



澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU



不惑新航
揚帆追夢
SET SAIL ANEW ON
THE RUBY JUBILEE

UM RESEARCH

澳大 研究

First Issue 創刊號 2021



校長寄語



在中央政府、澳門特區政府及社會各界的鼎力支持和全體師生的共同努力下，澳門大學已發展成為一所中西多元融合的國際化綜合性大學，也是大灣區西岸綜合實力最強的大學之一。特別是自 2014 年遷入橫琴新校園後，澳門大學在一流的教學和科研環境屢創突破，課程質素、師生人數、科研產出和發明專利均大幅躍升，體現粵澳合作的豐碩成果。

澳門大學採取突出特色、發揮優勢、構建高峰和加強合作的方針，形成了“3+3+3+3”的科研戰略佈局。澳門大學全力支持中藥質量研究、模擬與混合信號超大規模集成電路和智慧城市物聯網這三個國家重點實驗室的發展建設；重點發展精準醫學、先進材料、區域海洋這三個新興方向；積極建設認知與腦科學、數據科學及人工智能與機器人這三個跨學科交叉研究平台；打造澳門研究中心、亞太經濟與管理研究所和人文社科高等研究院這三個人文社科研究平台。澳門大學已有工程學、計算機科學、化學、材料科學、藥理學與毒理學、精神病學／心理學、生物學與生物化學、臨床醫學、社會科學總論、農業科學等十大學科領域進入基本科學指標資料庫 (ESI) 前 1% 之列。2021 年，澳門大學發表 SCI 期刊論文數量超過 2300 篇，論文獲引用超過 57000 次，較十年前增長近 10 倍。另外，澳門大學在國際主流的大學排行榜上呈穩定一致的上升態勢，在 2022 年度泰晤士高等教育世界大學排名中，澳門大學躋身前 201-250 名，國際聲譽持續提升。澳門大學著眼於國家所需、澳大所長，積極促進成果轉化和應用，切實推動澳門經濟適度多元發展，逐步形成創新引領發展的新局面。這本刊物主要展示了澳門大學的科研發展歷程及卓越研究，突出介紹了大學在科研方面的相關舉措和所獲成就，彰顯大學爭創一流，追求卓越的精神。

2021 年是澳門大學創校 40 週年，恰逢中央政府發佈《橫琴粵澳深度合作區建設總體方案》，文中多次提及澳門大學，這將更有利於澳門大學再一次騰飛。站在新的歷史節點，我們將以“立足澳門、共建灣區、融入國家、走向世界”為發展定位，通過以學生為本的優質教育、具國際影響力的重點研究及高水平的社會服務，實現澳門大學科研水平的飛躍和提升。同時，我們將堅持與國際接軌，加強與內地，特別是粵港澳大灣區，在人才培養、科研創新等方面的合作，推動產學研發展。未來，澳門大學將配合大灣區和橫琴粵澳深度合作區的發展方向，全力成為“廣州 - 深圳 - 香港 - 澳門”科技創新走廊中的重要節點、構建大灣區西岸的科技創新高地和國家人才培養基地，更好地貢獻國家、服務澳門。

宋永華
校長

Rector's Message

With the full support of the Central Government, the Macao SAR Government, and all sectors of the society and the joint efforts of all academic staff and students, the University of Macau (UM) has developed into a renowned international university integrating Chinese and Western cultures. It is also one of the most comprehensive universities on the west coast of the Greater Bay Area (GBA). Since its relocation to the new campus in Hengqin in 2014, UM has enjoyed a first-class teaching and research environment. Significant improvements have been made on the fronts of the quality of its academic programmes, number of staff and students, scientific research output, and invention patents, reflecting the fruitful cooperation between Guangdong and Macao.

Adopting an approach of leveraging its unique characteristics and advantages, and strengthening cooperation, UM has formed a strategic layout of "3+3+3+3" for scientific research. The University fully supports the development of its State Key Laboratories of Quality Research in Chinese Medicine, Analog and Mixed-Signal VLSI, and Internet of Things for Smart City, with a focus on the development of precision medicine, advanced materials, and regional oceans. It is also actively developing three interdisciplinary research platforms: cognition and brain science, data science, artificial intelligence and robotics, jointly with the other three research platforms in humanities and social science, namely, the Institute of Advanced Studies in Humanities and Social Sciences, the Centre for Macao Studies, and the Asia-Pacific Academy of Economics and Management.

UM has ten disciplines listed among the top 1% of the Essential Sciences Indicators (ESI), which are Engineering, Computer Science, Chemistry, Materials Science, Pharmacology and Toxicology, Psychiatry/Psychology, Biology and Biochemistry, Clinical Medicine, Social Sciences (General) and Agricultural Science. In 2021, UM published more than 2,300 papers in SCI journals, and recorded more than 57,000 times of citations, an increase of nearly 10 times compared with that number ten years ago. In addition, the University has

seen a steady upward trend in major rankings of international universities. In the 2022 World University Rankings of Times Higher Education, UM was ranked among the top 201-250, and its international reputation continued to improve. Focusing on national and local needs, UM actively boosts the transformation and application of research achievements, effectively promotes an adequately diversified development of Macao's economy, and gradually enters into a new stage in which innovation serves as a driving force for development. This magazine aims to present the scientific research development and excellent research projects carried out in UM, highlighting our initiatives and achievements, while demonstrating the University spirit of striving for world-class and pursuing excellence.

The year 2021 marked the 40th anniversary of the University of Macau, and saw the launch of the Plan for Building Guangdong-Macao In-Depth Cooperation Zone in Hengqin. As highlighted in the Plan, UM will have an important role to play and embrace opportunities of significant growth. As a university for Macao, we actively participate in the development of the GBA and the nation, with the ambition to 'go global'. We aspire to achieve international excellence through student-oriented education, key research with global influence and quality social services. UM will continue to adhere to the international governance model, strengthen collaboration with the mainland, especially the GBA, in talent training, scientific research, and innovation, and promote industry-university-research development. In addition, UM will follow the national technological development strategy of the GBA and Guangdong-Macao In-Depth Cooperation Zone in Hengqin. We are determined to become an important node in the Guangzhou-Shenzhen-Hong Kong-Macao Science and Technology Innovation Corridor and a technological innovation hub on the west coast of the GBA to contribute to the country and local community.

Rector
Song Yonghua



00101010

01101010

10110100101010

0101010101010010

0101010110010

1001001

目錄

Content

科研里程碑	
UM's Research Milestones	01
歷任澳大校長	
UM Rectors	05
研究戰略	
Research Strategy	06
研究亮點	
Research Highlights	10
人物故事	
Feature Stories	31
重點研究平台及設備	
Key Research Platforms and Equipment	42
科研合作	
Research Collaboration	50
知識轉移	
Knowledge Transfer	60
產學研合作	
Industry-University-Research Collaboration	64
人才培養	
Talent Development	74
數據資料	
Facts at a Glance	76
研究委員會	
Research Committee	83

科研里程碑

UM's Research Milestones

1981 - 2014

1981

澳門大學前身東亞大學成立。
The University of East Asia (UEA), the predecessor of UM, was founded.



1989

設立研究委員會，標誌著大學的研究工作正式開始。
The Research Committee was established, signaling the official start of the University's research work.

1993

設立科研基金。
UM established a scientific research fund.

1995

成立教育研究中心和澳門法律研究中心。
The Educational Research Centre and the Centre for Macao Law Studies were established.

1993

成立日本研究中心。
The Center for Japanese Studies was established.

1991

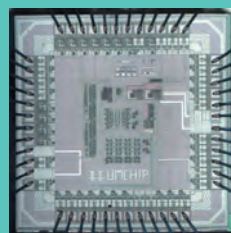
成立葡亞研究中心。
The Research Centre for Luso-Asian Studies was established.

1987

成立澳門研究中心。
The Center for Macau Studies was established.

1995

首個微電子芯片設計成功。
UM successfully developed its first microelectronic chip.



1999

發佈全球首部中葡雙語發聲詞典「中葡通」。

UM launched the world's first Chinese-Portuguese bilingual audio dictionary 'PCT'.



2002

成立中華醫藥研究所(現稱“中華醫藥研究院”)。
The Institute of Chinese Medical Sciences was established.

2003

成立資訊及通訊科技教育研究中心、工程研究及檢測中心、博彩研究所。
The Centre for Information and Communication Technology in Education, the Centre for Engineering Research and Testing, and the Institute for the Study of Commercial Gaming were established.

2009

憑研究項目「用於多制式接收器的雙階段頻道選取技術」，為澳大取得首項微電子領域的美國專利。

The research project "Two-Step Channel Selection for Wireless Receiver Front-Ends" earned UM the first U.S. patent in microelectronics.

2013

成立健康科學學院。
The Faculty of Health Sciences was established.

2014

成立應用物理及材料工程研究所(現稱“應用物理及材料工程研究院”)。

The Institute of Applied Physics and Materials Engineering was established.

2011

獲國家科技部批准設立“中藥質量研究國家重點實驗室”和“模擬與混合信號超大規模集成電路國家重點實驗室”。

UM received approval from the Ministry of Science and Technology to establish the State Key Laboratory of Analog and Mixed-Signal VLSI, and the State Key Laboratory of Quality Research in Chinese Medicine.



2011

藉「高性能模擬與混合信號集成電路技術的設計與開發」這一芯片設計項目，獲頒2011年度國家科學技術進步獎二等獎，是首次有澳門科研人員獲此國家級獎項。

UM received a second prize of the State Scientific and Technological Progress Award, for the project on the design and development of high-performance analogue and mixed-signal integrated circuit technology.



1999

憑“電度表脈衝轉換器”獲中國國家知識產權局授予專利權，是澳大第一個發明專利。

UM developed a watt-hour metre pulse converter, which earned UM the first-ever invention patent from China National Intellectual Property Administration.

2017 - 2021

2017

成立中國歷史文化中心·中葡雙語教學暨培訓中心·協同創新研究所(現稱“協同創新研究院”)。

The Centre for Chinese History and Culture, the Chinese-Portuguese Bilingual Teaching and Training Centre, and the Institute of Collaborative Innovation were established.



2018

成立憲法與基本法研究中心·孔子學院·微電子研究院。
The Centre for Constitutional Law and Basic Law Studies, the Confucius Institute, and the Institute of Microelectronics were established.

2018

獲國家科技部批准設立“智慧城市物聯網國家重點實驗室”。
UM received approval from the Ministry of Science and Technology to establish the State Key Laboratory of Internet of Things for Smart City.



2018

成立澳門中小學生人文社科教育基地及澳門中小學生科技實踐基地。

The Macao Base for Primary & Secondary Education in Humanities & Social Sciences, and the Macao Base for Primary & Secondary STEM Education were established.



2018

成立中山大學·澳門大學教育部聯合重點實驗室。

The Sun Yat-Sen University - University of Macau MOE Joint Key Laboratory was established.



2019

在橫琴粵澳深度合作區建立產學研示範基地。

UM established an industry-university-research demonstration base in the Guangdong-Macao In-Depth Cooperation Zone in Hengqin.



2019

崇文樓揭幕，匯聚中國歷史文化中心·澳門研究中心·孔子學院·中葡雙語教學暨培訓中心·藝術設計中心，以及澳門中小學生人文社科教育基地等文化教研單位。

The Cultural Building was inaugurated. The building houses the Centre for Chinese History and Culture, the Centre for Macau Studies, the Confucius Institute, the Chinese-Portuguese Bilingual Teaching and Training Centre, the Centre for Arts and Design, and the Macao Base for Primary & Secondary Education in Humanities & Social Sciences.

2019

協同創新研究院轄下成立認知與腦科學研究中心、人工智能研究中心、數據科學研究中心及創新創業中心。

The Centre for Cognitive and Brain Sciences, the Centre for Artificial Intelligence, the Centre for Data Science, and the Centre for Innovation and Entrepreneurship were established under the Institute of Collaborative Innovation.



2020

澳大創新創業中心獲批為“國家級眾創空間”。
UM's Centre for Innovation and Entrepreneurship received approval to join China's national system of co-working space.



2020

成立區域海洋研究中心。
The Centre for Regional Oceans was established.



2020

澳大聯合華潤集團、廣藥集團、香雪製藥、南光集團、中國中醫科學院中藥研究所和香港中藥創新中心成立“澳門中藥研發中心”。

UM initiated Macau Centre for Research and Development in Chinese Medicine jointly with the China Resources Group, Guangzhou Pharmaceutical Holdings Limited, Guangzhou Xiangxue Pharmaceutical Co., Ltd, Nam Kwong (Group) Company Limited, China Academy of Chinese Medical Sciences, and Hong Kong Centre for Chinese Herbal Medicine Drug Development.



2021

獲國家教育部批准建設精準腫瘤學前沿科學中心。

UM received approval from the Ministry of Education (MOE) to establish the Frontiers Science Centre for Precision Oncology.



2021

成立澳門轉化醫學創新研究院。
The Macao Institute for Translational Medicine and Innovation was established.



歷任澳大校長 UM Rectors



薛壽生
HSUEH Shou Sheng
(1981-1986)
(1987-1991)



林達光
LIN Ta Kuang
(1986-1987)



李天慶
LI Tianqing
(1991-1994)



費利納
Mário Nascimento
FERREIRA
(1994-1997)



周禮杲
ZHOU Ligao
(1997-1999)



姚偉彬
IU Vai Pan
(1999 - 2008)



趙偉
ZHAO Wei
(2008 - 2018)



宋永華
SONG Yonghua
(2018- 至今 present)

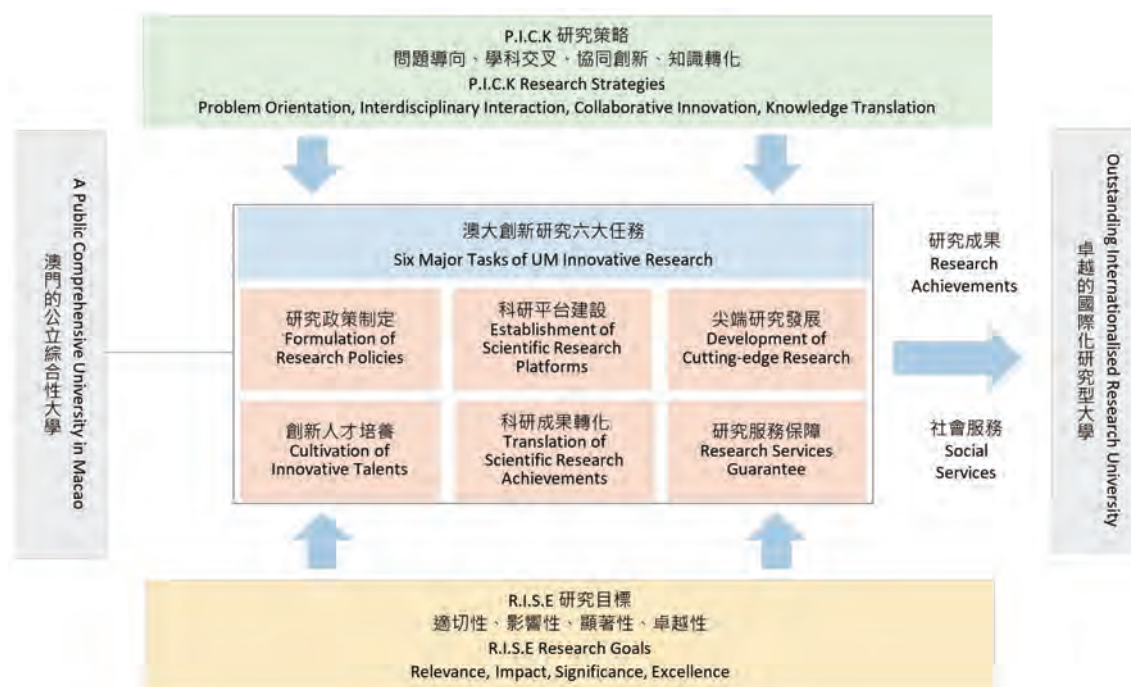


研究戰略

Research Strategy



指導思想 Guiding Principle



澳門大學作為澳門特區一所國際化綜合性公立大學，也是粵港澳大灣區（下稱“大灣區”）西岸綜合實力最強的大學之一。隨著國家粵港澳大灣區戰略的正式啟動、港珠澳大橋的開通及橫琴粵澳深度合作區（下稱“深合區”）的掛牌，澳門大學迎來了前所未有的歷史發展機遇。

在科研方面，澳門大學走小而精的道路，採取突出特色、發揮優勢、構建高峰和加強合作的方針，秉持「P.I.C.K.」研究策略（即問題導向 problem orientation、學科交叉 interdisciplinary interaction、協同創新 collaborative innovation、知識轉化 knowledge translation），緊扣“研究政策制定、科研平台建設、尖端研究發展、創新人才培養、科研成果轉化、研究服務保障”等創新研究六大任務，達至「R.I.S.E.」研究目標（適切性 relevance、影響性 impact、顯著性 significance、卓越性 excellence），提高科研創新發展，加強教育和人才培養，持續提供更優質的社會服務，實現澳大整體水平的飛越和提升。

As an international comprehensive public university in Macao SAR, UM is one of the best universities on the west coast of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA). With the official launch of the Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, the opening of the Hong Kong-Zhuhai-Macao Bridge and the establishment of the Guangdong-Macao In-Depth Cooperation Zone in Hengqin (Cooperation Zone), UM has taken advantage of unprecedented historical development opportunities.

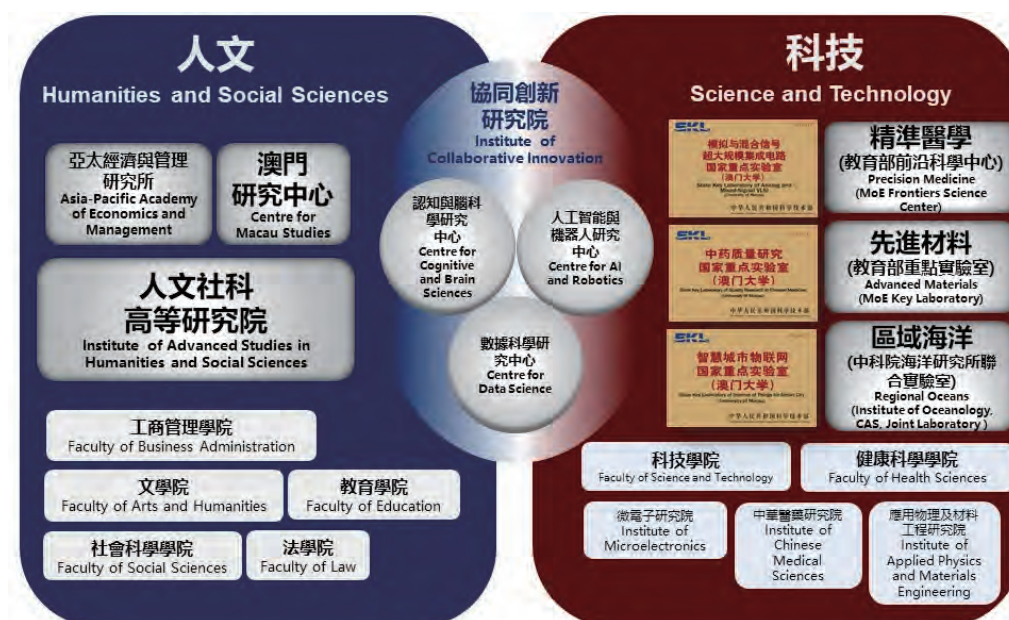
UM is adopting a highly focused and refined path in scientific research. Taking an approach of highlighting unique features, bringing existing advantages into full play, reaching new heights and strengthening collaboration, and adhering to the “P.I.C.K.” strategies (problem orientation, interdisciplinary interaction, collaborative innovation, and knowledge translation), the University focuses on supporting disciplines with local characteristics that are in line with global trends. By improving and strengthening research policy formulation, establishing scientific research platforms, developing cutting-edge research, cultivating innovative talents, translating scientific research achievements, and guaranteeing research services, UM aims to achieve the “R.I.S.E.” research goals (relevance, impact,

站在新的歷史起點，澳門大學將緊抓大灣區和深合區“雙區”疊加的歷史機遇，一如既往地大力支持學術研究和科技創新，力爭發展成為具有鮮明特色的國際化研究型大學。

significance, and excellence) and strives to develop into an international research university with distinctive characteristics. The University also provides high-quality social services and brings about the University's overall improvement by strengthening research and education level.

As new opportunities beckon in concert with the construction of the GBA and the Cooperation Zone, UM will, as always, strongly support academic research, talent cultivation and technological innovation and develop into a world-class research university.

戰略佈局 Research Layout



澳門大學在過往科技研究成果的基礎上，推出多項科研策略，重點支持既具澳門特色，又符合國家發展戰略、順應國際發展潮流的學科方向，根據集中力量、突出重點、發揮優勢、構建高峰、突出特色、加強合作的策略，制定了“3間國家重點實驗室+3個重點發展方向+3個跨學科交叉領域+3個人文社科研究平台”的科研戰略布局。

澳門大學全力支持中醫藥、微電子和智慧城市物聯網三個國家重點實驗室的建設、重點發展精準醫療、先進材料及區域海洋研究的三個新興方向，積極建設認知與腦科學、人工智能與機器人和數據科學的三個跨學科交叉研究中心以及持續推動人文社科

UM has launched research policies to support disciplines with local characteristics that are in line with global trends and the national development strategy based on past research achievements. The University adopts an approach of highlighting unique features, bringing existing advantages into full play, reaching new heights, and strengthening cooperation in scientific research. To achieve its goals, UM has formulated a ‘3+3+3+3’ strategic research layout as the backbone of its research development, including three state key laboratories (Quality Research in Chinese Medicine, Analog and Mixed-Signal VLSI, and Internet of Things for Smart City), three emerging research areas (precision medicine, advanced materials and regional oceans), three interdisciplinary research fields (artificial

高等研究院、澳門研究中心及亞太經濟與管理研究所的三個人文社科平台的影響力。

澳大在 大灣區、深合區的定位

澳門大學植根澳門，有責任亦有能力通過科技創新和人才培養促進澳門經濟適度多元化發展，多層次、全方位服務澳門社群，造福澳門社會。同時，澳大身處大灣區和深合區，將發揮澳門特色“一國兩制”的優勢，配合國家和澳門特區的總體部署，著眼澳大所長、國家所需，積極參與大灣區和深合區的發展建設，融入國家發展大局。另外，澳大實施國際化現代大學管理模式，有八成教研人員來自世界各地，與全球超過 270 所機構建立了合作夥伴關係，現有學生來自近 50 個國家和地區。澳大秉持開放合作的理念，把握機遇、迎接挑戰、主動作為，憑藉優秀的人才和卓越的研究共同服務科學發展和人類進步，矢志成為一所國際公認的卓越大學。



澳門大學在大灣區和深合區所處位置
UM's position in the GBA and the Cooperation Zone

intelligence and robotics, data science, and cognitive and brain sciences) and three research platforms for the Humanities and Social Sciences (the Institute for Advanced Studies in Humanities and Social Sciences, the Centre for Macao Studies, and the Asia-Pacific Academy of Economics and Management).



立足澳門，共建灣區，面向全國，走向世界
Rooting Itself in Macao and Integrating into the
Greater Bay Area, the Nation and Beyond



UM's position in the GBA and the Cooperation Zone

UM is a university of and for Macao. It has the ability and responsibility to boost the economic diversification of Macao and provide all-round community services through technology innovation and talent cultivation. It will take advantage of the 'One Country, Two Systems' policy and tap its own resources and potential to actively take part in the construction of the GBA and especially the Cooperation Zone according to the nation and Macao's overall scheme. While it is located in the GBA and the Cooperation Zone, the University has the ambition to 'go global'. Hence, it exerts a modern governance model and has established collaboration agreements with more than 270 institutions of higher learning. Additionally, eighty percent of its faculty members are from outside Macao and students are from over 50 countries and regions. With an open mindset, UM will seize the opportunity and meet the challenge to develop into a world-class research university.

研究亮點

Research Highlights



聚焦領域 Focused Areas

澳門大學結合自身特色，緊跟國際科研發展前沿，面向國家戰略性新興產業，圍繞澳門經濟適度多元的新產業和橫琴粵澳深度合作區重點發展產業，重點聚焦以“3+3+3+3”為戰略佈局的科研方向。

以 3 間國家重點實驗室為依托 的優勢研究領域

中藥質量

中藥質量研究是澳大極具特色的研究領域，集成中華醫藥研究院、中藥質量研究國家重點實驗室（澳門大學）和澳門中藥研發中心，形成教育 - 科技 - 研發“三位一體”的縱向體系。圍繞中藥質量的有效、安全、穩定、可控等關鍵關節，集成前沿科學技術，以系統的佈局促進中藥科研轉化。截至 2021 年底，中藥質量研究國家重點實驗室（澳門大學）和中華醫藥研究院已先後培養了超過 800 名博士和碩士生，培育全球 2% 頂級科學家 19 名；發表超過 2930 篇 SCI 論文，立項和完成美國藥典及歐洲藥典等 20 餘項中藥標準；主導 5 個學科進入 ESI 全球 1% 優勢學科；主編頂級中華醫藥 SCI 期刊 Chinese Medicine (IF 5.5)，成為全球中醫藥領域頂尖綜合性學報。依託重點實驗室，澳門大學已建成全球頂級中藥創新研發平台，成果獲國家科技進步獎二等獎(2016)、澳門特區專業功績勳章(2021)、澳門科技特別獎(2018)及中醫藥國際貢獻獎一等獎(2021)等。引入多家世界 500 強企業，共同組建澳門第一個科技研發平台 - 澳門中藥研發中心，聚焦中醫藥研發與產業轉化，服務澳門經濟多元發展。

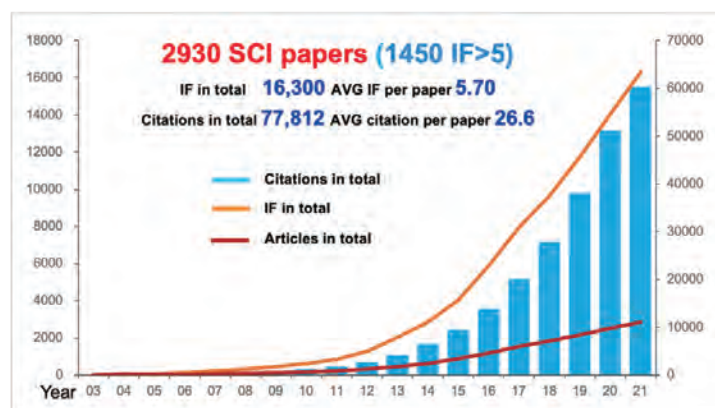
Alongside the ‘3+3+3+3’ research layout, UM focuses on research areas with local characteristics that are in line with national and local strategies and the Cooperation Zone’s emerging industries.

3 Excellent Areas Supported by State Key Laboratories

Chinese Medicine Quality

The quality of Chinese medicines is one of the most reputable research areas in UM supported by the State Key Laboratory of Quality Research in Chinese Medicine (University of Macau) [SKL-QRCM (UM)] as well as the Institute of Chinese Medical Sciences (ICMS) and the Macau Centre for Research and Development in Chinese Medicine. It formulates a trinity system of Education-Technology-R&D which employs cutting-edge science and technology to lead innovative research into the efficacy, safety, stability, and controllability of Chinese medicine and promotes the commercial application of technological achievements. By the end of 2021, SKL-QRCM (UM) and ICMS have trained more than 800 PhD and MSc students and nurtured 19 top 2% scientists in the world; published more than 2,930 papers in SCI-indexed journals; initiated and completed more than 20 research projects on the quality standards of Chinese medicine for the US Pharmacopoeia (USP) and the European Directorate for the Quality of Medicines (EDQM); drove the ranking of 5 disciplines up to the top 1% of the global ESI disciplines; and produced a high-quality journal in Chinese medical sciences, Chinese Medicine (IF 5.5), which has become the world's top comprehensive journal in the field

of traditional Chinese medicine. Relying on SKL-QRCM (UM), UM has built the world's top innovative research and development platform for traditional Chinese medicine. The achievements are highly recognized winning multiple awards including the National Science and Technology Progress 2nd Class Award (2016), the Macao SAR Medal of Merit – Professions (2021), the Macao



中藥領域發表論文、影響因子及引用數量
Articles, IF and citations in the
area of traditional Chinese medicine



中藥領域所獲獎項
Awards in the area of traditional
Chinese medicine

Science and Technology Special Award (2018), the International Award for Contribution to Chinese Medicine (2021), etc. SKL-QRCM (UM) and ICMS also established the first Chinese medicine research platform in Macao, the Macao Centre for Research and Development in Chinese Medicine, jointly with several Fortune 500 companies, which is committed to commercializing research outputs and advancing the economic diversification of Macao.

微電子

微電子是澳大的主要研究方向之一，設有模擬與混合信號超大規模集成電路國家重點實驗室和微電子研究院兩個學術研究單位，主要開展各種電子系統的尖端研究，聚焦模擬和混合信號電路，特別是高速和低功耗應用的無線 / 有線射頻收發器和數據轉換器等研究方向。實驗室還積極開展電源管理電路和微流控芯片的研究，為微流芯片化驗技術 (Lab-on-Chip) 和更進一步的硅芯片化驗技術 (Lab-on-CMOS) 的應用上進行開發。自實驗室成立以來，澳大在微電子領域持續突破創新。截至 2021 年底，實驗室和微電子研究院在國際固態電路會議 (ISSCC，集成電路設計領域的最高級別學術會議) 上共有 45 篇論文入選；共發表 374 篇國際期刊論文、281 篇國際會議論文；獲得了 37 項美國專利、10 項中國專利、3 項台灣專利；獲得了超過 50 個國際性或全國性重要獎勵，包括國家科學技術獎和何梁何利基金科學與技術創新獎 (澳門首獲)，首屆澳門科學技術特別獎，多項澳門科學技術獎技術發明獎 (於 2020 年獲澳門首個一等獎) 以及 IEEE SSCS 和 CASS 全球最佳分會獎項，ISSCC

Microelectronics

Microelectronics is one of the key research areas of UM supported by the State Key Laboratory of Analog and Mixed-Signal VLSI (University of Macau) [SKL-AMSV (UM)] and the Institute of Microelectronics (IME). It mainly conducts cutting-edge research on analog and mixed-signal circuits specially focusing on wireless/wireline RF transceivers and data converters for high-speed and low-power applications. SKL-AMSV (UM) also actively develops research in power management circuits and microfluidic chips, developing solutions for Lab-on-Chip and eventually Lab-on-CMOS applications. UM has made breakthroughs in the field of microelectronics continuously since the establishment of SKL-AMSV. By the end of 2021, SKL-AMSV (UM) and IME had published 374 international journal papers and 281 international conference papers, among which, 45 papers were published in the International Solid-State Circuits Conference (ISSCC, a top academic conference in the area of integrated circuit design) proceedings; obtained 37 US patents, 10 Chinese patents and 3 Taiwan patents; won more than 50 international or national awards, including the National S&T Award, and the S&T Progress Award of the Ho Leung Ho Lee Foundation (the first in Macao), the IEEE SSCS and CASS Best Global Chapter Award, the ISSCC Far East Outstanding Paper Award (the first in China), the ISSCC Award, and the IEEE SSCS Doctoral Achievement Award; won many Macao SAR awards, including the first Special Award from Macao SAR and a number of Macao S&T Awards such as the Technological Invention Award (including a first prize for



模擬與混合信號超大規模集成電路國家重點實驗室獲
2011 年度國家科學技術進步獎二等獎
SKL-AMSV won the Second Prize of the 2011 State
S&T Progress Award

遠東傑出論文獎(中國首獲)、ISSCC 絲綢之路獎、IEEE SSCS 博士生成就獎等,4 項中央及澳門特區政府的勳章;1 名成員最近獲委任中國科學院海外評審專家。



UM in 2020). SKL-AMSV (UM) also received 4 medals from the central and Macao SAR governments and one member was appointed recently as an overseas review expert of the Chinese Academy of Sciences.

模擬與混合信號超大規模集成電路國家重點實驗室獲 2020 年度澳門科學技術獎 - 技術發明獎一等獎
SKL-AMSV won the 2020 Macao S&T Awards-the First Prize of the Technological Invention Award

智慧城市物聯網

澳大於 2018 年獲國家科技部批准設立全國第一個智慧城市物聯網領域的國家重點實驗室,實驗室主要圍繞五個科研方向:智能傳感與網路通信、城市大數據與智能技術、智慧能源、智能交通、城市公共安全與災害防治。截至 2021 年底,實驗室發表超過 370 篇學術論文,出版 8 本中英文專著,並獲得包括國家科學技術進步獎二等獎、何梁何利基金科學與技術進步獎、廣東省科技進步獎一等獎等多項國家級與省部級重要獎項;實驗室獲批 105 項國家級、省部級、澳門科學技術發展基金及橫向項目,含 1 項國家自然科學基金優青(港澳),項目經費超 1 億 8 千萬澳門元,其中澳門科學技術發展基金重點研發專項“綜合能源物聯網的智能協同管控與防護關鍵技術及應用研究”旨在進一步提高城市綜合能源利用效率,保障城市能源供應安全;澳門科學技術發展基金人工智能重點研發專項計劃“協同智能驅動的無人駕駛關鍵技術與平台研究”為澳門史上最大的單體研究項目之一,通過多方合作,服務國家、構建美好未來;科技部國家重點研發計劃課題“面向城市公共服務的高效融合與動態認知技術和平台”搭建了一套高性能、低功耗、低成本的城市

Internet of Things for Smart City

In 2018, UM received approval from the Ministry of Science and Technology to establish the nation's first State Key Laboratory of Internet of Things for Smart City (University of Macau) [SKL-IOTSC (UM)]. SKL-IOTSC (UM) carries out research on five fronts: intelligent sensing and network communication, urban big data and intelligent technology, smart energy, intelligent transportation, and public safety and disaster prevention. By the end of 2021, SKL-IOTSC (UM) had published over 370 academic papers and 9 monographs in Chinese and English; received a number of important awards including the second prize of the State S&T Progress Award, S&T Progress Award of the Ho Leung Ho Lee Foundation, and the Guangdong Provincial S&T Award – First Prize of Progress Award. 105 research projects have gained funds from central and provincial governments including NSFC Excellent Young Scientists Fund (Hong Kong and Macao) as well as the Macau SAR Science and Technology Development Fund (FDCT) and enterprises, with total grant funding of over MOP180 millions. A key project funded by the FDCT - 'Intelligent Coordinated Operation, Protection and Application on Integrated Energy IoT' aims to improve urban comprehensive energy utilization efficiency and ensure the security of the urban energy supply. Another key project funded by FDCT - 'Research on Key Technologies and Platforms for Collaborative Intelligence Driven Auto-Driving Cars', has gained the largest amount of funding from Macao SAR ever. It aims to serve the country and build a better future



2018 年 10 月,澳大舉辦智慧城市物聯網國家重點實驗室揭牌儀式
UM held the plaque unveiling ceremony for the SKL-IOTSC in October 2018

綜合計算平台；科技部國家重點研發計劃課題“港珠澳大橋智能化運維技術集成應用”和廣東省重點領域研發計劃課題“重大跨海交通集群工程智能安全監測與應急管控”，將為港珠澳大橋智能化運維出力，實現以技術創新服務國家及澳門。



through multi-party cooperation. The 'Efficient Convergence and Dynamic Cognitive Technologies and Platforms for Urban Public Services' funded by the Ministry of Science and Technology (MOST) has successfully built a high-performance, low-power and low-cost integrated computing platform. The 'Integrated Application of Intelligent Operation Technology on Hong Kong-Zhuhai-Macao Bridge' funded by MOST, and 'Intelligent Safety Monitoring and Emergency Management of Major Cross-Sea Traffic Cluster Projects' funded by Guangdong Province will contribute to the intelligent operation of the Hong Kong-Zhuhai-Macao Bridge and enhance technological innovation in the country and Macao.

2021 年 5 月，智慧城市物聯網國家重點實驗室
通過國家科技部驗收評估
SKL-IOTSC passed assessment of MOST in May 2021

3 個重點發展方向

精準醫學

精準醫學是澳大科研戰略布局中的重點發展領域。2021 年 1 月，澳大獲國家教育部批准建設精準腫瘤學前沿科學中心，聚焦澳門常見多發腫瘤疾病的預防、發生、轉移、耐藥等重大問題，圍繞癌症的發生與發展、腫瘤微環境與免疫調控、癌症轉移及耐藥機制、高效藥物開發及癌症個體化治療四個方向開展前沿科學研究工作。澳大精準醫學相關的藥理學與毒理學、生物學與生物化學、臨床醫學三個學科已經躋身世界頂尖基本科學指標 (ESI) 前 1%。2021 年，大學在癌症精準醫學研究領域發表的 254 篇學術文章中，有 56 篇文章的影響因數超過 10 分，當中 1 篇有關肺癌發生驅動機制的文章於《自然》(Nature) 期刊發表，1 篇文章則在國際著名期刊《自然 - 遺傳學》(Nature Genetics) 發表。澳大積極建設教育部澳大精準腫瘤學前沿科學中心，助力粵港澳大灣區的遠景發展規劃，引領地區在生命科學、醫學，尤其是癌症等方面的研究與發展，加強對關鍵技術的研發，開發原創性產品，促進科技成果轉化，為癌症患者提供高端化、定制化、個人化的精準醫學預防、診斷及治療技術。

2021 年 1 月，澳門大學獲國家教育部批准建設精準腫瘤學
前沿科學中心

UM received approval from the MOE to establish
Frontiers Science Centre for Precision Oncology in
January 2021

3 Emerging Areas

Precision Medicine

Precision Medicine is a key developmental area in UM's research plan. In January 2021, UM received approval from the Ministry of Education (MOE) to establish the Frontiers Science Center for Precision Oncology. It focuses on the prevention, development, and metastasis of cancer, as well as drug resistance and other major issues related to common cancers in Macao. The Center carries out research in four areas: tumor genesis, microenvironment and immune regulation, metastasis and drug resistance, and drug development and personalized therapy. UM was recently ranked in the ESI database in the top 1% in terms of three disciplines related to precision medicine: Pharmacology and Toxicology, Biology and Biochemistry, and Clinical Medicine. In 2021, 56 of the 254 academic papers published by the University in the field





of precision oncology were in journals with an impact factor over 10, including one article on the mechanisms of lung cancer development published in "Nature" and another on 3D folding dynamics of a genome in "Nature Genetics". UM is actively building the Frontiers Science Center and shaping the long-term development plan to be a leader in cancer research in the Guangdong-Hong Kong-Macao Greater Bay Area. The Center strives to make ground-breaking discoveries in original research, strengthen the research and development of the critical technologies, develop innovative products, and promote knowledge transfer. Overall, we wish to provide cancer patients with cutting-edge technologies via precision medicine for cancer prevention, diagnosis, and treatment.

2021 年，澳大在《自然》期刊發表的一篇有關肺癌發生驅動新機制的文章

One Nature paper published by UM reports a novel mechanism for the development of lung cancer in 2021

先進材料

澳大於 2014 年創建應用物理及材料工程研究所（現稱“應用物理及材料工程研究院”），其核心研究領域為以下三大主要研究方向：能源材料、環保材料、生物醫學材料。在能源材料領域，聚焦面向能源的光電、電光轉換材料，以該研究院最強研究基礎的鈣鈦礦材料體系為主線，實現多維鈣鈦礦光電材料的可控制備，獲得高效穩定的鈣鈦礦光伏與發光器件。研究院亦推動包括量子點發光節能領域、能量轉換與儲能材料領域（電池）、氫能關鍵材料和系統等能源材料領域。在環保材料領域，推動以納米顆粒穩定泡沫開發的輕質節能建築材料、納米吸附水凝膠材料、高抗折混凝土、農田及沙漠保水、環境去污及工業廢水處理等的環保材料研究。在生物醫學材料領域，以促進納米材料在生物光子學及重大疾病中的臨床應用為目標，開展以無毒、生物相容性好的碳納米點為代表的新型納米功能材料在

Advanced Materials

Through the establishment of the Institute of Applied Physics and Materials Engineering in 2014, its core research areas are the following three main research directions: energy materials, environmental protection materials and biomedical materials. In the area of energy materials, it focuses on photoelectric and electro-optical conversion materials. The main line is the perovskite material system based on the strongest research basis of IAPME, realise the controllable preparation of multi-dimensional perovskite optoelectronic materials, and obtain efficient and stable perovskite photovoltaics and light-emitting devices. IAPME also promotes the fields of energy materials including quantum dot light-emitting energy saving, energy conversion and energy storage materials (batteries), and key materials and systems for hydrogen energy. In the area of environmental protection materials, it promotes research on environmental protection materials such as lightweight energy-saving building materials developed with nanoparticle-stabilized foam, nano-absorbent hydrogel materials, high-flexural concrete, farmland and desert water retention, environmental decontamination, and industrial wastewater treatment. In the area of biomedical materials, it develops new nano functional materials represented by non-



2018 年 5 月，澳門大學與中山大學生物無機與合成化學教育部聯合重點實驗室揭牌

UM held the plaque unveiling ceremony for the MOE Joint Key Laboratory of Bioinorganic and Synthetic Chemistry in May 2018

生物成像、細胞標記與識別、腫瘤免疫激活材料和治療等應用研究。

toxic, biocompatible carbon nano dots in bio-imaging, as well as cell labeling research with applications such as identification, tumor immune activation materials and therapy, with the goal of promoting the clinical application of nanomaterials in biophotonics and major diseases.

區域海洋

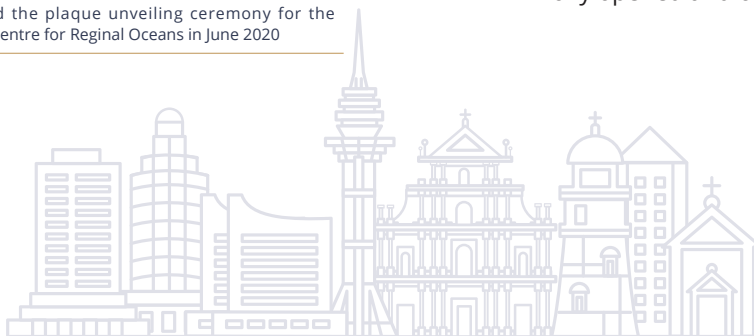
區域海洋研究以促進粵港澳大灣區海洋環境保護及資源合理規劃利用、踐行生態文明理念為宗旨，以解決區域發展中新增 85 平方公里水域的規劃和利用問題為目標，聚焦海洋土木工程、海洋環境與生態、海洋災害防治以及海洋經濟具有社會影響的領域。2019 年，澳大組建區域海洋研究中心，聚焦海洋多圈層動力與環境調節機制、濱海城市自然災害與工程、濱海環境治理與資源開發三個方向。2020 年，澳大與中國科學院海洋研究所共建海洋環境與工程聯合實驗室，充分利用各自領域的研究優勢，促進在海洋環境與工程中的近海環境生態、海洋地質、海洋多圈層動力與區域海洋環境調節機制、城市自然災害防治和海洋工程等領域的協同發展。大學積極開展與海洋領域相關的研究交流與合作，包括與中國科學院海洋研究所、中國科學院空天信息創新研究院、海岸和近海工程國家重點實驗室、南方海洋科學與工程廣東省實驗室（珠海）、港珠澳大橋管理局以及葡萄牙阿爾加威大學等多所大灣區及國際知名的大學及機構簽署合作框架協議。區域海洋研究中心轄下的四個實驗室將於 2022 年內全面開放及投入運作。

Regional Oceanography

UM's research in regional oceanography aims to promote marine environmental protection, make rational use of marine resources in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), and promote the idea of ecological civilization. To solve the problems in planning and utilizing the watershed area of 85 square kilometers granted to Macao SAR, the University conducts research in marine civil engineering, marine environment and ecology, marine disaster prevention, and marine economy. In 2019, UM established the Centre for Regional Oceans (CRO). It focuses on three specific fields: offshore civil engineering, ocean environment and ecology, and ocean disaster prevention. In 2020, UM established the Joint Laboratory of Ocean Environment and Engineering with the Chinese Academy of Sciences. Both parties leverage their research strengths respectively and promote joint development in the fields of coastal environment and ecology, marine geology, the dynamics of the multiple spheres of the ocean, regulation of the regional marine environment, natural disaster prevention in cities, and ocean engineering. UM has been actively developing research exchanges and cooperation in marine studies, having signed cooperation framework agreements with a number of renowned universities and institutions in the GBA and internationally, including the Institute of Oceanography of the Chinese Academy of Sciences, the Aerospace Information Research Institute of the Chinese Academy of Sciences, the State Key Laboratory of Coastal and Offshore Engineering, the Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), the Hong Kong-Zhuhai-Macao Bridge Authority and the University of Algarve in Portugal. The four laboratories under the Centre for Regional Oceans will be fully opened and operated in year 2022.



2020 年 6 月，區域海洋研究中心揭牌
UM held the plaque unveiling ceremony for the
Centre for Regional Oceans in June 2020



3 個跨學科交叉領域

人工智能與機器人

在人工智能與機器人領域，澳大專注於計算智能算法、視覺和模式識別、數據的智能分析和預測、機器翻譯、人類語言技術、自然語言處理（NLP）、人機通訊、無人駕駛和智能機器人等研究，在澳門智慧城市現在和將來的發展方面都將發揮著至關重要作用。2019 年，澳大與中國科學院深圳先進技術研究院共建人工智能與機器人聯合實驗室，雙方在相關領域開展合作研究，在人才培養、科研團隊建設和科技成果的轉化與產業化方面加強合作。大學持續搭建和完善人工智能與機器人研究中心人員隊伍，現已形成由 25 名教職人員組成的、具有國際影響力的學術團隊，在人工智能和機器人領域的頂級期刊和頂級會議發表一系列論文，並與著名互聯網公司聯合申請具有高商業價值的專利。在平台建設方面，進一步建設橫琴國家智能超算中心澳門大學分中心平台，並於 2021 年 4 月進行了“粵港澳人機智能協同系統聯合實驗室”的正式揭牌。



2019 年 5 月，澳門大學—中國科學院深圳先進技術研究院人工智能與機器人聯合實驗室揭牌

UM held the plaque unveiling ceremony for the UM-SIAT Joint Laboratory of Artificial Intelligence and Robotics in May 2019

數據科學

在數據科學領域，澳大致力於培養新一代的數據科學家，進行各項跨領域的數據研究，推動深度知識探索並建立預測機制與模型，引導數據科學於人類生活的各層面應用，提升新興科技產業發展，貢獻社會。2019 年，澳大依托協同創新研究院成立數據科學研究中心，致力於打造一個推動新型合作、引入新科學範式、以及利用數據應對社會挑戰的平台。數據科學研究中心已開展一系列跨學科課題及研究，包括以網上用戶互動為題的跨領域研究已經啟動，透過選擇螺旋理論研究社交平台數據與觀眾對

3 Interdisciplinary Areas

Artificial Intelligence and Robotics

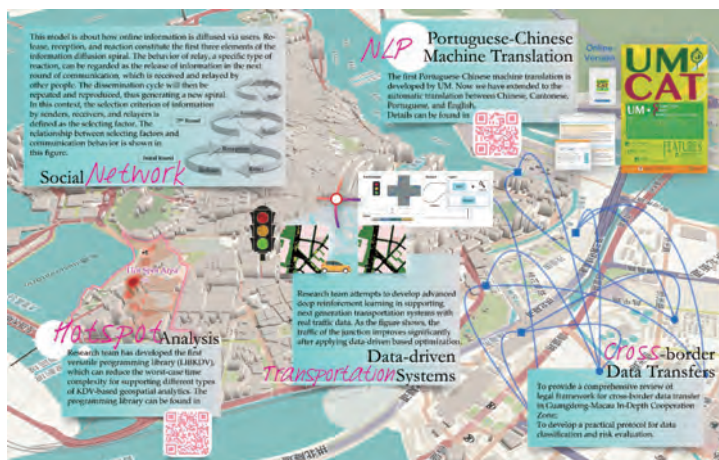
In the area of artificial intelligence (AI) and robotics, the University focuses on research in computational intelligence algorithms, vision and pattern recognition, intelligent analysis and prediction of data, machine translation, human language technology, natural language processing (NLP), human-computer communication, autonomous driving and intelligent robots. AI and robotics play a crucial role in developing Macao into a smart city at present and in the future. In 2019, UM established the Joint Laboratory of Artificial Intelligence and Robotics with Shenzhen Institutes of Advanced Technology (SIAT) of the Chinese Academy of Sciences. The Laboratory aims to provide a platform for collaborative research in AI and robotics and is expected to enhance the research capacity of both parties. The University has continued building the Centre for Artificial Intelligence and Robotics and improving its staff structure, now comprising an internationally influential academic team of 25 faculty members. The Centre has

published a series of papers in top journals and conferences in the field of artificial intelligence and robotics and has worked with leading internet companies to file high commercial value patents. In terms of platform construction, it will further develop the platform construction of the University of Macau branch of the national Super Intelligent Computing Centre in Hengqin. In April 2021, the 'Guangdong-Hong Kong-Macao Human-Machine Intelligence Collaboration System Joint Laboratory' was officially inaugurated.

Data Science

In the area of data science, UM is committed to enhancing the development of new technology industries and contribute to society by training a new generation of data scientists, conducting various interdisciplinary research on data, promoting in-depth exploration of knowledge, and establishing predictive mechanisms and models to guide the applications of data science in all levels of human life. In 2019, UM established the Centre for Data Science as a sub-centre of the Institute of Collaborative Innovation, dedicated to creating a platform that promotes new types of collaboration, introduces new scientific

品牌的影響，進行為期兩年的跨學院合作研究項目。大學持續推動跨學科研究，期望透過嶄新的數據科學技術及碩士課程，支援交叉學科課題。同時，本中心積極開展對跨境數據流動的制度與深度學習計算平台及實驗室的建設工作。



paradigms, and applies data to address social challenges. The Centre has carried out a series of interdisciplinary projects and research topics, including a two-year collaborative inter-faculty research on the topic of online user interaction focusing on the impact of social platform data and audience on brands through selective spiral theory. The University continues to push interdisciplinary research and hopes to support cross-disciplinary topics through new data science technologies and the Master programme. In addition, the Centre also involves into the development of cross-border data flow, the management of super-intelligent computing platforms, and the establishment of data science laboratories.

數據科學的跨學科項目
Interdisciplinary Projects in Data Science

認知與腦科學

認知與腦科學研究中心由腦影像、腦干預、認知與行為測查和高性能計算四個研究平台組成。四個平台相輔相成，並實現基於腦影像、眼動、行為、生理、臨床等在內的多維大數據的整合，進而建成一個多層次、全方位、立體化的認知與腦科學研究中心。2019年，澳大與中國科學院生物物理研究所共同設立的腦與認知科學聯合實驗室，主要研究領域包括腦影像與腦網路圖譜、腦與語言認知、行為成癮與神經決策、兒童發展、認知老化和腦疾病。大學致力加強跨學科、跨學院的認知和腦科學研究。磁共振腦功能成像系統已經開始全面運行，實現對校內開放，現有 10 多個研究項目正在進行中。中心正在

Cognitive and Brain Science

The Centre for Cognitive and Brain Sciences consists of four research platforms: neuroimaging, brain intervention, behavioural data collection, and high-performance computing. The four platforms complement each other and integrate multi-dimensional and large-scale data acquired from brain imaging, eye movement, behaviour, physiology, clinical observation, etc., which can help develop a multi-level and all-round research centre for cognitive and brain sciences. In 2019, UM established the Joint Research Laboratory of Brain and Cognitive Sciences with the Institute of Biophysics, Chinese Academy of Sciences(CAS), focusing on research on brain imaging and brain network mapping, brain and language cognition, behavioral addiction and decision making, child development, cognitive aging, and brain diseases. UM is committed to strengthening interdisciplinary and cross-faculty research in cognitive and brain sciences. The functional MRI system is now fully operational and open to the whole UM campus, with more than 10 research projects ongoing. The Centre is undertaking three major research projects,



2019年3月，澳門大學-中國科學院生物物理研究所腦與認知科學聯合實驗室揭牌
UM held the plaque unveiling ceremony for UM and CAS' s Joint Laboratory of Brain and Cognitive Sciences in March 2019

開展三個重大研究項目：行為成癮與神經決策、腦與語言認知、認知老化和腦疾病。已發表高水平神經科學 SCI 文章 110 篇，累計獲得國家科技部、深圳科創委、廣東省自然科學基金委員會及澳門教育及青年發展局和澳門科學技術發展基金資助共 10 項。

3 個人文社科研究平台

人文社科高等研究院

人文社科高等研究院是澳大於 2019 年底成立的學術單位，致力打造跨越學院疆界的校級研究平台，建設澳大在此等人文範疇的跨學科國際水平研究團隊，實現學術資源協同效應的戰略佈局。研究院不僅促進大學範圍內的人文和社科研究，培養學有所成的青年才俊，推廣人文和科技領域的跨界合作，還以回饋澳門社會為己任，以期為澳門特區行穩致遠、融入灣區並參與灣區建設，盡力作出貢獻。研究院出版的期刊《南國學術》於 2021 年度按複印報刊資料轉載率排名的“高等院校主辦學報排名”位列全國第四；透過“卓越出版計劃”資助澳大學者在國際期刊發表文章和出版著作，以助力大學學術影響力的躍升。2020 至 2021 兩年成功協助兩位澳大學者在知名期刊及法律出版社發表論文和出版書籍投稿。

such as behavioural addiction and decision making, brain and language cognition, and cognitive aging and brain diseases. The Centre has published 110 high-level SCI articles in neuroscience and has received 10 grants from the Ministry of Science and Technology, Shenzhen Science and Innovation Commission, Guangdong Provincial Natural Sciences Foundation Committee and Macao Education and Youth Development Bureau and Macao Science and Technology Development Fund.

3 Research Platforms for Humanities and Social Sciences

Institute of Advanced Studies in Humanities and Social Sciences (IAS)

The Institute of Advanced Studies in Humanities and Social Sciences (IAS) is an academic unit established under UM towards the end of 2019. It is committed to building a university-level, cross-faculty research platform to help UM develop world-class inter-disciplinary research teams in humanities and social sciences, and plans to form a strategic structure that facilitates the sharing of academic resources for synergy. On the one hand, the IAS advances the University's research on humanities and social sciences, trains young talent, and promotes collaboration between humanities and S&T. On the other hand, it also shoulders the responsibility of giving back to Macao society. By serving as a comprehensive local think-tank featuring cross-disciplinary research, and through the theory development and empirical studies for various policies and fields, the IAS aspires to make its due contributions to the long-term sustainable development of Macao, and to help Macao integrate into the development of and participate in the construction of the Greater Bay Area. The Journal of South China Quarterly was ranked fourth among all academic journals published by higher education institutions in the mainland in terms republication rate in 2021. Through the Excellence Publication Scheme, UM faculty members enjoy financial support to publish articles in international journals, as well as books, to help enhance the University's academic impact. Over the past two years from 2020 to 2021, the institute successfully assisted two UM faculty members to publish a paper in a leading journal and get a book published by a prestigious book publisher in law.



2021 年 IAS 第一屆週年研討會
IAS First Annual Conference in 2021

澳門研究中心

澳門研究中心是澳門大學的校級專職研究機構，以「立足澳門，研究社會，為澳門發展服務」為宗旨，聚焦澳門歷史、文化、社會和政策研究，持續推動本土研究、學術出版以及建設學術交流平台等工作。中心成立之初即以推動跨學科的本土研究為己任，在 1988 年創辦的學術研究刊物《澳門研究》，是澳門出版時間最長的綜合學術期刊之一。從成立至今，中心已主導及參與超過一百個研究項目，目前正在開展的包括澳門回歸進程口述史、澳門宏觀經濟研究、粵港澳大灣區系列研究以及《澳門志》的編纂工作。

The Centre for Macao Studies (CMS)

The Centre for Macao Studies (CMS), is a university-level specialised research institute with the mission to 'anchor and pursue research on society for the development of Macao'. It focuses on research on Macao's history, culture, society and policies and continues to promote local research, academic publications, and the development of academic exchange platforms. From its inception, CMS has always been committed to promoting local interdisciplinary research. The Journal of Macao Studies, one of the longest-running comprehensive academic journals in Macao, has been published since 1988 to promote local academic research. In addition, since its establishment, CMS has led and participated in more than a hundred of research projects. The Centre's currently ongoing projects include the collection of oral history of Macao's handover process, the Macroeconomic Forecast for Macao, the research series of the Guangdong-Hong Kong-Macao Greater Bay Area and the compilation of the Macao Gazetteers.



澳門研究中心統籌出版的代表性學術期刊
Representative academic journals published
by CMS

亞太經濟與管理研究所

亞太經濟與管理研究所 (APAEM) 定位為學者與從業者的交流平台、應用於現實生活管理和經濟問題的技術平台，以及來自不同院系研究者的跨學科互動平台，旨在推動對澳門和大灣區的社會經濟發展具有重要意義的跨學科研究，其重點研究領域為金融創新、智慧旅遊、和亞洲經濟。金融創新方面，透過跨學科研究助力澳門發展成為金融中心，以支持中國內地與葡語系國家之間的貿易，融合大灣區發展及解決法律和安全相關問題；智慧旅遊方面，透過跨學科研究和大力創新支持澳門發展成為世界旅遊休閒中心，以整合信息通訊技術和其他資源來

Asia-Pacific Academy of Economics and Management (APAEM)

Asia-Pacific Academy of Economics and Management (APAEM) positions itself as a platform for academics to meet with practitioners, for technology to be applied to real-life management and economic issues, and for researchers from different faculties and disciplines to interact with each other. APAEM aims to promote interdisciplinary research that is significant and relevant to the socio-economic development of Macao and the Greater Bay Area (GBA). Specifically, APAEM's research focuses on three major areas: financial innovation, smart tourism, and Asian economics. In terms of financial

優化整體旅遊體驗；亞洲經濟方面，將著手研究亞洲的經濟政策和趨勢及其對澳門、大灣區和中國的影響。亞太經濟與管理研究所與浙江大學於 2021 年 7 月成立“金融創新聯合研究中心”；與澳門大西洋銀行簽訂保密協議，共同開發智慧投顧以及澳門特色金融產品；與中國銀行澳門分行以及澳門通共同探討如何進行智慧數據分析提高客戶滿意度。

innovation, APAEM assists not only the development of Macao into a financial centre, supporting trade between mainland China and Portuguese-speaking countries, but also the integration of the GBA as well as resolving the legal and security issues involved through interdisciplinary research; in terms of smart tourism, APAEM supports the advancement of Macao as a world centre of tourism and leisure through interdisciplinary research and innovative efforts, including the integrated use of information and communication technologies, and other resources to enhance the overall tourism experience; in terms of Asian economics, APAEM promotes the study of the economic policies and trends in Asia, and their significant impact on Macao, the GBA and mainland China. In addition, the Joint Research Centre for Financial Innovation was established with Zhejiang University in July 2021. The Academy also signed a confidential agreement with Banco Nacional Ultramarino to jointly develop smart investment and Macao featured financial services. It also agreed to explore smart data analysis to improve customer satisfaction jointly with Bank of China (Macao) and Macau Pass.



2021 年 7 月，澳門大學和浙江大學金融創新聯合研究中心揭牌
UM held the plaque unveiling ceremony for UM and Zhejiang University's Joint Research Centre for Financial Innovation in July 2021

重點科研項目 (2020/2021)

Key Research Projects (2020/2021)

Serial No.	Principal Investigator	Affiliated Academic Unit	Funding Unit	Project Title
1.	鄧初夏 Deng Chuxia	健康科學學院 FHS	國家自然科學基金 委員會重點項目 NSFC Key Projects (檔案編號 File No.: 82030094)	鑒定三陰性乳腺癌的癌症驅動突變開發並有效治療方法 Identification of Cancer Driver Mutations for Triple Negative Breast Cancer and Development of Effective Therapies
2.	邢貴川 Xing Guichuan	應用物理及材料工程研究院 IAPME	國家自然科學基金 委員會重點項目 NSFC Key Projects (檔案編號 File No.: 61935017)	電泵浦鈣鈦礦激光器 Electrically Pumped Perovskite Laser Diodes
3.	諸嫣、陳知行 Zhu Yan、Chen Zhixing	微電子研究院 IME	國家自然科學基金 委員會重點項目 NSFC Key Projects (檔案編號 File No.: 62090040)	高速射頻模數轉換器新架構和電路技術研究 課題三“高度可重構高速射頻模數轉換器架構和電路技術” Research on New Architecture and Circuit Technology of High-Speed RF Analog-to-Digital Converter Topic 3: Technology on Highly Reconfigurable High-Speed RF Analog-to-Digital Converter Architecture and Circuit
4.	潘少恒、韋孟宇 Pan Shao heng、Wei Mengyu	微電子研究院 IME	國家科技部重點研發計劃 MOST Key R&D Projects (檔案編號 File No.: 2020YFB1313500)	微型全植入式腦機接口及運動行為精確控制的應用研究 Studies on Miniaturized, Fully Implantable Brain Computer Interface and Precise Control on Motor Behavior
5.	趙琦 Zhao Qi	健康科學學院 FHS	國家科技部重點研發計劃 MOST Key R&D Projects (檔案編號 File No.: EF008/FHS-ZQ/2020/FDU)	功能性免疫分子的人工合成及其在腫瘤免疫治療中的應用項目 課題三：基於高通量篩選的人工免疫分子定向進化與功能鑒定 Directed Evolution and Function Characterization of Synthetic Immune Molecules with High Throughput
6.	李紹平 Li Shaoping	中華醫藥研究院 ICMS	FDCT 重點研發專項資助計劃 FDCT Key Projects (檔案編號 File No.: 0017/2019/AKP)	中藥國際標準研究與制訂 International Standard Research and Development of Selected Chinese Medicines

Serial No.	Principal Investigator	Affiliated Academic Unit	Funding Unit	Project Title
7.	須成忠 Xu Chengzhong	科技學院 FST	FDCT 重點研發專項資助計劃 FDCT Key Projects (檔案編號 File No.: 0015/2019/AKP)	協同智能驅動的無人駕駛 關鍵技術與平台研究 Research on Key Technologies and Platforms for Collaborative Intelligence Driven Auto-Driving Cars
8.	李銘源 Lee Ming Yuen	中華醫藥 研究院 ICMS	FDCT 重點研發專項資助計劃 FDCT Key Projects (檔案編號 File No.: 0016/2019/AKP)	抗神經退行性病的天然小分 子化合物 PD-001 的研發 The Research and Development of PD-001, a Novel Anti-Neurodegenerative Natural Compound
9.	徐青松 Xu Qingsong	科技學院 FST	FDCT 重點研發專項資助計劃 FDCT Key Projects (檔案編號 File No.: 0022/2019/AKP)	基於三維視覺感知與柔順力控 的機器人智慧作業系統研發 Development of Robotic Intelligent Operation System Based on 3D Vision Sensing and Compliant Force Control
10.	楊志新 Yang Zhixin	科技學院 FST	FDCT 重點研發專項資助計劃 FDCT Key Projects (檔案編號 File No.: 0018/2019/AKP)	基於多模態感知和數據 驅動的工業機器人智能 作業系統研究及應用 Research and Application of Multi-modal Sensing and Data-Driven Intelligent Process Planning Technology for Industrial Robots
11.	宋永華 Song Yonghua	智慧城市物 聯網國家重 點實驗室 SKL-IOTSC	FDCT 重點研發專項資助計劃 FDCT Key Projects (檔案編號 File No.: 0003/2020/AKP)	綜合能源物聯網的智能協同管 控與防護關鍵技術及應用研究 Intelligent Coordinated Operation, Protection and Application on Integrated Energy IoT
12	麥沛然 Mak Pui In	微電子研究院 IME	FDCT 重點研發專項資助計劃 FDCT Key Projects (檔案編號 File No.: 0004/2020/AKP)	於先進納米級工藝下開發 高能效高分辨率吉赫茲 採樣率的模數轉換器 Develop Power-Efficient High-Resolution GHz-Range Analog-to-Digital Converters in Advanced Nanometer- Scale Technology



Serial No.	Principal Investigator	Affiliated Academic Unit	Funding Unit	Project Title
13	王一濤 Wang Yitao	中華醫藥 研究院 ICMS	FDCT 重點研發專項資助計劃 FDCT Key Projects (檔案編號 File No.: 0006/2020/AKP)	中藥經典名方製劑、標準研發與產業轉化 Classical Chinese Medicine Prescription Preparations and Standard R&D and Industrialization
14	周萬歡 Zhou Wanhuan	智慧城市物 聯網國家重 點實驗室 SKL-IOTSC	廣東省重點領域研發計劃 Guangdong Provincial Key R&D Projects (檔案編號 File No.: EF001/ FST-ZWH/2020/GSTIC)	重大跨海交通集群工程智 慧安全監測與應急管控 Intelligent Safety Monitoring and Emergency Management of Major Cross-Sea Traffic Cluster Projects
15	須成忠 Xu Chengzhong	科技學院 FST	廣東省重點領域研發計劃 Guangdong Provincial Key R&D Projects (檔案編號 File No.: EF009/ FST-XCZ/2020/ATCAS)	面向雲數據中心智慧管控的 軟件定義方法與關鍵技術 Intelligent Management and Control in Software-Defined Cloud Datacenters
16	王一濤 Wang Yitao	中華醫藥 研究院 ICMS	廣東省重點領域研發計劃 Guangdong Provincial Key R&D Projects (檔案編號 File No.: EF013/ ICMS-WYT/2020/GDSTC)	嶺南中草藥活性化合物庫的構 建及重大疾病候選藥物發現 Creation of a Database for Active Compounds of Chinese Herbal Medicine in the Lingnan Region and the Discovery of Candidate Drugs for Major Diseases
17	李紹平 Li Shaoping	中華醫藥 研究院 ICMS	廣東省重點領域研發計劃 Guangdong Provincial Key R&D Projects (檔案編號 File No.: EF022/ ICMS-LSP/2021/GDSTC)	蛹蟲草、蟲草菌粉、溪黃草、枸杞、 天麻、香櫞、小葉榕和蒲公英等 8 種藥材國際質量標準體系建立 Research on International Standards of Eight Traditional Chinese Medicines with Guangdong Characteristics
18	陳曉雲 Chen Xiaoyun	工商管理學院 FBA	澳門高等院校人文社會 範疇研究專項資助計劃 Specialized Subsidy Scheme for Macao Higher Education Institutions in the Area of Research in Humanities and Social Sciences (檔案編號 File No.: HSS-UMAC-2020-03)	COVID-19 重大傳染病疫情下 的企業復甦和公共政策研究： 以粵港澳大灣區企業為例 COVID-19 Corporate Recovery and Public Policy Research under Major Infectious Disease Epidemic: Taking Guangdong, Hong Kong and the Macao Bay Area Enterprises as an Example



Serial No.	Principal Investigator	Affiliated Academic Unit	Funding Unit	Project Title
19	Mario CAMS	人文學院 FAH	澳門高等院校人文社會 範疇研究專項資助計劃 Specialized Subsidy Scheme for Macao Higher Education Institutions in the Area of Research in Humanities and Social Sciences (檔案編號 File No.: HSS-UMAC-2020-05)	QingMaps.org 2.0
20	翟志恆 Chark Chi Hang	協同創新 研究院 ICI	澳門高等院校人文社會 範疇研究專項資助計劃 Specialized Subsidy Scheme for Macao Higher Education Institutions in the Area of Research in Humanities and Social Sciences (檔案編號 File No.: CP-UMAC-2020-01)	重大傳染病風險感知 和交流的可視化 Visualization in risk Perception and Communication of Major Infectious Diseases
21	袁振 Yuan Zhen	協同創新 研究院 ICI	澳門高等院校中葡人才培訓 及教研合作專項資助計劃 Specialized Subsidy Scheme for Chinese and Portuguese Bilingual Talent Training and Cooperation of Education and Research for Macao Higher Education Institutions (檔案編號 File No.: CP-UMAC-2020-01)	高等教育一年級中國學生針 對葡萄牙語第二語言能力的 決定因素和神經關聯性 Determinants and Neural Correlates of Portuguese L2 Proficiency amongst 1st-year Higher Education Chinese Students
22	邱天然 Qiu Tianran	工商管理學院 FBA	粵港澳大灣區旅遊教育 培訓專項資助計劃 Specialized Subsidy Scheme for the Tourism Education and Training for the Guangdong- Hong Kong-Macao Greater Bay Area (檔案編號 File No.: TET-UMAC-2020-03)	旅無邊界，遊涉百業 - 旅遊市場 衝擊對澳門經濟的影響之研究 How Far can Tourism Reach in Our Economy? An Investigation of Macau's Tourism Satellite Account



榮譽獎項 Research Awards

國家、省部級獎項 National and Provincial Awards

Award	Awardee	Project Title/Paper	
2020 年度國家科學技術進步獎二等獎 Second Prize of the 2020 State Scientific and Technological Progress Award	宋永華 Song Yonghua	含高比例新能源的電力系統需求側負荷調控關鍵技術及工程應用 (第一完成人) Key Technologies and Applications of Demand-side Load Regulation of Power Systems with a High Proportion of New Energy Sources (first principal person)	
2020 年度何梁何利基金科學與技術進步獎 2020 Science and Technology Progress Award of the Ho Leung Ho Lee Foundation	宋永華 Song Yonghua		
2020 年度第十三屆光華工程科技獎 2020 13th Guanghua Engineering Science and Technology Prize from the Chinese Academy of Engineering (CAE)	湯子康 Tang Zikang		
國家教育部第八屆高等學校科學研究優秀成果獎 (人文社會科學) - 著作論文類二等獎 Second Prize at the Eighth Award for Outstanding Scientific Research in Higher Education (Humanities and Social Sciences)	林玉鳳 Lam Lok Fong	《中國近代報業的起點——澳門新聞出版史 (1557-1840)》 The Beginning of the Modern Chinese Press History – Macao Press History 1557-1840	
	盛力 Sheng Li	解讀澳門的城市經濟管理 Explaining Urban Economic Governance: The City of Macao	



國家、省部級獎項 National and Provincial Awards

Award	Awardee	Project Title/Paper
2019 年度廣東省科學技術獎 - 科技進步獎一等獎 2019 Guangdong Provincial Science and Technology Award-First Prize of Progress Award	宋永華 Song Yonghua	跨域多維電子圍網關鍵技術及應用 (第二完成人) Key Technologies and Applications of Cross-domain Multi-dimensional Electronic Monitoring (second principal person)
2017 年全國創新爭先獎狀 The State Scientific Innovation and Pioneer Award 2017	楊志新 Yang Zhixin	
2016 年度國家科學技術進步獎二等獎 Second prize of the 2016 State Scientific and Technological Progress Award	王一濤 Wang Yitao	中草藥 DNA 條形碼物種鑑定體系 (第四完成人) Using DNA Barcoding for Species Identification of Medicinal Plants (fourth principal persons) 
2011 年度國家科學技術進步獎二等獎 Second Prize of the 2011 State Scientific and Technological Progress Award	余成斌、麥沛然、冼世榮 U Seng Pan, Mak Pui In, Sin Sai Weng	高性能模擬與混合信號集成電路技術的設計與開發 Design and Development of High Performance Analog and Mixed Signal Integrated Circuit Technology 



澳門特區獎項及其他獎項 (2020/2021) Local and Other Awards (2020/2021)

Award	Awardee	Project Title/Paper
2020 年度澳門科學技術獎 - 自然科學獎二等獎 2020 Macao Science and Technology Awards- Second Prize of the Natural Science Award	阮家榮 Yuen Ka Veng	結構動力學的貝業斯方法：從線下到實時 Bayesian Methods for Structural Dynamics: from Offline to Real-Time
	陳俊龍、劉竹琳、馮霜 Philip Chen, Liu Zhulin, Feng Shuang	新型判別式和生成式學習方法研究：寬度學習網絡及生成模糊網絡 Research on New Discriminative and Generative Learning Methods: Broad Learning System and Generative Fuzzy Networks
	祝雷、譚錦榮、蔡偉華、楊力、邱雷雷 Zhu Lei, Tam Kam Weng, Choi Wai Wa, Yang Li, Qiu Leilei	多模態振結構的研究及其在寬頻微波電路中的應用 Research on Multi-Mode Resonance Structure and Its Application in Wideband Microwave Circuits
2020 年度澳門科學技術獎 - 自然科學獎三等獎 2020 Macao Science and Technology Awards- Third Prize of the Natural Science Award	莫昇萍 Mok Seng Peng	核醫學物理研究及其於精準醫學的應用 Nuclear Medicine Physics and Its Applications in Precision Medicine
	周怡聰 Zhou Yicong	圖像加密技術及其應用研究 Image Encryption Technologies and Applications
	李紹平、趙靜、王蘭英 Li Shaoping, Zhao Jing, Wang Lanying	澳門蕈菌研究 Study on Macau Mushroom
2020 年度澳門科學技術獎 - 技術發明獎一等獎 2020 Macao Science and Technology Awards- First Prize of the Technological Invention Award	麥沛然、殷俊、陳勇、羅文基、馬許願 Mak Pui In, Yin Jun, Chen Yong, Law Man Kay, Rui Paulo da Silva Martins	創建萬物連網關鍵微電子芯片 Enabling Internet-of-Everything (IoE) Connectivity with Advanced Electronic Chip
2020 年度澳門科學技術獎 - 技術發明獎二等獎 2020 Macao Science and Technology Awards- Second Prize of the Technological Invention Award	陳知行、諸嬌、路延、冼世榮、Rui Paulo da Silva Martins Chan Chi Hang, Zhu Yan, Lu Yan, Sin Sai Weng, Rui Paulo da Silva Martins	應用於新興系統具前沿能效的數據及電源轉換集成電路設計 Leading-Edge-Efficiency Data and Power Conversion Integrated Circuit Designs for Emerging Systems



澳門特區獎項及其他獎項 (2020/2021) Local and Other Awards (2020/2021)

Award	Awardee	Project Title/Paper
2020 年度澳門科學技術獎 - 技術發明獎三等獎	王瑞兵、李銘源、高成 Wang Ruibing, Lee Ming-Yuen, Gao Cheng	環境友好百草枯新劑型的開發 The Development of User-friendly Formulation of Paraquat
2020 Macao Science and Technology Awards- Third Prize of the Technological Invention Award	李銘源、許貝文、陳勁 Lee Ming-Yuen, Hoi Pui Man, Chen Ging	用於藥物研發和環境監測的基於微流控技術大規模活生物體篩選系統 High-throughput Microfluidic Small Whole-organism Screening System and Its Use in Pharmaceutical Research and Environmental Monitoring
2020 年度澳門科學技術獎 - 科技進步獎三等獎	譚錦榮、鄭家興、鄭振邦、張文海 Tam Kam Weng, Cheang Ka Heng, Cheang Chan Pong, Cheong Man Hoi	面向智能公共資產管理的超高頻識別天線關鍵技術研究與應用 Research on Key Technologies of UHF RFID Antennas for Intelligent Public Asset Management
2020 Macao Science and Technology Awards- Third Prize of the Science and Technology Progress Award		
2020 年度粵港澳大灣區高價值專利培育佈局大賽優秀獎	路嘉宏 Lu Jiahong	基於自噬調控的抗腫瘤新藥開發 Development of New Cancer Drugs Based on Autophagy Regulation
2020 the Greater Bay Area High-Value Patent Cultivation Competition Excellence Award		
2021 J. Worth Estes Award	白雅詩 Beatriz Puente-Ballesteros	巧克力在中國：一個不完全連接世界的文化歷史交織 Chocolate in China: Interweaving Cultural Histories of an Imperfectly Connected World
2021 泰德威廉斯獎 2021 TED WILLIAMS AWARD	譚錦榮 Tam Kam Weng	
2021 年 IEEE 通訊學會青年學者最佳論文獎	武慶慶 Wu Qingqing	面向多無人機無線網路的軌跡和通訊聯合設計 Joint Trajectory and Communication Design for Multi-UAV Enabled Wireless Networks
2021 The Communications Society of the Institute of Electrical and Electronics Engineers-The Young Author Best Paper Award		



國家自然科學基金 優秀青年科學基金項目(港澳)

國家優秀青年科學基金項目(港澳)作為國家自然科學基金人才資助體系中一個重要組成部分,旨在支持基礎研究方面取得優秀成績的青年學者自主選擇研究方向開展創新研究,促進青年科學技術人才的快速成長。自2019年起首次開放予港澳高校年輕學者申請,澳門大學積極組織申報,其中,2019年有4個項目獲批准;2020年有3個項目獲批准;2021年有2個項目獲批准。

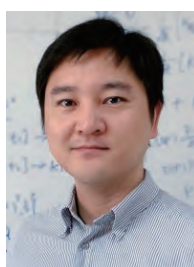
Excellent Young Scientists Fund for Hong Kong and Macao

The Excellent Young Scientists Fund for Hong Kong and Macao supported by the National Natural Science Foundation of China (NSFC), is an important part of NSFC's talent funding schemes. It aims to support young scholars who have achieved excellent outputs in basic science to choose their research directions independently and promote their success rapidly. Since its openness to young scholars from Hong Kong and Macao in 2019 for the first time, UM has 4 awardees listed in 2019; 3 awardees listed in 2020; and 2 awardees listed in 2021.

2019



陳美婉
Chen Meiwan



胡光輝
Hu Guanghui

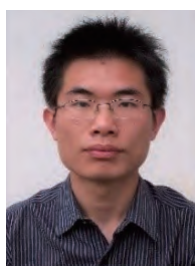


莫昇萍
Mok Seng Peng



曲松楠
Qu Songnan

2020



蔡永青
Cai Yongqing



王春明
Wang Chunming



周萬歡
Zhou Wanhuan

2021



路延
Lu Yan



孫國星
Sun Guoxing

說明:按照各獲獎者的姓名首字母進行排序
Note: the awardees are arranged in alphabetical order according to their surnames.

人物故事

Feature Stories



/ 人物故事
Feature Stories /

馬許願 Rui P. Martins

副校長(全球事務)、模擬與混合信號超大規模集成電路國家
重點實驗室(澳門大學)主任、微電子研究院院長
Vice Rector (Global Affairs), Director of State
Key Laboratory of Analog and Mixed-Signal
VLSI (UM), Dean of Institute of Electronics

1992 年，馬許願教授從葡萄牙里斯本大學來到澳門大學。1994 年，在資源極度貧乏的情況下，馬教授和學生研發出了首塊由澳大設計的芯片：第一代“UM Chip”（澳大芯），並在翌年一個學術會議發表論文。2003 年，馬教授創建了澳門大學模擬與混合信號超大規模集成電路實驗室，並在 2010 年獲批為國家重點實驗室，由此建立了“澳大芯”的科技品牌。2011 年至 2021 年間，實驗室在國際固態電路會議（集成電路設計領域最高級別學術會議）共有 45 篇論文入選。特別是在 2019 年的會議上，澳大有八篇論文入選，等於內地和香港所有入選論文的數量，全球排第二，僅次於 Intel。今天，澳大的芯片已經達到世界先進水平，是大學的主要研究方向之一。

當年的拓荒者，今天已經桃李滿門、碩果纍纍。馬教授說：“在芯片研究領域要達到世界最頂尖水平並不容易，但當你嘗試去做並實現目標時，你就到達了最高峰。”開拓創新，永無止境！澳大芯的拓荒者精神將會繼續在澳大一代一代地延續下去……

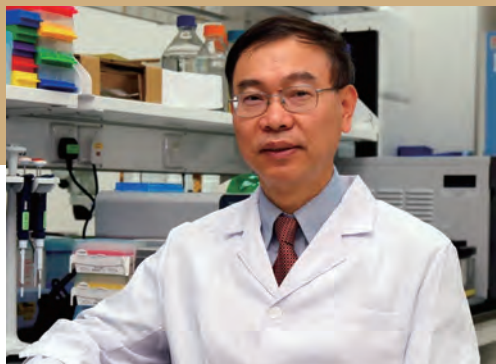
馬許願： 澳門芯的拓荒者

*Rui P. Martins-The Pioneer in Macao's
Microelectronics Chip Design*

In 1992, Rui P. Martins came to UM from the University of Lisbon in Portugal. In 1994, he successfully developed the first generation of “UM Chip” with extremely limited resources, which was presented at an academic conference in 1995. In 2003, Prof Martins founded the Analog and Mixed-Signal VLSI Laboratory, which was approved as a state key laboratory in 2010. The 'UM Chip' brand originated from 2010. From 2011 to 2021, 45 papers from the laboratory were selected for presentation at the International Solid-State Circuits Conference (ISSCC, a top academic conference in the area of integrated circuit design). Especially in the 2019 conference, UM had eight papers selected, which is equal to the number of selected papers from mainland China and Hong Kong combined and meant UM ranked second in the world, next only to Intel. Today, chip research has become a key research area at UM, which is now at the forefront of this field. The pioneer of Macao's chip design is now leading a group of outstanding researchers and students. 'It's not easy to reach the top of the world in chip research, but when you try to do it and achieve your goals, you arrive at the top', says Prof Martins.

Innovation knows no boundaries, and the pioneering spirit of the ongoing 'UM Chip' project will, no doubt, be passed down from generation to generation at the university.



/ 人物故事
Feature Stories /

鄧初夏 Deng Chuxia

健康科學學院院長、癌症中心主任、講座教授
Dean of Faculty of Health Sciences, Director
of Cancer Centre, Chair Professor

鄧初夏教授師從馬里奧·卡佩奇教授(2007年獲諾貝爾生理醫學獎)。於1995年在哈佛醫學院完成博士後培訓後，鄧教授成為美國國家衛生研究院(NIH)美國國家糖尿病、消化與腎臟疾病研究院(NIDDK)終身研究員，隨後擔任NIDDK哺乳動物基因學研究組組長、終身研究員。鄧教授於2014年加入澳門大學並擔任澳門大學健康科學學院創院院長。

鄧教授是生命科學領域頂級的華人科學家，他把癌症研究定為健康科學學院的核心研究之一，並親自擔任癌症研究中心主任。癌症為澳門十大死因之首，癌症研究與澳門公眾健康息息相關，但澳門對本地癌症研究相對薄弱。鄧教授上任後，即帶領學院啟動相關的研究項目，與澳門本地和鄰近地區醫療機構展開合作，尤其是針對澳門人的身體特質和癌症特點而進行精準醫學研究，研發出一批針對常見癌症的精準治療方案，並把最新的研究成果提供給醫院，為有效地降低癌症死亡率作出貢獻，並藉此協助澳門培訓醫療人員，提升澳門整體醫療水準。

鄧教授團隊在精準醫學領域不斷發表突破性研究成果，不但受到專業學界的關注認同，更獲得國家的重視和肯定。2020年底，國家教育部批准在澳大成立由健康科學學院牽頭組建的「精準腫瘤學前沿科學中心」，成為全國唯一一個教育部批准組建的精準腫瘤學領域的前沿科學中心及港澳地區首個前沿科學中心，標誌著澳大在精準醫學領域邁上了新台階，同時也冀望研究團隊在精準醫學領域成為「領跑者」，達到成為國際上最具代表性的創新中心及人才搖籃的學術高地的目標。

鄧初夏：
精準治療，醫學大趨勢

*Deng Chuxia - Precision
Treatment, a Medical Trend*

Prof. Deng Chuxia studied under Prof. Mario Capecchi, who won the Nobel Prize in Physiology or Medicine in 2007. After his postdoctoral training at Harvard Medical School in 1995, Prof. Deng became a tenured researcher at the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the National Institutes of Health (NIH) in the US, and then served as the head of the NIDDK Mammalian Genetics research group. In 2014, Professor Deng joined UM and acted as the founding dean of the Faculty of Health Sciences(FHS).

Prof. Deng is a top Chinese scientist in the field of life sciences. He has positioned cancer as a core research subject of the Faculty of Health Sciences and served as the director of the Cancer Research Centre. Cancer is the leading cause of death in Macao. Hence, cancer research is of great significance to Macao's public health, but the local cancer research is relatively weak. Since taking office, Prof. Deng has led the faculty to conduct relevant research projects, and cooperated with local and neighboring medical institutions; these projects are especially related to precision medicine research on the physical and cancer characteristics of local people and have helped develop a number of precise treatment plans for common cancers. He also provides the latest research results to hospitals, which helps train medical staff, reduce cancer mortality effectively, and improve Macao's overall medical standards.

Prof. Deng's team has continuously published breakthrough research outcomes in the field of precision medicine, which has not only gained recognition from academic circles, but also won the affirmation of the country. At the end of 2020, the Ministry of Education granted approval to UM to establish the Frontiers Science Centre for Precision Oncology led by the FHS which is the only frontier science centre in the field of precision oncology and the first frontier centre in Hong Kong and Macao. This centre signifies that UM has reached a new level in the field of precision medicine, and it is expected to become an unparalleled global innovation centre that boasts academic talents who are expected to play a leading role in the field.

/ 人物故事
Feature Stories /

須成忠 Xu Chengzhong

澳門大學科技學院院長、協同創新研究院代院長、講座教授
Dean of Faculty of Science and Technology, Interim Director
of Institute of Collaborative Innovation, Chair Professor

須成忠教授於 2019 年初加入澳大，現任科技學院院長、協同創新研究院代院長。歷年來，須教授著有多本書籍、發表了逾 200 篇國際頂尖學術期刊和會議論文，更於 2010 年獲選中國自然科學基金會海外傑青 (B 類)、2011 年入選國家特聘專家 (千人計劃)、2015 年獲選為電機電子工程師學會會士。須教授曾在美國任教 20 載，曾任韋恩州立大學電子與計算機工程系教授及該校的雲端與互聯網計算實驗室主任。2014 年回國後，須教授在中國科學院深圳先進技術研究院任職該院計算機、通訊和數據工程範疇的首席科學家和先進計算與數字工程研究所所長。

須教授的研究之路分為四個十年：第一個十年研究並行計算、第二個十年探討分佈式計算、第三個十年聚焦雲端運算。「現在是第四個十年，我們有了計算平台、計算資源和數據，就是做數據驅動的智能增值服務。」須教授研究經驗豐富，其研究多次獲美國國家科學基金會、美國太空總署、中國國家發展 and 改革委員會和中國科學技術部等資助。他認為，無論是甚麼方面的研究，都離不開對質量的要求：「Quality research 不是說你發了文章就算，而是要發好文章，產生影響才算。各個領域最頂尖的科學家在哪儿發文章，我們就要往哪儿發，這是我們現在努力的方向。」

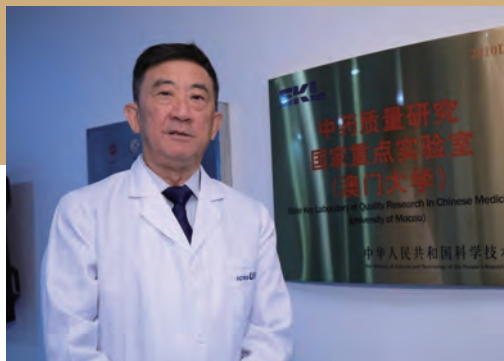
須成忠：
科研源於創新、源於堅持

*Xu Chengzhong - Scientific Research
Requires Innovation and Persistence*

Prof. Xu Chengzhong joined UM in early 2019 and is currently the Dean of the Faculty of Science and Technology and the Interim Director of the Institute of Collaborative Innovation. Over the years, Prof. Xu has authored many books and published more than 200 top international academic journal articles and conference papers. He was listed in the NSFC Excellent Overseas Talent in 2010 and the 1,000 Talents Plan of China in 2011; and was elected as an IEEE Fellow in 2015. Prof. Xu has taught in the United States for 20 years. He was a professor at Wayne State University and the director of its Cloud and Internet Computing Laboratory. Returning back to China in 2014, Prof. Xu worked as the director of the Institute of Advanced Computing of Shenzhen Institutes of Advanced Technologies, Chinese Academy of Sciences before he joined UM in 2019.

Professor Xu has divided his research life into four decades: focusing on parallel computing in the first decade, distributed computing in the second decade, and cloud computing in the third decade. 'This is the fourth decade. We have computing platforms, computing resources and data to provide data-driven intelligent value-added services', Prof. Xu said. He has extensive research experience, and has received awards from the US National Science Foundation, the US Space Agency, the National Development and Reform Commission of China and the Ministry of Science and Technology. He believes that no matter what kind of research it is, the same requirements for quality exist: 'publishing a paper does not mean research quality. You must publish a good paper and make an impact. You must publish papers where the top scientists do, and that's the direction we are working towards now'.



/ 人物故事
Feature Stories /

王一濤 Wang Yitao

中藥質量研究國家重點實驗室（澳門大學）主任
澳門中藥研發中心主任、講座教授
Director of the State Key Laboratory of Quality
Research in Chinese Medicine (UM),
Director of the Macau Centre for Research and Development
in Chinese Medicine, Chair Professor

王一濤出生於醫藥世家，恢復高考後考入中醫藥大學，走上了中華醫藥傳承創新的耕耘之路。1989 年留日歸來後王教授創建全國第一個中藥學國家重點學科，全國唯一中藥學國家教育部理科基地班，籌建全國第一家校辦企業改制組建的上市公司。1996 年調任中醫藥最高學府中國中醫科學院副院長兼中藥研究所所長，1999 年被國家科技部聘任為第一個國家 973 中醫藥項目的兩位首席科學家之一。

2002 年王一濤教授應邀來澳大創建中華醫藥研究院，培養出澳門第一批醫藥類高端人才、19 名全球 2% 的科學家，800 餘名博碩士畢業生，主導了藥理毒理、化學、農業、臨床醫學等進入全球 1% 的優勢學科。2008 年王一濤教授牽頭申報中藥質量研究國家重點實驗室，2010 年獲批為中國第一個中醫藥國家重點實驗室。2020 年王一濤教授牽頭聯合多家世界 500 強企業及中國中醫科學院、香港中藥創新研發中心等共建“澳門中藥研發中心”，成為澳門批准的第一個研發中心。王一濤教授還主編全球中醫藥排名第一 SCI 期刊《CHINESE MEDICINE》。

王一濤：
中華醫藥傳承創新的耕耘者

*Wang Yitao - Chinese Medicine Cultivator
of Inheritance and Innovation*

Wang Yitao was born into a medical family. After taking the college entrance examination, he was admitted to the University of Traditional Chinese Medicine and embarked on the road to knowledge inheritance, and innovation in Chinese medicine. After returning from Japan in 1989, Prof. Wang founded the first national key discipline of Chinese pharmacy and the only national science-based class on Chinese pharmacy approved by the Ministry of Education; following this he settled down to found the first listed company restructured from a school-run enterprise. In 1996, he was appointed as the vice president of the Chinese Academy of Chinese Medical Sciences, which is the best institution of Chinese medicine, and the director of the Institute of Chinese Medicine. In addition, he was appointed as the chief scientist of the first national 973 Chinese medicine project by Ministry of Science and Technology.

In 2002, Prof. Wang was invited to join UM to establish the Institute of Chinese Medical Sciences, which has cultivated the first batch of pharmaceutical talents of Macao, including 19 of the world's top 2% scientists, and more than 800 PhD and master graduates. He has also led several of UM's disciplines that have entered into the top 1% in the ESI rankings such as Pharmacology and Toxicology, Chemistry, Agricultural Science, and Clinical Medicine. In 2008, Prof. Wang played a leading role in applying for UM's State Key Laboratory of Quality Research in Chinese Medicine, and in 2010 it was approved as the first state key laboratory in traditional Chinese medicine in China. In 2020, Prof. Wang led the joint establishment of the Macau Centre for Research and Development in Chinese Medicine, which was the first research centre approved by the Macao SAR, with several Fortune 500 companies, China Academy of Chinese Medical Sciences and Hong Kong Centre for Chinese Herbal Medicine Drug Development. In addition, he works as the chief-editor of the Rank #1 SCI journal on traditional Chinese medicine called Chinese Medicine.



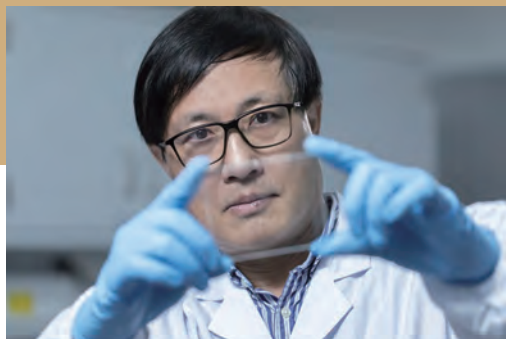
/ 人物故事
Feature Stories /

王一濤： 中華醫藥傳承創新的耕耘者

*Wang Yitao - Chinese Medicine Cultivator
of Inheritance and Innovation*

20年來，王一濤教授帶領中華醫藥團隊在傳承創新的路上辛勤耕耘，孜孜不倦探索，榮獲國家科技進步獎、澳門教育功績勳章和澳門專業功績勳章，澳大已成為集人才培養、科學研究和研發轉化為一體的全球中華醫藥創新高地，也是澳門成功實踐“一國兩制”的科教亮點。王一濤教授說：“中華醫藥博大精深，傳承創新既是初衷，也是一生為之奮鬥的目標”。

For 20 years, Prof. Wang has led the Chinese medicine team on the road of inheritance and innovation tirelessly. He has won the National Science and Technology Progress Award, the Medal of Merit – Education, and the Medal of Merit – Professions from the Macao SAR. Now, UM has become a globally preeminent Chinese medicine innovation hub for talent cultivation, scientific research, and knowledge transfer; it is also an outstanding scientific and educational example of successful implementation of the ‘One Country, Two Systems’ Policy in Macao. Prof. Wang said: ‘Chinese medicine is broad and profound. Its inheritance and innovation are not only the original intention, but also the goal of striving for life’.

/ 人物故事
Feature Stories /

湯子康 Tang Zikang

應用物理及材料工程研究院院長、講座教授
Director of the Institute of Applied Physics and
Materials Engineering, Chair Professor

澳大應用物理及材料工程研究所(現稱“應用物理及材料工程研究院”)成立於2014年,湯子康教授在2016年獲聘為首任院長,他帶領團隊從零開始到不斷取得創新突破。經過多年的發展,研究院獲得澳門科學技術發展基金、國家自然科學基金、澳大科研基金等資助70多項研究課題,至今已發表SCI論文500餘篇。

在研究院的高質量研究成果中,不乏具有市場應用前景的先進技術,並正在通過澳大設於橫琴的首個產學研示範基地——珠海澳大科技研究院開展商業化過程,其中包括利用水泥緩釋出納米顆粒複合而成的特種水凝膠,可以作為中間原料製成吸水膨脹劑,在日常生活、農作物保水、沙漠治理等領域有廣泛的應用。

澳大近年積極鼓勵跨學院、跨學科、跨領域的合作,以協同合作的團隊方式創造影響深遠的研究。湯教授領導的交叉學科團隊跟世界頂尖生命科學領域專家鄧初夏教授領導的健康科學學院以及中華醫藥研究院合作,把碳納米材料、腫瘤免疫以及生物醫學結合起來進行研究。他們研發的量子生物腫瘤免疫治療技術,在惡性腫瘤的治療上取得了非常好的效果。湯教授說:「現在我最大、也是唯一的心願就是把這研究項目應用到臨床上,能夠為全球數以千萬的腫瘤患者帶來福音。」

湯子康的科學夢

Tang Zikang's Dream as a Scientist

The Institute of Applied Physics and Materials Engineering (IAPME) was established in 2014 and Prof Tang was appointed as its first director in 2016. Since then he has led the team in carrying out research in the field from scratch. Over the past years since its establishment, the IAPME has received grants for more than 70 research projects from various organisations, including FDCT, NSFC and UM, and published over 500 papers in SCI listed journals.

Some advanced technologies and products developed by the Institute hold great promise for commercial applications, and they are being commercialised. One such product is a special hydrogel made of nanoparticles that can be used as an intermediate raw material to make super water-absorbing swelling agents; these have the potential to be applied in farmland water retention and desert management.

In recent years, UM has encouraged cross-faculty, cross-disciplinary, and cross-field collaborations to create far-reaching research in a collaborative team approach. In light of this, Prof Tang teamed up with experts in the Faculty of Health Sciences and the Institute of Chinese Medical Sciences to form a research collective led by Prof Chuxia Deng, one of the world's foremost experts in cancer research. Combining their knowledge in carbon nanomaterials, cancer immunotherapy, and biomedicine, they rolled up their sleeves and set to work. They have developed a quantum biologic technique in cancer immunotherapy, which has yielded very good results as evidenced by their data collected on malignant tumours. He adds: 'My greatest and only dream now is to see clinical application of this novel discovery, in order to bring new hope to the tens of millions of cancer patients worldwide.'



/ 人物故事
Feature Stories /

阮家榮 Yuen Ka Veng

研究生院院長、特聘教授
Dean of Graduate School,
Distinguished Professor

「板凳寧坐十年冷，文章不寫半句空。」用這句治學名言來形容阮家榮教授最貼切不過了。阮教授是一位地震工程學專家，自 23 年前遇上「貝葉斯」後，便心無旁騖，專注如一，更不斷在其研究方法上屢創新猷。

阮教授的學術成就斐然：2010 年成為澳大首位 35 歲前晉升正教授的學者；2018 年更成為澳大首位 43 歲前晉升的特聘教授；後歷任土木及環境工程系主任、科技學院副院長、代院長及澳大教務長等。他在 2004 年與加州理工學院教授 James Beck 合著的論文《使用結構響應測量的模型選擇：貝氏機率方法》，是奠定其學術界地位的奠基之作。該論文獲美國土木工程師學會旗艦學刊《工程力學期刊》發表，並於該刊數十年刊登的三千多篇論文中，引用次數名列前十。

談到如何能在學術研究上可以不斷精進，阮教授分享道：“必須要一心一意專注自己擅長的領域，然後日復一日堅持不懈去做。做研究就是要專注，要經得起孤獨，選定一個方向越鑽越深，不要每樣都只懂得一些皮毛，更不要東打一槍，西發一炮。這樣是解決不了真正的問題。”

阮家榮：
專注如一必有所成

Yuen Ka Veng - Focus: Your Way to Success!

It was once said that the mark of a true writer is the patience to sit at his writing desk in oblivion for ten years in order to produce one masterpiece. This is also a fitting description of Prof Yuen Ka Veng, who, despite not being a writer, embodies the same kind of perseverance in his research. As an earthquake engineering expert, Prof Yuen stumbled upon his lifelong passion, Bayesian inference, 23 years ago.

In 2010, he became the first UM scholar to be promoted to full professor before the age of 35. In 2018, he became the first scholar at UM to be promoted to Distinguished Professor before age 43. Following this, he served as the department head of the Department of Civil and Environmental Engineering, associate dean and interim dean of the Faculty of Science and Technology, and registrar of UM. In 2004, he published a journal paper co-authored with his then-supervisor Prof James Beck at Caltech, which received great attention. Being the first in the field of structural dynamics to tackle the problem of model class selection, this paper was ranked among the ten most cited, out of more than 3,000 papers, that have been published in the Journal of Engineering Mechanics of the American Society of Civil Engineers in last few decades.

When asked how one can continuously improve in scientific research, he says: ‘You must focus on what you are good at, and then persevere in doing it day after day. Doing research requires focus; it also requires tolerance for loneliness. Choose a direction and keep digging. Don’t be a jack-of-all-trades but master of none. That will not solve any meaningful problems’.



/ 人物故事
Feature Stories /

王笛 Wang Di

人文社科高等研究院副院長、講座教授
Associate Director of the Institute of Advanced Studies
in Humanities and Social Sciences, Chair Professor

王笛教授於 2015 年加入澳門大學，現任歷史系講座教授、人文社科高等研究院副院長。王教授被學界認為是研究中國城市史和新文化史的代表性人物，曾獲得美國城市學會 2005 年度最佳著作獎，擔任英文學術季刊《中國歷史學前沿》(Frontiers of History in China) 主編。最新兩部英文著作《袍哥：1940 年代的川西鄉村暴力與秩序》及《茶館：成都公共生活的衰落與復興》分別由美國史丹福大學出版社及康乃爾大學出版社出版。

博學多才的王笛教授熱愛鑽研歷史，特別是研究最普通的平民百姓生活。因為平民百姓的生活更能貼緊現實地呈現當刻的歷史背景和文化。他說：“平民在歷史上佔大多數，我們應該知道他們的思想、活動、情感和經歷，就像我們坐飛機從上往下看，看不到整個地方的細節，若把眼光向下，站在下面，切身處地用平民的眼光去看，你是在人群之中，從下往上看，就能貼緊人們真正的歷史。”

這種以觀察細小的對象為基礎的歷史稱作微觀史，將歷史的研究從宏大敘事轉向微觀敘事，從對重大政治、經濟、文化與社會事件的研究轉向對日常生活、普通人物以及他們的經歷的研究，從對看似微不足道的物件的研究來發現歷史，瞭解歷史。對自己熱衷的事情，王教授矢志執著完成，他說：“研究歷史往往就像在過去和現實的時空中切換和交替，對歷史的看法更深刻，看待今天就更清晰。”

王笛：
看歷史更深刻，看今天更清晰

Wang Di - Deeper into the Past, Clearer into the Present

Wang Di joined UM in 2015 and is currently a chair professor of the Department of History and Associate Director of the Institute of Advanced Studies in Humanities and Social Sciences (IAS). Prof Wang is recognised as one of the foremost experts on urban history in China and new cultural history. He is the recipient of the Best Book (Non-North American) Award for 2005 from the Urban History Association in the United States and a co-editor of the English academic quarterly Frontiers of History in China. His two most recent English books, *Violence and Order on the Chengdu Plain: The Story of a Secret Brotherhood in Rural China, 1939-1949*, and *The Teahouse under Socialism: The Decline and Renewal of Public Life in Chengdu, 1950-2000*, were published by Stanford University Press and Cornell University Press, respectively.

What sets Prof Wang apart from many historians is his focus on ordinary people, as he believes the lives of the masses provide the most faithful representation of society. He says, ‘Throughout history, ordinary people have always been in the majority. So we should understand their thoughts, activities, emotions, and experiences. It’s like what happens when you look down from a plane - you can’t see the details. But if you stand on the ground and look at the world with the eye of an ordinary person, then you can capture authentic history’.

This intensive historical investigation of a well-defined small unit of research is known as the microhistorical approach, which is characterised by a shift from grand narratives to micro-narratives. Instead of studying major political, economic, cultural, and social events, microhistory focuses on ordinary people and their everyday life experiences. Historical truths are discovered and understood through studies of seemingly insignificant objects. He says, ‘Studying history is like travelling back and forth between the past and the present. The more you understand history, the more clearly you can see the present’.



澳大學人研究講壇 The UM Scholar Research Forum

澳大近年在科研方面取得了顯著成果。2021 年適逢澳大 40 週年校慶，澳大研究服務及知識轉移辦公室組織開展“澳大學人研究講壇”，邀請傑出的澳大學人以通俗易懂的方式介紹其研究成果，帶出學術研究就是創造知識的意義，讓大眾了解研究成果的可應用性及與人類生活素質改善的緊密關係。論壇自 2021 年澳大開放日開幕，至 2021 年底已舉辦至第三講。

UM has made remarkable achievements in scientific research in recent years. In celebration of the 40th anniversary of UM in 2021, the UM Scholar Research Forum was launched by Research Services and Knowledge Transfer Office, with its debut on UM Open Day. Outstanding UM scholars were invited to introduce their research results in daily language; this forum emphasises that the meaning of academic research is creating knowledge, and, as a result the public may come to understand the applicability of research results and its close relationship with improvements in the quality of human life. Since its inception, the forum has held three well-received public lecture events.



澳大學人研究講壇
UM SCHOLAR RESEARCH FORUM

日期 Date | 2021.1.17 地點 Venue | E4 - G051

12:00	劉丁己 教授 Prof. Ting Chi LIU	學會市場營銷讓你成為CEO Learning Marketing Makes You a CEO
12:30	伍海燕 教授 Prof. Haiyan WU	人工智能與人類認知 Artificial Intelligence and Human Cognition
13:00	郝天偉 教授 Prof. Tianwei HAO	在垃圾中“淘寶”：從污水處理到高價值物質回收 Gold Mining in the Dirt – Producing Precious Materials from Sewerage Sludge
13:30	王春明 教授 Prof. Chunming WANG	再造人體器官——“用樹皮補人皮？” Rebuilding our Organs – “From Tree Barks to Human Skins?”
14:00	孫國星 教授 Prof. Guoxing SUN	用水泥把普通高分子變成超級材料 Use Cement to Turn Ordinary Polymers into Super Materials
14:30	林智聲 教授 Prof. Chi Seng LAM	無線充電技術引領無線充電時代的革命 Wireless Charging Technology Leads the Revolution in the Age of Wireless Charging



澳大學人研究講壇——澳大開放日
The UM Scholar Research Forum at UM Open Day

“澳大學人研究講壇”於 2021 年 1 月 17 日在澳大開放日盛大開幕，來自不同學院的 6 位教授——劉丁己、伍海燕、郝天偉、王春明、孫國星、林智聲向公眾介紹了市場營銷、人工智能、污水處理、人造器官、超級材料、無線充電等領域的科研成果，現場互動熱烈，座無虛席。

The UM Scholar Research Forum was officially launched on January 17, 2021 at the UM Open Day with all seats occupied. Six professors from different faculties/institutes - Ting Chi Liu, Haiyan Wu, Tianwei Hao, Chunming Wang, Guoxing Sun and Chi Seng Lam introduced their research outputs in marketing, artificial intelligence, sewage treatment, artificial organs, super materials, and wireless charging respectively.

“澳大學人研究講壇”之第一講於 2021 年 4 月 8 日舉行，由健康科學學院助理教授邵寧一以“肺癌標靶治療研究新突破”為題發表演說，為非專業人士解讀其最近在國際著名期刊《自然》上發表關於肺癌標靶治療研究上取得的重大突破。



The first lecture of the UM Scholar Research Forum was held on April 8, 2021. The speaker, Shao Ningyi, an assistant professor in the Faculty of Health Sciences, shared his team's recent breakthroughs in targeted lung cancer treatment research, which have been published in the internationally renowned journal *Nature*.

邵寧一教授於澳大學人研究講壇發表演說
Professor Shao Ningyi delivered a speech at the UM Scholar Research Forum

“澳大學人研究講壇”之第二講於 2021 年 5 月 14 日舉行，由中華醫藥研究院副教授胡元佳以“一種突破性癌症療法的全球專利解碼以及對中國藥物創新的啟發”為題發表演說，為非專業人士解讀其最近在國際著名期刊《自然—生物技術》上發表關於嵌合抗原受體 T 細胞療法全球專利格局分析中取得的重大突破。



The second lecture of the UM Scholar Research Forum was held on May 14, 2021. Associate Professor Hu Yuanjia of the Institute of Chinese Medical Sciences presented a speech entitled 'A Global Patent Decoding of a Breakthrough Cancer Therapy and the Inspiration for Chinese Medicine Innovation' to explain the invaluable insights he has gained regarding the global patent landscape related to chimeric antigen receptor T-cell therapy, which were recently published in the internationally renowned journal *Nature-Biotechnology*.

胡元佳教授於澳大學人研究講壇發表演說
Professor Hu Yuanjia delivered a speech at the UM Scholar Research Forum

“澳大學人研究講壇”之第三講於 2021 年 9 月 24 日舉行，由健康科學學院副教授黃冠豪以“‘休眠中’的真菌 BB 如何‘贏在起跑線’？”為題發表演說，解讀其最近在國際知名期刊《自然微生物》以封面論文形式刊登的關於真菌研究的新突破。這項新發現對理解真菌病原體如何致病以及如何預防可致命的真菌感染具有重要意義，並為免疫力弱的人群如新冠病患帶來喜訊。



The third lecture of the UM Scholar Research Forum was held on September 24, 2021. Wong Koon Ho, an associate professor in the Faculty of Health Sciences, was the speaker. He gave a talk titled 'How Do "Dormant" Fungal Babies Prepare for Their Future' to explain his breakthrough in fungal biology recently featured on the cover of *Nature Microbiology*. His finding has important implications in the understanding of fungal biology and pathogenesis as well as in the prevention of potentially deadly fungal infections. The discovery holds particular promise for protecting immunocompromised people, such as COVID-19 patients, from these infections.

黃冠豪教授於澳大學人研究講壇發表演說
Professor Wong Koon Ho delivered a speech at the UM Scholar Research Forum



重點研究平台及設備

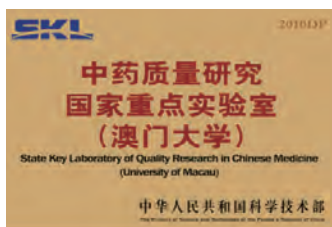
Key Research Platforms and Equipment



國家重點實驗室

中藥質量研究國家重點實驗室

中藥質量研究國家重點實驗室於 2011 年獲國家科技部批准設立，致力於中藥質量評價的關鍵科學和技術問題，設有製藥工程中心、毒理檢定中心、藥理篩選中心、質量檢定中心、臨床資訊中心。實驗室已成為具有國際先進水準的中藥質量創新研究基地和國際合作平台，凝聚建設多學科交叉的學術團隊，開展系統的轉化型研究，為中藥創新研發建立科學質量標準，發揮國際輻射交流作用。



State Key Laboratories

The State Key Laboratory of Quality Research in Chinese Medicine

The State Key Laboratory of Quality Research in Chinese Medicine (UM) was approved by the Ministry of Science and Technology (MOST) in 2011 with the aim of addressing the key scientific and technical issues related to the quality evaluation of traditional Chinese medicine. It consists of 5 centres: the centre for pharmaceutical engineering, the centre for toxicology testing, the centre for pharmacological screening, the centre for quality evaluation, and the centre for clinical informatics. By setting up a multidisciplinary team to carry out systematic transformational research and establishing scientific quality standards for innovative traditional Chinese medicines, the Laboratory has developed into a leading platform for quality Chinese medicine research that plays a significant role in international communication.

模擬與混合信號超大規模集成電路國家重點實驗室

模擬與混合信號超大規模集成電路國家重點實驗室於 2011 年獲國家科技部批准設立。實驗室主要從事前沿電子學及其他相關新興領域的尖端研究，研究重點為模擬和混合信號電路，特別是高速和低功耗應用的無線 / 有線射頻收發器和數據轉換器。實驗室還積極開展電源管理電路和微流控芯片的研究。



The State Key Laboratory of Analog and Mixed-Signal VLSI

The State Key Laboratory of Analog and Mixed-Signal VLSI was approved by MOST in 2011. It mainly conducts cutting-edge research on various electronic systems with two main research emphases-analog-to-digital converters and low-power RF chips. The Laboratory also actively develops research directions in power management and microfluidic chips.

智慧城市物聯網國家重點實驗室

智慧城市物聯網國家重點實驗室於 2018 年獲國家科技部批准設立，為全國第一間智慧城市物聯網領域的國家重點實驗室，開展基礎性和共性的理論、演算法和系統研究，開發智慧城市示範應用。實驗室科研主要圍繞五個方向：智慧傳感與網路通信、城市大數據與智慧技術、智慧能源、智慧交通、城市公共安全與災害防治。



The State Key Laboratory of Internet of Things for Smart City

The State Key Laboratory of Internet of Things for Smart City was approved by MOST in 2018. It is China's first state key laboratory focused on the Internet of Things for smart city. The Laboratory puts forward common theories, algorithms and systems that are of fundamental importance and help develop exemplary applications for a smart city. It carries out research on five fronts: intelligent sensing and network communication, urban big data and intelligent technology, smart energy, intelligent transportation, and public safety and disaster prevention.



省部級 研究中心及實驗室

教育部精準腫瘤學前沿科學中心

澳大於 2021 年 1 月獲國家教育部正式批准立項建設“精準腫瘤學前沿科學中心”，是國家在港澳地區佈局的首個前沿科學中心，將聚焦在澳門常見多發腫瘤疾病的預防、發生、轉移、耐藥等重大問題，圍繞癌症的發生與發展、腫瘤微環境與免疫調控、癌症轉移及耐藥機制、高效藥物開發及癌症個體化治療四個方向開展前沿科學研究工作。

憲法與基本法研究中心

憲法與基本法研究中心服務於澳門大學建設國際公認的優秀學府的總體目標，服務於“一國兩制”事業和國家的發展大局，致力發展成為一個在澳門特區有相當影響力的、與澳門大學在澳門特區的地位相匹配的憲法、基本法和“一國兩制”理論研究基地、學術交流基地、人才培養基地、決策諮詢基地和“愛國愛澳”精神弘揚基地。該中心現為國家教育部人文社科重點研究基地——北京大學“憲法與行政法研究中心”的夥伴基地。

Provincial/Ministerial Level Research Centres & Laboratories

The MOE Frontiers Science Centre for Precision Oncology

UM has officially received approval from the Ministry of Education (MOE) to establish the Frontiers Science Centre for Precision Oncology in January 2021. It is the first cutting-edge scientific research centre in Hong Kong and Macao, and will focus on the prevention, occurrence, and metastasis of cancer cells, as well as drug resistance and other major issues related to common cancers in Macao. The Centre carries out cutting-edge scientific research in four areas: cancer occurrence and development, tumour microenvironment and immune regulation, cancer metastasis and mechanisms of drug resistance, as well as efficient drug development and personalised cancer medicine.

The Centre for Constitutional Law and Basic Law Studies

In line with the University's global objective of developing itself into an outstanding and internationally-recognised institution of higher learning and against the backdrop of one united country, the Centre for Constitutional Law and Basic Law Studies (CCBLS) strives to become a research platform that will be impactful in the Macao SAR and live up to what the community expects of the University. It is devoted to the study of the Constitution, Basic Law and the 'One Country, Two Systems theory'; academic exchange; talent nurturing; the fostering of, in Chinese terms, the 'Love China, Love Macao' spirit; and the provision of consultation to the Macao SAR government on its policy formulations. The CCBLS is currently the partner base of the Centre for Constitutional and Administrative Law of Peking University, which is a key research base of humanities and social sciences of the Ministry of Education.



教育研究中心

教育研究中心是在澳門特區政府的大力支持下成立、澳門特區唯一在公立大學設立的有關教育的研究基地。該中心致力於培養能傳承“一國兩制”與“愛國愛澳”精神的高素質教育專業工作者，為澳門和大中華地區教育事業作出卓越貢獻。中心目前的研究方向集中在青少年兒童學習的心理因素研究、跨年級教育中的技術應用研究、人類認知活動中的眼動追蹤研究、在綫信息搜索中認知策略使用研究的數據挖掘方法等。中心現為國家教育部人文社科重點研究基地——北京師範大學“教師教育研究中心”的夥伴基地。

中國歷史文化中心

中國歷史文化中心是在中央人民政府駐澳門特區聯絡辦公室和澳門特區政府關懷和指導下成立的有關中國歷史文化的研究、教育、交流和推廣平台，旨在加強中國歷史文化研究，培養澳門本地致力於中國歷史文化傳播與推廣的骨幹力量，建構高水準的中國歷史文化交流機制，向澳門社會特別是澳門青少年推廣中國歷史文化，並促進中國歷史文化在葡萄牙語國家、地區的傳播與影響，藉以促進和提高澳門及國際社會對中國歷史文化的認知與理解。中國歷史文化中心已列入教育部人文社會科學重點研究基地，並將列入文化部傳播和推廣中華文化的“50 個海外中國文化中心”，以及中國社會科學系統的文學理論與批評重點基地。

The Educational Research Centre

The Educational Research Centre (ERC) was established with the great support of the Macao SAR government and is the only educational research centre at a public university in Macao. The ERC is committed to nurturing high-calibre educators that can contribute to education development in Macao and the Greater China region. The current research strands are focused around the psychological factors in children and adolescent learning; the use of technology in teaching and learning across grade levels; eye-tracking studies on human cognitive task execution; and data mining approaches in studying (Meta) cognitive strategy use during online information seeking. The ERC is currently the partner base of the Centre for Teacher Education Research of Beijing Normal University, which is a key research base of humanities and social sciences of the Ministry of Education.

The Centre for Chinese History and Culture

The Centre for Chinese History and Culture is a research, education, exchange, and promotion platform established under the care and guidance of the Liaison Office of the Central People's Government in the Macao SAR and the Macao SAR Government. It aims to strengthen the research in Chinese history and culture; cultivate the backbone dedicated to disseminating and promoting Chinese history and culture; construct a high-level mechanism for the exchange of Chinese history and culture; and promote Chinese History and Culture to Macao society, especially to youngsters. In addition, the Centre facilitates the dissemination and interest in Chinese history and culture in Portuguese-speaking countries and regions to promote and improve perception and understanding in Macao and international societies. The Centre has been included in the key research bases of humanities and social sciences of the Ministry of Education and will be included in the '50 Overseas Chinese Cultural Centres of the Ministry of Culture for dissemination and promotion of Chinese culture, as well as serving as the base of the literary theory and criticism focus of the Chinese social science system.



澳門中藥研發中心

為推進澳門中醫藥科技轉化與產業發展，進一步加強科技轉化平台建設，澳門大學於 2020 年聯合華潤集團、廣藥集團、香雪集團、南光集團、中國中醫科學院和香港中藥創新研發中心等頂級藥業和學府，聯合組建產學協同創新共同體“澳門中藥研發中心”，中心聚焦經典名方開發、名優成藥升級、健康產品開發和創新藥物發現，以助力澳門中醫藥產業發展，中心已獲澳門特區政府批准和資助，成為澳門第一個產品研發科技轉化平台。

無機與合成化學教育部聯合重點實驗室

2018 年，澳門大學應用物理及材料工程研究院與中山大學生物無機與合成化學教育部重點實驗室成立了“教育部聯合重點實驗室”，以加強相關科學領域的研究合作。雙方在化學合成、光電與能源材料領域的研究各具優勢，兩個實驗室之間的強強聯合，將促進彼此在相關科學領域跨越式的發展，也開創了粵港澳大灣區內高等教育和科研協同創新發展的新的合作模式。

Macau Centre for Research and Development in Chinese Medicine

Macau Centre for Research and Development in Chinese Medicine was jointly initiated by the University of Macau, the China Resources Group, Guangzhou Pharmaceutical Holdings Limited, Guangzhou Xiangxue Pharmaceutical Co., Ltd, Nam Kwong (Group) Company Limited, China Academy of Chinese Medical Sciences, and Hong Kong Centre for Chinese Herbal Medicine Drug Development in 2020. The Center focuses on the development of classic and famous prescriptions, the upgrading of high-quality patent medicines, the development of healthy products and the discovery of innovative drugs to help the development of the traditional Chinese medicine industry in Macao. The Center has been approved and funded by the Macao SAR government and has become the first technology transformation platform for product research and development in Macao.

The Bioinorganic and Synthetic Chemistry MOE Joint Laboratory

The Bioinorganic and Synthetic Chemistry of the Ministry of Education (MOE) Joint Laboratory was established by the Institute of Applied Physics and Materials Engineering of UM and the Bioinorganic and Synthetic Chemistry MOE Key Laboratory at Sun Yat-Sen University in 2018. Both parties have distinct advantages in research on chemical synthesis, optoelectronics, and energy materials. This strong alliance promotes synergistic development in the field of chemistry, and creates a new cooperation model for institutes in the Greater Bay Area.

重點研究設備

3T 功能磁共振成像系統

功能性磁共振成像 (fMRI) 系統是一種非常有效的研究腦功能的非介入技術，已經成為最廣泛使用的腦功能研究手段。它雖然是一種非介入的技術，但卻能對特定的大腦活動的皮層區域進行準確、可靠的定位，空間解析度達到 1 mm，並且能以各種方式對物體反復進行掃描。借助 fMRI，對大腦的認知功能的研究便可擴展至記憶、注意力、執行功能等。fMRI 還用於臨床和商業環境中，以早期發現和治療腦部疾病。

綜合物理性能測量系統

綜合物理性能測量系統主要用來測量各種材料的磁性、電性及熱學性能等。它還配備了高磁場、超低溫、高壓、高溫等各方面所需的樣品測量環境等，可以用來測量各種無機和有機樣品，如金屬、氧化物、薄膜、納米顆粒、單晶、超導體、磁體等。

核磁共振光譜系統

核磁共振光譜是研究化合物分子結構的重要技術。應用於中藥質量研究中生物大分子和天然產物的結構鑒定、生物大分子分子動力學研究、藥物篩選和設計、代謝物分析、材料科學研究等。

Key Academic Equipment

3T Functional Magnetic Resonance Imaging System

fMRI is a non-invasive and widely-used technique to study brain functions effectively. Despite being a non-invasive technology, it can locate the cortical area of specific brain activities accurately and reliably, and scan objects repeatedly in various ways with a spatial resolution of 1 mm. The study of the cognitive functions of the brain can be extended to memory, attention and executive function with fMRI. It is also applied in clinical contexts and for commercial purposes for early detection and treatment of brain diseases.



Comprehensive Physical Performance Measurement System

The comprehensive physical performance measurement system is mainly used to measure the magnetic, electrical and thermal properties of various materials. It can also provide testing environments such as high magnetic field, ultra-low temperature, high pressure and high temperature; and measure various inorganic and organic samples such as metals, oxides, thin films, nanoparticles, single crystals, superconductors and magnets.



Nuclear Magnetic Resonance (NMR) Spectrometer

Nuclear magnetic resonance spectrometer is an important technique to study the molecular structure of compounds. It is used for structural identification of biological macromolecules and natural products in quality research of traditional Chinese medicine, molecular dynamics research of biological macromolecules, drug screening and design, metabolite analysis, and material science research.



智能超算中心

澳大智能超算中心是澳門迄今最大型的智能超算中心，單一集群最高運算率可達每秒 2 萬 2 千億次。內含 DGX 系列、GPU 計算平台及華為雲多套計算平台，為科創企業及眾多科研項目提供設備及強大的算力支撐，協助澳門乃至粵港澳大灣區發展成為智慧城市。

透射電子顯微鏡

穿透式電子顯微鏡可以用於觀察樣品的精細結構，甚至可以用於觀察僅僅一列原子的結構。透射電子顯微鏡的解析度可以達到 0.1-0.2nm。

聚焦離子束掃描電子顯微鏡

聚焦離子束掃描電子顯微鏡是一台結合了掃描電子顯微鏡和離子束顯微鏡的機器。因此，它具有多種功能，可用於材料和生物領域。它可以製備 TEM 薄片，橫截面，失效分析，3D 重建，銑削納米圖案，編輯電路等。

X 射線光電子能譜儀

X 射線光電子能譜儀可以為多種材料提供高精度的元素成分、價態、相對含量、濃度摻雜及分佈等功能分析。XPS 與其他多種技術例如 UPS、REELS 等的結合，能從樣品中得到能隙和功函數的資訊，進而更能確保和調控所研發的材料性能；同時，還可以作為測試平台，對其他擴展領域的應用材料進行品質的檢測和控制。

The Super Intelligent Computing Centre

The Super Intelligent Computing Centre at UM is the largest intelligent supercomputing centre in Macao. With a maximum computing rate of 22 petaFLOPs in a single cluster. DGX series, GPU computing platform and Huawei Cloud, provide key equipment and powerful computing power to technology enterprises and support many scientific research which assists Macao and the Greater Bay Area develop as smart cities.

Transmission Electron Microscope

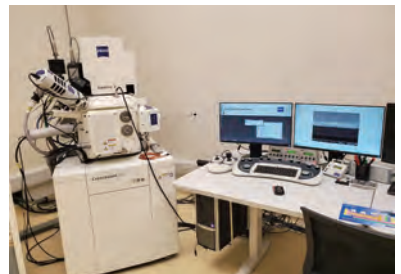
The transmission electron microscope can be used to observe the fine structure of a sample. It even allows observation of just one column of atoms. The resolution of the transmission electron microscope can be 0.1-0.2nm.

Focused Ion Beam Scanning Electron Microscope

The focused ion beam scanning electron microscope is a machine that combines the function of a scanning electron microscope and an ion beam microscope. It has multiple functions and can be used in the fields of materials and biology. It can be used for making TEM thin film, cross-section observation, invalidation analysis, 3D reconstruction, milling nano-patterns and editing circuits.

X-ray Photoelectron Spectrometer

The X-ray photoelectron spectrometer (XPS) can provide high-precision functional analysis of element composition, valence, relative content, concentration doping and distribution for a variety of materials. The combination of XPS and other technologies such as UPS and REELS can allow information including energy gap and work function to be ascertained from samples, which can ensure and control the materials' performance. It can also test and control the quality of other applied materials as a test platform at the same time.



超高通量測序系統

強大的高通量測序系統，可為研究廣泛應用和大規模的基因組學測序。它使用總 RNA 測序分析編碼 RNA 和多種形式的非編碼 RNA，以全面瞭解轉錄組；以及外顯子組測序（分析基因組的蛋白質編碼區域，作為替代全基因組測序的一種低成本方法）。

三重四極桿飛行時間質譜儀系統

四極桿串聯飛行時間質譜（QTOF）可收集樣品中每種可檢測分析物的高解析度 MS / MS 數據。

超快飛秒激光系統

此系統能輸出波長 240nm-20 μ m，可用於以下應用：fs 微加工，多維光譜學，表面 SFG / SHG，太赫茲光譜，時間分辨光譜。

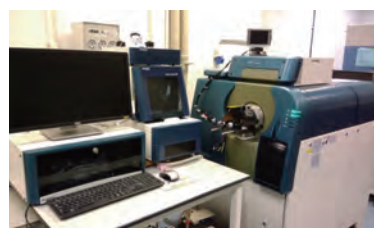
Ultra-High-Throughput Sequencing System

The high-throughput sequencing system can be widely used for large-scale genomics sequencing. It helps to fully understand the transcriptome by RNA sequencing (RNA-Seq); coding RNA and non-coding RNA analyzing; and exome sequencing (analyzing the protein coding region of the genome as a low-cost alternative to the whole-genome sequencing method).



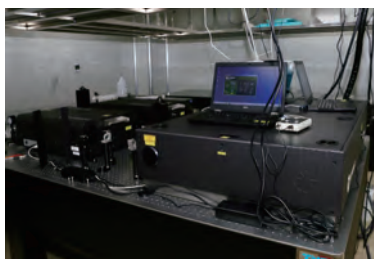
Triple Quadrupole Time-of-Flight Mass Spectrometer System

The Quadrupole time-of-flight mass spectrometer system (QTOF) can collect high-resolution MS/MS data for each detectable analyte in a sample.



Ultrafast Femtosecond Laser System

This system can output a wavelength of 240nm-20 μ m, which can be applied to fs micromachining, multidimensional spectroscopy, surface SFG / SHG, terahertz spectroscopy and time-resolved spectroscopy.



科研合作

Research Collaboration



聯合實驗室 - 澳門大學 & 中國科學院

Joint Laboratory - University of Macau (UM) & Chinese Academy of Sciences (CAS)



澳大科研重點布局與中科院聯合實驗室關聯支撐框架
The supporting framework of the joint laboratories of UM
and the Chinese Academy of Sciences



澳門大學 - 中國科學院生物物理研究所腦與認知科學聯合實驗室揭牌儀式
The Plaque Unveiling Ceremony of the UM-Institute of Biophysics of
the CAS Joint Laboratory of Brain and Cognitive Sciences



澳門大學 - 中國科學院腫瘤與基礎醫學研究所聯合癌症實驗室揭牌儀式
The Plaque Unveiling Ceremony of the UM-Institute of Cancer and Basic Medicine (ICBM) of the CAS Joint Cancer Laboratory



澳門大學 - 中國科學院深圳先進技術研究院人工智能與機器人聯合實驗室揭牌儀式
The Plaque Unveiling Ceremony of the UM-Shenzhen Institute of Advanced Technology (SIAT) of the CAS Joint Laboratory of Artificial Intelligence and Robotics



澳門大學 - 中國科學院海洋研究所海洋環境與工程聯合實驗室合作協議視頻簽約儀式
The Collaborative Agreement Signing Ceremony on Establishing the UM - Institute of Oceanology of the CAS Joint Laboratory of Ocean Environment and Engineering via Video Conferencing



澳門大學 - 中國科學院空天信息創新研究院空間信息聯合實驗室揭牌儀式
The Plaque Unveiling Ceremony of the UM-Aerospace Information Research Institute (AIR) of the CAS Joint Laboratory of Aerospace Information

聯合實驗室 - 粵港澳聯合實驗室

The Guangdong-Hong Kong-Macao Joint Laboratory

2020

1. 粵港澳污染物暴露與健康聯合實驗室
The Guangdong-Hong Kong-Macao Joint Laboratory on Pollutant Exposure and Health
2. 粵港澳數據驅動下的流體力學與工程應用聯合實驗室
The Guangdong-Hong Kong-Macao Joint Laboratory for Data-Driven Fluid Mechanics and Engineering Applications
3. 粵港澳中醫藥與免疫疾病研究聯合實驗室
The Guangdong-Hong Kong-Macao Joint Laboratory for Chinese Medicine and Autoimmune Disease Research
4. 粵澳先進智能計算聯合實驗室
The Guangdong-Macao Joint Laboratory of Advanced and Intelligent Computing
5. 粵港澳智慧城市聯合實驗室
The Guangdong-Hong Kong-Macao Joint Laboratory for Smart Cities

2021

1. 粵港澳人機智能協同系統聯合實驗室
The Guangdong-Hong Kong-Macao Joint Laboratory of Human-Machine Intelligence-Synergy Systems
2. 粵港澳光電磁功能材料聯合實驗室
The Guangdong-Hong Kong-Macao Joint Laboratory for Optoelectronic and Magnetic Functional Materials
3. 粵港澳光熱電能源材料與器件聯合實驗室
The Guangdong-Hong Kong-Macao Light-Heat-Electric Energy Materials and Devices Joint Laboratory
4. 粵港澳中子散射科學技術聯合實驗室
The Guangdong-Hong Kong-Macao Neutron Scattering Science and Technology Joint Laboratory



高校合作

Inter-University Collaboration

粵港澳高校聯盟

The Guangdong-Hong Kong-Macao
University Alliance



2019年7月，粵港澳高校聯盟年會暨校長論壇在澳大學辦
The Guangdong-Hong Kong-Macao University Alliance Annual Meeting
and Presidents' Forum 2019 was held in July 2019 at UM

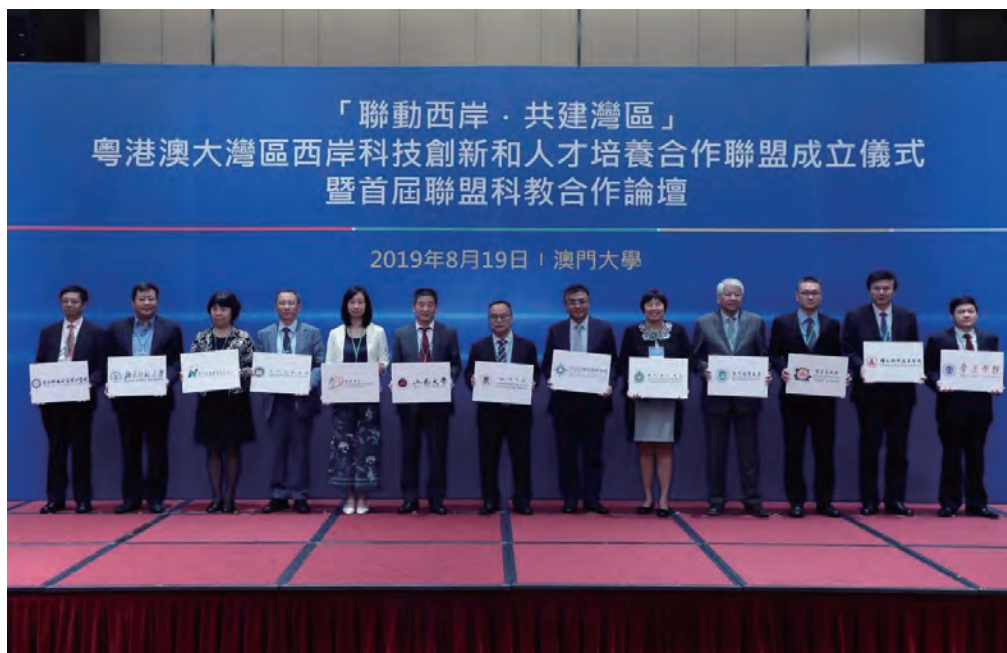
粵港澳高校聯盟成立於2016年7月，由澳門大學、中山大學和香港中文大學共同發起，澳門大學出任副理事長。聯盟以彙集粵港澳精英大學，培養高素質人才，推動三地共同邁向知識型經濟時代為宗旨，成立時獲國家教育部、國務院港澳事務辦、香港中聯辦及澳門中聯辦等多個單位支援。目前，共有41所粵港澳三地高校入盟，包括廣東25所、香港9所和澳門7所高校。

Established in July 2016, the Guangdong-Hong Kong-Macao University Alliance was initiated by the University of Macau, Sun Yat-sen University, and the Chinese University of Hong Kong. UM serves as the vice chair of the Alliance. The Alliance aims to bring together elite universities in Guangdong, Hong Kong and Macao, cultivate high-quality talents, and spearhead the Greater Bay Area's move towards a knowledge-based economy era. It was supported by the Ministry of Education, Hong Kong and Macao Affairs Office of the State Council, the Liaison Office of the Central People's Government in the Hong Kong SAR and the Liaison Office of the Central People's Government in the Macao SAR. So far, 41 universities in the Greater Bay Area have joined the alliance, including 25 in Guangdong, 9 in Hong Kong, and 7 in Macao.



粵港澳大灣區西岸科技創新和人才培養合作聯盟

The Alliance for Technological Innovation and Talent Development
in Western Guangdong-Hong Kong-Macao Greater Bay Area



2019年8月，粵港澳大灣區西岸科技創新和人才培養合作聯盟成立儀式暨首屆聯盟科教合作論壇在澳大學舉辦
The inauguration ceremony for the Alliance for Technological Innovation and Talent Development in Western GBA and the Alliance's First Forum on Collaboration in Technology and Education was held in August 2019 at UM

粵港澳大灣區西岸科技創新和人才培養合作聯盟成立於2019年8月，由澳門大學、北京師範大學—香港浸會大學聯合國際學院和五邑大學共同發起，共17間大灣區高校參與。聯盟啟動之初，以推動粵港澳大灣區西岸高校科教合作為主要目標，之後再逐步有序拓展至聯動科研院所及企業單位，以“促科創、育人才，聯西岸、建灣區”為理念，充分挖掘、發揮、整合西岸的科技和教育資源，協同創新、深化合作，積極配合粵港澳高校聯盟的工作，共同提升大灣區西岸科技創新和人才培養水平，攜手打造大灣區西岸科技創新中心和人才培養基地，實現大灣區區域協調發展。

The Alliance for Technological Innovation and Talent Development in Western Guangdong-Hong Kong-Macao Greater Bay Area (GBA) was initiated jointly by the University of Macau, Beijing Normal University-Hong Kong Baptist University United International College, and Wuyi University in August 2019. Currently, there are 17 member universities in the GBA joining the Alliance. The Alliance first promotes teaching and research among universities in the western GBA before shifting its focus to building relations among companies, research institutes, and universities in the region so that they can work closely to integrate teaching and research resources in the western GBA, in order to jointly promote innovation and deepen collaboration. In addition, the Alliance supports the effort of the Guangdong-Hong Kong-Macao University Alliance to enhance the quality of technological innovation and talent training in the western GBA to develop the region into a centre for technological innovation and personnel training.



澳門大學 - 清華大學博士後計劃

The University of Macau & Tsinghua University Joint Training Programme of Postdoctoral Scholars

澳門大學與清華大學於 2019 年 1 月簽署兩校聯合培養博士後合作協定，雙方將共同資助聯合培養博士後項目，依託兩所大學在工程、材料、信息、生命等優勢學科，開展前沿科技研究與國際一流博士後人才培養，共同為國家的戰略性科研工作開展作出卓越貢獻。



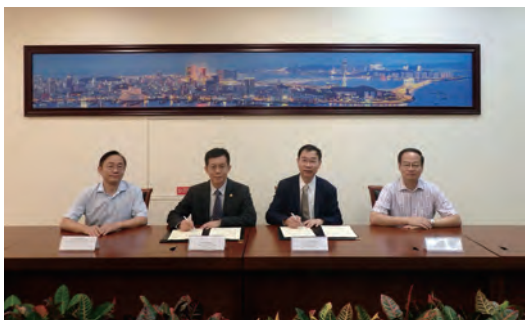
The University of Macau and Tsinghua University (THU) signed an agreement for a joint training programme of postdoctoral scholars in January 2019. UM and THU will jointly fund postdoctoral programmes, which means the strengths and resources of the two universities will be combined in certain disciplines, including engineering, materials science, information science, and life science. The two universities will collaborate in cutting-edge research and postdoctoral training to promote the development of strategic scientific research in China.

2019 年 1 月，澳門大學與清華大學簽署兩校聯合培養博士後合作協定
UM and THU signed an agreement on the joint training programme of postdoctoral scholars in January 2019

澳門大學與浙江大學簽署“2+4”醫學學習計劃

UM & Zhejiang University ‘2+4’ bachelor’s degree programme in biomedical sciences and clinical medicine

澳門大學與浙江大學於 2018 年 10 月簽訂課程合作協議，開展“2+4 生物醫學 - 臨床醫學”學士學位課程的人才聯合培養項目，修畢學生將獲得澳大生物醫藥學學士學位和浙大臨床醫學學士學位。是次協議簽訂為澳門有志從醫的學子提供進入中國一流大學求學的機會，也為澳門積累基礎醫學教育的人才和經驗，提升澳門整體的醫療實力。



UM and Zhejiang University signed a collaborative agreement on the launch of a ‘2+4’ bachelor’s degree programme in biomedical sciences and clinical medicine in October 2018. Graduates of the programme will receive a bachelor’s degree in biomedical sciences from UM and a bachelor’s degree in clinical medicine from Zhejiang University. In addition to providing an opportunity for students wishing to pursue a career in medicine to study at a top-tier university in China, the agreement also helps Macao nurture professionals with previous medical education and allows them to accumulate experience in the field, thereby enhancing the overall quality of healthcare in the city.

2018 年 10 月，澳門大學與浙江大學簽訂合作協議，開展“2+4 生物醫學 - 臨床醫學”學士學位課程的人才聯合培養項目
UM and Zhejiang University signed a collaborative agreement on the launch of a ‘2+4’ bachelor’s degree programme in biomedical sciences and clinical medicine in October 2018

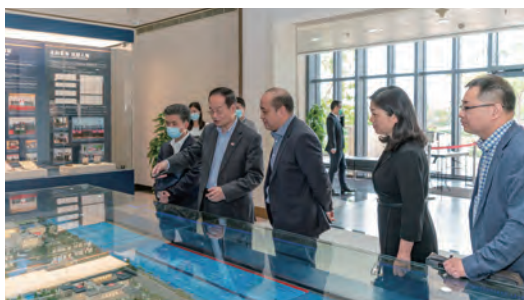


活動與交流 Event and Visit

FEB 9

2021 年 3 月 25 日，中國科協代表團一行參訪澳門大學。

A delegation from the China Association for Science and Technology visited UM on 25 March 2021.



MAR 31

2021 年 4 月 7 日，中國科學院海洋研究所王凡所長率團訪問澳門大學。

Wang Fan, director of the Institute of Oceanography, Chinese Academy of Sciences, led a delegation to visit UM on 7 April 2021.



2021 年 2 月 9 日，澳門特別行政區行政會參訪澳門大學。

The Executive Council of Macao SAR visited UM on 9 February 2021.



MAR 25

2021 年 3 月 31 日，國家電投集團廣東電力有限公司參訪澳門大學。

A delegation from the subsidiary in Guangdong Province of the State Power Investment Corporation Limited visited UM on 31 March 2021.



APR 7

MAY 24

2021 年 6 月 4 日，澳門特別行政區公共資產監督規劃辦公室及科學技術發展基金信託委員會訪問澳門大學。

Public Assets Supervision and Planning Office of Macao SAR and FDCT Trustee Committee visited UM on 4 June 2021.



2021 年 5 月 24 日，珠海澳大科技研究院中華醫藥及轉化醫學研發中心舉辦啟用儀式。

An inauguration ceremony for a research and development centre for Chinese medicine and translational medicine under ZUMRI was held on 24 May 2021.



JUN 4

2021 年 6 月 17 日，中信集團及澳門電訊參訪澳門大學。

A delegation of CITIC Group and CTM visited UM on 17 June 2021.



JUN 17

2021 年 6 月 17 日，“內地與澳門科技合作委員會第十五次會議”嘉賓（包括科學技術部、國務院港澳事務辦公室、中國科學院、國家自然科學基金委員會等嘉賓）參訪澳門大學。

A delegation of the 15th Session of Science and Technology Cooperation Committee of Mainland China and Macao (including members from Ministry of Science and Technology of China, Hong Kong and Macao Affairs Office of the State Council, Chinese Academy of Sciences, National Natural Science Foundation of China) visited UM on 17 June 2021.



JUN 17

DEC 2

2021 年 12 月 2 日，「科創中國」大灣區創新論壇——集成電路與自動駕駛科技發展論壇在澳門大學舉辦。

China Science and Technology Summit – Guangdong-Hong Kong-Macao Greater Bay Area Technology Innovation and Achievement Transformation was held on 2 December 2021 at UM.



2021 年 12 月 2 日「科創中國」大灣區創新論壇——集成電路與自動駕駛科技發展論壇在澳門大學舉辦。

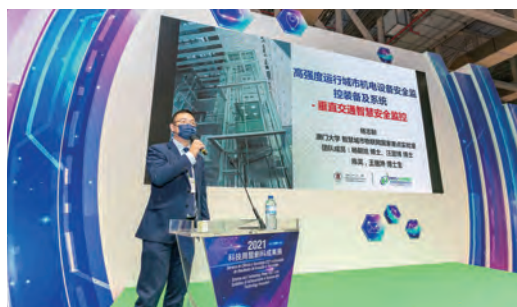
The ‘Science and Innovation China’ Greater Bay Area Innovation Forum – Integrated Circuit and Autonomous Driving Technology Development Forum was held on 2 December 2021 at UM.



DEC 3

2021 年 12 月 10 日 -12 日，澳門大學參加 2021 科技周暨科創成果展。

UM participated in the 2021 Science & Technology Week and Technology Innovation Products Exhibition on 10-12 December 2021.



DEC 10-12

2021 年 12 月 17 日，澳門轉化醫學創新研究院揭牌儀式在澳門大學舉辦。

UM held a plaque unveiling ceremony for the Macao Institute for Translational Medicine and Innovation on 17 December 2021.



DEC 17

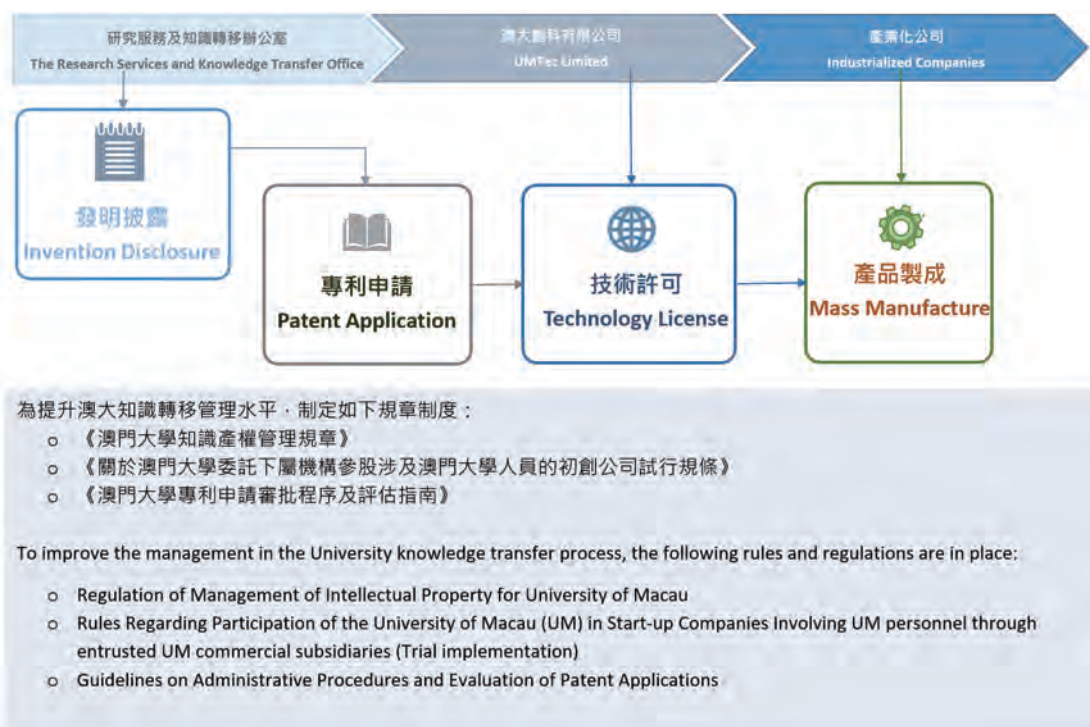
知識轉移

Knowledge Transfer



一圖看懂知識轉移路徑

A Glance at the Knowledge Transfer Process



知識轉移平台

Knowledge Transfer Platform

目前，澳門大學擁有兩個知識轉移單位：研究服務及知識轉移辦公室 (RSKTO) 及大學全資擁有的商業機構 - 澳大創科有限公司 (UMTec)。知識轉移單位為大學規劃、實施、協調、管理科技創新和研究成果相關工作。

對內，RSKTO 負責全面強化研究服務和知識產權保障意識，力求通過提升服務體系和運行機制來更有效地支撐研究活動的部署和開展。

對外，UMTec 專門負責承擔澳大知識產權的管理和產業化，在創新源頭支持、成果保護、孵化培育、知識評估等過程中營造創新要素高效流動的機制。

UM currently has two knowledge transfer units: The Research Services and Knowledge Transfer Office (RSKTO) and the UM's commercial subsidiary, UMTec Limited (UMTec). The knowledge transfer units are responsible for planning, implementing, coordinating, and governing innovation and research achievements for UM.

Internally, RSKTO promotes the awareness of research services and intellectual property protection all-round; and supports the deployment and development of research activities effectively by improving service systems and operation mechanisms.

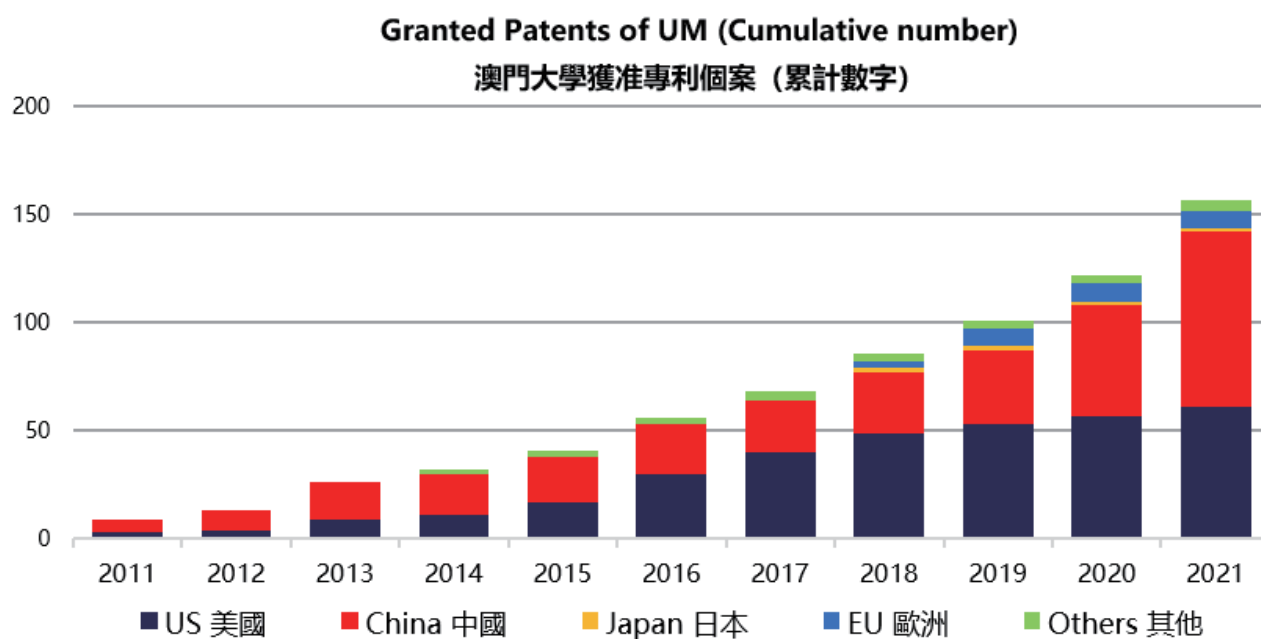
Externally, UMTec is specifically responsible for the management and industrialisation of UM's intellectual property and for creating an efficient flow of innovation elements in the process of innovation source support, research results protection, incubation/cultivation, and knowledge evaluation.

知識轉移成果

Knowledge Transfer Outputs

知識產權發展情況

Intellectual Property Development



澳大孵化企業 Incubated Companies



奧正醫療有限公司
AW Medical Company
Limited



蓓沐生物科技有限公司
Baylifetech Biotechnology CO.,
LTD.



天鐳科技有限公司
TMASS Technology Company
Limited



澳門盈福生物醫藥有限公司
Macao Informed Biomedicine
Company



RJC 生物科技有限公司
RJC and CO Biotech LTD.



臻善
澳門 TRUE CARE 科技有限公司
Macao True Care Technology
CO., LTD.



AlphaTable
阿法特科技有限公司
Alphatech Technology
CO. LTD.



起躍創科設計有限公司
Barra Creative Technology
and Design Limited



魔方文化創意有限公司
A-Cube Cultural & Creative
Company Limited



印蕉 (澳門) 有限公司
Printing Banana (Macao)
Company Limited



優創譯科技有限公司
Utran-i Technology LTD.



智管科技有限公司
Smart Guan Technology
Company Limited



南國優創工作室有限公司
Southern Utron Studio
Company LTD.



澳萊特能源科技有限公司
Wright Energy Technology CO.,
LTD.



智文有限公司
Smart Fusion LTD.



澳特朗能源科技有限公司
Faraday Energy Technology CO.,
LTD.



迪奇孚瑞生物科技
有限公司
Digifluidic Biotech Ltd.



紫電科技有限公司
Zidian Technology CO., LTD.



樂送科技有限公司
Deliver2U Tecnologia Sociedade
Unipessoal LDA.



看透你科技有限公司
Catydid Technology LTD.



金創克有限公司
Genetrump CO., LTD.



澳門松茸堂生物科技有限公司
Cordyceps Plus Biological
Technology (Macao) CO., LTD.



澳門拍著吃有限公司
Bideats Macao Limited



楊博科技投資有限公司
Yang Bo Technology Investment
Co., LTD.



伯樂未來
伯樂未來信息技術服務有
限公司
Botofuture Information
Technology Service
Company Limited



2048 (澳門) 有限公司
2048 (Macao), Limited



華藥精創研究院有限公司
Institute of Chinese Medical
Innovation, Limited



為我創造有限公司
BEME.Limited



故事不死有限公司
Story Never Die Studio



連創科技 (澳門) 有限公司
Leadtech (Macao)
Technology CO., LTD.



金果果科技有限公司
Gin Go Technology CO.,
LTD.



姚錢樹 (澳門) 有限公司
Yao Qian Shu (Macao), Limited

產學研合作

Industry-University-Research
Collaboration



“五位一體”產學研平台系統 Five-in-One Industry-University-Research System

澳大近年來充分重視產學研工作，透過建立五位一體成果轉化體系，逐步充實並完善澳大的研究創新及轉化體系。

UM has attached importance to Industry-University-Research (IUR) collaboration in recent years and enriched the system of research and knowledge transfer by setting up the Five-in-One IUR system.



澳大“五位一體”成果轉化體系
UM Five-in-One IUR System

創新平台

澳大積極參與國家、大灣區和澳門的重大科研平台建設，依託平台推動產學研創新發展。鼓勵及促進大學的聯合研究平台與企業合作，共同申報產學研合作類項目，以此為契機促進與產業界的合作與對接，探索與企業界的合作創新模式。加強與政府部門的交流和合，推動教研人員對技術成熟度高的研究進行應用研究類、試驗發展類項目的申報。

服務平台

對創新源頭和創新主體的高質量服務是產學研的基礎和保障。澳門大學透過研究服務及知識轉移辦公室(RSKTO)，全面強化研究服務和知識轉移工作。重點開展研究政策的制定執行、研究平台建設支持、研究預算編制修訂、研究項目申請服務、研究人才培養監督、研究獎項申報鼓勵、合作交流開拓推進、合作協議審批落實、知識產權申請保護等九個方面的工作。通過提升服務體系和運行機制來更有效地支撐研究活動的部署和開展，RSKTO積極完善以促進知識發現、共用和擴散為核心的科研項目服務管理體系，健全科研活動全週期管理。通過積極建

Innovation Platform

UM actively takes part in the construction of key research platforms in the country, the GBA and Macao. UM joint research platforms are encouraged to cooperate with enterprises and apply for IUR grants together to strengthen linkages and create new cooperation models with enterprises. Communication and cooperation with government departments are also necessary to stimulate scholars to transform their experimental research outputs with practical technological applications into products.

Service Platform

Providing high-quality service to all innovative parties guarantees the IUR process operating smoothly, and this is performed by RSKTO, an academic support unit that strengthens research service and knowledge transfer through the following nine aspects: research policy formulation and implementation, research platform establishment and support, research budget planning and alteration, research project application and management, research talent cultivation and management, research award application and promotion, collaboration exchange development and promotion,

設國家、大灣區和澳門的重大科研平台和綜合服務體系，落實大學“四個三”的科研戰略佈局。

管理平台

管理平台旨在落實澳門大學知識產權管理相關規章制度，持續審視和優化其執行與操作流程。透過RSKTO制定知識產權保護管理規章，在科研人員與應用企業間進行對接。透過澳大創科有限公司進行知識產權的運營與應用，系統地為澳門輸送科技創新團隊和初創企業。為澳大進一步開辦科技服務企業發揮示範作用。此外，積極聯絡本地企業，加強橫向研發合作，更有效地配合本地企業的發展需要，提升成果轉化的成效。

實踐平台

澳門大學著力建設澳大橫琴產學研示範基地——珠海澳大科技研究院，推動技術成果在大灣區的轉化。完成三間國家重點實驗室的橫琴分部，以及微電子、中華醫藥、智慧城市、轉化醫學、先進材料五大研發中心和高級培訓中心的建設，推動研究項目進駐產學研基地。依託珠海澳大科技研究院，有效整合澳門與內地科技創新要素協同發展，加強與大灣區高校、科研機構等聯合開展高水準的創新研究和技術研發，提升大學綜合科研實力，並加快科研成果在大灣區的轉化。

培育平台

透過協同創新研究院轄下的創新創業中心，把大學優秀學科的研究成果及具備產業化潛力的項目轉化到實際應用，大力培育本地年輕創業人才。挖掘推動更多具備潛質的創業項目入駐並提供孵化指導，加強與內地高校、橫琴產學研平台的合作，對接更多大灣區創投資源以支持大學創業項目，為發展



collaboration agreement review and management, and intellectual property application and management. Through the enhancement of the service system and operating mechanism, RSKTO facilitates knowledge discoveries, sharing and expansion, which is the core of the research project management system, and, in addition, helps to improve the full-cycle management of research activities. It will also put the ‘3+3+3+3’ research strategic layout into practice through the establishment of major scientific platforms and integrated service system of the nation, the GBA and Macao.

Management Platform

The Management Platform aims to implement the intellectual property management regulations of UM and to review and improve the execution and procedures related to the IUR system. Researchers can make linkages with enterprises following the regulations formulated by RSKTO and transform their intellectual property into products with the assistance of UMTec, which specializes in providing services for startups and businesses systematically. Furthermore, the platform is committed to keeping active contact with local companies and facilitate horizontal cooperation with them to effectively meet their demands and improve knowledge transfer.

Practice Platform

UM established the Zhuhai UM Science & Technology Research Institute (ZUMRI) in Hengqin, as its first industry-university-research demonstration base to promote knowledge transfer in the Greater Bay Area. In addition to undertaking a number of research projects, ZUMRI has set up branches of UM’s 3 state key laboratories in Hengqin, 5 research centres (microelectronics, Chinese medicine, smart city, translational medicine and advanced materials) and 1 executive training centre. Since the establishment of ZUMRI, the elements required for technological innovation in Macao and the Mainland have been effectively integrated to strengthen UM’s cooperation with universities and research institutions in the Greater Bay Area and enhance the comprehensive impact of UM and research achievement transformation in the Greater Bay Area.

Cultivation Platform

UM set up the Centre for Innovation and Entrepreneurship affiliated to the Institute of Collaborative Innovation to transform research achievements with commercial potential into real-world applications and cultivate local young entrepreneurs. The Centre seeks promising potential entrepreneurial projects and provides professional incubated

相對成熟的產學研項目進行校內和校外資源對接，鼓勵創業項目和學術研究向業界接軌，實現科研成果轉化。目前已經培育了包括紫電科技有限公司、2048 (澳門) 有限公司 等約 30 家澳大初創企業。

產學研示範基地

按照《粵港澳大灣區發展規劃綱要》的指導思想，澳門大學於 2019 年 3 月在橫琴設立了大灣區首個產學研基地——珠海澳大科技研究院（下稱“珠研院”），助力澳門大學加速融入大灣區並優化創新科研佈局，推動建設橫琴粵澳深度合作區，服務澳門產業多元化。

2019 年以來，珠研院已掛牌智慧城市物聯網國家重點實驗室、模擬與混合信號超大規模集成電路國家重點實驗室、中藥質量研究國家重點實驗室等 3 個國家重點實驗室的橫琴分部、橫琴先進智能計算平台澳門分中心，並陸續獲得“廣東省博士工作站”、“博士後科研工作站珠海澳大科技研究院分站”、“珠海市新型研發機構”、“珠海市中小企業開放實驗室”等平台資質認定。

依托澳門大學 3 個國家重點實驗室及優勢學院所的研究力量，產學研示範基地在珠海橫琴已設立微電子、智慧城市、先進材料、中醫藥及轉化醫學等 5 個研發中心及 1 個高級培訓中心，場地面積近 7000 平方米。截至 2021 年 12 月底，珠研院共獲得政府科研項目資助 108 項，其中科技部重點專項課題 7 項，國家自然科學基金重點及重大項目 4 項，國家自然科學基金面上及青年項目 76 項，其他政府專項 21 項，總金額超過人民幣 4,000 萬元；承擔企業委托研究項目合計 52 項，覆蓋智慧城市、集成電路、中醫藥質量研究領域，總金額超過人民幣 3,000 萬元。



guidance for them by strengthening cooperation between internal and external organizations such as universities in the Mainland, the IUR platform in Hengqin and venture capital institutions. So far, the Centre has incubated about 30 start-ups, including Zidian Technology Co., Ltd. and 2048 (Macao) Limited.

Industry-University-Research Demonstration Base

In response to the guidance detailed in the Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, UM set up its first industry-university-research demonstration base – the Zhuhai UM Science and Technology Research Institute (ZUMRI) in Hengqin in March 2019. The base aims to accelerate UM's integration into the innovation layout of the Greater Bay Area, facilitate the construction of the Guangdong-Macao In-Depth Cooperation Zone and serve to boost the economic diversification of Macao.

Since its establishment, ZUMRI has set up branches of UM's 3 state key laboratories (SKL-AMSV, SKL-QRCM, and SKL-IOTSC), a branch of the Hengqin Intelligent Computing Platform in Macao, and received approval for the Doctoral Research Centre of Guangdong Province, the Branch Centre of Postdoctoral Research at ZUMRI, New Research & Development Institution of Zhuhai, and the Open Laboratory for Startups of Zhuhai.

Taking advantage of the research resources of UM, ZUMRI has a research space of 7000 square meters, in which 5 R&D centres (microelectronics, Chinese medicine, smart city, translational medicine and advanced materials) and 1 executive training centre have been set up. By the end of 2021, 108 research projects were funded by government entities, including 7 key projects funded by MOST, 4 major and key projects funded by NSFC, 76 general and youth projects by NSFC and 21 projects funded by other departments. The total funding was over





RMB 40 million. In addition, ZUMRI undertook 52 enterprise commissioned projects on smart city, integrated circuit and Chinese medicine quality, with funding totalling over RMB 30 million.



企業合作

UM-Enterprise Cooperation

澳門大學 - 華發集團聯合實驗室

The UM-Huafa Joint Laboratory

2019年10月，澳門大學與華發集團簽署《澳門大學與珠海華發集團有限公司戰略合作框架協議暨共建澳門大學—華發集團聯合實驗室》協議，共建澳門大學—華發集團聯合實驗室。

澳門大學全力支持智慧城市物聯網國家重點實驗室、模擬與混合信號超大規模集成電路國家重點實驗室、中藥質量研究國家重點實驗室的建設，積極推動科技創新，提升科研成果的社會影響力。通過強強聯合與珠海國資龍頭企業中國500強華發集團建立合作，進行科研成果的開發轉化、產業化，最終推動粵港澳大灣區國際科技中心的建設。

第一批11個科創項目已正式進駐澳門大學—華發集團聯合實驗室。項目涉及中醫藥、集成電路、智慧城市等多個領域，在技術領先性、產業化就緒度、商業化前景等方面具有明顯優勢。

UM signed a strategic collaboration framework agreement to establish a joint laboratory with Huafa Group in October 2019. UM is fully committed to constructing its three state key laboratories (SKL-IOTSC, SKL-AMSV, and SKL-QRCM) to promote technology innovation and enhance its social impact. Through building strong collaboration with Huafa Group, which is listed among the Fortune China 500 and is a leading state-owned enterprise in Zhuhai, UM will strengthen knowledge transfer and commercialization and eventually help to accomplish the construction of the international science and technology centre in the Greater Bay Area. The Joint Laboratory has attracted its first batch of 11 research projects, which cover areas including Chinese medicine, integrated circuit, and smart city. All projects have prominent advantages in terms of technology leadership, industrialization readiness and commercialization prospects.





澳門大學 - 華發集團聯合實驗室揭牌儀式暨珠海澳大科技研究院啟用儀式於 2019 年 10 月舉辦
An inauguration ceremony for the University of Macau-Huafa Group Joint Laboratory and Zhuhai UM Science & Technology Research Institute was held in October 2019

聯合實驗室首批入駐項目

List of the First Batch of UM-Huafa Joint Laboratory Projects

序號 Serial No.	項目負責人 Principal Investigator	所屬學術單位 Affiliated Academic Unit	項目名稱 Project Title
1.	曲松楠 Qu Songnan	應用物理及材料工程研究院 IAPME	碳量子點腫瘤免疫治療技術 Carbon nanodots-based cancer immunotherapy
2.	王春明 Wang Chunming	中華醫藥研究院 ICMS	糖尿病足傷口敷料 Bioactive dressing for diabetic wounds
3.	劉子銘 Liu Ziming	健康科學學院 FHS	重症偵測血液螢光儀 Blood fluorometer for the monitoring of acute illness
4.	羅茜 Luo Qian	健康科學學院 FHS	製備，鑒定和申報脂質體二乙醯丹參酮 II A 作為一種治療耐藥和轉移性肺癌的新藥 Preparation and evaluation of liposomal acetyltanshinone IIA as a new drug for the treatment of drug-resistant and metastatic lung cancer
5.	陳國凱 Chen Guokai	健康科學學院 FHS	多能幹細胞來源的人皮膚角質細胞體外分化技術開發及應用 Technology development and applications of keratinocyte differentiation from human pluripotent stem cells

序號 Serial No.	項目負責人 Principal Investigator	所屬學術單位 Affiliated Academic Unit	項目名稱 Project Title
6.	賈豔偉 Jia Yanwei	模擬與混合信號超大規模集成電路國家重點實驗室 SKL-AMSV	基於數位微流控技術的可攜式藥物篩選平台 Portable drug screening platform based on digital microfluidic technology
7.	徐青松 Xu Qingsong	科技學院 FST	機器人微夾鉗系統研發及產業應用 Development and industrial application of robotic microgripper system
8.	周萬歡 Zhou Wanhuan	智慧城市物聯網國家重點實驗室 SKL-IOTSC	城市基礎設施安全監測與智慧物聯技術、儀器設備及產業化 Safety monitoring, smart IoT technology, instrument and equipment, and industrialization for urban Infrastructure
9.	郝天偉 Hao Tianwei	科技學院 FST	廢物資源化過程中揮發性有機酸及鹼度線上監測系統 Real-time automatic VFA&Alkalinity (V&A) analyzer
10.	楊志新 Yang Zhixin	智慧城市物聯網國家重點實驗室 SKL-IOTSC	智慧社區中電梯綜合安全監控大資料服務系統及應用 Intelligent safety monitoring of vertical transportation towards smart community
11.	唐遠炎 Tang Yuanyan	智慧城市研發中心 Smart City R&D Centre under ZUMRI	面向珠澳地區智慧園區的視頻物聯網關鍵技術與應用研究 Key technology of computer vision in internet of things for smart territory in Zhuhai-Macao region

澳門大學 - 澳門博維聯合實驗室

澳門大學與澳門博維資訊系統有限公司（下稱“澳門博維”）於 2021 年 2 月簽署戰略合作框架協議，共同建設澳門大學—澳門博維聯合實驗室。聯合實驗室將充分發揮在智慧城市、現代資訊技術、資訊安全、公共安全、大數據、物聯網、人工智能、雲管理等領域的研究優勢，透過整合雙方研發實力及資源優勢，以創新性研究拓展科技前沿，促進雙方在相關科學領域的研究與發展，打造核心科技的創新工程體系、科技創新載體和產學研合作平台。是次合作成為澳門校企深度合作的典範，不斷培育出創新型、國際化的高端人才，為澳門創造更多科技成果，助力澳門經濟適度多元可持續發展及粵港澳大灣區建設。



2021 年 2 月，澳大和博維簽署戰略合作框架協議
UM and BoardWare signed a strategic collaboration framework agreement in February 2021

澳門大學 - 金域醫學聯合創新實驗室

為了推動澳門產業多元化，提高大灣區整體醫療科研轉化水準，澳門大學與廣州金域醫學檢驗集團股份有限公司於 2020 年 12 月簽署協定，共同建設澳門大學—金域醫學聯合創新實驗室。實驗室將配合澳門特區政府的發展策略和粵港澳大灣區的發展，充分發揮雙方在精準和轉化醫學、公共衛生、臨床檢驗等領域的合作需求和技術優勢，共同打造澳門檢驗醫學的新平台。



The UM-BoardWare Joint Laboratory

UM and BoardWare Information System Limited (BoardWare) signed a strategic collaboration framework agreement to establish the UM-BoardWare joint laboratory in February 2021. The Joint Laboratory will fully utilise the research advantages of both institutions in the fields of smart city technology, modern information technology, information security, public security, big data, Internet of Things, artificial intelligence, and cloud management. By integrating the R&D strengths and resources of both parties, the Joint Laboratory will carry out innovative research, promote each other's development in related fields, create an innovative system for engineering, and provide a platform for technological innovation and industry-academia collaboration. Both UM and BoardWare expect this collaboration to become a model of close cooperation between Macao's universities and businesses. Through this Joint Laboratory, it is hoped to nurture more innovative talent, create more technological achievements for Macao, and promote economic diversification and sustainable development in Macao, as well as the development of the Greater Bay Area (GBA).

The UM-KingMed Diagnostics Joint Laboratory

UM and Guangzhou KingMed Diagnostics Group Co, Ltd (KingMed Diagnostics) signed an agreement in December 2020 establishing a joint laboratory of innovation with the aim of promoting industrial diversification in Macao and improving the overall quality of medical research and technology transfer in the GBA. In line with the development strategy of the Macao SAR government and the development of the GBA, the Joint Laboratory will fulfill the demands for collaboration between the two parties and will take advantage of their strengths in the fields of precision and translational medicine, public health, and clinical diagnostics.

2020 年 12 月，澳門大學與金域醫學檢驗集團簽署協定共建澳門大學—金域醫學聯合創新實驗室
UM and KingMed Diagnostics signed an agreement on establishing a joint laboratory in December 2020

澳大與國電投 簽訂戰略合作框架協議

澳門大學與國家電力投資集團公司（下稱“國電投”）於 2020 年 11 月簽署戰略合作框架協議，冀通過校企合作，充分發揮以澳大科技、人才、信息和研究成果高度集中的綜合優勢及國電投在清潔能源領域的突出能力，進一步促進澳大科技創新和成果轉化，同時提升國電投自主創新能力和核心競爭力，雙方將在智慧能源、物聯網及人才培養與交流等領域開展全面合作，推動雙方的共同發展。



UM and SPIC signed a strategic collaboration framework agreement

UM and State Power Investment Corporation Limited (SPIC) signed a strategic collaboration framework agreement in November 2020. The agreement aims to promote technological innovation and the commercialisation of research results of the University, enhance SPIC's capacity for independent innovation and core competitiveness by making full use of UM's strengths in technology, talent, information, and research results, as well as SPIC's advantages in the field of clean energy. UM will cooperate fully with SPIC in the fields of smart energy, Internet of Things and talent development and exchange to promote the joint development of both parties.

2020 年 11 月，澳大與國電投簽署戰略合作框架協議
UM and SPIC signed a strategic collaboration framework
agreement in November 2020

澳大與南光簽訂 戰略合作框架協議

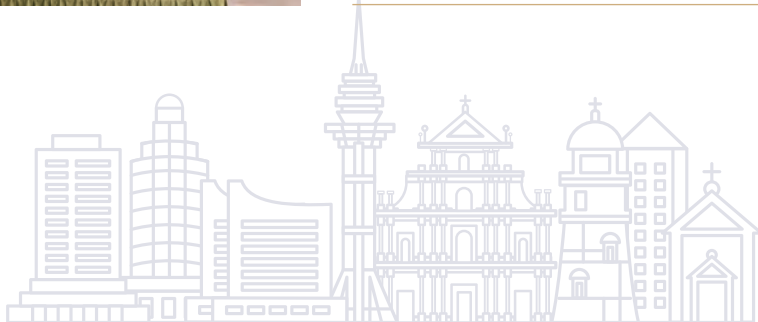
澳門大學與南光石油化工有限公司（下稱“南光”）於 2020 年 7 月簽署戰略合作框架協議，通過校企合作，進一步提升科研成果轉化、培育人才，共同建設澳門智慧城市。雙方將充分發揮各自的優勢，共同開展燃氣管網優化、能源物聯網、分佈式能源綜合利用及特種設備安全監控四個領域的深入合作，設立定期交流機制，加強在智慧城市、物聯網、智慧能源、大數據等領域人才培養方面的合作，推動粵港澳大灣區在相關領域的建設。



UM and NKOIL signed a strategic collaboration framework agreement

UM and Nam Kwong Petroleum & Chemicals Co., Ltd (NKOIL) signed a strategic cooperation framework agreement in July 2020. Through this agreement, both parties hope to promote the commercialisation of research results, cultivate talent, and jointly create a smart city in Macao. Both parties will give full play to their respective advantages and carry out cooperation in four areas, namely gas pipeline network optimization, energy Internet of Things, comprehensive utilisation of distributed energy, and special equipment safety monitoring. It is also planned to establish a mechanism for regular communication and strengthen cooperation in nurturing talent in such areas as smart city development, Internet of Things, smart energy, and big data, for the GBA.

2020 年 7 月，澳大與南光於簽署戰略合作框架協議
UM and NKOIL signed a strategic cooperation framework
agreement in July 2020



澳門大學與格力電器 簽訂戰略合作框架協議

澳門大學與珠海格力電器股份有限公司於 2020 年 10 月簽訂戰略合作框架協議，雙方將通過資源互通，優勢互補，以共建聯合實驗室為抓手，開展智慧能源、智能製造、物聯網、集成電路、新材料電池等多領域的全面合作，努力成為珠澳校企深度合作的典範，助力澳門產業適度多元，助力珠海產業轉型升級。



UM and Gree Electric signed a strategic collaboration framework agreement

UM and Zhuhai Gree Electric Enterprise Co., Ltd (Gree Electric) signed a strategic cooperation framework agreement in October 2020. The two parties will take the Joint Laboratory as the starting point to share resources, complement each other's advantages, and carry out cooperation in smart energy, smart manufacturing, Internet of Things, integrated circuit, and new material batteries. It will strive to become a model of in-depth cooperation between universities and enterprises in Zhuhai and Macao, boost Macao's economic diversification and Zhuhai's industrial transformation and upgrading.

2020 年 10 月，澳門大學與格力電器簽訂戰略合作框架協議
UM and Gree Electric signed a strategic cooperation framework
agreement in October 2020

人才培養

Talent Development



澳大人才計劃 UM Talent Programme

為配合澳門特區政府“教育興澳、人才建澳”的施政方針，進一步促進研究生教育的可持續發展和國際間的學術合作，澳門大學推出“澳大人才計劃”，以培養更多高端人才。計劃由澳門大學發展基金會及大學支持，包括“澳大博士生獎學金”、“澳大博士後研究員”、“澳大傑出訪問學者”和“澳大濠江學者”四個項目，旨在鼓勵著名大學的優秀畢業生到澳大深造和發展，以及吸引傑出學者與澳大人員進行學術交流和合作。



UM launched the UM Talent Programme, in order to train more high-calibre professionals, promote the sustainable development of postgraduate education, and strengthen international academic collaboration in support of the Macao SAR government's policy of 'building a better Macao through education'. Supported by the University of Macau Development Foundation and UM, the programme consists of four parts, namely the UM PhD Scholarship programme, the UM Postdoctoral Fellowship programme, the UM Distinguished Visiting Scholar programme, and the UM Macao Fellow programme. The programmes aim to encourage outstanding graduates from reputable universities to pursue further studies or develop their careers at UM, as well as to increase academic exchange and collaboration between UM and outstanding scholars.

澳大人才計劃
UM Talent Programme

澳大研究助理教授招聘計劃 UM Research Assistant Professor Recruitment Programme

2021年，澳門大學迎來建校四十週年校慶，為響應國家科技創新的總體規劃，進一步深化粵港澳大灣區國際科技中心建設部署，促進橫琴粵澳深度合作區新產業建設，澳大推出研究助理教授招聘計劃。通過引入高水平的研究助理教授，將組織實施一批國家所需、澳大所長的研究項目，著力構建大灣區科技創新的重要支點；大力推動產學研合作，培育和發展新產業，助力澳門經濟適度多元發展；加強研究生教育，推動建設大灣區西岸人才培養高地。通過引入滿載新知的年輕研究助理教授，為澳大教員隊伍的建設提供重要的人才來源和儲備。

The year of 2021 marks the 40th anniversary of the University of Macau. To support the nation's master plan for scientific and technological innovation, further deepen the building of the international centre of science and innovation in the GBA, and promote industrial development in the Guangdong-Macao In-Depth Cooperation Zone in Hengqin, UM has launched the Research Assistant Professor Recruitment Programme. High-calibre talents will be recruited to undertake research projects to serve the needs of the country and bring out the strengths of the University, thus providing important impetus for technological innovation in the GBA. This programme will vigorously promote industry-university-research collaboration and the development of new industries to diversify the economy of Macao. It will also enhance the University's postgraduate education and facilitate the formation of a talent training hub on the west bank of the GBA. These young and knowledgeable professionals will become an important source and talent pool for the faculty team development in UM.

數據資料

Facts at a Glance



基本概況 Overview

學校排名 University Rankings

2022 年泰晤士高等教育世界大學排名
University Rankings: THE 2022

201-250 位

ESI 前 1% 學科數量
Number of Research Fields in ESI Top 1%

10 個

2022 年泰晤士世界大學國際化發展
THE 2022 International Outlook

第 5 位

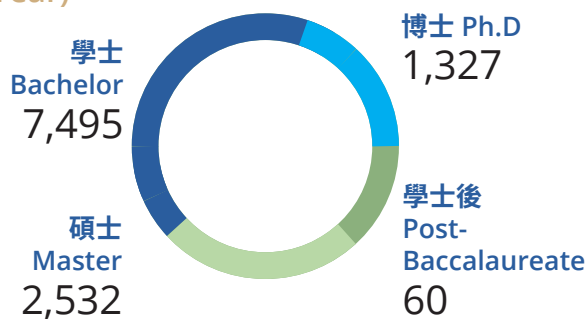
- 創校時間: 1981 年
Founded in: 1981
- 住宿式書院數量: 10 個
Number of Residential Colleges: 10
- 學院及研究院數量: 14 個
Number of Faculties & Institutes: 14

註冊學生數量 (2020/2021 學年)

Registered Students (2020/2021 Academic Year)

總人數
Total numbers

11,414

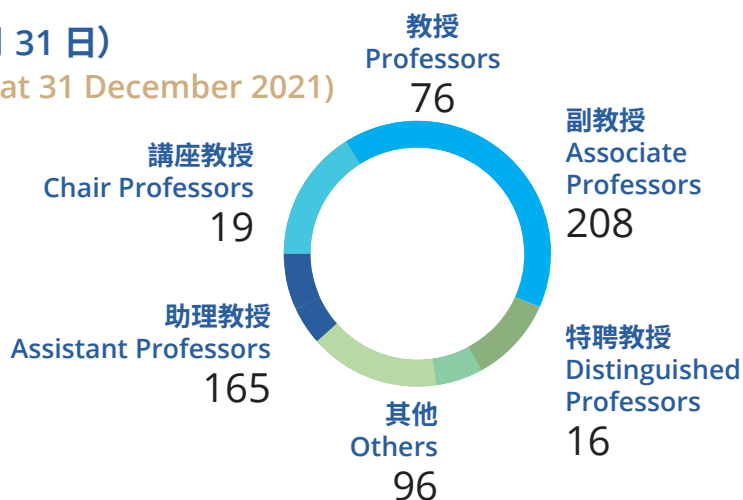


教學人員數量 (截至 2021 年 12 月 31 日)

Number of Faculty Members (as at 31 December 2021)

總人數
Total numbers

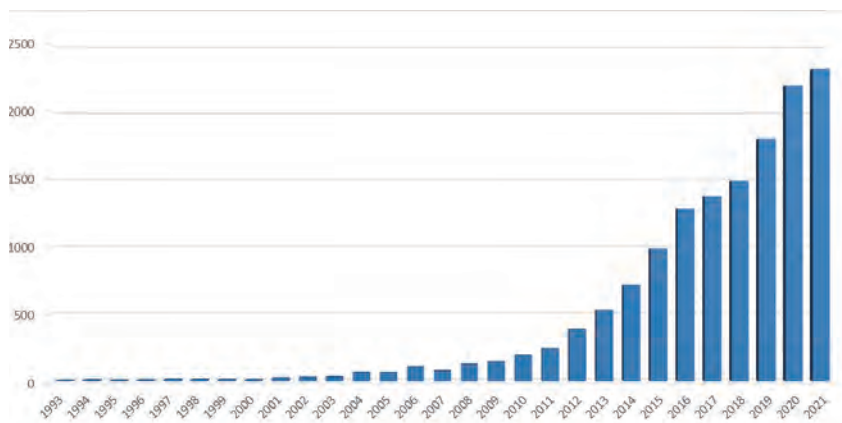
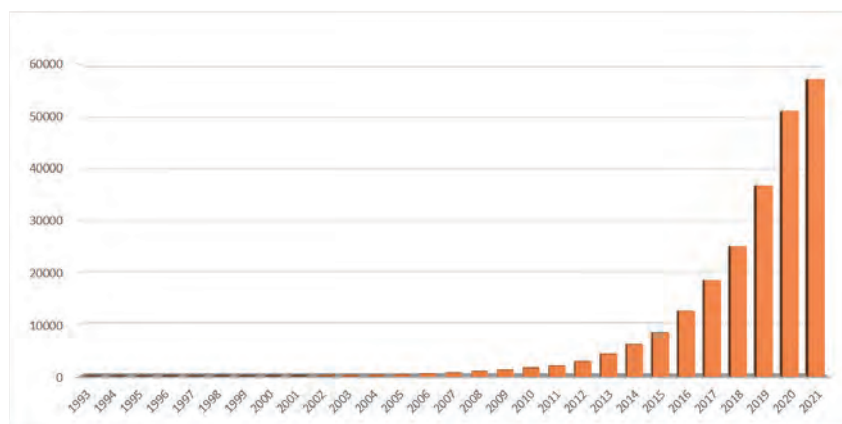
580



截至 2021 年 12 月 31 日
As at 31 December 2021

論文發表和被引數

Publications and Citations

期刊論文發表數量
Number of Published
Journal Papers期刊論文被引用次數
Citation Frequency of
Journal Papers

2020/2021 學年獲批科研項目

Approved Research Projects 2020/2021

- 澳門大學研究委員會資助的研究項目
數量: 52
資助金額: MOP 15,065,000
- 澳門特別行政區科學技術發展基金資助的研究項目
數量: 84
資助金額: MOP 140,974,700
- 澳門特別行政區高等教育基金資助的研究項目
數量: 3
資助金額: MOP 658,200
- 其他(包括內地、香港資助)項目
數量: 47
資助金額: MOP 29,612,200
- Research projects approved by the UM Research Committee
Quantity: 52
Funding amount: MOP 15,065,000
- Research projects approved by Macao SAR Science and Technology Development Fund
Quantity: 84
Funding amount: MOP 140,974,700
- Research projects approved by Macao SAR Higher Education Fund
Quantity: 3
Funding amount: MOP 658,200
- Research projects approved by other funding organizations (Including Mainland China and Hong Kong)
Quantity: 47
funding amount: MOP 29,612,200

科研項目申請

Research Project Application

內地科研項目 Mainland China Research Project		
級別 Level	資助單位 Funding Unit	項目類型 Funding Scheme
國家級 National	科技部 Ministry of Science and Technology	國家重點研發計劃 National Key R&D Project
		國家重點研發計劃青年科學家項目 National Key R&D Project-Young Scientist Programme
		戰略性科技創新合作重點專項 FDCT-MOST Joint Fund
	國家自然科學基金委員會 National Natural Science Foundation of China	優秀青年科學基金項目(港澳) Excellent Young Scientist Fund for Hong Kong and Macao
		青年科學基金項目 Young Scientist Fund
		面上 / 重點 / 重大研究計劃項目 General/Major/Key Research Programme
		國家自然科學基金委員會與澳門科學技 術發展基金聯合科研資助基金項目 FDCT-NSFC Joint Fund

內地科研項目 Mainland China Research Project		
省級 Provincial	廣東省 Guangdong Province	廣東省重點領域研發計劃 Guangdong Province Key R&D Project
		廣東省自然科學基金面上項目 Guangdong Province Natural Science Foundation General Project
		廣東省市聯合基金粵港澳研究團隊項目 Guangdong Provincial-Municipal Joint Fund for Hong Kong and Macao Research Team
		港澳科技成果來粵轉化項目 Hong Kong and Macao Knowledge Transfer in Guangdong Project
		廣東省國際科技合作專題 Guangdong Province International S&T Cooperation Scheme
		粵澳科技創新聯合資助專題 FDCT-GDST Joint Fund
		政策引導類計劃港澳台科技合作項目 Hong Kong, Macao and Taiwan Cooperation Project Guided by Government
		國際科技創新合作港澳台科技創新合作項目 International S&T Innovation Cooperation Project for Hong Kong, Macao, and Taiwan
		“科技創新行動計劃”港澳台科技合作項目 S&T Innovation Act Scheme for Hong Kong, Macao, and Taiwan S&T Cooperation
		產學研合作珠港澳合作項目 Industry-University-Research Cooperation Project for Zhuhai, Hong Kong, Macao Cooperation
市級 Municipal	江蘇省 Jiangsu Province	
	四川省 Sichuan Province	
	上海市 Shanghai City	
市級 Municipal	珠海市 Zhuhai City	
	深圳市 Shenzhen City	
	廣州市黃埔區 Guangzhou City Huangpu District	
其他 Others	五邑大學 Wuyi University	
	國家重點實驗室 State Key Laboratory	
		開放課題 Open Project



澳門特別行政區及大學科研項目 Macao SAR and UM Research Project		
級別 Level	資助單位 Funding Unit	項目類型 Funding Scheme
澳門特別行政區 Macao SAR	科學技術發展基金 Science and Technology Development Fund	一般科研資助 General Scientific Research Funding
		澳門科學技術發展基金與國家科技部聯合科研資助 Joint Funding with MOST
		澳門科學技術發展基金與國家自然科學基金委員會聯合科研資助 Joint Funding with NSFC
		澳門科學技術發展基金與廣東省科技廳聯合科研資助 Joint Funding with GDST
		澳門科學技術發展基金與葡萄牙科技基金聯合科研資助 Joint Funding with FCT
		澳門科學技術發展基金對參與歐盟 Horizon Europe 計劃之配套資助方案 Supporting Funding Scheme for Projects Admitted to EU's Horizon Europe
		科技創新提升計劃 Funding Scheme for Innovation and Technology Promotion
		企業產學研配對資助計劃 Funding Scheme for Industry-University-Research Partnership for Enterprises
		企業產學研配對資助計劃 Funding Scheme for Industry-University-Research Partnership for Enterprises
		重點研發專項資助計劃 Key R&D Programme
		構建「智慧城市」專項資助 Funding for Smart City of Macao
		博士後專項資助計劃 Postdoctoral Researcher Funding
		實驗室與研發中心專項資助計劃 Funding for Laboratories and R&D Centres
		高等院校科研儀器設備專項資助計劃 Scientific Research Devices and Equipment Funding

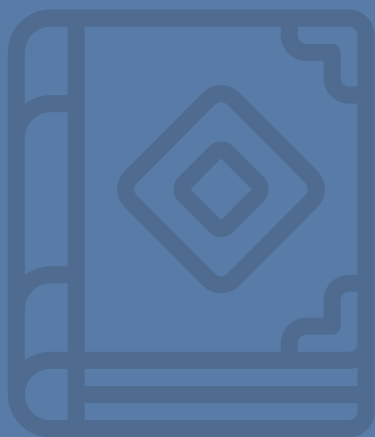


澳門特別行政區及大學科研項目 Macao SAR and UM Research Project

	高等教育基金 Higher Education Fund	澳門高等院校人文社會範疇研究專項資助計劃 Specialized Subsidy Scheme for Macao Higher Education Institutions in the Area of Research in Humanities and Social Sciences
		澳門高等院校中葡人才培訓及教研合作專項資助計劃 Specialized Subsidy Scheme for Training of Bilingual Talents of Chinese and Portuguese Language and Cooperation of Education and Research for Macao Higher Education Institutions
		粵港澳大灣區旅遊教育培訓專項資助計劃 Specialized Subsidy Scheme for the Tourism Education and Training for the Guangdong-Hong Kong-Macao Greater Bay Area
		多年度研究資助 - 一般研究資助 Multi-Year Research Grant-General Research Grant (MYRG-GRG)
		啟動研究資助 Start-up Research Grant (SRG)
校級 University	澳門大學研究委員會 UM Research Committee	講座教授研發資助 Research & Development Grant for Chair Professor(CPG)
		多年度研究資助 - 協同合作研究資助 Multi-Year Research Grant-Collaborative Research Grant (MYRG-CRG)
		會議資助 Conference Grant (CG)

研究委員會

Research Committee



研究委員會

Research Committee

2021/2022 成員 2021/2022 Membership		
主席 Chair	副校長(研究) Vice Rector (Research)	葛偉 Prof. Wei GE
成員 Member	人文學院 Faculty of Arts and Humanities	李德鳳 Prof. Defeng LI
	工商管理學院 Faculty of Business Administration	蕭志成 Prof. Ricardo Chi Sen SIU
	教育學院 Faculty of Education	周明明 Prof. Mingming ZHOU
	健康科學學院 Faculty of Health Sciences	徐仁和 Prof. Renhe XU
	法學院 Faculty of Law	Prof. Augusto Teixeira GARCIA
	社會科學學院 Faculty of Social Sciences	胡文詩 Prof. Anise Man Sze WU
	科技學院 Faculty of Science and Technology	蔡小川 Prof. Xiao-Chuan CAI
	人文學院 Faculty of Arts and Humanities	朱壽桐 Prof. Shoutong ZHU
	工商管理學院 Faculty of Business Administration	蕭澤忠 Prof. Jason Zezhong XIAO
	教育學院 Faculty of Education	Prof. Barry Lee REYNOLDS
	健康科學學院 Faculty of Health Sciences	沈漢明 Prof. Hanming SHEN



2021/2022 成員
2021/2022 Membership

成員 Member	法學院 Faculty of Law	Prof. Miguel Ângelo LOUREIRO MANERO DE LEMOS
	社會科學學院 Faculty of Social Sciences	盛力 Prof. Li SHENG
	科技學院 Faculty of Science and Technology	Prof. Carlos Jorge Ferreira SILVESTRE
	研究生院 Graduate School	阮家榮 Prof. Ka Veng YUEN
	中華醫藥研究院 Institute of Chinese Medical Sciences	陳新 Prof. Xin CHEN
	應用物理及材料工程研究院 Institute of Applied Physics and Materials Engineering	湯子康 Prof. Zikang TANG
	協同創新研究所 Institute of Collaborative Innovation	須成忠 Prof. Chengzhong XU
	微電子研究院 Institute of Microelectronics	羅文基 Prof. Man Kay LAW
	模擬與混合信號超大規模集成電路國家重點實驗室 (澳門大學) State Key Laboratory of Analog and Mixed- Signal VLSI (University of Macau)	麥沛然 Prof. Pui In MAK
	中藥質量研究國家重點實驗室(澳門大學) State Key Laboratory of Quality Research in Chinese Medicine (University of Macau)	李鵬 Prof. Peng LI
	智慧城市物聯網國家重點實驗室(澳門大學) State Key Laboratory of Internet of Things for Smart City (University of Macau)	馬少丹 Prof. Shaodan MA



