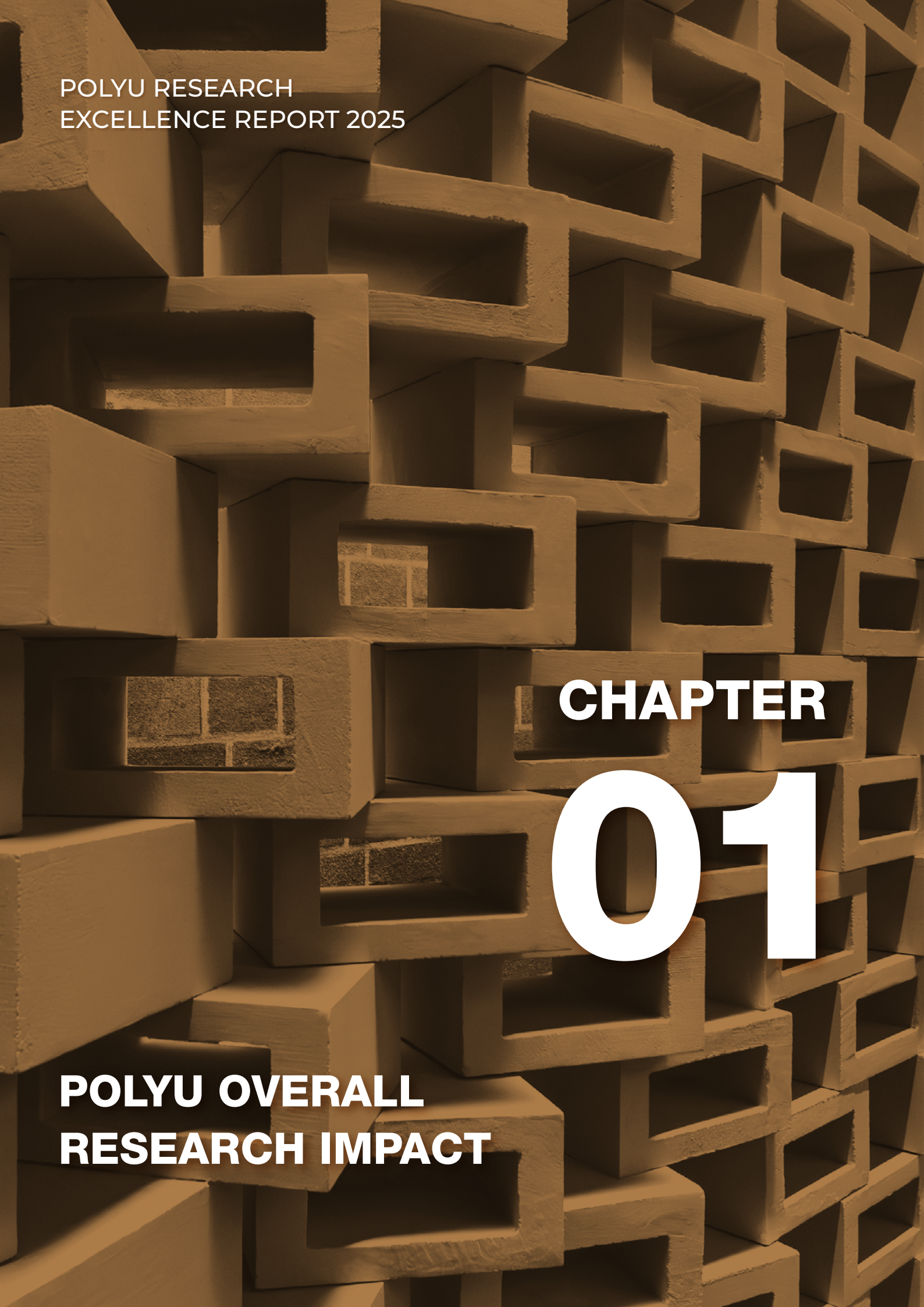

CHAPTER

01

POLYU OVERALL RESEARCH IMPACT

CHAPTER 1

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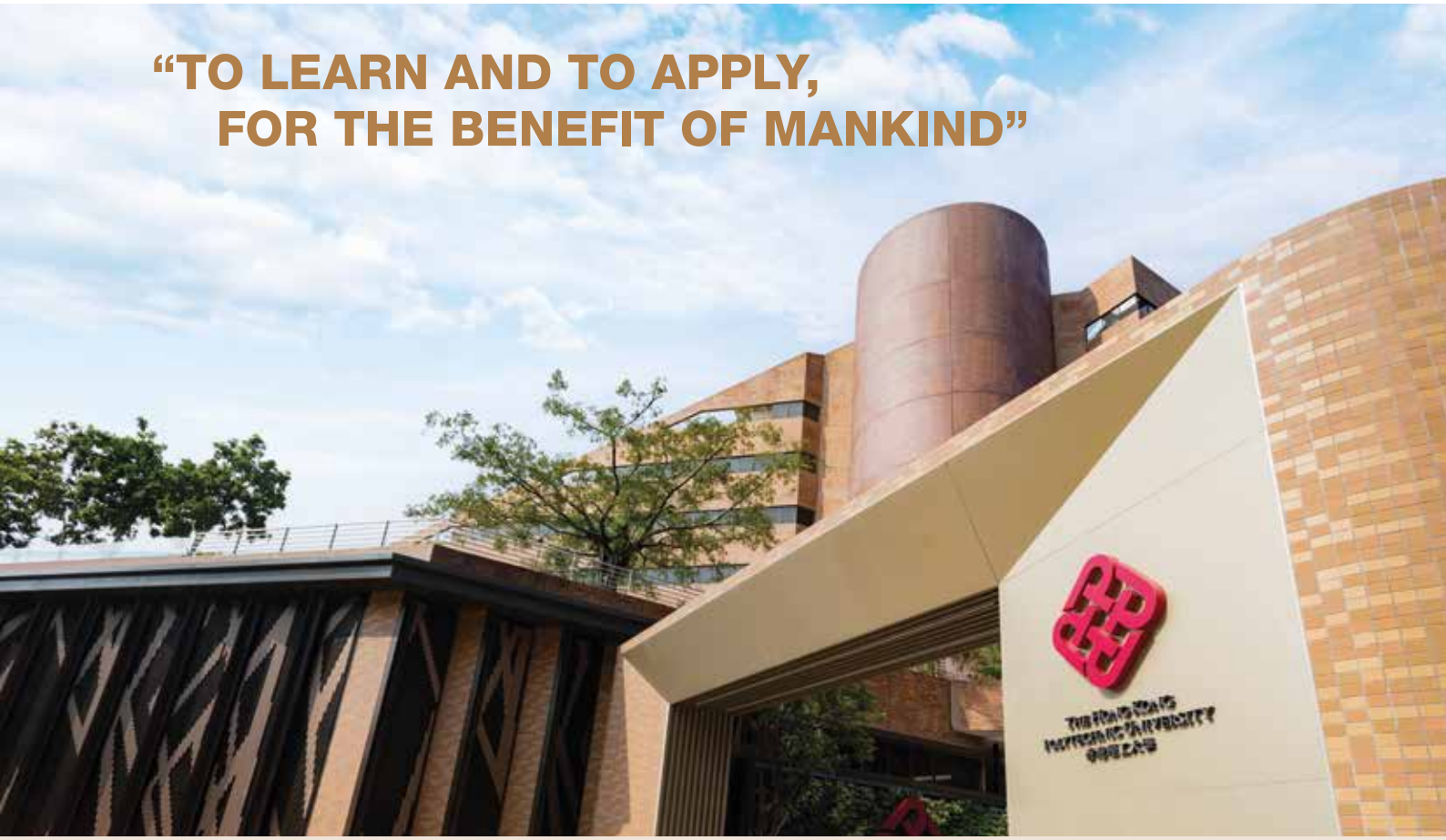
As one of the Top 100 universities globally, PolyU has significantly increased its research output and knowledge transfer in the past decade. In 2024, PolyU had the highest number of publications and the third highest number of granted patents among the UGC-funded universities, demonstrating its regional leadership in research excellence.

1.1 POLYU VISION AND MISSION

Established as the Government Trade School in 1937, shortly before World War II, to support the development of local technical education, The Hong Kong Polytechnic University (PolyU) has excelled by nurturing talent and driving positive impact. Aspiring to be an innovative world-class university, PolyU thrives with its vision to pursue excellence in education, research and knowledge transfer for the benefit of Hong Kong, the Nation and the world. Today, **PolyU is ranked among the world's Top 100 universities for its leadership in cutting-edge research, innovative teaching and contributions to sustainability.**



The University's mission centres on people: To nurture socially responsible professionals and leaders, and foster a community of belonging and pride. Guided by its motto, the University's core values have informed its newly published Strategic Plan (2025/26 – 2030/31), which has the theme **"Unite to Meet Challenges, Innovate to Benefit Society"**.[1] This objective highlights PolyU's commitment to advancing research excellence and delivering significant contributions to society.

This chapter will explore PolyU's overall research excellence with a focus on ranking performance, scholarly output, leading scholars, knowledge transfer and societal impact.

1 PolyU's Strategic Plan 2025/26 - 2030/31, https://www.polyu.edu.hk/cpa/Ebook/Strategic_Plan/2025-31/pdf/Polyu_StrategicPlan_25-31.pdf

1.2 UNIVERSITY RANKING PERFORMANCE

The University's excellence in education, research and knowledge transfer has earned it significant international recognition. PolyU is now among the world's Top 100 universities, with its positions in the Quacquarelli Symonds (QS) World University Rankings, Times Higher Education (THE) World University Rankings and U.S. News & World Report Best Global Universities Rankings all showing substantial improvements in the past decade (Figure 1), reflecting its unwavering pursuit of academic and research achievement. In the most recent ranking evaluations, **PolyU achieved 54th place in the QS World University Rankings 2026,[2] 58th in the U.S. News & World Report Best Global Universities Rankings 2025-2026,[3] and 80th in the THE World University Rankings 2026.[4]**

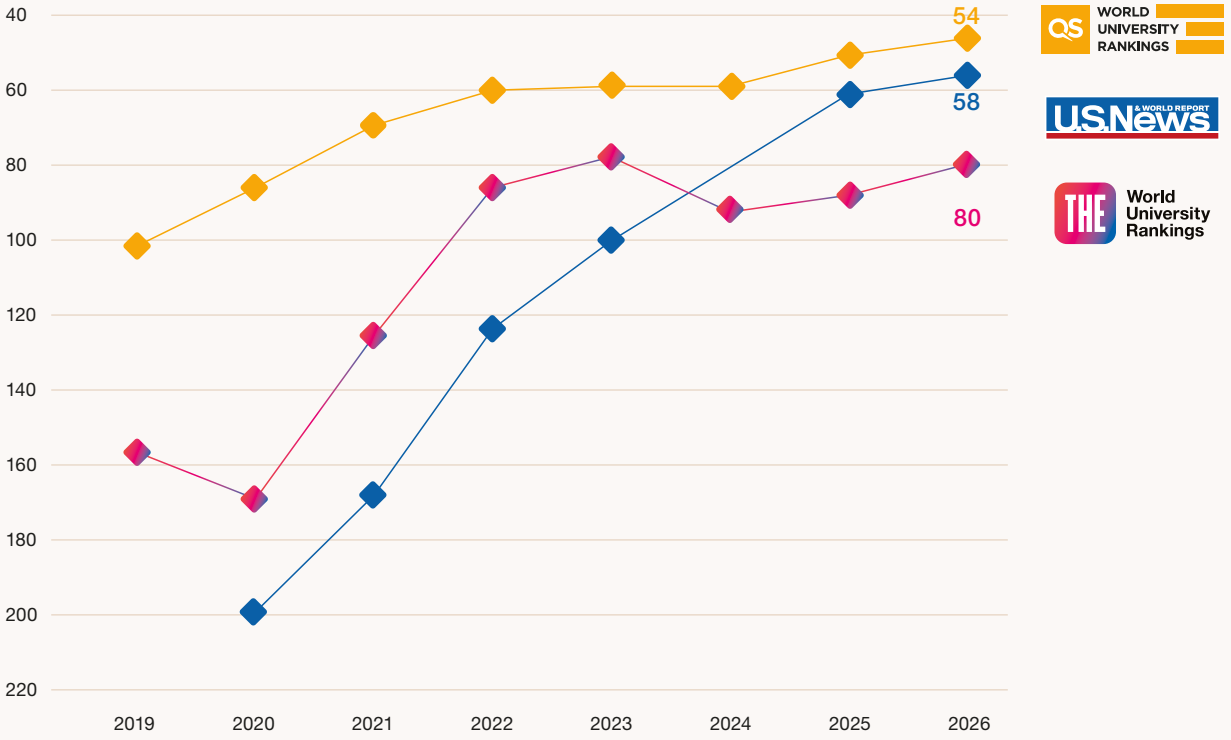


Figure 1. PolyU global university rankings

1.3 SUBJECT RANKING PERFORMANCE

PolyU educates students to be critical thinkers, innovative problem solvers and socially responsible global citizens. As part of its vibrant academic community, researchers and students can build a dynamic learning and research environment that not only empowers learning but also creates lasting impact. Established as a post-secondary technical institution, PolyU has evolved into a multidisciplinary institution that supports high-quality research endeavours across both fundamental and applied disciplines. **PolyU now has seven faculties: Business, Computer and Mathematical Sciences, Construction and Environment, Engineering, Health and Social Sciences, Humanities, and Science, as well as three schools: Design, Fashion and Textiles, and Hotel and Tourism Management**. Interdisciplinary integration supports the development of strategic, diversified and emerging research areas that attract and retain top scholars.

In response to changing workforce demands, PolyU is dedicated to curriculum innovation by continuously developing and launching cutting-edge programmes and refining its structure. For instance, the new Faculty of Computer and Mathematical Sciences was established in January 2025 to fulfil the growing demand for talent and impactful research in data science and AI. Additionally, the PolyU Marshall Research Centre for Medical Microbial Biotechnology was established in March 2025 to enhance the diagnosis and treatment of bacterial infections by utilising AI-driven e-biobanks. From the 2025/26 academic year onwards, PolyU offers programmes in emerging fields that include Interdisciplinary Studies, Quantitative Finance and FinTech, Intelligent Robotics Engineering, Vision Science and Innovation, and Sports Technology and Management.[5]

2 QS World University Rankings 2026, https://www.topuniversities.com/world-university-rankings?search=polytechnic
3 U.S. News & World Report Best Global Universities Rankings 2025-2026, https://www.usnews.com/education/best-global-universities/hong-kong-polytechnic-university-500421
4 THE World University Rankings 2026, https://www.timeshighereducation.com/world-university-rankings/hong-kong-polytechnic-university
5 PolyU programmes are offered in the 2025/26 academic year, https://www.polyu.edu.hk/en/media/media-releases/2024/0930_polyu-info-day-2024-to-be-held-on-12-october/

PolyU's strong performance in the global university rankings is closely tied to its outstanding performance in the global subject rankings, where the University consistently ranks first in Hong Kong (Figure 2). These achievements reflect PolyU's commitment to delivering world-class education and conducting impactful research that addresses societal needs.

In the QS World University Rankings by Subject 2025, seven PolyU disciplines rank in the global Top 30, with **Hospitality and Leisure Management, Art and Design, and Environmental Sciences achieving the highest rankings in Hong Kong.[6] Overall, 26 disciplines are listed among the world's Top 100.[7]**

PolyU's commitment to societal impact is also internationally recognised, as evidenced by its position at 56th in the THE Impact Rankings 2025, where it secured first in Hong Kong and 16th globally in Good Health and Well-Being (SDG 3).[8]

PolyU has demonstrated exceptional strength in engineering. **In the U.S. News & World Report Best Global Universities Rankings 2025 - 2026, PolyU ranked second globally in Civil Engineering, while its overall Engineering discipline ranked sixth in the world**. Its forward-thinking approach to transforming traditional engineering into sustainable solutions has also earned it the 11th position globally in Green and Sustainable Science and Technology, and the 18th position globally in Environmental Engineering.[9]

Beyond its strong performance in engineering, the University's collaborative environment fosters multidisciplinary talent in unique subjects. In the **ShanghaiRanking's Global Ranking of Academic Subjects 2025, PolyU globally ranked first in Hospitality and Tourism Management, and fifth in Textile Science and Engineering.[10]**

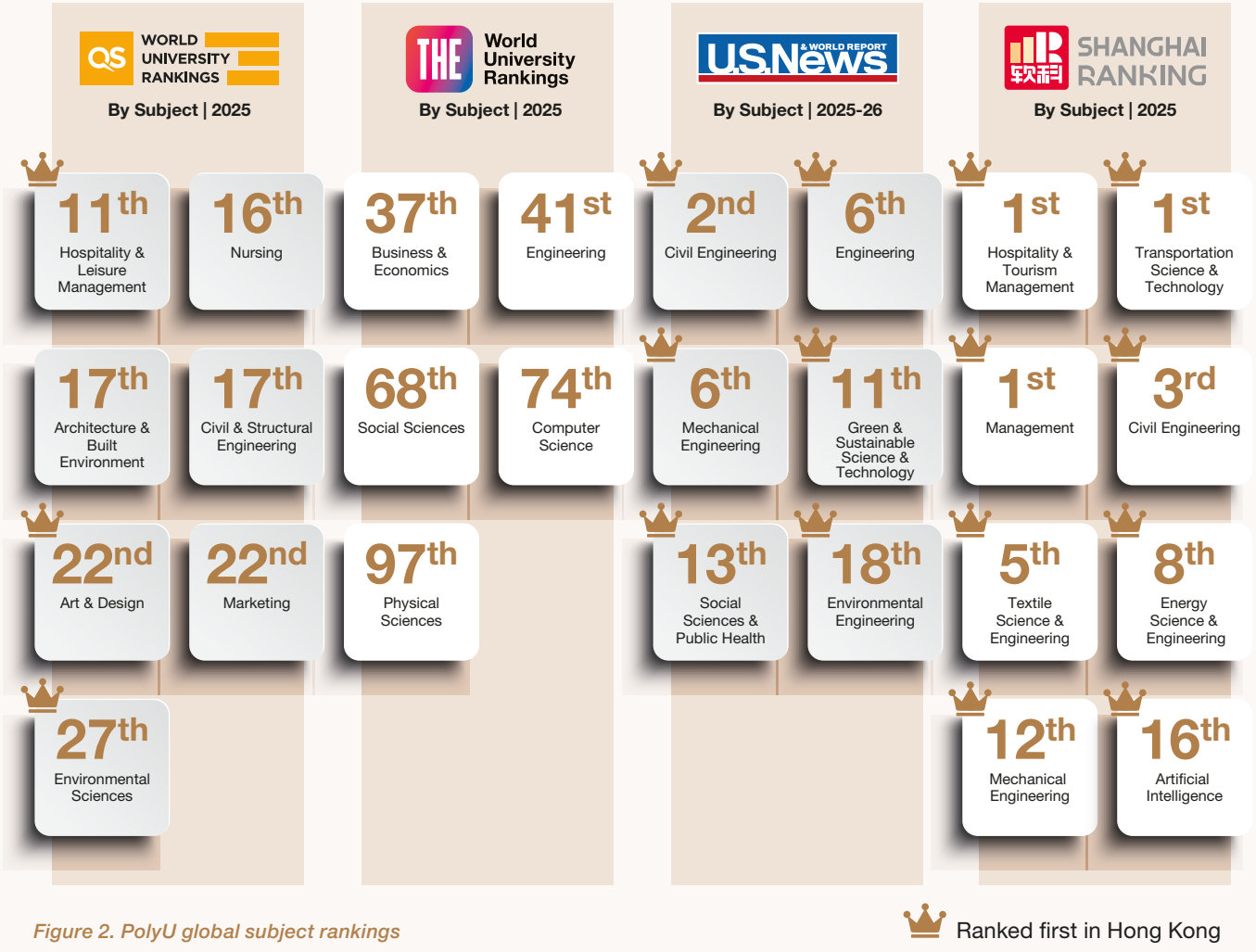


Figure 2. PolyU global subject rankings

6 QS World University Rankings 2026, https://www.topuniversities.com/universities/hong-kong-polytechnic-university
7 QS World University Rankings by Subject 2025, https://www.topuniversities.com/subject-rankings
8 THE University Impact Rankings 2025, https://www.timeshighereducation.com/impactrankings/good-health-and-well-being#!/length/25/locations/HKG/sort_by/rank/sort_order/asc
9 U.S. News & World Report Best Global Universities Rankings 2025-2026, https://www.usnews.com/education/best-global-universities/hong-kong-polytechnic-university-500421
10 ShanghaiRanking's Global Ranking of Academic Subjects 2025, https://www.shanghairanking.com/institution/the-hong-kong-polytechnic-university

1.4 RESEARCH PERFORMANCE

At PolyU, curiosity is transformed into solutions with the belief that knowledge can address the world's most pressing problems. Its research strategy emphasises interdisciplinary collaboration and finding innovative solutions to real-world problems. Specifically, PolyU implements targeted initiatives and partnerships that help turn ideas into positive societal, economic and environmental changes in Hong Kong and make significant contributions to the development of the Nation and beyond. This section explores the University's expanding research footprint and its contributions to global knowledge.

Research and innovation are facilitated by various bodies, including the PolyU Academy for Interdisciplinary Research (PAIR), the Research and Innovation Office (RIO), and the Knowledge Transfer and Entrepreneurship Office (KTEO).

PolyU hosts some of Hong Kong's premier research infrastructure and facilities and has deployed translational research platforms in Hong Kong and the Chinese Mainland for knowledge transfer and start-up incubation. It now supports eight National Research Laboratories, including two State Key Laboratories, three Greater Bay Area Joint Laboratories, two InnoHK Research Centres, 12 Interdisciplinary Research Institutes, eight Interdisciplinary Research Centres, 46 University-level Research Institutes, Centres and Facilities, and 25 Faculty and School-level Research Centres.[11] The National Research Laboratories, in particular, have contributed significantly to national missions, including deep space exploration.

To further support the Chinese Mainland's technology growth and implementation, PolyU has increased its footprint in the region. The University has aligned its research expertise, innovations and manpower with local industry needs, leveraging its partner cities' resources, including infrastructures, facilities and research funding. To date, PolyU has established 15 translational research institutes and centres in various cities in the Chinese Mainland,[12] which gives the University a significant presence in the Chinese Mainland and among the countries participating in the Belt and Road Initiative.

Between 2020 and 2024, PolyU had the second highest growth in publications among the eight universities funded by the University Grants Committee (UGC) in Hong Kong (Figure 3). It had the second highest number of publications among the UGC-funded universities, with a total of 38,265 publications during this period.

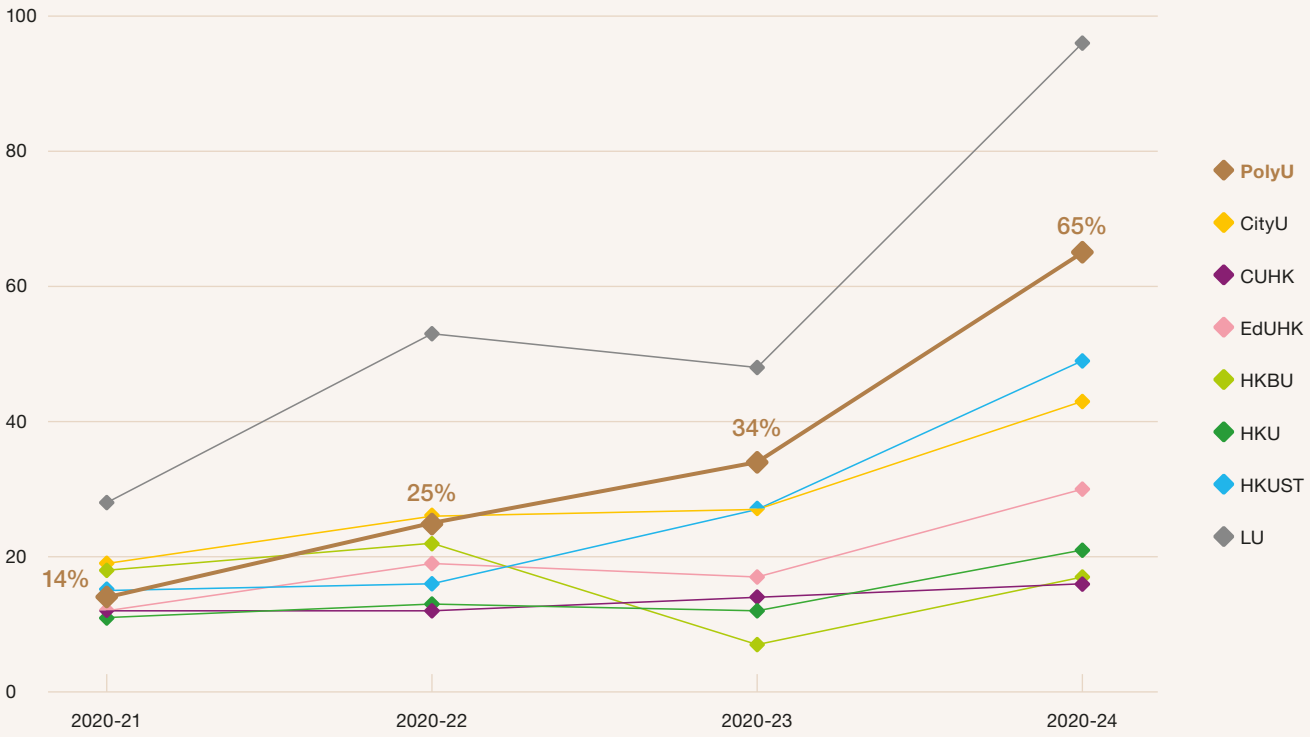


Figure 3. Cumulative publication growth: Hong Kong UGC-funded universities

11 A list of PolyU's Research Labs, Institutes and Centres, https://www.polyu.edu.hk/en/research/labs-institutes-centres/
12 PolyU's Strategic Plan 2025/26 - 2030/31, https://www.polyu.edu.hk/cpa/Ebook/Strategic_Plan/2025-31/pdf/Polyu_StrategicPlan_25-31.pdf

In 2024, with a steady and strong 65% growth in publications, PolyU had the highest number of publications in Hong Kong (Figure 4).

The quality of PolyU publications is also highly regarded in academia. Highly Cited Papers are publications performing in the Top 1% based on the number of citations received when compared to other papers published in the same field and the same publication year. Between 2020 and 2024, PolyU achieved a 55% increase in the number of Highly Cited Papers (Figure 5). Compared to Hong Kong, the Asia Pacific Region (APAC) and the world average, PolyU also consistently demonstrated a higher percentage of publications that achieved Highly Cited Papers status (Figure 6).

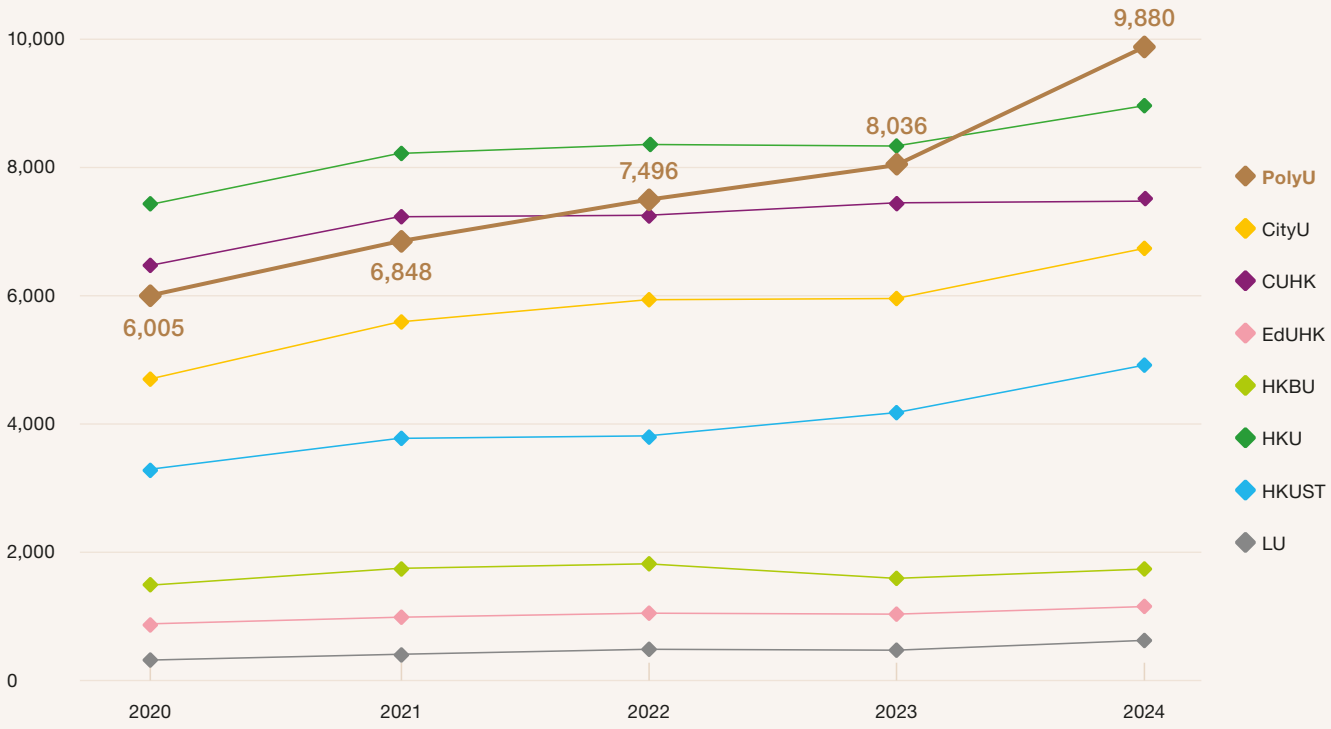


Figure 4. Number of yearly publications: Hong Kong UGC-funded universities

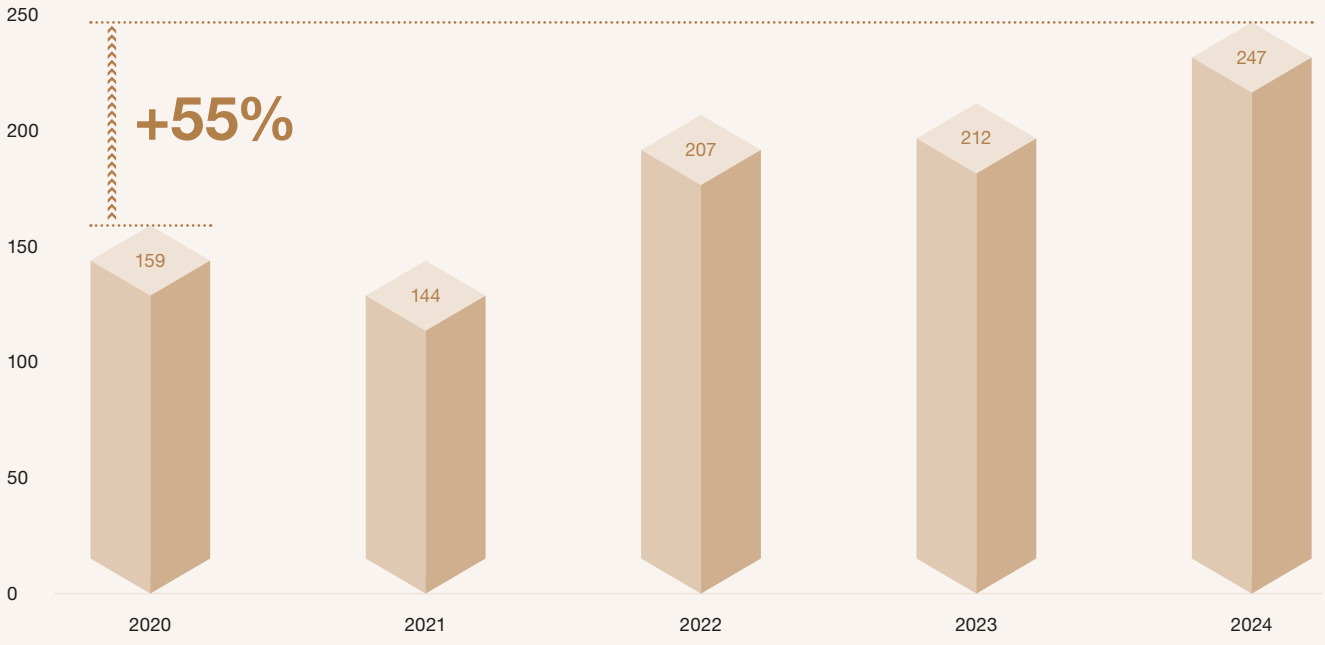


Figure 5. PolyU number of Highly Cited Papers

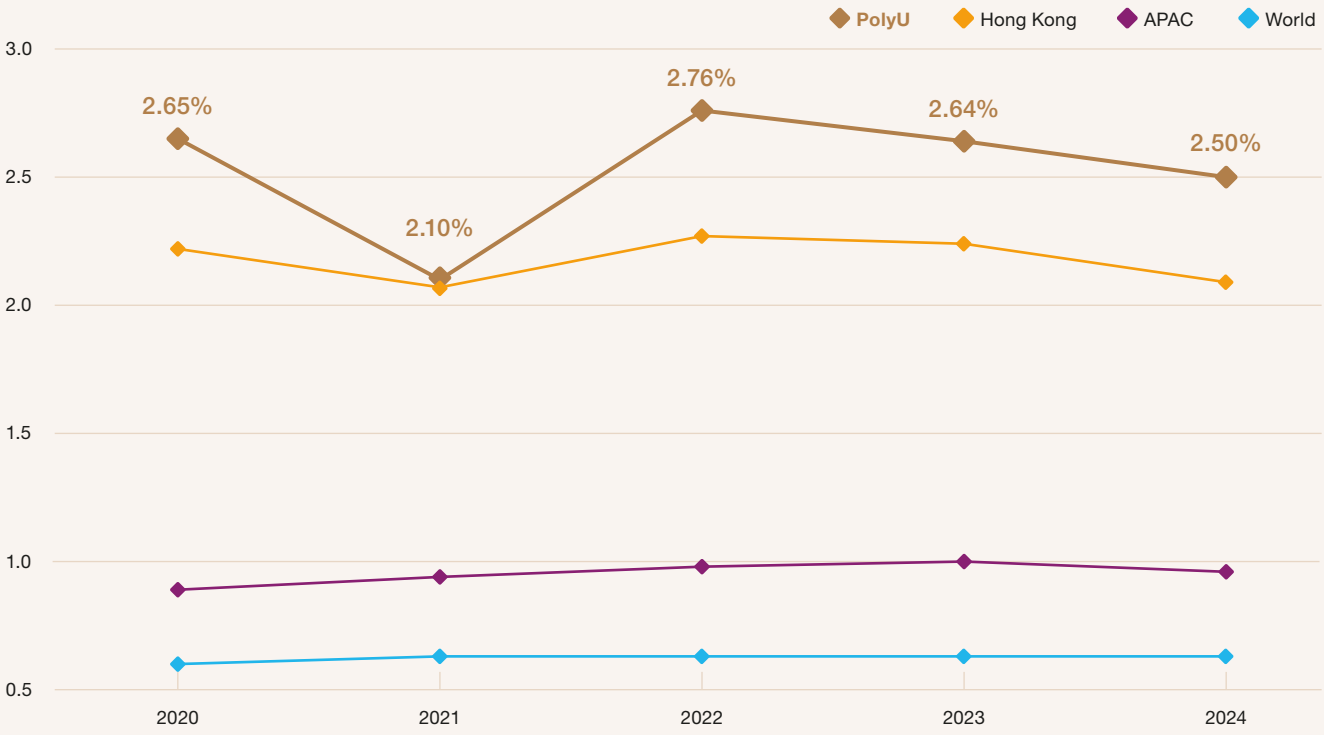


Figure 6. Share of Highly Cited Papers: PolyU, Hong Kong, APAC, and world

The University's rapid growth has also increased its global presence. Between 2020 and 2024, the percentage of global publications affiliated with PolyU increased by 63%. Similarly, the percentage of publications in Q1 publications and Top 10% global publications affiliated with PolyU increased by 58% and 54% respectively, while the percentage of global Highly Cited Papers affiliated with PolyU increased by 45% (Figure 7).

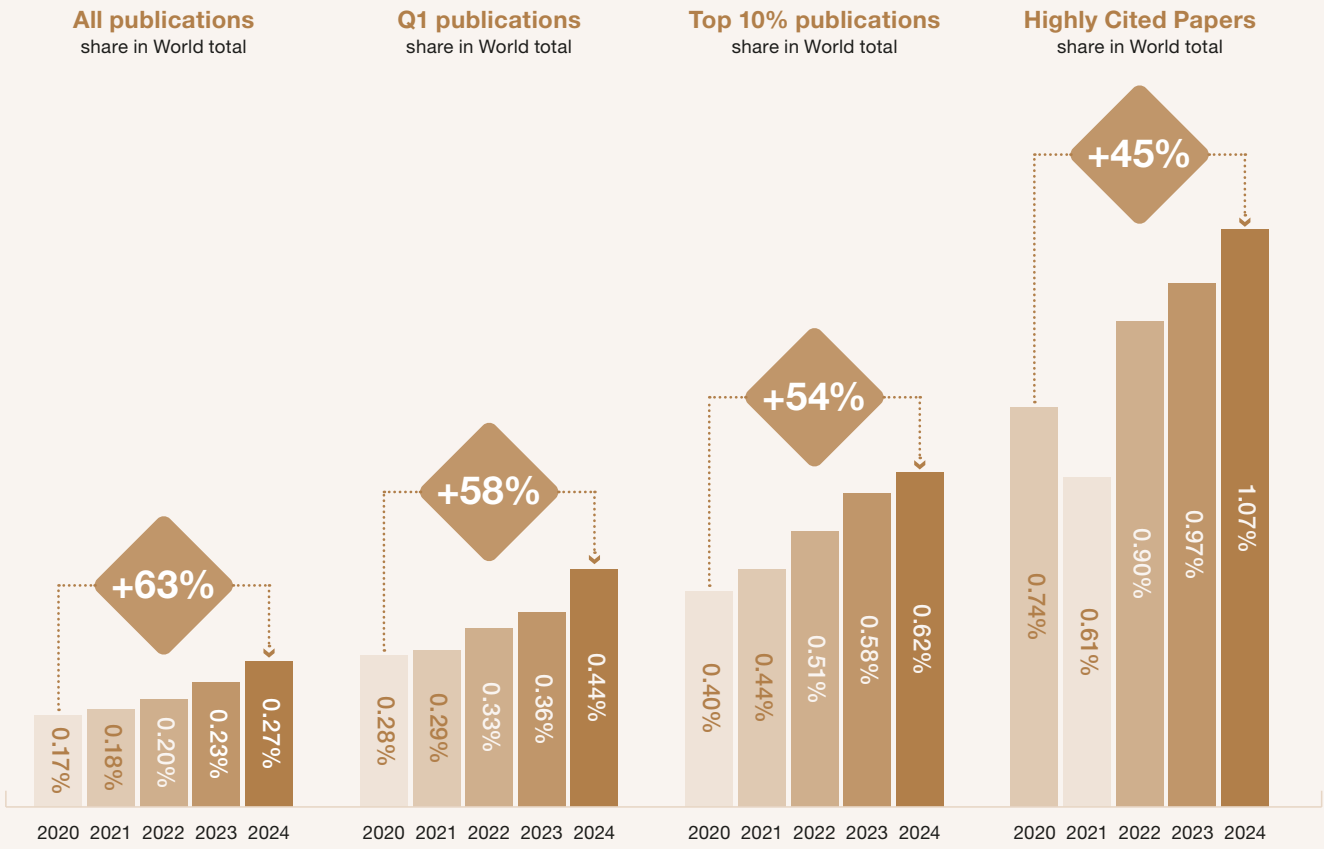


Figure 7. PolyU global share: all publications, Q1 publications, Top 10% publications and Highly Cited Papers

PolyU's markedly advancing research capabilities and international acclaim for its institutional excellence are closely tied to the dedication and efforts of its staff.

Clarivate's Highly Cited Researcher is a prestigious award for researchers who have multiple publications ranked in the top 1% worldwide by citations. In 2025, PolyU had 21 researchers recognised as Highly Cited Researchers.[13] Among them, **Professor John Lei ZHANG**, Chair Professor of Computer Vision and Image Analysis in the Department of Computing, has been listed for 12 consecutive years, while **Professor Gang LI**, Chair Professor of Energy Conversion Technology in the Department of Electrical and Electronic Engineering, has also been listed for 12 consecutive years.

Essential Science Indicators (ESI) measures citations authors receive in a 10-year period and determines the authors who are among the Top 1% in their research field based on citations. Currently, among the 1,353 ESI Top 1% researchers affiliated with institutions in Hong Kong, a total of 263 Top 1% researchers are affiliated with PolyU, the second highest among the eight UGC-funded universities. Within the 22 ESI research areas, PolyU had the highest number of Top 1% researchers in Engineering, Mathematics, and Biology and Biochemistry compared to the other seven UGC-funded universities.

1.5 COLLABORATION WITH LEADING GLOBAL INSTITUTIONS

As global challenges demand collective action, research collaboration is becoming increasingly critical for learning and innovation. PolyU embraces its role as a responsible global partner and cultivates collaborations with organisations and countries worldwide. As of January 2026, more than 600 international collaboration agreements have been signed with over 390 overseas institutions, spanning more than 45 countries and regions, including Australia, Belgium, Canada, France, Germany, Japan, Singapore, Sweden, the United Kingdom and the United States. These partnerships help to create meaningful societal contributions.[14]

In its research, PolyU is dedicated to applying its expertise to tackle both global and local challenges through extensive collaborations. Between 2020 and 2024, among its 38,265 publications, nearly 50% were with domestic collaborators and nearly 40% with international collaborators. Of these publications, 27% were with QS Top 50 universities, achieving a high Category Normalized Citation Impact (CNCI) of 2.27 that is more than double the world average (global average=1). In addition, all collaborations had a relatively high Average Impact over the 55th percentile, with some collaborations, such as with the Massachusetts Institute of Technology (MIT), reaching above the 77th percentile for their Average Impact (Figure 8). This aligns with the local funding landscape, as the UGC promotes high-quality research that is collaborative across institutions, disciplines and borders through schemes such as the Collaborative Research Fund and the Joint Research Scheme with the Chinese Mainland and the European Union.

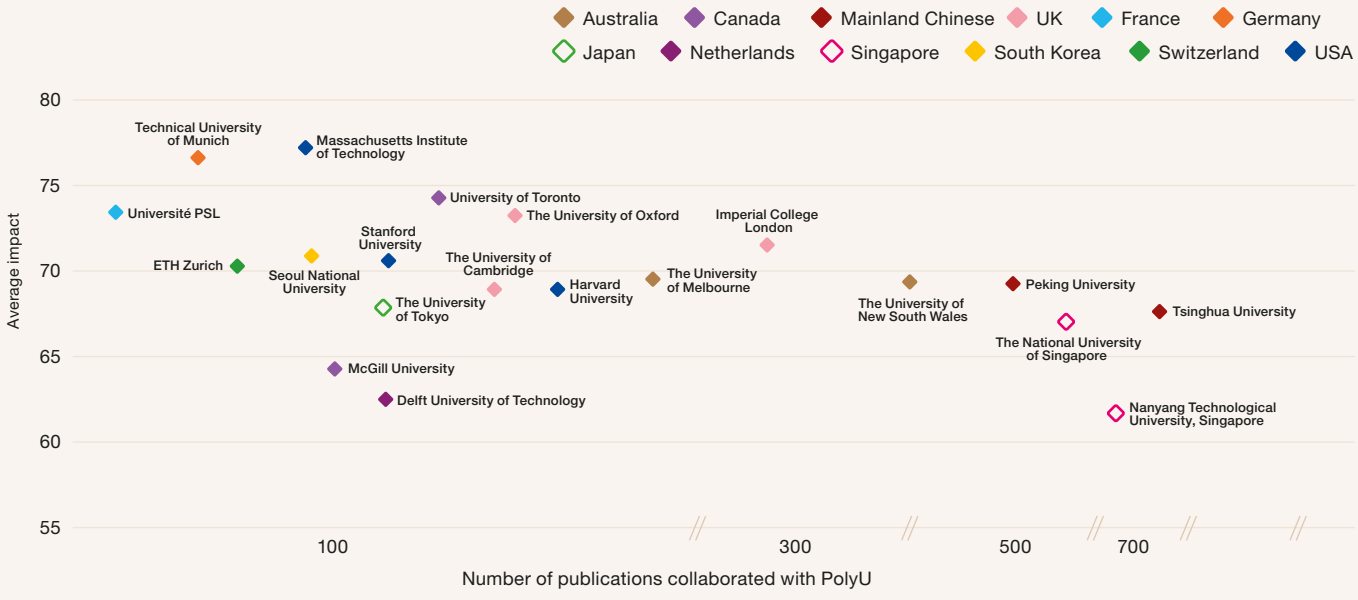


Figure 8. PolyU collaboration with 2026 QS Top 50 universities (2020 - 2024)

13 Highly Cited Researchers 2025, https://clarivate.com/highly-cited-researchers/?action=clv_hcr_members_filter&clv-paged=1&clv-category=&clv-institution=Hong%20Kong%20Polytechnic%20University&clv-region=&clv-name=

14 PolyU Partners List, https://www.polyu.edu.hk/geo/partnerships/partners-list/

Clarivate utilises a suite of indicators, the Collaboration Category Normalized Citation Impact (Collab-CNCI), to measure citation impact for various types of collaborations. These include overall collaboration (Collab-CNCI), overall domestic collaboration (Collab-CNCI Domestic), overall international collaboration (Collab-CNCI International) and multilateral international collaboration (Collab-CNCI International Quadrilateral+). Aggregated data for 2020-2024 showed that PolyU achieved higher Collab-CNCI in all domains compared to Hong Kong, APAC and the world average (Figure 9), indicating PolyU engagement in impactful collaborations.

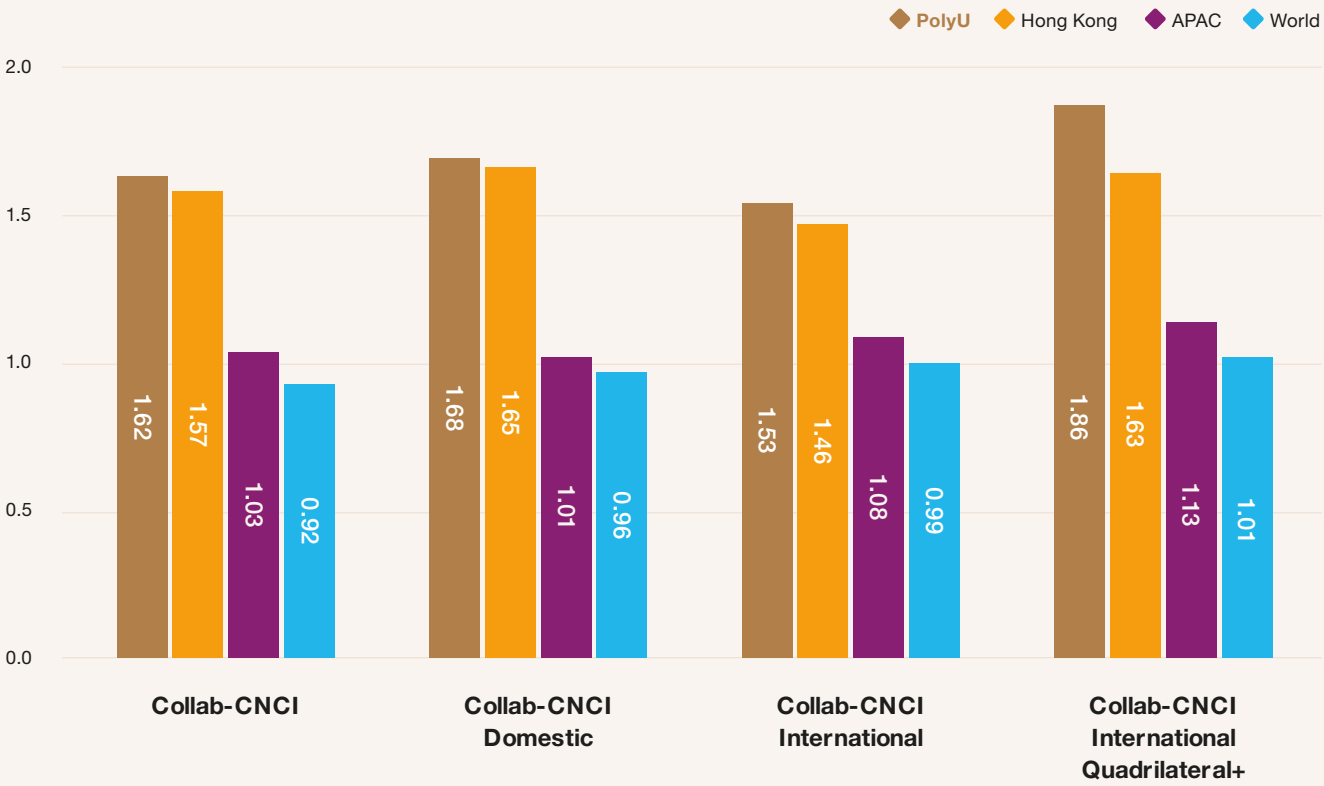


Figure 9. Collaboration Category Normalized Citation Impact: PolyU, Hong Kong, APAC, and world (2020 - 2024)

Through the InnoHK initiative funded by the Government of the Hong Kong Special Administrative Region of the People's Republic of China (the Government of the HKSAR), PolyU established two world-class research centres at the Hong Kong Science Park, partnering with the Royal College of Art in the United Kingdom for the Laboratory for Artificial Intelligence in Design (AiDLab) and the University of Waterloo in Canada for the Centre for Eye and Vision Research (CEVR). Further collaboration with the University of Waterloo has led to the establishment of the Research Centre for Nanoscience and Nanotechnology, which aims to develop innovative approaches in nanoscience. These partnerships demonstrate a global reach in the arts, health, science and technology.

PolyU's collaborative network in the Chinese Mainland is extensive and long-standing. In 1997, it became the first Hong Kong university approved by the Ministry of Education for cross-border collaboration, offering a higher education programme in the Chinese Mainland.[15] The University has since strategically established its Chinese Mainland presence and now has over 950 Chinese Mainland partner universities and research institutes, with over 3,100 collaborative projects completed.[16] These efforts concentrate on translational areas such as advanced manufacturing, aerospace, biomedical technology and intelligent transportation. Its translational research actively contributes to the Nation's key strategic initiatives, such as the Belt and Road Initiative. It co-founded the University Alliance of the Silk Road in 2015 with Xi'an Jiaotong University, bringing together over 150 universities from 37 countries and regions to promote higher education collaborations.[17] PolyU serves as the Vice-President institution of the Alliance in 2025, further increasing the impact of its education, research and knowledge transfer activities.

15 The first Hong Kong university approved by the Ministry of Education for cross-border collaboration, https://www.polyu.edu.hk/publications/excelximpact/issue/202516/cover-story/international-collaborations-with-impacts
16 An overview of PolyU's World-class excellence and innovation for societal impact, https://www.polyu.edu.hk/cpa/university_brochure/PolyU_Brochure_EN.pdf
17 PolyU's Belt and Road Initiative: University Alliance of the Silk Road (UASR), https://www.polyu.edu.hk/geo/partnerships/belt-and-road-initiatives/

1.6 TRANSLATING RESEARCH INTO INDUSTRIAL APPLICATIONS

Research ideas and outcomes are only meaningful when they serve people. PolyU drives technology transfer from academic research into real-world applications with its sense of societal responsibility. Forming close university partnerships with government and industry, and actively supporting entrepreneurship and start-up development are key priorities at PolyU for driving research translation. As part of this effort, PolyU has built a strategic patent portfolio globally.

Between 2020 and 2024, PolyU experienced a 257% increase in the number of its granted patents (Figure 10).

This growth also marked a 61% increase in the percentage of Hong Kong patents to which PolyU contributed in this period, representing the University's significant contribution to Hong Kong's technology development and translation.

Reflecting such rapid growth, PolyU was granted a total of 1,020 patents between 2020 and 2024, ranking second among the eight UGC-funded universities in both total patents granted (2020-2024) (Figure 11) and patents granted annually (2020-2023) (Figure 12).

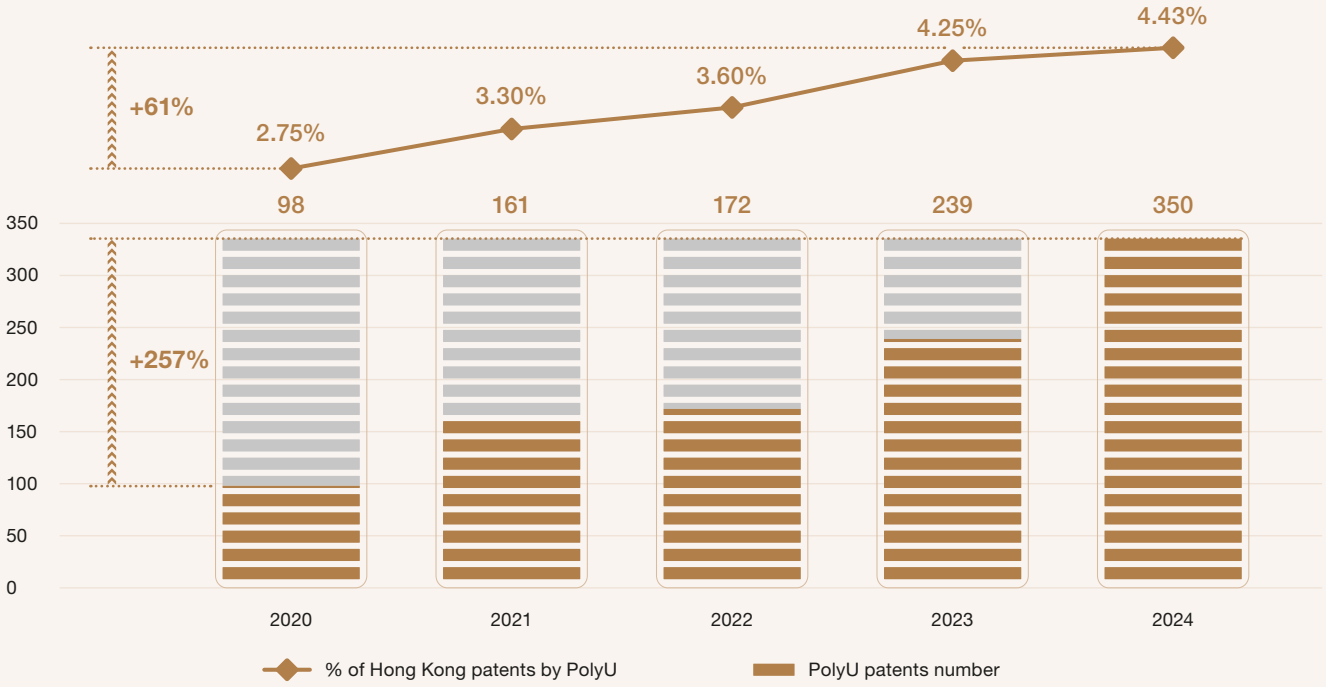


Figure 10. PolyU yearly granted patents

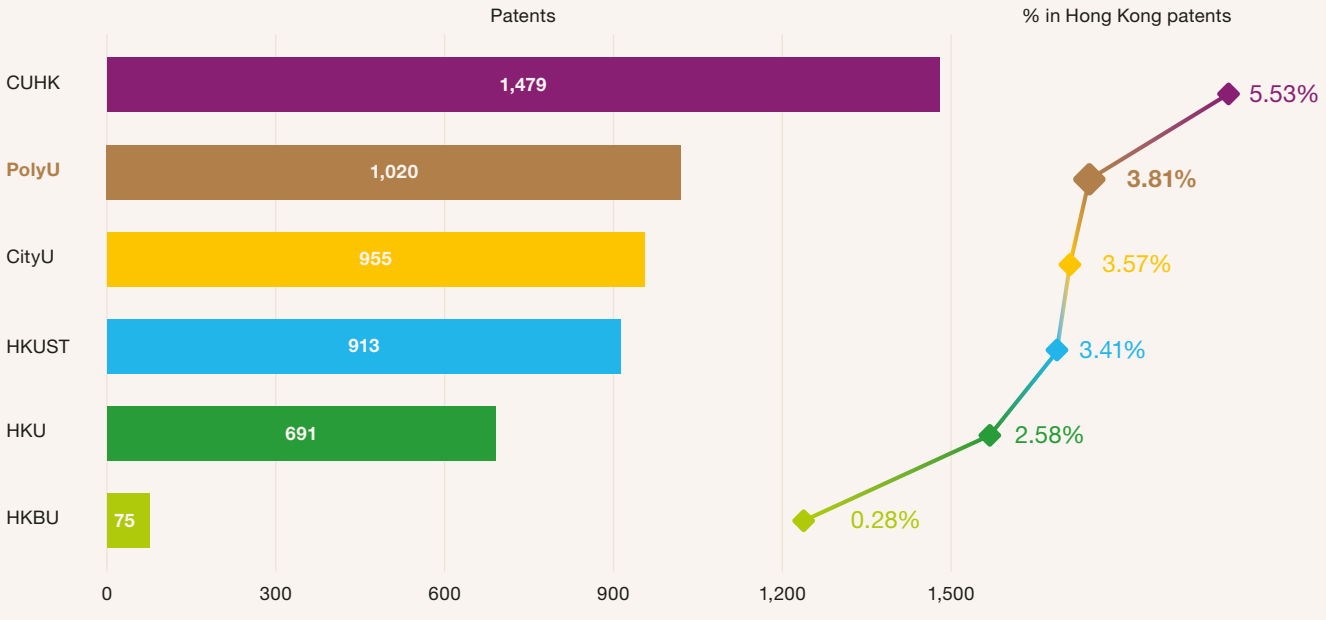


Figure 11. Total granted patents: Hong Kong UGC-funded universities (2020 - 2024)

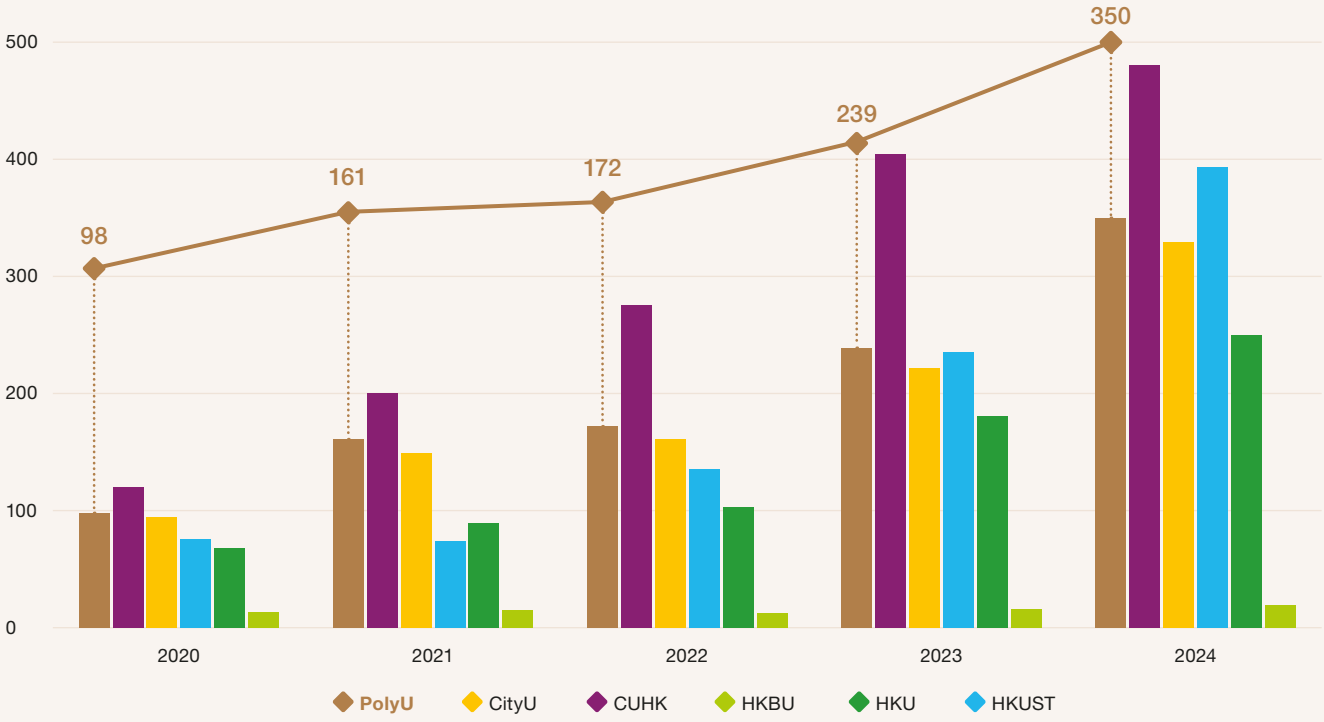


Figure 12. Yearly granted patents: Hong Kong UGC-funded universities

PolyU patents are distributed among many disciplines, showcasing the University's multidisciplinary research advancements. The patent category Computing and Control received 261 patents, the highest number awarded to any single category, highlighting PolyU's recent substantial advancement in computer science and artificial intelligence. The computer science discipline also supported numerous significant developments in the Pharmaceuticals category. By powering drug identification and development with advanced artificial intelligence technology, the Pharmaceuticals category became the fourth most patented research discipline at PolyU (Figure 13). While expanding into new research areas, the University's traditional strengths in various engineering research fields were also recognised with a high number of patents, including materials science, electronic engineering and mechanical engineering, as well as interdisciplinary research areas such as textile science. (Figure 14)

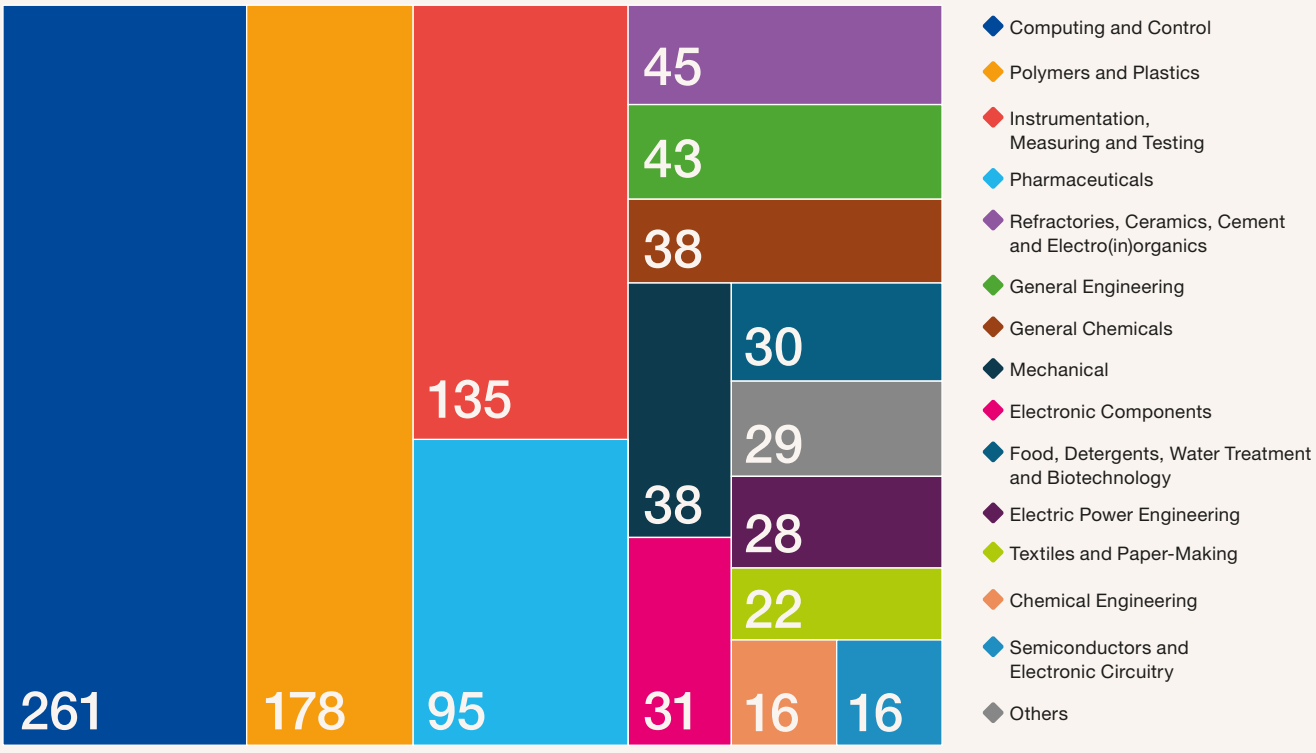


Figure 13. Disciplines associated with PolyU granted patents (2020 - 2024)

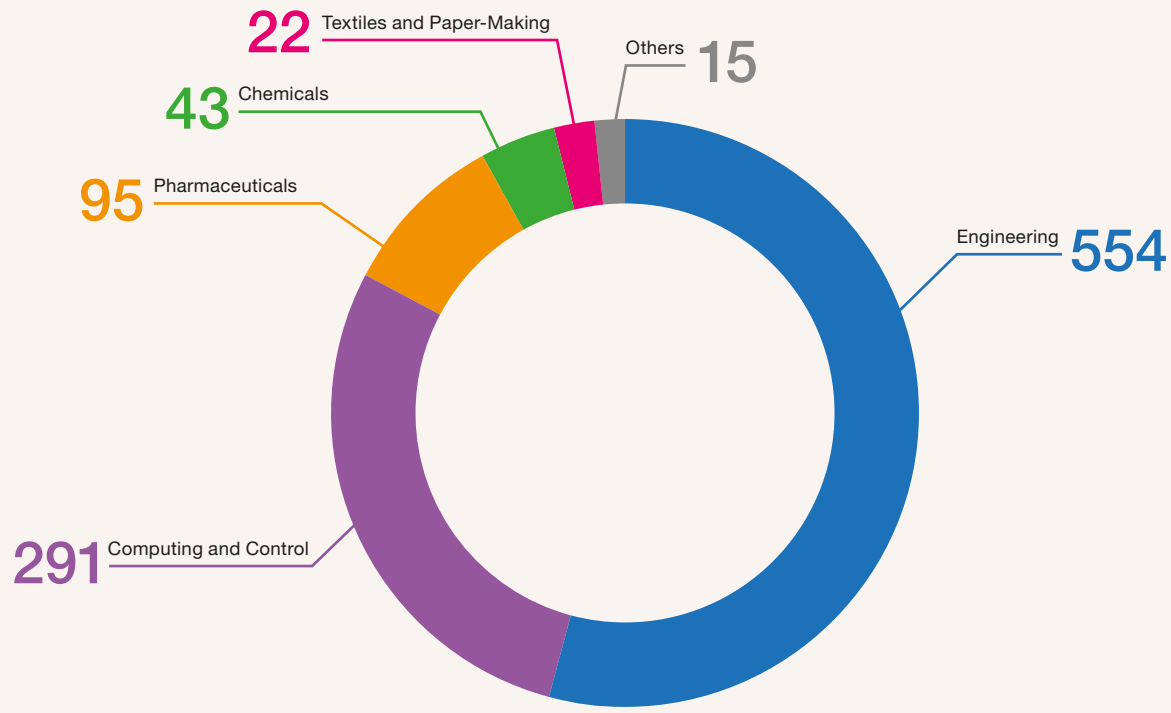


Figure 14. Aggregated disciplines associated with PolyU granted patents (2020 - 2024)

To raise its global standing, PolyU has strategically expanded its global footprint for its inventions. Between 2020 and 2024, PolyU continued to increase its patent filing both in international patent offices, spanning the United States, Europe, and Southeast Asia (Figure 15 and Figure 16), as well as in domestic patent office in the Chinese Mainland (Figure 17). The high number of granted patents in the Engineering category globally not only showcases PolyU's decades-long leadership in engineering-related technological advancement but also reflects the University's strategic efforts to expand into regions with both market potential and manufacturing hubs to commercialise its inventions. The patent boom in the Computing and Control category, both domestically and internationally, underscores PolyU's remarkable advancement in computer science and its swift knowledge translation.

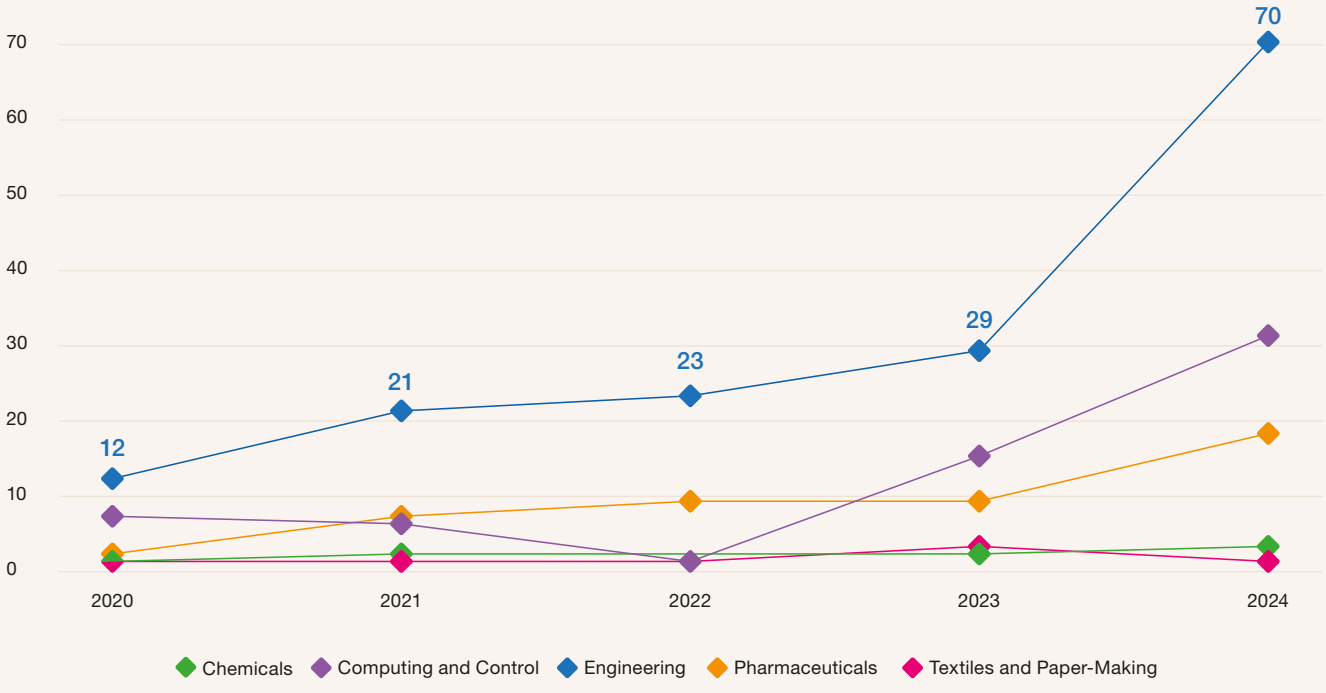


Figure 15. Top 5 patent classes filed in international patent offices

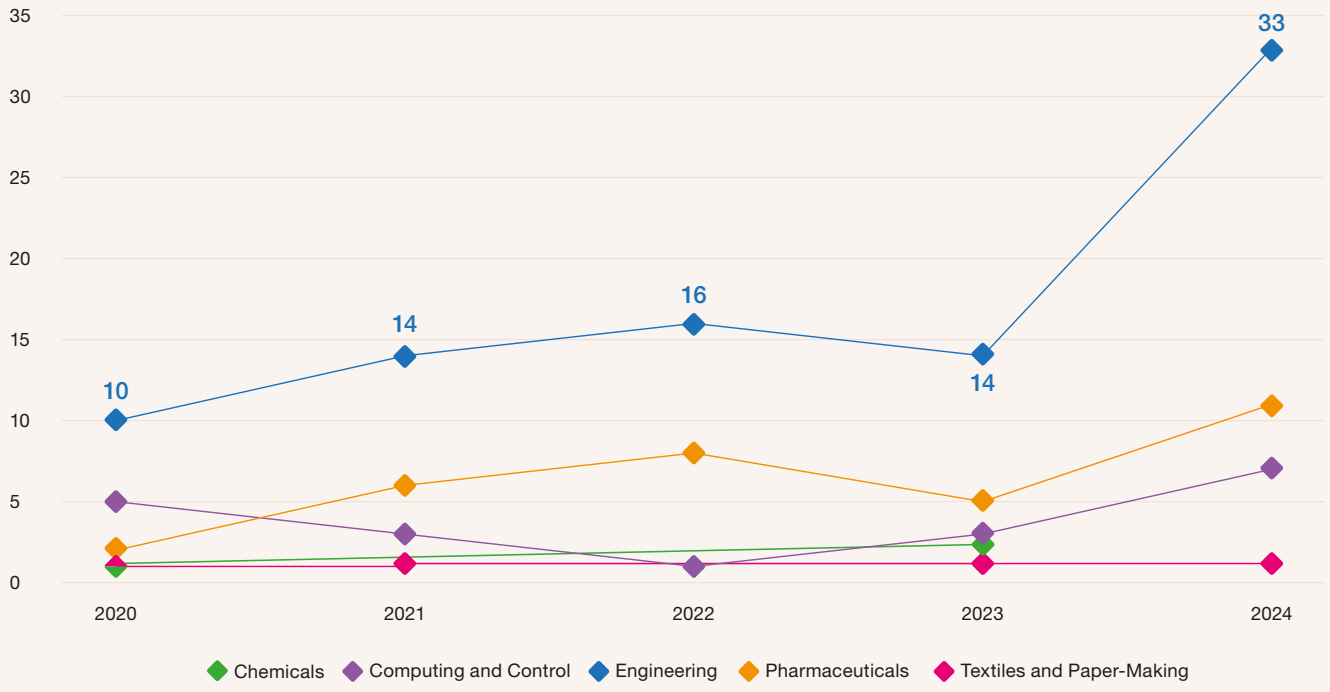


Figure 16. Top 5 patent classes filed in the United States patent office

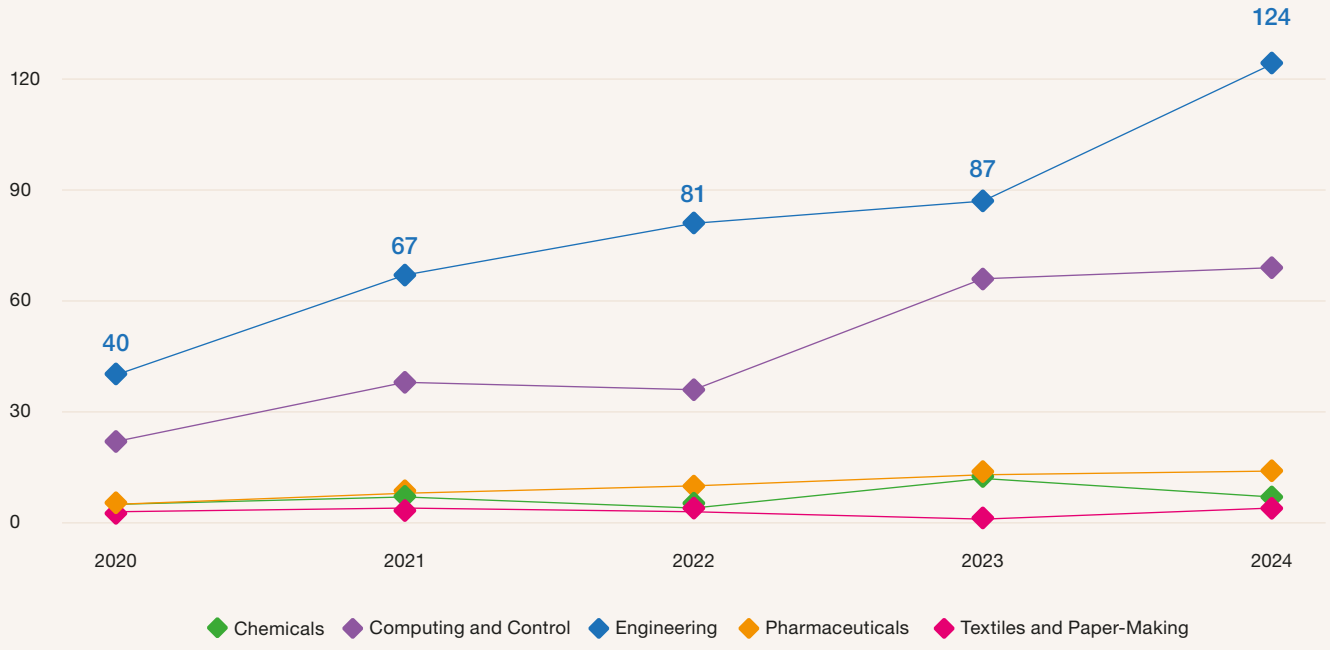
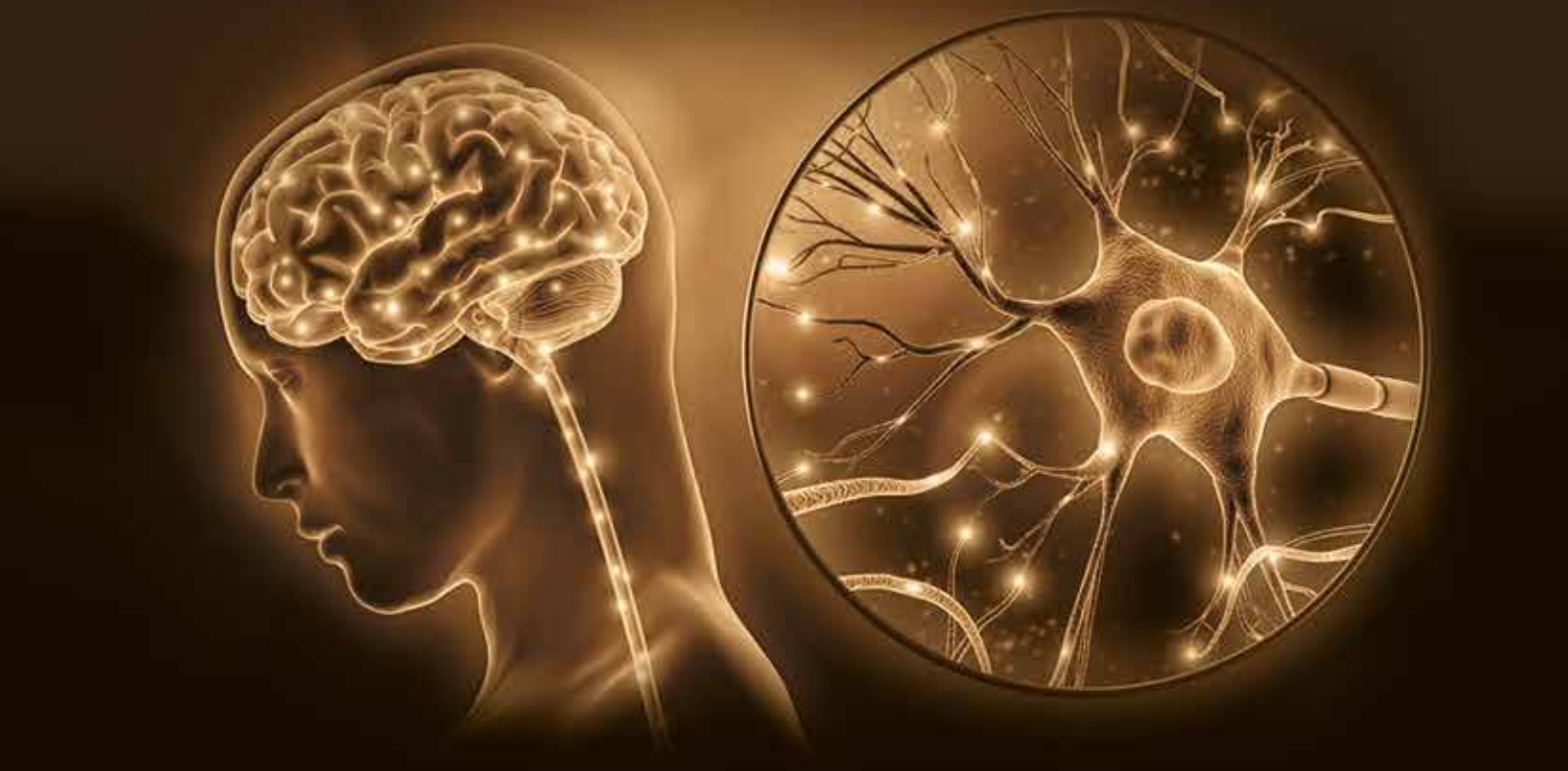


Figure 17. Top 5 patent classes filed in the Chinese Mainland patent office

With leading regional innovation capabilities, multiple PolyU research projects have been awarded funds from the Innovation and Technology Commission's Research, Academic and Industry Sectors One-plus Scheme (RAISe+).[18] The RAISe+ was launched by the Government of the HKSAR in 2023 to facilitate collaborations among the Government, industry, university, and research sectors, enabling universities to transform and commercialise research outcomes. Six PolyU projects were awarded RAISe+ funding in the 2024 and 2025 rounds.[19,20] This achievement demonstrates PolyU's world-leading expertise in academic research and industry's confidence in the University's research translation capabilities. Using an interdisciplinary approach, the funded projects focus on solving pressing global challenges, including energy storage, artificial intelligence infrastructures and neurodegenerative diseases. Specifically, **Professor Simon Ming-yuen LEE**, Chair Professor of Biomedical Sciences in the Department of Food Science and Nutrition, is leading an interdisciplinary research project across biomedical sciences, Chinese medicine, genomics and computer science. The project develops novel drugs derived from natural resources for treating debilitating diseases such as Alzheimer's and Parkinson's diseases. The LifeChip technology platform developed by this research group combines next-generation DNA sequencing and AI-powered drug discovery. Their discovery, Oxyphylla®, has already been granted six global patents in the United States, European Union, Spain, Japan and the Chinese Mainland, and is anticipated to be a disease-modifying therapy offering a breakthrough in neurological health.



18 PolyU's cutting-edge research projects awarded funding from government's RAISe+ Scheme, https://www.polyu.edu.hk/publications/pulse-polyu/issue/202406/research-knowledge-transfer/polyu-s-cutting-edge-research-projects-awarded-funding-from-government-s-raise-scheme

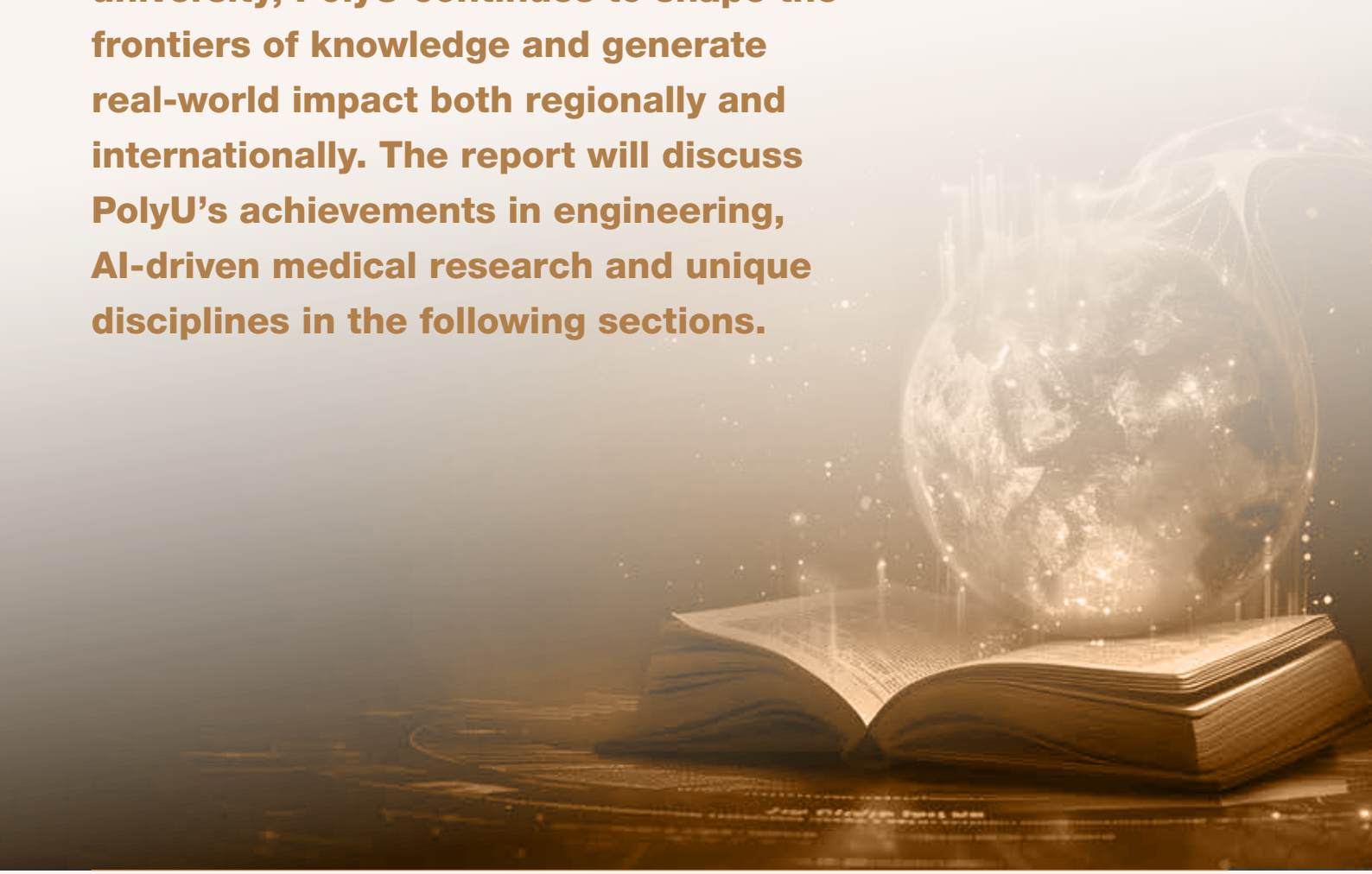
19 PolyU research projects receive funding from RAISe+ Scheme 2024, https://www.polyu.edu.hk/pair/publications/issue-11/pp01---polyu-research-projects-receive-funding-from-raise-scheme/

20 PolyU research projects win funding support from RAISe+ Scheme 2025, https://www.polyu.edu.hk/en/media/media-releases/2025/0620_polyu-research-projects-win-funding-support-from-raise-scheme/

PolyU's innovations have been pivotal in supporting several national priority projects. Its advanced manufacturing and surveying technology have been applied to space instruments for the Nation's Moon and Mars exploration missions. Through interdisciplinary research that combines advanced manufacturing technologies with clinical expertise and in partnership with industry leaders like ZEISS, PolyU has developed innovative lenses designed to slow myopia progression. Partnering with industry leaders such as Huawei Technologies Co., Ltd (Huawei) and Alibaba Group Holding Ltd (Alibaba), PolyU has made groundbreaking innovations readily available for implementation, bolstering domestic companies' global competitiveness throughout the 5G network rollout. PolyU and Huawei have recently signed strategic collaboration agreements to enhance the knowledge translation of AI, foster incubator platforms to strengthen their impact in the wider APAC region and provide students with the opportunity to engage in real-world projects.

In addition to collaborating with established partners, PolyU's entrepreneurial support is further demonstrated by promoting innovation and entrepreneurship through campus. PolyU also now supports more than 500 active start-up firms.[21] Three of them were listed in the Forbes Asia 100 to Watch 2023 report,[22] and two were included in the Forbes 30 Under 30 Asia 2025 list.[23,24] Three have achieved "Unicorn" status (USD 1 billion+ valuation), and two have been publicly listed. These Unicorns have created over 5,000 international job opportunities. Adopted by millions worldwide, these innovations have driven transformative solutions across industries and highlighted the broad societal and economic impact of PolyU's innovation ecosystem.

Striving to become an innovative world-class university, PolyU continues to shape the frontiers of knowledge and generate real-world impact both regionally and internationally. The report will discuss PolyU's achievements in engineering, AI-driven medical research and unique disciplines in the following sections.



21 PolyU celebrates achievements of start-ups supported by PolyVentures and kicks off inaugural International Future Challenge, https://www.polyu.edu.hk/en/media/media-releases/2025/0225_polyu-celebrates-achievements-of-startups-supported-by-polyventures/
22 Forbes Asia 100 to Watch 2023, https://www.forbes.com/sites/forbesasiateam/2023/08/28/forbes-asia-100-to-watch-2023/
23 Forbes 30 Under 30 Asia 2025 list, https://www.forbes.com/30-under-30/2025/asia/
24 PolyU-nurtured start-ups earn spots on Forbes 30 Under 30 Asia 2025, https://www.polyu.edu.hk/publications/pulse-polyu/issue/202506/achievements/polyu-nurtured-startups-earn-spots-on-forbes-30-under-30-asia-2025