CHAPTER 6

创新无限

INNOVATION INTO THE FUTURE

创新无限
Innovation Into the Future

港城大（东莞）将“创新无限”理念贯穿人才培养全过程，通过创新学术架构、优化学科布局、革新教学方式，致力于培育面向未来的创新型人才。学校依托港城大的学科基础、教学经验和资源优势，结合港城大（东莞）的科研实力与大湾区产业需求，积极推动交叉学科建设与产业协同升级，填补前沿技术领域空白。

CityUHK (DG) embeds the concept of "Innovation Into the Future" throughout the entire talent-development journey. By advancing an innovative academic framework, optimizing programme design, and updating pedagogical approaches, the University is committed to nurturing future-ready, innovation-driven talent. Leveraging CityUHK's strong disciplinary foundations, teaching expertise, and global resources, and aligning them with Dongguan's scientific strengths and industrial needs in the Greater Bay Area, the University actively promotes interdisciplinary development and industry integration, helping to bridge gaps in emerging technological frontiers.

前沿实验平台
Cutting-Edge Laboratories

市级重点实验室

东莞市计算智能与安全重点实验室

Dongguan Key Laboratory of Computational Intelligence and Security

东莞市多尺度智能物质与先进制造交叉科学重点实验室（筹）

Dongguan Key Laboratory of Multiscale Intelligent Materials and Advanced Manufacturing (in preparation)

Municipal Key Laboratories

教学实验室

2024/25学年，港城大（东莞）完成15间教学实验室建设，总面积约1300平方米，涵盖材料、化学、光学、物理、智能制造、能源及生物医学工程等重点领域。完善的实验室体系为多学科实验教学有序开展提供了坚实条件保障，有效提升了实践教学能力与人才培养质量。

Teaching Laboratories

In the 2024/25 academic year, CityUHK (DG) completed the construction of 15 teaching laboratories with a total area of approximately 1,300 square meters. These facilities span key areas such as materials science, chemistry, optics, physics, intelligent manufacturing, energy science and engineering, and biomedical engineering. This comprehensive laboratory system provides strong support for delivering courses in different disciplines and significantly enhances the university's capacity for practical instruction and talent development.

材料教学实验室
Materials Science and Engineering Teaching Laboratory

能源教学实验室
Energy Science and Engineering Teaching Laboratory

生物医学工程教学实验室
Biomedical Engineering Teaching Laboratory

杰出科研成果
Outstanding Achievements

自我校筹建至2025年8月31日，累计发表学术文章153篇、其中SCI数据库收录98篇。在2024/25学年（2024年9月至2025年8月）期间，我校共发表学术文章70篇，其中SCI数据库收录62篇，高被引文章6篇，发表在Nature、Science及其子刊文章6篇。

*数据来源：Scopus及Web of Science数据库

截至2025年8月，我校累计承担各级各类科研项目29项，其中国家级项目10项、省级项目9项、横向项目10项，累计项目经费收入超过900万元人民币。

Since the University began its establishment phase up to 31 August 2025, our faculty have produced 153 scholarly publications, 98 of which are indexed in the SCI database.During the 2024/25 academic year (September 2024 to August 2025), we released 70 research articles, with 62 included in SCI-indexed journals. Six highly cited articles and six publications in Nature, Science and their subsidiary journals.

*Data source: Scopus and Web of Science databases.

As of August 2025, our institution has undertaken a total of 29 research projects at various levels, including 10 national-level projects, 9 provincial-level projects and 10 industry-sponsored projects, with cumulative project funding exceeding RMB 9 million.

基于肠道微生物组谱的多疾病多标签预测研究

黄志安助理教授团队针对传统单病种、单标签方法难以刻画肠道菌群与多种疾病复杂关联的问题，首次将基于人类肠道微生物组的疾病检测系统性建模为多标签分类任务，提出GutMLC 框架。该方法综合利用疾病与微生物语义相似性知识，引入矩阵分解与多标签特征选择，有效缓解微生物数据的高维、稀疏和异质性难题；同时设计带去偏权重的焦点损失函数，显著提升样本类别极度不平衡场景下的多病种联合预测能力。实验表明，GutMLC 在大规模跨项目数据集上显著提升了多种复杂疾病的并发预测精度，为基于肠道菌群的精准诊疗提供了强有力的计算工具。

Multi-disease, Multi-label Prediction Based on Gut Microbiome Profiling

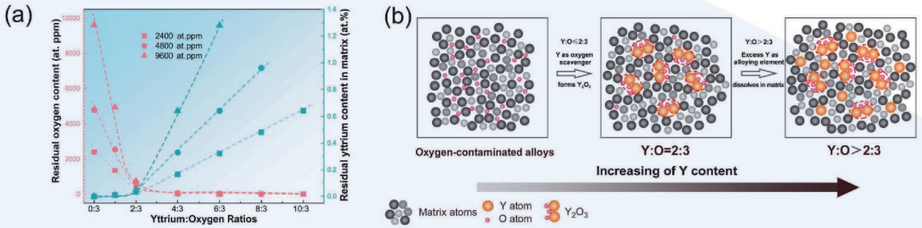
Assistant Professor HUANG Zhian's Team addresses the challenge that traditional single-disease, single-label methods struggle to capture the complex links between gut microbiota and multiple diseases. For the first time, the team formulated disease detection from human gut microbiome data as a multi-label classification problem and proposed the GutMLC framework. GutMLC leverages semantic similarity between diseases and microbial taxa, and integrates matrix factorization with multi-label feature selection to overcome the high dimensionality, sparsity, and heterogeneity common to microbiome datasets. The design also incorporates a bias-adjusted focal loss function to improve predictive performance in scenarios where disease classes are extremely imbalanced.Experiments on large-scale, cross-project datasets demonstrate that GutMLC significantly enhances the accuracy of concurrent predictions across multiple complex diseases, offering a powerful computational tool for microbiome-based precision diagnostics and treatment.

Zr基非晶合金研究

李毅讲席教授团队和吴桢舵副教授团队，联合东莞逸昊金属材料科技有限公司，共同开展了一项Zr基非晶合金的研究。该工作揭示了Y微量元素对于非晶形成能力的关键作用，可有力推动相关材料的商业应用。目前，东莞逸昊金属公司已将同类型产品应用在华为的先进折叠屏手机关键铰链材料，并且与我校开展相关产学研合作。

Research on Zr-Based Amorphous Alloys

The research teams led by Chair Professor Li Yi and Associate Professor Wu Zhenduo, in collaboration with Dongguan Yihao Metal Materials Technology Co., Ltd., have carried out a study on Zr-based amorphous alloys. Their work uncovered the critical role of trace amounts of yttrium (Y) in promoting the glass-forming ability of these alloys, a finding that holds strong promise for practical, industrial applications.Currently, Dongguan Yihao Metal has utilized these alloys in manufacturing the critical hinge components of advanced foldable smartphones for Huawei, and has launched collaborative industry–academia–research projects with the University to further develop and apply these materials.



拥堵感知交通预测新模型 CASA former

张祎凡助理教授团队提出创新模型：CASA former。CASA former 提出了一种创新的拥堵感知稀疏注意力 Transformer 模型，专注于提升交通拥堵状态下的速度预测精度。针对现有模型在低速预测中的不足，该模型设计了独特的稀疏注意力机制以聚焦关键拥堵节点，并引入自适应损失函数以应对数据不平衡问题。在公开数据集上的验证表明，该模型显著优于现有先进模型，尤其在 40mph 以下的拥堵速度预测中表现卓越，为智能交通管理和控制提供了更可靠的决策依据。

CASA former A Congestion-Aware Model for Traffic Prediction

Assistant Professor ZHANG Yifan's team developed CASA former, an innovative congestion-aware sparse-attention Transformer for traffic speed forecasting. Addressing the limitations of existing models, particularly their reduced accuracy under congested, low-speed conditions, the team designed a sparse attention mechanism that selectively focuses on congestion-critical nodes. They further introduced an adaptive loss function to mitigate the impact of data imbalance commonly seen in real-world traffic datasets. Experiments conducted on public benchmark datasets demonstrate that CASA former outperforms state-of-the-art baselines, with especially strong gains in predicting speeds below 40 mph, where congestion effects dominate. This work greatly helps with decision-making for intelligent traffic management and control.

产学研创新生态
Industry-Academia-Research Ecosystem

深化科研合作

港城大（东莞）与广东省科技厅、港城大共同签署《深度合作计划》，构建“政府引导+港校资源+湾区落地”的三方联动机制，旨在通过三方紧密协作，在科研攻关、平台建设、国际交流以及人才培育等多个关键领域实现突破与提升。学校还与中国散裂中子源、松山湖材料实验室等大科学装置及科研机构建立合作，共同推动重大科技成果产出与转化。

2025年4月，学校与港城大签署科研实验室共享框架协议。该合作旨在推动双方在科研与人才培养方面的深度融合，提升科技成果转化能力，服务东莞、大湾区乃至全国的科研与产业发展。

Deepening Research Collaboration

CityUHK (DG) has signed a Comprehensive Collaboration Plan with the Department of Science and Technology of Guangdong Province and CityUHK, establishing a tripartite mechanism that leverages government leadership, Hong Kong universities' resources, and implementation across the Greater Bay Area. It aims to facilitate breakthroughs and advancement in multiple key areas such as research breakthroughs, platform construction, international exchanges, and talent cultivation through close collaboration among the three parties. The University has also forged partnerships with large-scale scientific facilities and research institutes, such as the China Spallation Neutron Source and the Songshan Lake Materials Laboratory, advancing the generation and translation of high-impact scientific researches.

In April 2025, CityUHK (DG) signed a Shared Laboratory Framework Agreement with CityUHK. This initiative aims to foster deeper integration in research and talent development between the two campuses. The partnership will enhance the capacity for technology transfer and support the scientific and industrial advancement of Dongguan, the Greater Bay Area, and across China.

共建创新平台

2024 年 9 月，港城大（东莞）与东莞市科学技术局共建“香港城市大学（东莞）科技创新中心”，该中心将凭借港城大的世界级科研实力及东莞市的产业优势，建设成为集创赛承办、概念验证、项目孵化于一体的莞港科创孵化平台，促进两地的科研转化和产业化。

港城大（东莞）深度融入区域创新体系，先后加入“大湾区综合性国家科学中心先行启动区科学联盟”与“粤港澳高校联盟”，推动跨区域科研协同与资源共享。

孵化创业项目

港城大（东莞）积极引进“HK Tech 300”大型创新创业计划，该计划已投入 6 亿港元，培育了 900 多个初创项目，提供从种子基金、创业培训到投资配对的全方位支持。2024 年 9 月，港城大（东莞）依托香港城市大学（东莞）科技创新中心，协办了 HK Tech 300 全国创新创业千万大赛第二届颁奖礼暨第三届启动礼。同年 12 月，第三届“HK Tech 300 全国创新创业千万大赛”东莞赛区正式启动，吸引超 50 个初创项目报名参选，加速打造湾区创新创业的“强磁场”。

Building Collaborative Innovation Platforms

In September 2024, CityUHK (DG) partnered with the Dongguan Municipal Science and Technology Bureau to establish the City University of Hong Kong (DG) Technology Innovation Center. Leveraging CityUHK's world-class research capabilities and Dongguan's industrial advantages, the center aims to become a comprehensive platform for hosting innovation competitions, proof-of-concept development, and project incubation. This collaboration will promote the transfer and commercialization of research outcomes.

CityUHK (DG) is deeply integrated into the regional innovation ecosystem. It has joined both the Science Alliance of the Pilot Area of the Comprehensive National Science Center in the Guangdong-Hong Kong-Macao Greater Bay Area and the Guangdong-Hong Kong-Macao Universities Alliance, facilitating cross-regional research collaboration and resource sharing.

Entrepreneurial Ventures Incubation

CityUHK (DG) is actively introducing the large-scale innovation and entrepreneurship program HK Tech 300, which has invested HKD 600 million and nurtured more than 900 start-ups. The program offers comprehensive support from seed funding and entrepreneurial training to investment matchmaking.In September 2024, leveraging the CityUHK (DG) Technology Innovation Center, CityUHK (DG) co-hosted the second awards ceremony and the launch of the third edition of the HK Tech 300 National Start-up Competition. In December 2024, the Dongguan division of the third competition officially kicked off, attracting over 50 start-up teams and helping build a powerful innovation and entrepreneurship magnet in the Greater Bay Area.

组织研究生创新创业启航课程

2025年5月，港城大（东莞）凭借与港城大的长期深度合作关系，成功助力港城大研究生创新创业启航课程顺利实现内地首秀。这一具有开创性意义的课程，以“线下实训 + 线上深化”的独特模式精心打造。在港城大（东莞）校园，开展了为期3天的沉浸式工作坊。工作坊内，模拟了真实且复杂的创新创业场景，学员们全身心投入其中，积极思索、大胆尝试，在探索实践中不断积累经验、提升能力。不仅如此，后续还精心安排了3场线上专题精品课程，打破时间与空间的限制，让知识传递更加高效、精准、便捷。该课程邀请到海外资深导师团队亲临授课，他们拥有丰富的实战经验和深厚的学术造诣。围绕市场机遇挖掘、初创企业全流程管理、科研成果与市场精准对接及商品化路径等核心内容，导师团队深入浅出地讲解，为学员们创新创业搭建了一个优质的实践平台，助力他们在创新创业的道路上迈出坚实步伐。

Organised Graduate Research and Innovation Trek Programme

In May 2025, CityUHK (DG) successfully facilitated the debut of the Graduate Research and Innovation Training program of CityUHK on the Chinese mainland, thanks to its long-term and in-depth cooperation with CityUHK. This pioneering course was meticulously designed with a unique model of “offline practical training + online deepening”. A three-day immersive workshop was held at the CityUHK (DG) campus, where real and complex scenarios of innovation and entrepreneurship were simulated. Participants were fully engaged, actively thinking, and boldly experimenting, continuously accumulating experience and enhancing their capabilities through exploration and practice. Moreover, three online specialized courses were carefully arranged to break the limitations of time and space, making the transmission of knowledge more efficient, precise, and convenient. The course invited a team of experienced overseas mentors with rich practical experience and profound academic attainments to teach. Focusing on core contents such as market opportunity exploration, full-process management of start-ups, precise connection between scientific research achievements and the market, and commercialization paths, the mentor team provided in-depth and easy-to-understand explanations, building a high-quality practical platform for innovation and entrepreneurship for the participants and helping them take solid steps on the road of innovation and entrepreneurship.

促进莞港产业合作交流

2025年3月17日，以“莞港科技成果转化+产业赋能”为主题的莞港产业合作交流会（科技服务专场）在香港嘉里酒店顺利召开。该专场由东莞市人民政府主办，东莞市科学技术局、香港生产力促进局、东莞市科技人才发展促进会承办，东莞科技创新金融集团有限公司协办，为莞港产业合作交流会的平行活动。东莞市政协副主席卓庆，香港生产力促进局首席数码总监、内地业务首席执行官黎少斌，香港投资推广署创新及科技总裁黄炜卓及多位莞港高校科研院所部门负责人，莞港两地产业投资基金负责人、莞港科技企业及学会代表共计50多人出席本次活动。会上，我校李毅教授团队与东莞逸昊金属材料科技有限公司签订了合作协议，通过精准对接和高效服务，双方将充分发挥各自优势，加速科技成果应用转化和先进制造技术突破，为东莞乃至大湾区的先进制造业发展注入新动能。

Promoting Industrial Cooperation and Exchange Between Dongguan and Hong Kong

On March 17, 2025, the “Dongguan-Hong Kong Technology Transfer and Industrial Empowerment” themed Dongguan-Hong Kong Industrial Cooperation Exchange Conference (Technology Service Special Session) was successfully held at the Kerry Hotel in Hong Kong. This special session was hosted by the People's Government of Dongguan, organized by the Dongguan Science and Technology Bureau, the Hong Kong Productivity Council, and the Dongguan Science and Technology Talent Development Promotion Association, and co-organized by the Dongguan Science and Technology Innovation Finance Group Co., Ltd. The event brought together over 50 attendees participated, including Mr. ZUO Qing, vice chairperson of the Dongguan Committee of the Chinese People's Political Consultative Conference, Mr. LAI Shaobin, Chief Digital Director and Chief Executive Officer of Mainland Business of the Hong Kong Productivity Council, Mr. WONG Wai Chak, Director of Innovation and Technology of Invest Hong Kong, and heads of universities and research institutes, managers of industry investment funds, and representatives from technology enterprises and associations. At the event, Prof. LI Yi's team signed a cooperation agreement with Dongguan Yihao Metal Materials Technology Co., Ltd. Through precise matching and efficient services, both sides will give full play to their respective advantages, accelerating the application and transformation of scientific and technological achievements and the breakthroughs of advanced manufacturing technologies, and injecting new impetus into the development of advanced manufacturing in Dongguan and even the Greater Bay Area.

省科技厅来访调研 助力大学科研发展

2025年，广东省科技厅厅领导先后两次组织调研团队深入我校，为学校的发展带来了宝贵的指导意见与强大助力。3月26日，广东省科技厅厅长王月琴率领调研团队莅临我校，鲁春执行校长专题汇报办学情况，并强调我校与港城大在科研创新、人才培养的紧密联系和共同努力。王月琴厅长认真聆听汇报后，对我校工作表示高度认可，并表示通过本次调研对我校有了更加深入的了解，将全力支持我校与港城大的合作项目，并在人才引进政策方面给予更多支持。同年8月7日，广东省科技厅副厅长杨军带队来到我校开展调研工作。刘子顺副校长（研究与创新）聚焦学校科研进展，从科研项目申报、科研成果转化、科研平台建设等多个维度进行了详细汇报，杨军副厅长对学校在科研创新方面的积极探索和扎实工作表示赞赏，鼓励学校继续加大科研投入，为广东省的科技创新发展贡献更多力量。

GDDST Bolsters University's Research Development Through High-Level Visits

In 2025, the leaders of the Department of Science and Technology of Guangdong Province (GDDST) visited our university twice, providing valuable guidance and strong support for the university's development. On March 26, Ms. WANG Yueqin, Director of GDDST, led a team to visit CityUHK (DG) . Prof. Chun LU, the Executive President, briefed the delegation on the university's development and emphasized the close connection and joint efforts of CityUHK (DG) and CityUHK in research and talent cultivation. Ms. WANG expressed high recognition of our university's work and stated that through this research, she had a deeper understanding of CityUHK (DG) and GDDST would fully support the cooperation projects between CityUHK(DG) and CityUHK, and will provide more policy support in talent introduction. On August 7 of the same year, Mr. YANG Jun, the Deputy Director of GDDST, led a team to visit our university. Prof. Zishun LIU, the Vice-President (Research and Innovation), reported on the university's research progress, including research project application, research achievement transformation, and research platform construction. Mr. YANG expressed appreciation for CityUHK (DG)'s active exploration and solid work in research innovation and encouraged us to continue to increase investment in research and contribute more to the development of science and technology innovation in Guangdong Province.

实施粤港高校“1+1+1” 联合资助计划

2025年9月，在广东省科技厅大力支持下，港城大、港城大（东莞）联合实施粤港高校“1+1+1”联合资助计划，重点支持两校联合开展符合粤港澳大湾区经济社会发展需求并具有重要影响力的项目，催生一批具有国际影响力的原创科技成果，推动创新资源跨境流动，促进科技产业深度融合。该联合资助计划为期两年（2025－2026年），三方每年将共同投入不少于3000万元作为种子资金，其中广东省科学技术厅投入1000万元，港城大（东莞）投入1000万元，港城大投入1000万港币，为两校科研团队的合作提供坚实的资金保障。我校与港城大联合编制详细的实施方案并顺利获得广东省科学技术厅批复。同年10月，两校立即召开项目申报动员会，正式启动2025年度申报工作，积极鼓励两校科研团队投身其中，共同开启粤港科技合作的新征程，共同为大湾区科技发展贡献力量。

Guangdong-Hong Kong Universities “1+1+1” Joint Research Collaboration Scheme Implementation

In September 2025, with the strong support of the Department of Science and Technology of Guangdong Province, CityUHK and CityUHK (DG) jointly launched the Guangdong-Hong Kong Universities “1+1+1” Joint Research Collaboration Scheme. It aims to facilitate breakthroughs and advancement in multiple key areas such as research breakthroughs, platform construction, international exchanges, and talent cultivation through close collaboration among the three parties. This joint scheme lasts for two years (2025-2026), and the three parties will jointly invest no less than 30 million yuan each year as seed funds. Among them, the GDDST will invest 10 million yuan per year, CityUHK (DG) will invest 10 million yuan per year, and CityUHK will invest 10 million Hong Kong dollars per year. This will provide a solid financial guarantee for the cooperation between the research teams of the two universities. CityUHK (DG) and CityUHK jointly compiled the implementation plan, which was successfully approved by GDDST. In October of the same year, the two universities immediately held a project application mobilization meeting, officially launching the project application work for 2025, actively encouraging the research teams of the two universities to participate, jointly embarking on a new journey of science and technology cooperation between Guangdong and Hong Kong, and jointly contributing to the development of science and technology in the Greater Bay Area.

链接学术网络

2024年10月，由港城大与复旦大学联合主办、港城大（东莞）承办的化学与材料双边论坛在港城大（东莞）举办。本次会议聚焦国际化学与材料科学的前沿进展与趋势，邀请了包括中国科学院院士赵东元教授、欧洲科学院外籍院士张华教授在内的众多知名专家学者，深入交流化学与材料学科热点问题，充分彰显了港城大（东莞）与港城大在科研交流领域的紧密协作与深度融合，为推动化学与材料科学的发展搭建了高端交流平台。

Connecting Academic Networks

In October 2024, the CityUHK–Fudan Bilateral Forum on Chemistry and Materials, co-hosted by CityUHK and Fudan University and organized by CityUHK (DG), was successfully held on the Dongguan campus. Focusing on cutting-edge advances and emerging trends in international chemistry and materials science, the forum brought together a distinguished lineup of experts, including Professor Dongyuan Zhao, Academician of the Chinese Academy of Sciences, and Professor Hua Zhang, Foreign Academician of the European Academy of Sciences. Through in-depth discussions on key topics across chemistry and materials science, the forum highlighted the strong synergy and deep integration between CityUHK (DG) and CityUHK in academic exchange, establishing a high-level platform for advancing research in these fields.

*香港城市大学前沿学科学术论坛
*Forntier Disciplines Academic Forum CityUHK

2025年1月，由港城大主办、港城大（东莞）协办的港城大前沿学科学术会议系列论坛在港城大（东莞）举办。本次会议涵盖化学与化工、材料科学、管理科学、信息科学四大分论坛，吸引了来自哈佛大学、清华大学、武汉大学等多所知名高校的200余位国内外专家学者，共同聚焦学科前沿，深入研讨关键学术问题。港城大（东莞）与港城大的紧密配合，为专家学者们提供了深入研讨关键学术问题、聚焦学科前沿的优质交流环境，进一步深化了双方在科研交流方面的密切合作，有力推动了多学科领域的协同发展与创新突破。

In January 2025, the CityUHK Frontier Disciplines Academic Conference Series, hosted by CityUHK and co-hosted by CityUHK (DG) was held on the Dongguan campus. The conference featured four sub-forums in Chemistry and Chemical Engineering, Materials Science, Management Science, and Information Science, and attracted over 200 scholars and experts from leading global universities, including Harvard University, Tsinghua University, and Wuhan University. Together, participants explored frontier topics and engaged deeply with critical academic challenges. Through close coordination between CityUHK (DG) and CityUHK, the conference offered an exceptional environment for scholarly dialogue, further strengthening collaboration in research exchange and driving interdisciplinary development and innovation across multiple fields.