinese perspective, within the world's mainstream theoretical framework in humanities and sciences. In other words, we must tell the stories of China and Macao in a language the world understands .'

創新能力 工匠精神

作為一名有成就的學者，徐杰教授樂於分享他的學術與人生經驗，「從事學術研究，重要的有兩個能力，一個是創新能力，再一個是工匠精神。當然首先是創新精神。創新能力是高人一籌、獨闢蹊徑、高屋建瓴、透過現象看本質的能力。別人習焉不察，你能看出大問題。別人面對問題一頭霧水，你能簡潔流暢地找到解決的捷徑。工匠精神就是要把你得來不易的創新成果，凝結成學術產品。用盡你所有的才華和心血，精雕細刻，捧獻給社會。創新能力加上工匠精神，終將成就美好的學術人生。」

「在人生方面，我的經驗是：人生要有規劃，機會需要捕捉。對你的長項和弱點都要有清醒的認識，要學會揚長避短，要讓自己的優勢和長處淋漓盡致地施展出來。制定的人生目標要合理。這個目標是跳一跳、付出一番努力後可以夠得到的目標。不能太高，也不能太低。當然最後實現的目標和經過的路徑可能跟最初的規劃不完全一樣，但是你最初規劃的目標和為此付出的努力對你最後達成的目標一定發揮了關鍵的作用。」

徐杰教授認為做學問須具創新能力和工匠精神
Prof Xu Jie thinks a scholar must be creative and have a craftsman 's spirit

Creativity and Craftsmanship

As an accomplished scholar, Prof Xu believes that two traits are very important for scholars. One is creativity, and the other is care for craftsmanship. 'Creativity is about building on what others have done, blazing a new trail, seeing the big picture, and looking beyond the surface. In other words, it is the ability to see problems that escape other people who are blinded by their familiarity with the subject, as well as the ability to find solutions where others see none, ' he says. ' The craftsman's care means you have to turn your hard-earned results into academic products. You must pour every last ounce of your talent and energy into it, so you can give society nothing less than your best. Together, these two things will spell a perfect academic life.'

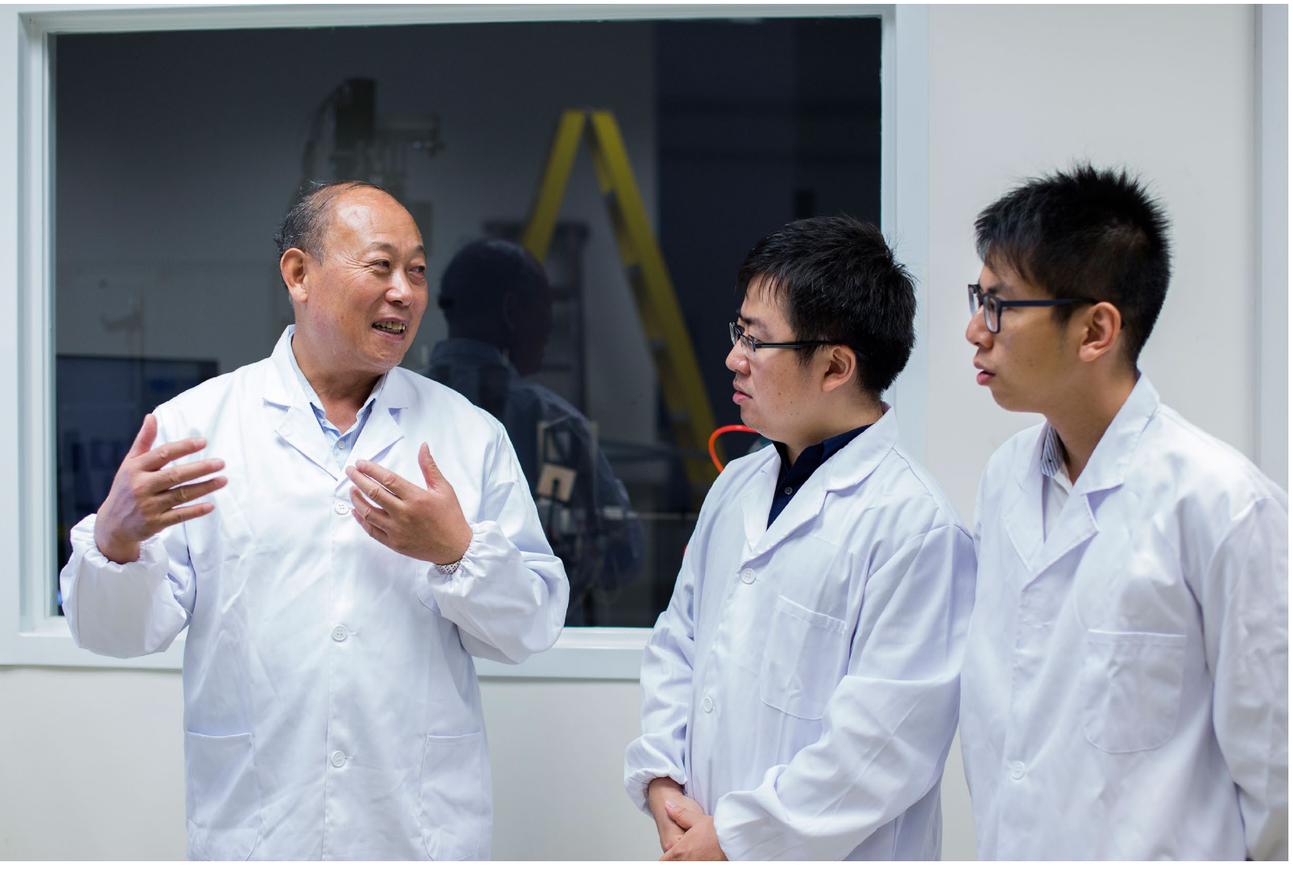
'Over the years, my experience is: life needs to be planned, and opportunities need to be seized,' says Xu. 'You must have a clear idea of your strengths and weaknesses so you can play to your strengths. You must also set realistic life goals—goals that are slightly out of reach but attainable if you stretch for them. In other words, don't set your goals too high or too low. Of course, your final goals and the way to achieve them may not be exactly the same as what you planned, but the initial goals and your subsequent effort will play a crucial role in achieving your final goals. '

短片：澳大徐杰教授：澳門是鮮活的語言博物館
Video: UM Professor Xu Jie: Macao is a Living Museum of Languages

從製磚工人到世界級科學家
專訪混凝土專家李宗津教授

From a Brickmaker to a World-class Scientist
Interview with Concrete Expert Prof Li Zongjin

文 Text｜黃首豪 Saohou Wong
圖 Photo｜何杰平、部分圖片由受訪者提供 Jack Ho, with some provided by the interviewee



李宗津教授樂於指導晚輩
Prof Li Zongjin likes to pass on his knowledge and experience to his students

萬丈高樓從地起，再高的大樓都離不開一樣重要的材料——混凝土。今年獲美國混凝土學會頒授科研終身成就獎「亞瑟．安德森獎章」的澳門大學應用物理及材料工程研究所講座教授李宗津，年輕時曾做過製磚和農務工作，後來卻走上科學之路，成為世界級混凝土專家。李教授總結他的成功之道時說：「我只是把別人喝咖啡的時間都用在工作上。」

Building the tallest structures, the saying goes, begins with the base. To Prof Li Zongjin, chair professor at the University of Macau's (UM) Institute of Applied Physics and Materials Engineering (IAPME) and winner earlier this year of the Arthur R Anderson Medal from the American Concrete Institute, the base is basically composed of an important material—concrete.

李宗津教授為首位獲頒
美國亞瑟．安德森獎章的中國科學家
Prof Li Zongjin is the first Chinese scientist to receive the Arthur R Anderson Medal

李宗津教授是「亞瑟．安德森獎章」設立 45 年以來第一位獲此殊榮的中國科學家，表彰他為世界各地基建、教學和研究上作出的卓越貢獻。作為世界最頂尖的混凝土專家，李教授的成長經歷值得晚輩學習，同輩敬佩。

李教授初中時遇上文革，沒法接受正規教育，先是上山下鄉，在農村做了兩年半農務工作，後來又到礦場的磚瓦廠製作磚瓦，但他受魯迅「我只是把別人喝咖啡的時間都用在工作上」的態度影響，在勞碌的礦場工作後，把別的礦工用來打牌的時間全部用來閱讀借回來的書籍，「想要做出成就，就要比別人有更多付出和努力，當機會出現時才能緊緊把握在手中。」

李教授年輕時有收集名人金句的習慣，尤其是當他在面對生活的困難，這些佳句往往能幫他渡過困境，其中一句他最喜歡的金句就是「勤奮成就生活之美」。因為努力不懈的學習，當國家在 1977 年恢復高考後，他於 1978 年考上了浙江大學，之後讓他人生出現翻天覆地的改變。

The Arthur R Anderson Medal recognises Prof Li for his triple global contributions to infrastructure, teaching, and research. The first Chinese scientist to be so honoured since the award was established 45 years ago, this preeminent concrete expert is admired by peers and inspires the younger generation. His humble beginnings saw him toil as a brickmaker and farm hand. How did he then reinvent himself to become a world-class scientist? The ‘secret’ to his success is simple yet prosaic: ‘I merely work when other people are drinking coffee.’

When Li was in middle school, a cataclysmic event turned China upside down and upended millions of lives across the country. That defining event is the Cultural Revolution. His formal education ended prematurely, Li was forced to fend for himself; he was first thrust for two and a half years into a demanding job as a farmer, and then moved into a brickmaking factory that belonged to an iron mine. But somehow, he turned this adversity into advantage; it marked the beginning of his self-education. Li was inspired by China's iconic writer Lu Xun, who, when told he was a genius, famously replied, ‘There is no such thing as a genius. I merely work when others are drinking coffee’. He devoted all his precious hours after a gruelling day's work in the mine to reading borrowed books, while his co-workers busied themselves playing poker. ‘If you aspire to

李宗津教授收藏多年的筆記本，內裡收錄名人金句。
Prof Li has kept this notebook for many years.
He liked to collect famous quotes in his youth for self-motivation.

看到混凝土的研究機遇

李教授在年輕時吃了很多苦，培養出堅毅不拔的精神。他由進入浙江大學，到後來赴美國西北大學做研究生時都比別人更能吃苦。求學期間，李教授發現混凝土作為世界上應用最廣，使用量最大的建築物材料，卻沒有人重視混凝土研究的重要性，「全世界每人一年最少消耗 2500 到 3000 公斤混凝土，這個消耗量比我們消耗的糧食更多。由於混凝土得來太容易，很少受到注視。」李教授看到這項研究的發展空間，因而埋首苦幹研究如何把混凝土的性能做得更好同時降低造價，他指出混凝土是一種複合材料，比一般金屬材料結構更複雜，人類對金屬材料的研究和認識遠比混凝土多。

2009 年，李教授獲國家科技部委任成為「973 計劃」中唯一一位混凝土研究專案的首席科學家，研究出符合環保原則，但韌性與耐久性高的現代混凝土，其研究團隊研發的混凝土技術在京滬高鐵、田灣核電站、泰州大橋、崇啟大橋等工程項目均得到應用。

研究混凝土大半生，李教授形容混凝土的特別之處在於研究尺度的跨度非常大：「要瞭解鋼鐵的建構，一般情況下觀察其原子排列就可以，但混凝土的研究尺度跨度約有 10 的 14 次方，從納米的水化產物觀察到數公里長的大橋監測。我們通過納米科學對水化產物的認知，可以在納米的尺度上有意識地改進混凝土的特質，透過人為的方式加入有機或無機的納米顆粒，在非常小的尺度改進混凝土的微結構，使它的宏觀性能符合我們要求，例如增加結構的抗彎、抗衝擊性能。」

achievement, you must work harder than others. Only then can you seize the opportunities when they present themselves,' he says.

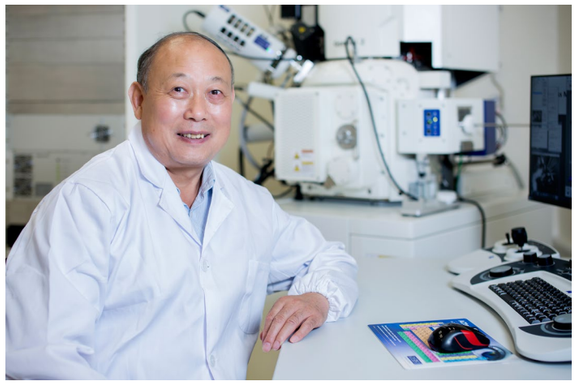
An opportunity eventually came knocking, and seize it he did. In 1977, the National College Entrance Exam was reinstated in China. Having never stopped his self-education during the wilderness years, Li now had a clear, reachable goal in mind—entering college and making up for lost time. During those difficult years, he developed the habit of collecting and internalising famous sayings by famous people. When he received a life-changing offer from Zhejiang University the following year, he was moved to quote one of his favourite aphorisms: 'Hard work makes a beautiful life possible.'

Foreseeing the Potential in Concrete Research

The hardships Li endured in his youth cultivated his perseverance and resilience. Whether at Zhejiang University or Northwestern University in the United States, Li was always the most hardworking student. During those days, he made an important discovery that would later shape his career trajectory. He noticed that concrete was the most widely-used building material in the world, and yet nobody seemed to realise the importance of research in the field. 'The per capita consumption of concrete is at least 2,500 to 3,000 kilograms a year worldwide, which is more than the per capital annual consumption of grains,' he says. 'But because concrete is easy to get, it is rarely treated with the importance it deserves.' Foreseeing great potential in concrete research, Li began to study ways to improve the performance of concrete at a lower cost. According to Li, scientists have a far better understanding of metal materials than concrete, because concrete is a composite material that is structurally more complicated than metals.

In 2009, Li was appointed by the Ministry of Science and Technology of China as the sole chief scientist for a concrete research project under the national 973 programme. He was given a challenging task: developing a modern version of concrete that is environmentally friendly but also more flexible and durable.

李教授現時與應用物理及材料工程研究所助理教授孫國星所做的研究，通過納米技術，對有機材料水凝膠加入 5 納米大小的無機顆粒，可以做出世界上綜合性能最好的水凝膠。同時間，他們利用一些有機或無機的顆粒應用到混凝土中，可以讓抗壓強度不變的情況下，使混凝土的抗彎強度提高三倍。



把不同學科交叉結合

在研究混凝土上作出卓越建樹，李教授感謝當年在美國西北大學碩士及博士的指導老師 S.P. Shah 教授。李教授當年在導師的帶領下看到不一樣的視野，「在美國時受到啟發，看到當時不只有木土系的學生做混凝土研究，也有化學系、物理系、材料學系的學生參與，讓研究團隊可以在不同的角度與專業領域下對待研究課題。後來我就把這個建立團隊的模式應用到自己的研究中。」

「招收學生時我們注意到不同學科的交叉，以前會隔行如隔山，現在我把各個山頭都拉成一塊，在各自的基礎上進行交流，發現效果非常好，例如我們原本要開發一套軟件應用到實驗上，如果由我們土木背景的人來開發就會非常吃力，但有了電子系的學生，很快就把軟件發展起來，讓研究進度快了很多。如果我只站在木土工程材料的角度去研究混凝土，很難去擴展混凝土的應用範圍，但我與不同學科交叉起來，視野就大大開闊，研究空間也就大大擴充。」

He and his team rose to the challenge and successfully developed a new technology, which has been used in numerous construction projects in China, including the high speed railway track between Beijing and Shanghai, Tianwan Nuclear Power Plant, and the Taizhou and Chongqi Bridges.

Having devoted half his life to concrete research, Prof Li says that one distinguishing feature of concrete is the great variance in the scale of measurement. 'To understand the structure of steel or iron, normally all you have to do is observe the atomic structure, but when it comes to concrete, the variance in the scale of measurement is so great. We are talking about ten to the 14^{th} power, from observing the products from concrete hydration using nano technology to monitoring bridges of several kilometres,' he says. 'By understanding products generated from concrete hydration using nano science, we can improve the micro-structure of concrete by artificially adding organic or inorganic nano-particles to make their macro-performance comply with our requirements, such as increasing a structure's flexural strength or toughness.'

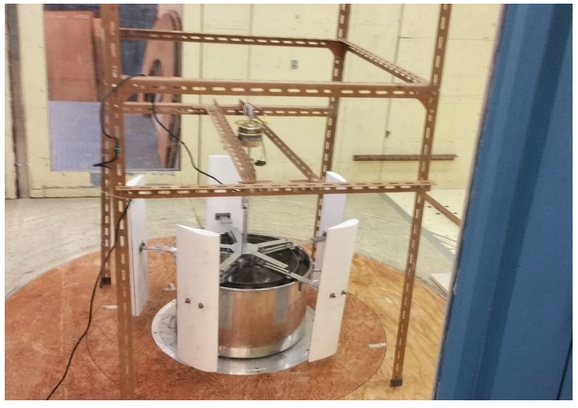
Currently, Prof Li is working with assistant professor Sun Guoxing from the IAPME and they have achieved some encouraging results. For example, by adding 5-nm inorganic particles in organic hydrogels, they successfully developed hydrogels with the best all-round performance in the world. Also, by adding organic or inorganic particles in concrete, they successfully increased the flexural strength of concrete by three times without lowering the compressive strength.

Cross-disciplinary Collaboration

Prof Li credits his accomplishments in concrete research to the guidance of Prof S P Shah, his master's and PhD supervisor while he was studying at Northwestern University in the US. Prof Shah opened Li's eyes to what could be achieved with cross-disciplinary collaboration. 'When I was in the US, I noticed that students involved in concrete research were not just from the civil engineering department; some of them also came from other departments, such as chemistry, physics, and materials engineering,'

看到澳大的機遇

李教授在香港科技大學工作了 22 年，曾任港科大工學院副院長，現任澳大應用物理及材料工程研究所講座教授，李教授說：「我看到這些年來澳大的發展迅速，吸引了來自世界各地的專家學者，這個情境就像我剛到港科大的時候。在這個環境下，我看到澳大會有很大的發展空間，所以就加入澳大。」

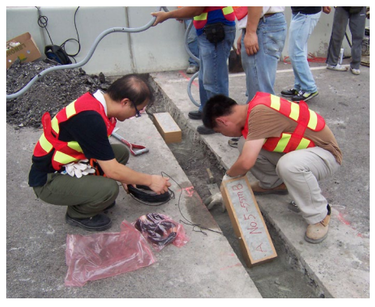


水浮式風力發電機實驗模型
A model of the floating wind turbine

研發新型風力發電機

李教授現時在澳大正進行一項跨領域的研究，他說：「澳門的風力資源不錯，我希望充分利用這個資源，研發出新型的風力發電機並設立在校園中。我們現在正研發一部功率約 1000 瓦，葉片與葉片的距離約 3.2 米的水浮式風力發電機，這座水浮式風力發電機有別於傳統塔式風力發電機，設計是利用阿基米德定律，用液體浮力來支撐風力發電機的垂直重量，簡單說就像把風車平放在水面上，從而減少葉片轉動時的阻力，也減少機件的磨損，而當中的葉片更可以用混凝土製造。」

他形容實驗樣機如果成功組建，一年可以產生 4000 到 5000 度電，足夠一個小型辦公室的照明需要。李教授談到未來研究計劃時，興奮地說：「未來希望得到企業投資，讓參與研究的學生與企業結合，深化研發，做一台發電功率更大的風力發電機。」



水泥基的壓電傳感器，可監測汽車流量、行車速度和車重。
The cement-based piezoelectric sensors can be used to monitor traffic flow, vehicle speed, and vehicle weight.

新研究為智慧城市作貢獻

另外，為了配合特區政府推動澳門智慧城市發展的施政目標，澳大現正籌備第三個國家重點實驗室，開展大數據研究，李教授正參與其中，利用水泥基的壓電傳感器作交通監管。「原理類似手機觸控熒幕，當有車輛經過裝有壓電傳感器的馬路，傳感器表面會產生電荷，通過收集這些信息便可以計算出馬路上的汽車流量、行車速度和汽車重量，透過收集和整合這些數據組成物聯網，便可實時監測交通狀況，為澳門發展智慧城市作貢獻。」

he says. 'Having members from different backgrounds could help the team approach the subject of research from different angles, with different kinds of expertise. Later, when I was trying to establish my own team, I adopted this cross-disciplinary approach.'

Li also adopts the cross-disciplinary approach when recruiting students. 'We would look at the overlaps between different disciplines,' he says. 'We used to say that the inside knowledge of a discipline is like Greek to outsiders. But now we try to bring people from different disciplines together so they can exchange ideas based on their own expertise, and the results have been very good.' He cites an example to illustrate his point. Earlier, his team needed to develop a piece of software to better control the experiment equipment, which would have been very difficult for civil engineering students. But with the help of students from the electronic engineering department, they developed the software in a very short time, which expedited the progress of the research study with good results. ' If we only study concrete from the perspective of civil engineering or materials engineering, we would be limiting the applications of concrete. Cross-disciplinary collaboration, on the other hand, opens our mind and lets us see all kinds of possibilities,' he says.

Seeing Opportunities at UM

Prof Li has worked at the Hong Kong University of Science and Technology (HKUST) for 22 years. Formerly the associate dean of the School of Engineering at HKUST, he is currently a chair professor in the IAPME at UM. 'UM's rapid progress in recent years has attracted experts and scholars from around the world, which is similar to what happened to HKUST when I first joined it. So I saw the great potential of UM, and decided to come here.'

Developing a New Type of Wind Turbines

Currently, Prof Li is working on a cross-disciplinary research project: a new type of wind turbine which he hopes can be set up on the UM campus. 'Macao is blessed with excellent wind resources, and I hope to take full advantage of the resources to develop a new type of wind turbine for the new campus,' he says. His team is working to develop a 1000-watt floating wind turbine, with a blade-to-blade distance of 3.2 metres. Unlike the old-fashioned tower-based wind turbines, the floating wind turbine was designed based on the Archimedes Law, with the buoyancy of the liquid supporting the vertical load of the wind turbine. To put it simply, it is like placing the wind turbine on the surface of the water to reduce the resistance from the turning of the blades as well as the wear and tear of the parts. What's more, the blades can be made from concrete.

If successful, the wind turbine will be able to generate between 4,000 and 5,000 kilowatt hours of electricity every year, enough to satisfy the need of a small office. Speaking of future research plans, Prof Li says excitedly, 'We hope to attract investments from businesses and give our students an opportunity to deepen their research and develop a large-sized wind turbine that can generate more power.'

Contributing to the Development of a Smart City with New Research

To support the Macao SAR government's goal to develop Macao into a smart city, UM is preparing for the establishment of a third state key laboratory for big data research. Prof Li is part of the team. He and his colleagues are now studying the application of cement-based piezoelectric sensors in traffic control. 'It is similar to the touchscreen of a mobile phone,' he says. 'The idea is that when a vehicle passes through a road installed with cement-based piezoelectric sensors, it would generate electric charges on the surface of the sensors. By collecting the data, we could calculate the traffic flow, vehicle speed, and vehicle weight. If we consolidate these data and establish an internet of things, we would be able to realize real-time traffic monitoring, thus contributing to creating a smart city in Macao.'

短片：著名混凝土專家：混凝土結合大數據創造智慧城市
Video: Renowned Concrete Expert: Developing Smart City with Concrete and Big Data

徐仁和教授
為何對幹細胞研究著迷？

Why Is Prof Ren – He Xu Fascinated with Stem Cell Research?

文 Text ｜林祖兒 Judite Lam
圖 Photo ｜何杰平、李思、部分由受訪者提供 Jack Ho, Manuel Reis, with some provided by the interviewee

現今科技對幹細胞的研究和應用十分廣泛，在皮膚美容、癌症治療、器官移植等都利用幹細胞演變成新技術，醫治疾病，延續生命。澳門大學健康科學學院教授徐仁和熱衷幹細胞研究，希望在過程中尋找治療疾病的新方法。雖然研究的道路困難重重，但他堅定的信念與幹細胞的生命一樣堅韌。

New technologies derived from stem cell research have found applications in many areas, such as cosmetic surgery, cancer treatment, and organ transplantation. Prof Ren-He Xu, from the Faculty of Health Sciences, University of Macau (UM), has devoted himself to stem cell research for nearly 20 years, hoping to find a new way to treat disease.

與人胚幹細胞 (hESC) 之父 James Thomson 教授合照

Prof Ren-He Xu with Prof James Thomson, father of stem cell research.

獲幹細胞之父賞識

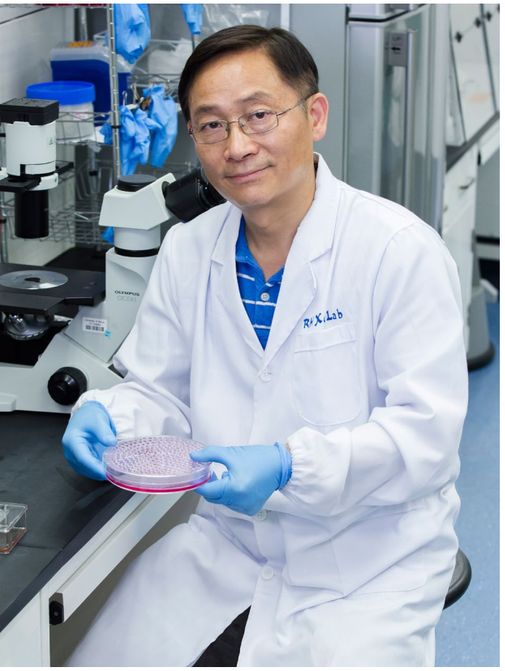
徐教授從事幹細胞研究近 20 年，先後畢業於南華大學和中南大學，取得醫科學士和碩士學位。後來在日本東京大學取得博士學位。他的第一個博士後培訓在以色列巴伊蘭大學，第二個在美國國立衛生研究院（NIH）。

1999 年，他辭去 NIH 的工作，開始思索自己未來研究的方向，偶然間在網上搜索到當時最熱門的科目——幹細胞，於是大膽地把自己的個人簡歷電郵給人胚幹細胞（hESC）之父 James Thomson 教授。20 分鐘後，Thomson 教授親自致電給徐教授，表示對他的研究很感興趣，並邀請他到威斯康辛大學麥迪遜分校的 WiCell 研究所工作。「能夠獲得這位重量級科學家的賞識，我當時感到很榮幸。」徐教授當即答應前往威斯康辛，並成為該所的首位高級研究員，從此打開了他對幹細胞研究的探索之門。

Arousing the Interest of the Father of Human Pluripotent Stem Cells

Xu received his bachelor's and master's degrees in medical sciences from South China University and Central South University, respectively. Later, he obtained a doctoral degree from the University of Tokyo, Japan, and received postdoctoral training at both Bar-Ilan University, Israel, and the National Institutes of Health (NIH), United States.

In 1999, he quit his job at the NIH and began to contemplate the future direction of his research. Then he stumbled upon an internet article about stem cell research, which was the hottest subject in medicine at the time. He summoned up his courage and sent his personal resume to Prof James Thomson, known as the father of human embryonic stem cells. Twenty minutes later, he received a phone call from Prof Thomson, who expressed a strong interest in his research and invited him to work at WiCell Research Institute at the University of Wisconsin-Madison. 'I feel very honoured that an eminent scientist like James Thomson invited me to work with him,' recalls Prof Xu. He immediately accepted the invitation and became the first senior scientist at the institute, thus beginning his research on stem cells.



徐仁和教授
Prof Ren-He Xu

利用專長
幫人治病

即使幹細胞研究的道路漫長，當中有喜有悲，徐教授享受的是研究的過程。他說：「我以前專注於研究幹細胞的生物學及其分子機制。但是學醫出身的我，總是本能地思考著如何為患者和普通老百姓的健康貢獻自己的力量，如果只是純粹研究這些，就距離這個目標很遠。所以我就利用自己的專長，更專注於幹細胞來治療人的疾病。」

徐教授認為學醫不一定要成為醫生，可以用另一種方法幫助別人。自從走上研究幹細胞的路後，他的研究取得了驕人的成就。

從 2014 年開始他研發一種幹細胞叫作間充質幹細胞（MSC），別人稱它有點像孫悟空，又像萬金油。孫悟空是因為它能千變萬化，萬金油是因為可以治療很多疾病，風險少。他首次從人胚幹細胞經滋養層細胞分化成 MSC，這種幹細胞在治療多發性硬化症和炎性腸病中療效顯著。

Helping Patients with Expertise

The journey of stem cell research is an arduous, bittersweet one, but Prof Xu enjoys the process. 'In the past, I was mainly focused on the biology and molecular mechanism of stem cells. But with my medical training, I kept thinking how I could use my expertise to help patients and ordinary people,' he says. 'If I just study the biology and molecular mechanism of stem cells, it would be very difficult for me to achieve that goal, so I decided to study how stem cells can be used to treat diseases.'

In Prof Xu's opinion, those with medical training do not necessarily have to become doctors to help people. Becoming a researcher is another option.

In 2014, he began to develop mesenchymal stem cells (MSC). Some have likened MSC to the Monkey King [a mythological figure that features in a body of Chinese legends who can transform into different animals and objects], because MSC can generate different types of cells. Some say MSC are like a medicinal balm, because they provide a low-risk treatment for many diseases. Prof Xu was the first to derive MSC from human embryonic stem cells (hESC) via trophoblast-like cells. MSC show significant results in treating multiple sclerosis and inflammatory bowel disease.

Over the years, Prof Xu has achieved numerous breakthroughs in stem cell research, which has earned him recognition from the scientific community. For example, he discovered an extraneous agent that enables self-regeneration and long-term in-vitro culture of hESC without having to rely on mouse embryonic fibroblast-conditioned medium. With this extraneous agent, experiments on hESC can be conducted under precise conditions to achieve more accurate results, as using animal embryonic fibroblast-conditioned medium can affect clinical applications of stem cells.

Prof Xu has published nearly 60 papers on stem cell research, some of which are in leading scientific journals, including *Biomaterials*, *Nature Methods*, *Nature Biotechnology*, *Cell Stem Cell*, *PNAS*, and *Stem Cell Reports*. He also holds several patents.

此外，他過去在幹細胞研究上有多項重大突破，並獲得科學界的肯定。其中他找到不需要依賴老鼠滋養細胞條件培養液，亦能維持人胚幹細胞自我更新和長期體外培養的外源因子。這樣可在精準條件下進行人胚幹細胞實驗以取得更準確的結果，因為利用動物滋養細胞條件培養液會影響幹細胞的臨床應用。

徐教授至今已發表有關幹細胞研究的論文近 60 篇，有部分刊登於一流科學雜誌，包括《Biomaterials》、《Nature Methods》、《Nature Biotechnology》、《Cell Stem Cell》、《PNAS》及《Stem Cell Reports》等，同時擁有多項發明專利。

無意中成就
新突破

幹細胞需要精準的培養條件和細心的照料。長途運輸幹細胞需要冷凍儲運，不但成本高昂（動輒可達數百甚至上千美元），而且飛機上有條例限制攜帶方法。少量則可放在培養瓶，但不能超過 48 小時，不然幹細胞會很快死亡。

2015 年，徐教授的一個學生用幹細胞集聚成球研究它們在 3D 條件下的特性，實驗完成後，他把裝有幹細胞球的試管放在實驗台上。一個星期後，他拿起試管，觀察細胞的狀況，本以為細胞都死掉，結果卻令他大吃一驚：裡面的幹細胞球仍然存活，沒有任何細胞死亡的跡象。

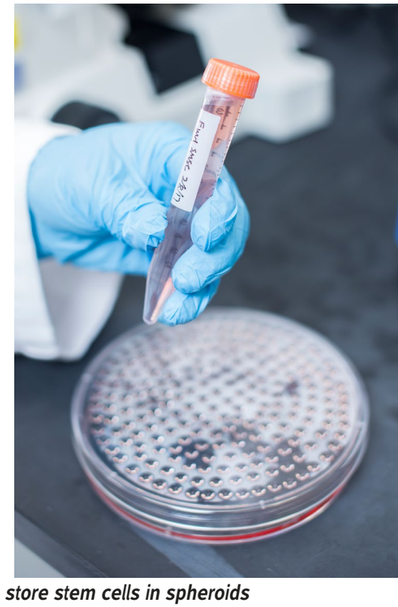
徐教授得悉消息後就決定進行深入研究。結果發現，幹細胞球在常温下可保存長達 11 天，且細胞存活率達 90% 以上。針對這一現象，徐教授比喻說：「幹細胞變成球狀的時候就好像動物進入冬眠狀態。細胞一般是在攝氏 37 度進行培養，但放在桌上時，温度就降至室温，大概攝氏 25 度左右，這個時候，成球後的細胞聚集成團，降低代謝，保存能量。」

該發現可立即解決幹細胞遠程運輸對冷凍的依賴，通過使幹細胞聚集成球就能在常温下運往世界各地，用於科學研究或臨床治療，花費僅區區數美元。

An Accidental Breakthrough

Stem cells require precise culture conditions and careful nurturing. They need to be frozen before long-distance transport, which can cost hundreds, sometimes even thousands of, US dollars. Moreover, airlines have regulations concerning the manner in which stem cells can be carried onto a plane. A small amount of cells can be stored in culture tubes. However, exposure to ambient conditions for more than 48 hours will cause the cells to quickly lose their functions and viability.

In 2015, one of Prof Xu's students conducted an experiment. He prepared stem cells to form spheroids and then studied their properties under 3D condition. After the experiment was over, he left the test tube that contained the cells in the laboratory. One week later, he went back to check the test tube, expecting to see only dead cells. But what he found astonished him. The cells in the tube were still alive, without showing any signs of dying.



幹細胞球儲存容器
The vessel used to store stem cells in spheroids

澳大
先进设备不逊於美国

留美 20 年，徐教授在幹細胞研究上成就卓著，曾獲得 Royan Institute 頒發的國際研究獎；美國康州生物醫藥創新聯盟（CURE）頒發的幹細胞研究優異獎；2007 年康州州務卿頒發的州藍皮書獲獎得主以及美國國立癌症研究所 Frederick 研究中心（NCI-FCRDC）傑出科學成就獎。

2012 年，在一次科研評審會議上，時任康乃狄克大學副教授、幹細胞中心主任的徐教授巧遇美國國立衛生研究院的鄧初夏教授。鄧教授剛剛獲聘為澳大新成立的健康科學學院院長，正在世界各地招攬專家學者加入他的學院。鄧院長當時便力邀徐教授加盟澳大。

徐仁和教授經常參加國際論壇發表演講
Prof Ren-He Xu often speaks at international conferences

After learning the outcome of the experiment, Prof Xu immediately decided to investigate. He found that the viability of spheroids formed of stem cells remained above 90 percent even after 11 days. Using an analogy to illustrate this phenomenon, he says: 'Stem cells forming spheroids is like animals entering hibernation in winter. Normally, cells are incubated at 37 degrees Celsius, but when placed on the table, the temperature drops to room temperature, around 25 degrees. At this temperature, spheroidal formation protects the cells via reduction of metabolic rates and conservation of energy.'

This discovery eliminates the need to freeze cells before long-distance transport. With this new UM-developed technology, called spheropreservation, stem cells which aggregate can be transported at room temperature to almost anywhere in the world for scientific research or clinical treatment at a cost of merely several US dollars.

Comparable to US in Research Facilities

Having worked in the US for 20 years, Prof Xu has received numerous awards for his achievements in stem cell research. These include the Royan International Research Award from Royan Institute, the CURE Award for Excellence in Stem Cell Research from the Connecticut United for Research Excellence (CURE), the Honoree of 2007 Annual State Bluebook of Connecticut, issued by the state secretary, and the Scientific Achievement Award from the Frederick Research Center of the US National Cancer Institute.

「科學研究依賴於國家政策的支持和雄厚的資金保障。跟美國和其它地方的大學相比，澳大的科研設備和資助均不遜色，加上澳門擁有一國兩制的優勢，這些都是吸引我來澳大工作的重要原因。」徐教授說。

目前，徐教授和團隊繼續深化他們的幹細胞研究，透過基因編輯，致力於提升人胚幹細胞來源的治療產品的安全性，並降低免疫排斥，目的是將人胚幹細胞來源的間充質幹細胞開發成通用的治療產品，為有需要的人提供合適的幹細胞治療。

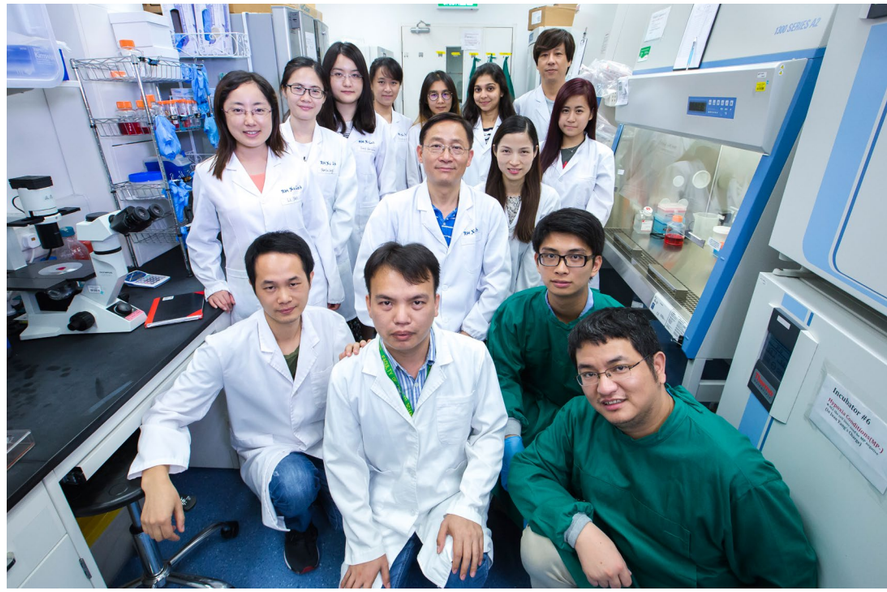
In 2012, Prof Xu, who was then an associate professor at the University of Connecticut and the director of the university's Stem Cell Institute, met Prof Chuxia Deng from the NIH at a conference they both attended. Prof Deng had just been appointed dean of the new Faculty of Health Sciences (FHS) at UM, and eager to recruit new blood for the fledgling faculty, Prof Deng immediately invited Prof Xu to join UM.

'Scientific research relies heavily on government support, both financially and policy-wise,' says Prof Xu. 'In terms of research facilities and funding, UM is comparable to universities in the US and many other places. Moreover, the "One Country, Two Systems" policy gives Macao an added advantage. These are all important reasons that drew me to UM.'

Currently, Prof Xu and his team are deepening their stem cell research. They hope to improve the safety of hESC-derived therapies and minimise immune response through genome editing, in order to develop hESC-derived MSC into drugs and provide suitable stem cell treatment for patients.

徐仁和教授
和幹細胞研究團隊

Prof Ren-He Xu
and his research team



短片：澳大教授談幹細胞的臨床試驗、運輸和來源
Video: UM Professor on Clinical Trials, Transport, and Sources of Stem Cells

心理輔導這條路 如是深戲

專訪 金樹人教授

An Exclusive Interview with Prof Jin Shuh Ren on Psychological Counselling

文 Text｜張愛華 Ella Cheong
圖 Photo｜張愛華、部分由受訪者提供 Ella Cheong, with some provided by the interviewee

享譽華人諮商心理學界的重量級人物金樹人教授，曾因為《靈山》一書的敍事手法受啟發而獨創出「心理位移」心理輔導方法。他在過去 10 年為澳門培養了一代投身杏壇的老師，繁重的教學工作之餘，他還為澳門眾多機構的心理輔導員或學校的老師等擔任心理督導的角色。

過去 10 多年，澳門經濟發展迅速，人們生活富裕，金教授正好在澳門經濟發展最輝煌的時候來到澳門。在這 10 年間，他發現澳門心理輔導人員的擔子越來越重，要解決的問題也日趨複雜。滿頭銀髮的金教授，溫文爾雅，說話不疾不徐，訪問中徐徐道出自己從事心理教育的觀察，每談到激動處，他會忍不住提升語調，說到難忘往事，又會俯首沉思。他說：「心理治療這條路，不是任何人都可以走，但當你一旦走上，這就是天命。在我生命中，樹人的角色，就是我的天命。」

金教授從小立下樹人的使命，數十年從事心理輔導治療的教育工作，孜孜不倦，育才無數。金教授以他在澳門 10 年所做的心理輔導教育的話題接受了《澳大新語》的專訪。

Prof Jin Shuh Ren is a giant in the field of counselling psychology and enjoys great renown in Greater China. Years ago, inspired by the narrative technique of the book *Soul Mountain*, he created a unique counselling method known as 'psychological displacement'. A veteran educator, Prof Jin also serves as a psychological mentor and supervisor for school teachers as well as psychological counsellors at numerous institutions.

In the past decade, Macao experienced fast economic growth, with some of its residents living an increasingly abundant life. Prof Jin came to Macao when the city was in its economic heyday. His observations over the past ten years have led him to conclude that psychological counsellors in Macao are faced with an increasingly heavy burden, and the problems they need to solve are also increasingly complicated.

Below is an interview with Prof Jin in which he shared his experience as an educator in psychological counselling in Macao over the past decade.

The silver-haired professor is an urbane gentleman who speaks at a moderate rate. During our interview, when he shared his insights from many years of experience in psychological education, he was emotional sometimes and pensive at others. 'Psychological counselling isn't a career path for everyone,' he said. 'But once you choose it, it becomes your calling. In my life, educating people is my calling. ' True to his mission, Prof Jin has tirelessly trained countless students over the years.

金：金樹人
U : *umagazine*

澳門心理輔導人員的擔子

U： 過往為澳門哪些機構提供心理輔導的培訓？

金：主要為學校的老師和輔導員做一些心理輔導的培訓督導工作。在教師的培訓部分，著重教他們一些輔導學生的技巧，讓學員在教學中碰到個案時，可以有一些方法和技巧去處理。老師在教學中經常要處理人的問題，若老師能對心理輔導方法掌握多一些，對師生關係也會有幫助。在輔導員的培訓部分，則是著重在當代新興的治療理論與方法。

U：這幾年尋求心理輔導的個案是否有上升趨勢？

金：我發現澳門心理輔導人員的擔子是越來越重，澳門人均 GDP 已到達一個很高的程度，對社會、很多家庭結構衝擊很大，夫妻和親子之間都有問題顯現，連帶工作上的情緒也有波動。不能說這些都是因為博彩業發展所引起，但我看到最近這 10 年間，澳門博彩業確實令澳門社會改變很多。人們收入增加了，但人與人之間溝通卻在減少，彼此產生很多疏離感，焦慮和憂鬱的情緒病比例也有增加。

金樹人教授與學生的關係亦師亦友
Prof Jin Shuh Ren is both a mentor and a good friend to his students

難忘那眼神

U：可以分享過去遇到最難忘的心理輔導個案嗎？

金：在澳門我主要以教書和研究為主，雖然澳門也有人找我做心理輔導和諮商，但單獨的案例我很少做，除非是澳大的學生。我以往曾經有一案例，案主曾是一名學生領袖，留學期間車禍後部分腦功能受損，我花了一段時間才令他慢慢接受現在的自己。當他最後一次離開我工作的地方時，我送他到門口，他在我前面走了幾步路，然後停下來，又回頭看了我一下，我注意到他看我的眼神，這眼神我到現在也忘不了。

J: Jin Shuh Ren
U: *umagazine*

The Burden on Psychological Counsellors in Macao

U: For which organisations in Macao have you provided training in psychological counselling?

J: I have mainly provided training and mentoring for school teachers and counsellors. In training school teachers, I mainly teach them skills for student counselling so they know how to handle real-life cases. The problems teachers encounter during their teaching often involve students. So if teachers know more about psychological counselling methods, it would benefit their relationship with the students. In training counsellors, I mainly focus on new theories and techniques.

U: Is the number of people seeking psychological counselling increasing in recent years?

J: From my observation, psychological counsellors in Macao are faced with an ever-increasing burden. The per capita GDP in Macao has reached a very high level, which is a double-edged sword, because on the one hand it means that people are earning more money, but on the other hand people are working longer and spending less time with their family. The resultant relationship problems between couples as well as between parents and their children in turn create a sense of alienation and an increased incidence of mental disorders such as anxiety and depression. I am not saying that these problems are all caused by the development of the gaming industry, but there is no denying the fact that the rapid development of the gaming industry over the past decade has indeed changed the Macao society in many ways and has had a big impact on social structure and family life.

The Look in the Patient's Eyes

U: What is the most unforgettable case you have handled as a psychological counsellor?

J: Working at the University of Macao, I mainly focus on teaching and research. While I have had people from Macao approaching me for psychological counselling, I rarely take these

U：那眼神透露了甚麼？

金：很難說是甚麼，是感激嗎？滿足嗎？理解嗎？被瞭解嗎？我不知道，都混在一起，那是兩個 human-being 很深層次的心靈溝通，好像 inter-being。 那個眼神對我也有很深的療癒作用。那一次，我感覺他在心理上開始調整，儘管功能上不會完全恢復。對於接受輔導的人來說，只有把心結打開，重新接納新的自己，才可以面對未來的生活。

天命就是你要學好這件事

U：擔任心理督導或教學時，如何幫助學員調整自己的心理？

金：很多學員自己本身都會遇到情緒焦慮的問題，我會教他們想辦法安頓自己。每個人在生命不同階段，碰到的心理問題都不同，我經常對學習心理輔導的學生說，當你最脆弱的時候，就是最好的學習時機。換句話，就是當你自己落入井裡，才知道裡面的人是甚麼心情，在裡面的人需要甚麼樣的幫助。我經常強調，治療這條路很辛苦，不是人人可以走，但當你一旦走上，這就是我們的天命，天命就是你要學好這些東西。

正念同理心的練習

U：您經常在課上教學生正念的方法，這方法對老師為何這麼重要？

金：老師最重要是管理自己的情緒，情緒管理比班級管理更重要。在一個學期的課裡，我通常會教 8 至 10 種以上的心理輔導方法。我會安排課後做很多的練習，學生都說這些方法對他們很有用，尤其是大四的學生，學會後馬上在學校的實習課用上。正念是其中一種，已經發展成一種心理治療與正念教育的新趨勢，適用於自己身上，也適用於學生。

U：如何指導學生做正念和同理心的練習？

金：正念的練習包括三個原則，我們要有專注力、重視當下和不要有任何的評價，練習的方式包括調身、調息與調心。正念在於改變我們舊有的思維模式，需要較長時間的練習。同理心最基本的練習，就是關於傾聽的練習。例如我會要求學生在校園隨便找一個位置，閉上眼睛靜坐十多分鐘，然後寫下聽到的聲音，我稱之為「天籟」的練習。

cases, unless they are UM students. But I once counselled a student leader who sustained brain damage in a car accident while studying abroad. It took me some time to help him come to terms with his new condition. The last time when he left the place where I worked, I walked him to the door. He walked a few steps ahead of me before he stopped, turned around, and gave me this one look that I remember to this day.

U: What did that look say?

J: It is hard to say. Was it gratitude? Satisfaction? A feeling of suddenly understanding something? Or a feeling of being understood? I don't know. Maybe it was a mixture of all these emotions. It was a deep form of communication between two human beings. It was as if we became inter-being at the moment. That look was deeply therapeutic to me. I felt that marked the beginning of his change of attitude in spite of his knowing that physically he would never fully recover. For those who seek counselling, only when they unearth the root cause of their feelings and learn to accept themselves under the changed circumstances will they be able to move on with their lives.

Learning to Follow One's Calling

U: In your role as a psychological mentor or professor, how do you help your students to deal with their own psychological problems?

J: Many students will encounter anxiety themselves, so I will teach them ways to calm their emotions. Different people will encounter different psychological problems during different stages of their lives. I often tell my students: 'Your most vulnerable moment presents the best learning opportunity for you as a counsellor.' In other words, only when you have been in the deep dark hole of emotional turmoil can you truly understand how people who are in that place feel and what kind of help they need. I often stress that psychological counselling is not an easy career path, and it is certainly not for everyone. But once you choose it, it becomes your calling, and then it's your duty to learn these things well.

Practicing Mindfulness and Empathy

U: You often talk about mindfulness in your class. Why is it so important to teachers?

eachers is to manage their own moods. Mood management is even more important than classroom management. Over the course of a semester, I usually teach eight to ten different counselling techniques. I also give them a lot of assignments to do after class. Students, especially fourth-year students, have told me that these techniques have been very useful, and they could immediately apply them in their internships. Mindfulness is one of the techniques. It has now become a new trend in psychological therapy and mindfulness education. Both my students and I can apply it in our daily lives.

U: How does one practice mindfulness and empathy?

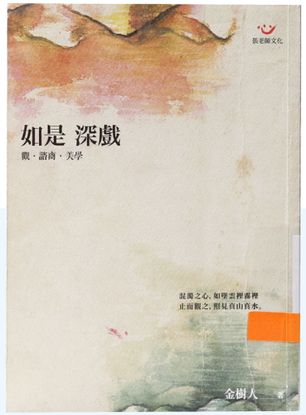
J: There are three principles to follow when we practice mindfulness: concentrate on awareness, focus on the present moment, and let go of any judgment. We can practice mindfulness by tuning our body, breath, and mind. Mindfulness is about changing our old way of thinking, and it takes sustained practice to master.

The most basic empathy practice is listening. For example, I ask my students to find any location on campus that they like, sit down, close their eyes, and sit still for ten minutes. After the time is up, they are required to write down all the sounds they have heard during the sitting. I call this 'Nature Sounds' practice.

Apart from listening to the sounds of nature, I also ask my students to listen between the lines during conversations with others. I call this 'Human Sounds' practice. It's especially important to listen between the lines. That is, what are the things the speaker wanted to say but didn't say, couldn't say, or didn't know how to say? What are the true meanings of the words spoken? Whether for teachers or psychological counsellors, observation and listening are both essential skills and qualities.

除了練習聽外界的聲音，我也會叫學生去傾聽別人怎樣講話，我稱之為「人籟」的練習。尤其要聽出講者的言外之音，甚至聽出他／她一些想講但未有講或無法表達出來的東西，以及這些話語背後真正的意思是甚麼。觀察和傾聽是老師或心理輔導員都必須要具備的能力和素養。

金樹人手握的間尺，上書有《心經》全文，是他的博士研究生送贈。
***The ruler in Prof Jin Shuh Ren 's hands is a gift from one of his PhD students.It is inscribed with the full text of* The Heart Sutra.**



金樹人教授的著作
Prof Jin Shuh Ren's book

金樹人教授專業與研究方向為諮商心理學、生涯諮商與輔導、心理諮商理論與實務。 從事心理諮商與生涯諮商講學與研究 30 多年，曾獲美國心理學會諮商心理學分會傑出國際學者獎（2007）；已指導內地、台灣、澳門碩士生與博士生 60 多人，已發表專題研究論文百餘篇。《如是深戲》一書，總結了他過去 10 年在心理諮商和美學方面的觀察和經驗的靈性之作。

Prof Jin's main research interests include counselling psychology, career counselling and guidance, as well as theories and practice of psychological counselling. Supervised more than 60 postgraduates, including master's and PhD students, in mainland China, Taiwan, and Macao. He is the 2007 recipient of the International Psychologist Commendation from the Society of Counseling Psychology under the American Psychological Association. *Ru Shi Shen Xi* sums up his observations and experience in psychological counselling and aesthetics over the past decade.

短片：澳大金樹人教學生看、聽、聞
Video: UM Professor Jin Shuh Ren Teaches Students to Look, Listen, and Smell

檢測圖像邊緣在社會上的應用

Social Applications of Edge Detection

文 Text ｜高潔欣 Anna Kou
圖 Photo ｜由高潔欣及編輯部提供 Provided by the Editorial Board and Anna Kou

高潔欣是澳門大學科技學院數學系副教授，研究領域包括複分析、四元素分析、傅立葉分析、時頻分析，以及訊號與圖像處理。目前主要研究方向是四元素分析及其在訊號和圖像處理中的應用。最近獲得了 2016/2017 年度科技學院研究優秀獎，並在同行評審的國際期刊上發表了 50 多篇論文。

The author is an associate professor in the Department of Mathematics, Faculty of Science and Technology, University of Macau (UM). Her research interests include complex analysis, Quarternion, Fourier analysis, time frequency analysis, and signal and image processing. Currently she mainly focuses on Quarternion analysis and its applications in signal and image processing. She recently received the FST Research Excellence Award 2016/2017 and has published more than 50 papers in peer-reviewed international journals.

邊緣檢測是圖像處理與分析中最基礎的內容之一，也是至今仍沒有得到圓滿解決的一類問題。圖像的邊緣包含了圖像的位置，輪廓等特徵，是圖像的基本特徵之一，廣泛地應用於特徵描述、圖像分割、圖像增強、圖像復原、模式識別，以及圖像壓縮等圖像分析和處理中。

Edge detection is one of the most basic tasks in image processing and analysis. It is also a problem for which no perfect solution has been found. The edges of an image consist of the location and outline of the image. These edges are basic features of the image and are widely used in feature description, image segmentation, image enhancement, image restoration, pattern recognition, and image compression.

圖 1 Figure1
三幅測試的圖像，即房子、花和肝臟。
Images of a house, a flower, and a liver.

檢測與提取方法

圖像邊緣和輪廓特徵的檢測與提取方法，一直是圖像處理與分析技術中的研究熱點，新理論、新方法不斷湧現。由於經常受到外界各種因素的影響，圖像在獲取和傳輸過程中容易受到和邊緣點頻率相近的噪聲的干擾，使得提取出的圖像邊緣總存在偽檢測、漏檢測以及檢測出來的邊緣不是單圖原寬等問題，因此噪聲圖像的邊緣檢測技術越來越受到人們的關注和重視。

Detection and Extraction Methods

For this reason, developing methods for detecting and extracting the edges and outline features of an image has always been a hot subject of research in the field of image processing and analysis, with new theories and methods constantly emerging. Because of the influence of various external factors, during the process of image retrieval and transmission, images are subject to disturbance of noise whose frequency is similar to that of the edge points. As a result, image edges thus extracted suffer from various problems, including false detection, false positives, false negatives, and edges not being of the single image original width. Therefore, edge detection technologies for noise in image are receiving increased attention. The traditional Sobel and Canny filters, while having extensive applications, only consider locally large gradient, especially large gradient in colour and brightness. These features cannot simulate complex images or hidden information. Changes in brightness or colour alone are not sufficient for accurate edge detection. To better evaluate edge detection algorithm, our research team built a series of phase detectors and conducted edge detection by combining various features, including colour, brightness, and gradient. These detectors are called phase edge detectors, or QDPC/QDPA for short. Figure 1 contains three images found on the internet, of a house, a flower, and a liver, respectively. We then compared the performance of different phase edge detectors.

傳統的 Sobel 濾波器，Canny 運算元檢測器具有廣泛的應用，但是這些檢測器只考慮到局部的急劇變化，特別是顏色、亮度等的急劇變化。這些特徵很難模擬較為複雜的場景和隱藏的信息，僅通過亮度，顏色變化並不足以把邊緣檢測做好。為了更好地評測邊緣檢測演算法，我們研究組建立了一系列的相位檢測器，學習怎樣聯合顏色、亮度、梯度這些特徵來做邊緣檢測，叫做相位邊緣檢測器，簡稱 QDPC 和 QDPA。圖 1 是從網上找到的三幅測試的圖像，即房子、花和肝臟，我們比較各種邊緣檢測器的表現（圖 2）。

從圖 2 中可以合理地得出結論，對於傳統檢測器 Sobel，Canny，我們（QDOC、QDPA 方法）有較好的表現。首先，房屋圖像的結果表明，基於相位的方法 (DPC、MDPC、QDPC、QDPA）可以非常好的表現房屋煙囪的細節。 相位的演算法也可以將花從背景中提取。 Sobel 方法也可以從背景中提取花朵，而 Canny 方法不能將花與背景分開。其次，對於肝臟圖像，QDPA 方法得到不錯的邊緣檢測結果，錯誤較少，表現較其他演算法理想。

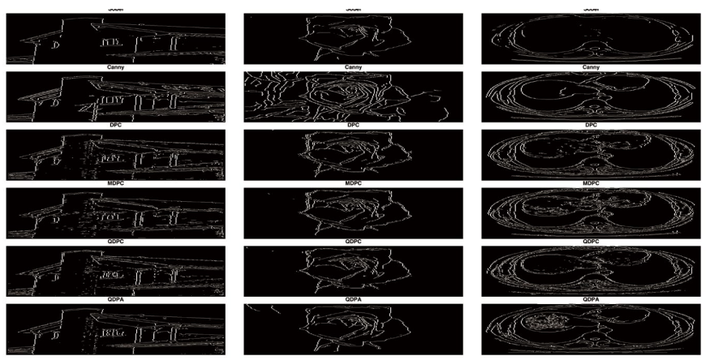


圖 2 Figure2
*由左至右是分別作用 **Sobel**、**Canny**、**DPC**、**MDPC**、**QDPC**、**QDPA** 檢測器的結果。*
(From left to right) results from Sobel, Canny, DPC, MDPC, QDPC, and QDPA.

Detecting Shaded Regions of the Liver

Neither Canny nor Sobel can detect the shaded regions of the liver. To suppress noise, Canny edge detector first smoothed out the image. But this process can cause the loss of edge points. So, Canny treated the shaded regions as noise and deleted them. Moreover, there is no significant difference between the shaded regions and their surrounding regions in terms of colour. Sobel failed to detect the shaded regions. The DPC, MDPC, QDPA and QDPC are all based on the phase methods. These methods include the properties of an image. We can see that these methods can detect the shaded regions of the liver clearly. QDPA not only can detect the smooth areas, but can also accurately and clearly detect the shaded regions of the liver.

檢測肝臟的陰影區域

Canny 和 Sobel 的方法不能檢測到肝臟的陰影區域。為了抑制雜訊，Canny 邊緣檢測器先對圖像進行平滑，但平滑的過程中會導致邊緣點的丟失。因此，Canny 方法將陰影區域視為噪聲並將其刪除。而且，陰影區域與周邊區域的顏色變化相對較小。而 Sobel 方法找不到陰影區域的肝臟圖像。 DPC、MDPC、QDPA 和 QDPC 都是基於相位的方法，它們包括圖像特徵的屬性。我們發現這些方法可以檢測肝臟的陰影區域。而 QDPA 方法不僅可以檢測整個平滑區域，還可以找出肝臟的陰影區域形象清晰準確。我們研究團隊提出的基於相位的演算法可以在處理結構信息方面取得優異的表現，可能會顯示更多的測試圖像的特徵細節（結構信息）。我們還發現相位在邊緣檢測中佔有重要地位，基於相位的方法在檢測特徵細節方面具有優越的地方。

我們提出的相位檢測器是由解析信號理論推導出來。解析信號在信號處理中起重要作用。它只有正的單邊譜。這使得解析信號的特定屬性更易理解，並促進了調製和解調技術的衍生。解析信號可以推導出信號的包絡、相位與頻率，它們在一些應用中用於測量和檢測的信號的局部特徵。相位包含信號的特徵資訊，這屬性激勵我們將相位的方法應用於圖像處理中。

可應用在社會的檢測

下面我們將帶領大家探索一下邊緣檢測在澳門社會上的一些應用。

车牌检测：現在社會的發展迅速，人工智慧也是現今最火熱的趨勢之一。很多智慧化理念都會一一去實現，只是時間和策劃的問題。今天甚麼最多，其中一個絕對是車。所以未來的智慧交通一定是無可否定的技術，於是乎，今天講解的是一個簡單的車牌檢測。公眾、公司和住宅區的停車場，收費站等都涉及車牌的檢測，這樣方便了整個流程的運行，所以這種技術的進步和發展，一定是一個非常好的趨勢和應用。首先對採集的圖像進行灰度化並進行了 QDPA 運算元邊緣檢測。以下展示了效果對比圖：（以圖 3 車輛為例子）

The phase algorithm proposed by our research team not only performs very well in processing feature details, but also can reveal more feature details of the image. We also discovered that phase has an important status in edge detection, and phase-based methods excel in detecting feature details. The phase detectors we developed are based on analytic signal theory. Analytic signals play an important part in signal processing. An analytic signal only has a positive unilateral spectrum. This makes it easier to understand certain properties of analytic signals, and has led to the development of modulating and demodulating techniques. Analytic signals can be used to obtain signal envelope, phase, and frequency. They can be used to detect local features of signals. A phase contains feature details of a signal, and this property inspired us to use phase-based methods in image processing.

圖 3　Figure3
原圖與進行了 QDPA 檢測的結果
The original images and the images produced with QDPA

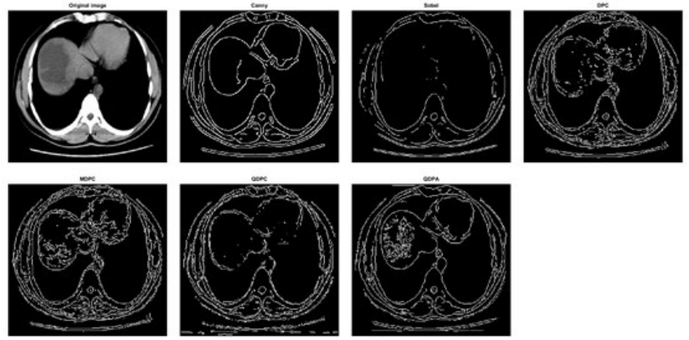


圖 4　Figure4
是帶有陰影的人體肝臟的 CT 圖，從對比圖看到，我們的方法（最後的三幅圖），可以有效的檢測出肝臟的陰影部分，其中 QDPA 的檢測效果是最理想的。
CT images of a human liver. We can see from the last three images that our methods can effectively detect the shaded regions of the liver, and among these methods, QDPA performed the best.

医学图像中检测隐藏的资讯：我們構造的相位檢測的方法的區別與傳統邊緣檢測（Canny、Sobel）方法的顯著優點是，我們不僅能夠檢測物體的邊緣，也可以檢測物體的一些隱藏的資訊，這些細節因為與周圍區域的顏色差異很小，傳統的方法是無法檢測出來的（見圖 4）。

高潔欣教授和博士生胡曉曉合作的論文《基於相位的邊緣檢測算法》，提出了利用相位檢測彩色圖像邊緣的創新方法，加上有效的實驗結果，使得胡曉曉在（CGI）電腦圖像會議上獲得論文最佳表現獎。

Phase-based Edge Detection Algrothms, a paper co-authored by Prof Kou Kit Ian and her PhD student Hu Xiaoxiao, received the ENGAGE 2017 Best Presentation Award at the Computer Graphics International. The paper proposes an innovative method for detecting the edges of colour images with PHASE).

Social Applications of Edge Detection

In the following, I will briefly discuss how edge detection can be used in the Macao society.

License plate detection: Today, cars are everywhere. Intelligent traffic control will no doubt become the future trend. So I will briefly discuss how we can apply edge detection in license plate detection. License plate detection technology is widely used in tollgates as well as parking lots in public places, companies, and residential areas. So improving this technology is of great practical value. First we conducted sample image gray scaling and QDPA operator edge detection. Below is a comparison of the two images (take this vehicle as an example)

Detecting hidden information in medical images: What distinguishes our phase-based detection methods from traditional edge detection methods such as Canny and Sobel is that we not only can detect the edges of an object; we can also detect some hidden information of the test object. It is impossible for these details to be detected via traditional methods because there is very little difference between the colour of these details and the colour of their surrounding regions.

戲劇音樂隨筆

A Few Words on Theatrical Music

文 English Text ｜王嘉祺 Katrine Wong
圖 Photo ｜由王嘉祺及編輯部提供 Provided by the Editorial Board and Katrine Wong
翻譯 Chinese Translation｜陳靜 Ruby Chen

「音樂在不同人心中激起不同漣漪，有時是喜悅、有時是悲傷、有時是痛苦。」

—— 托馬斯．懷特《心靈的激情》（1604）

'Divers consorts stirre up in the heart, divers sorts of joyes, and divers sorts of sadnesse or paine.'

—— Thomas Wright, *The Passions of the Minde (1604)*

有人說音樂是全人類的共通語言，但德國作家歌德也說過：「詞窮之時，音樂伊始」。 詞藻抑揚頓挫的詩意和音樂高低起伏的韻律之間有著異曲同工之妙，有心人不難體會。音樂和文學都有敘述故事和表達情感的功效。在漫漫的歷史長河中，這兩者彷若各自綻放嬌豔卻又相生相伴、密不可分的姐妹花。

It has been said that music is the universal language of mankind, but the German writer Johann Wolfgang von Goethe also said that 'music begins where words end'. It is not difficult to hear and feel the close affinity between poetic lilt and musical rhythm. Music expresses, so does literature. Literature narrates, so does music. Indeed, music and literature have long been received and appreciated as siblings throughout history.

歐菲利亞在國王和皇后面前，本傑明．韋斯特（Benjamin West）作品
Ophelia before the King and Queen--created by Benjamin West (1792).
https://earlymusicmuse.com/wp-content/uploads/2016/04/OpheliaBeforeTheKingQueen_BenjaminWest1792.jpg

王嘉祺是澳大教與學優化中心主任、英文系副教授。研究涉及音樂與性別、音樂與文學等澳門研究領域。曾接受過古典音樂訓練的鋼琴家及女高音歌唱家，獲倫敦聖三一學院頒發 FTCL（鋼琴獨奏）文憑及 LTCL（聲樂）文憑。現為澳門嚶鳴合唱團的助理指揮。

Katrine Wong is the director of the Centre for Teaching and Learning Enhancement and an associate professor of the Department of English. She has published on music and gender, music and theatre, and Macao studies. She is also a classically trained pianist and operatic soprano, holding professional titles of FTCL (Solo Piano) and LTCL (Voice) from Trinity College London. She is an assistant conductor of Coro Perosi of Macao.

音樂與文學的融合

如果我請你列舉將音樂和文學融為一體的藝術形式，你會想到甚麼？音樂劇？中國戲曲？童謠？歌劇？神劇？嘻哈音樂？鄉村音樂？交響詩？還是其他藝術形式？其實，就算沒有歌詞的歌曲都能說故事。浪漫主義作曲家費利克斯·門德爾松（Felix Mendelssohn）的《無言歌》就是一個絕佳的例子。門德爾松的友人蘇塞（Marc André Souchay）曾提出為《無言歌》填詞，被門德爾松婉拒。他表示：「我鍾愛的音樂所傳達的東西難以用語言去捕捉，這並非因為這些東西太過虛無縹緲、模棱兩可。恰恰相反，是因為這些東西太過確切了。」

約公元前 700 年，古希臘戲劇早已將詞句和音樂相結合，並在當中加入舞蹈的元素。這種多模態戲劇娛樂在近代早期的倫敦得到迅速推廣。那是四百多年前，英國享有「鈴鳴之島」的美譽。那個時期的英國劇作家，都熱衷於在劇本中加入音樂場景，尤其是當他們為擁有歌喉不錯的演員之劇團編寫劇本的時候。當時為數不多的歌唱家中比較有代表性的包括羅伯特·雅明（Robert Armin）和威爾·肯普（Will Kempe）。當時為劇中角色提供大量歌唱機會的多產劇作家包括大文豪莎士比亞等。

擁有最多讀者的莎士比亞，其 37 部劇作中，最少有 32 部提及音樂。其劇本中 350 處舞台指示與音樂相關。莎劇裡有不少於 50 個歌唱場景，其中 40 個是純歌唱場景。在純歌唱場景中，相關角色用歌唱來代替對白。他們為何而唱？又唱些甚麼？

Let's pause for a moment: if I asked you to think about music and literature together, what sort of art form would come to your mind? musical? *xiqu*? nursery rhyme? opera? oratorio? rap? country? symphonic poems? I'm sure you can think of other forms of artistic expression that bring together music and literature. And, let's not forget, even songs without words can tell stories; For example, Romantic composer Felix Mendelssohn's *Liede Ohne Worte* (*Songs Without Words*) is a series of lyrical piano pieces. Mendelssohn once stopped his friend Marc-André Souchay from trying to put words to the musical lines in *Songs Without Words*: 'What the music I love expresses to me, is not thought too *indefinite* to put into words, but on the contrary, too *definite*' (note Mendelssohn's own italics).

Starting from about 700 BC, ancient Greek drama had already combined both spoken words and musical lines, into which the element of dance was incorporated as well. Such form of multi-modal theatrical entertainment was much popularised in early modern London more than four centuries ago when England was known and celebrated as 'the ringing island'. English playwrights at the time were keen to include musical episodes in their plays, especially when they wrote for theatre companies that had actors with decent singing voices.

Out of the 37 canonical plays of Shakespeare, the most-read Renaissance playwright, no fewer than 32 mention music in the text itself. They include more than 350 stage directions that are musical in nature. Shakespearean characters enjoy at least 50 song episodes, about 40 of which are full songs; a full song can be understood as a musical episode wherein the character concerned is meant to stop speaking and become a musical being. Why do they sing? What do they sing?

他們在工作時唱歌

《第 12 夜》中的費斯特是奧西諾公爵府中的一名小丑。劇中奧西諾公爵因患上單思而鬱鬱寡歡，費斯特用其「圓潤悅耳的嗓音」為公爵唱歌，試圖舒緩公爵難以排解的憂愁。在《皆大歡喜》中，侍臣亞眠應劇中各個角色的要求唱歌。費斯特和亞眠可謂人肉點唱機。在《哈姆雷特》中，其中一個掘墓者邊工作邊唱歌。劇中主角哈姆雷特對此感到不安，相信很多學習莎劇的學生也有同感，認為這種行為悖乎情理。但是，會不會是對這份沉悶工作的漠不關心促使這位掘墓者用歌聲作為調劑？又或者，音樂節拍可能會為掘墓者增添幹勁。如果是這樣，掘墓時唱歌其實無異於為生鏽的機器加油。

伊麗莎白女皇最喜歡的弄臣理查·塔爾騰（Richard Tarlton，1588 年去世）
Richard Tarlton (died in 1588)--Queen Elizabeth 's favourite clown.
(http://luna.folger.edu/luna/servlet/s/7v51c2, Folger Digital Image Collection)

他們在施魔法時唱歌

《暴風雨》中會變身的精靈愛麗兒一邊唱歌一邊將一名遭遇海難的年輕人引領到指定的地方，在那裡年輕人將與一名年輕女子相遇並墮入愛河。這個場景中的愛麗兒是隱形的，年輕人認為愛麗兒的音樂是用來「侍奉島上諸神」的天籟之音。莎劇中的神靈魔怪通常都會唱歌。《仲夏夜之夢》中仙女一邊唱歌一邊安撫被小精靈惡作劇變成驢頭人身的織工波頓。

They sing when they work

Feste from *Twelfth Night* works as a fool in Duke Orsino's household. Feste sings with his 'mellifluous voice' (2.3.51) at the bidding of the melancholy Duke who suffers from love sickness, but to no avail. In *As You Like It*, Amiens works as a courtier who entertains various characters' song requests. Both Feste and Amiens can be viewed as human jukeboxes. In *Hamlet*, one of the grave diggers sings on the job. Sharing similar unease as the title character Hamlet, many a student have questioned the decency of such action. Mightn't it be the indifference and boredom of his job that prompts this grave digger to sing? Also, the musical beats most likely would help propel the digging momentum; the act of singing, in this circumstance, is not dissimilar to oiling a machine.

They sing when they play with magic

Ariel, a delicate shape-shifter in *The Tempest*, sings and guides a shipwrecked young man to a designated spot where romance with a certain young lady will blossom. The young man considers the music of Ariel, invisible in this scene, as that which 'waits upon / Some god o'th' island' (1.2.388-9). Shakespeare's supernatural beings are often associated with music: fairies sing while pampering the transformed Bottom in *A Midsummer Night's Dream*.

莎士比亞最喜歡的小丑威廉·肯普（William Kempe，1603 年去世）
William Kempe (died in ca.1603) --Shakespeare 's favourite clown
(https://www.biography.com/people/william-kempe-9362514)

他們在想要錢的時候唱歌

《冬天的故事》中的騙子歐托利卡斯可能是莎劇中最討人喜歡的一個無賴。這個角色的主要作用是用歌唱展現劇本從孤獨荒涼的西西里過渡到風景宜人的波希米亞。歐托利卡斯靠小偷小摸和騙錢為生，他在節日的街頭割破行人的錢包時唱歌，在沿村兜售小飾品時也唱歌。更絕的是，他不但唱歌，而且賣歌。他唱歌的速度「快過數錢」，開口即唱，彷彿「已將世間歌曲盡收囊中」。

他們在想要性愛的時候唱歌

人們經常將音樂與愛以及親密的身體接觸相提並論。文藝復興時期的作品中有很多試圖用音樂引誘別人的角色，這種引誘的戲碼有時是霸王硬上弓，有時則是一唱一和、兩廂情願。在《辛白林》中，克洛頓僱了一班音樂家，企圖用音樂去引誘一名女子，因為有人跟他建議：「為該女子獻上晨樂，據說音樂具有穿透力。」他吩咐音樂家為樂器調音，然後鼓勵他們：「如果你們能用手指插入她，那不妨也試試用舌頭。」在克洛頓看來，只有具有「穿透力」的音樂才是好音樂。用他的話說，「如果你們的音樂能助我成功插入她，我會認為你們的音樂是好音樂。」 克洛頓是個粗俗角色，這樣的角色將音樂與性行為劃上等號並不出奇。

They sing when they want money

Autolycus, a con artist in *The Winter's Tale*, is possibly the most lovable Shakespearean rogue. His primary purpose is to serve as a musical icon that transitions the play from a bleak Sicilia and into a cheerful Bohemia. Earning his living by 'silly cheat' (4.3.28), Autolycus sings when he picks and cuts 'festival purses' (4.4.614-15); he sings when he hawks his trinkets from village to village; and, more importantly, he sells his songs. Autolycus 'sings several tunes faster than [one can] tell money' and 'utters them as [if] he had eaten ballads' (4.4.185-7).

They sing when they want sex

The Renaissance canon is rife with characters who try to seduce each other with music, be it welcome or unwelcome. In *Cymbeline*, Cloten hires musicians to seduce a lady with music after he has been told to 'give [the lady] music a mornings, they say it will penetrate' (2.3.11-12). He instructs the musicians to tune their musical instruments and encourages them so: 'if you can penetrate her with your fingering, so: we'll try with tongue too' (2.3.13-14). In Cloten's dictionary, good music is music that penetrates: 'if this penetrate, I will consider your music the better' (2.3.27-8). It is not uncommon for crass characters like Cloten to equate music-making and singing with sexual behaviours.

繼威廉・肯普後成為環球劇場首席喜劇演員的羅伯特・雅明（1568–1615）
Robert Armin (1568-1615)
--successor of Will Kempe as Principal Comedian at the Globe Theatre
(cover image of The Historie of the two Maides of More-clacke [1609], Early English Books Online)

他們在喝酒時唱歌

莎劇中的男性角色總是喜歡在喝酒時唱歌，因為把酒當歌能加深男人之間的友情，肯定其男兒氣慨。這種喧囂吵鬧的聚眾喝酒的場景在很多莎劇中都出現過。例如，在《第 12 夜》中，托比爵士、安德魯爵士和費斯特深夜在廚房裡縱酒狂歡，用沸反盈天的歌聲嘲弄奧利維亞的管家馬弗利奧。《暴風雨》中的三個男人喝得酩酊大醉之後，嘻嘻哈哈語無倫次的一起唱歌。在《安東尼與克麗奧佩托拉》中有一幕講述在龐培船上舉行的宴會。在這一幕中，馬克．安東尼和屋大維．凱撒聯同眾人一起隨著一名少年的歌聲載歌載舞。

他們在發瘋時唱歌

歐菲莉亞是《哈姆雷特》僅有的兩個女性角色之一。歐菲莉亞可能是文藝復興時期所有戲劇角色裡第一個通過雜亂無章甚至堪稱不雅的歌曲來表現瘋狂的女性角色。在莎士比亞和約翰・弗萊切合寫的劇作《兩個貴親戚》中，獄卒之女因單戀上被囚禁在父親監牢裡的貴族年輕人而發瘋。和歐菲利亞一樣，獄卒之女（被劇中各角色稱為「嬌小玲瓏的瘋女人」和「美人」）經常會突然放聲歌唱。她唱的大部分歌曲都屬於當時的流行歌，充滿性暗示的歌詞。《李爾王》中因遭人陷害而背上弒父罪名的愛德伽為逃避追捕，裝瘋賣傻，喬裝成「可憐的湯姆」，逃亡途中唱著支離破碎的民歌，以作自保。

They sing when they drink

Shakespearean men are more than ready to sing whenever they drink because singing while boozing strengthens their camaraderie and confirms their masculinity. Boisterous, and often rowdy, drinking parties include a nocturnal revelry in the kitchen in *Twelfth Night*, where Sir Toby, Sir Andrew and Feste taunt the Puritan Malvolio with loud, 'caterwauling' songs (2.3.70); a merry threesome mucking about in *The Tempest*, sharing disorderly songs in an inebriated state; a banquet aboard Pompey's boat in *Antony and Cleopatra* where Mark Anthony and Octavius Caesar are among those who dance and drink to a Bacchus song sung by a young boy.

They sing when they're mad

Ophelia, one of the only two women in *Hamlet*, is possibly the first female character in the whole Renaissance dramatic canon whose madness is exhibited through disjointed and, at times, indecorous songs. *The Two Noble Kinsmen*, a collaboration between Shakespeare and John Fletcher, presents a young lady, known as the Jailor's Daughter, who runs mad for the unattainable love of a young nobleman imprisoned in her father's cell. Like Ophelia, the Jailor's daughter, referred to by various characters as 'a dainty mad woman' (3.5.66) and a 'Pretty soule' (4.1.69), frequently breaks into singing. Her songs, most of which have now been identified as contemporary popular ballads, are full of sexual innuendoes. In *King Lear*, Edgar feigns madness and disguises himself as Poor Tom. He sings fragments of folk song as a protective measure when he is on the run from unjust punishment.

歐托利卡斯賣東西，John Cawse 作品
'Autolycus Selling His Wares' --created by John Cawse (ca. 1830).
http://luna.folger.edu/luna/servlet/s/585tw2 (Folger Digital Image Collection)

由於莎士比亞的年代認為當眾唱歌是有失禮儀的行為，所以莎劇中大部分歌唱的角色是由僕人（包括成年僕人和僮僕）、小丑、以及無賴等社會低層人物充當。當然，凡事皆有例外，莎劇中亦不乏在角色發瘋或生命危在旦夕時唱歌的場景。與莎士比亞同時代的劇作家除了在劇作中加入歌唱的元素外，還大膽地嘗試了許多其他表現手法。例如，在海伍德的《盧克萊修受辱記》中，秘密訊息的傳遞是在精心設計的旁白歌唱中進行的。在約翰・弗萊切和威廉・羅利合寫的《美麗的磨坊女》中，弗羅麗玫用充滿情慾的歌舞試圖阻止對她垂涎三尺的綁架者。在弗朗西斯・博蒙特的《燃燒的斧頭騎士》中馬利紹特篤信音樂的美好，即使家中無米下炊時依然終日不停唱歌，藉此維持健康的體魄和愉悅的心情。

日常生活中有沒有和上述戲劇場景類似的例子呢？如果我們稍加留心，就會發現音樂其實無處不在，相伴你我左右。文末，我想請大家思考最後一個問題：《威尼斯商人》中的羅倫佐曾說過：切不可相信心中無音樂亦不為音樂所動之人。你同意嗎？

歐愛麗兒：蜜蜂吮蜜地是我藏身處。Vincent Brooks 印刷
'Ariel: Where the bee sucks there lurk I'
--printed by Vincent Brooks (ca. 19th century).
http://luna.folger.edu/luna/servlet/s/4l0g9h
(Folger Digital Image Collection)

Taking into consideration the social decorum of his time, Shakespeare gave most of the singing episodes to servants (both adults and children), fools and rogues. Of course, like everything else, there are exceptions under exceptional circumstances (when one is mad or when one's life is in danger, for example). Shakespeare's contemporaries also experimented with similar musical expressions and representations, and more: secret messages are passed from one to another in an elaborate dialogue song in Thomas Heywood's *The Rape of Lucrece*; Florimell sings and dances most lasciviously in order to fend off her lustful kidnapper in *The Maid in the Mill* by John Fletcher and William Rowley; Merrythought in Francis Beaumont's *The Knight of the Burning Pestle* believes in the goodness of music and keeps himself fit and happy by singing constantly, even when he runs out of food at home.

Have you managed to think of any everyday examples that function similarly to any of the above examples? Music surfaces and keeps us company more often than we realise. Before I finish, let me leave you with one final question: what do you think about Lorenzo's view that any man that has no music in him nor is moved by music should never be trusted (*The Merchant of Venice*, 5.1.91-7)?