



Championing sustainable growth has been central to this 100-year-old university with award-winning faculties, renowned research results, and advanced infrastructure. It is now poised for greater academic excellence.

In 1921, Tan Kah Kee, an overseas Chinese philanthropist, founded Xiamen University (XMU) in southeast China's Fujian Province. His goal was to improve the well-being of society, and boost the country through enhanced education, so he tried to recruit the best faculty members to ensure academic excellence. His vision is encapsulated in the university motto 'Pursue Excellence, Strive for Perfection', which has been driving XMU's century-long development, according to Rong Zhang, president of XMU.

Now a leading university, XMU is internationally recognized for its multidisciplinary research excellence. With a culture of innovation, it emphasizes enhancing science and technology capacities, and promoting transformation of its results to serve societal needs.

Accelerating science and technology innovation

While focusing on the most cutting-edge

issues in science, research at XMU also taps into national strategic development needs. A good illustration is the development of a sounding rocket, Tan Kah Kee-1, first launched in April 2019. The reusable rocket reached an altitude of 26.2km, before returning to the ground. It features a 3D forebody, designed to address shock-wave impacts. This rocket can be used for aerodynamic flight tests, and contributes to the national goal of improving near-space travel, and boosting the aerospace industry. Remarkably, researchers at XMU's School of Aerospace Engineering completed the rocket design in only seven months.

Known as 'the cradle of China's higher education in marine science', XMU covers national sea exploration with the launch of a research vessel, also named Tan Kah Kee (R/V TTK), in honour of the university's founder. As one of China's most advanced and versatile new research vessels, the ship has, since her delivery in 2017,

already sailed more than 80,000 nautical miles in nearly 30 research cruises. She accomplished the GEOTRACES-China expedition last year, China's first scientific cruise to study trace elements and their isotopes in the marine biogeochemical cycles. Equipped with advanced laboratories and state-of-the-art instruments, the ship also serves as a training platform for young oceanographers. The 'XMU at Sea' educational programme onboard R/V TTK bonds XMU and its Malaysia campus (XMUM), promoting international exchange and collaboration in ocean sciences.

To improve population health, XMU biomedical scientists work on biotechnologies that bring widespread public benefit. The HIV test kits they developed have been used in more than 40 countries and regions, serving 800 million people. For the control of hepatitis, XMU researchers, after years of research, have revealed structural characteristics of the

virus, and developed genetic engineering techniques for large-scale preparation of antigens, leading to test kits and vaccines for hepatitis E. With industry partners, they have also co-developed vaccines for human papillomavirus, along with monoclonal antibodies to many viruses, including the avian influenza virus, enteroviruses, and coronaviruses. Their patents are highly cited, and two XMU professors were listed among *Nature Biotechnology's* top 20 translational researchers in 2016, for the impact of their published work and patents — the first time researchers from the Chinese mainland made the list.

In response to the COVID-19 crisis, an XMU team developed assays for the detection of antibodies or nucleic acids to the SARS-CoV-2 virus, based on a double-antigen sandwich format, along with other reagents. For these test products, they have obtained certification for marketing in China, USA, Europe, and Australia. More recently, they launched the phase II clinical trial for a COVID-19 nasal spray vaccine candidate, co-developed with industrial and academic partners.

Addressing the diverse applications of analytical tools from materials science to

energy and bioscience, chemists at XMU have extended to transition metal surfaces for surface-enhanced Raman spectroscopy (SERS), a molecular vibrational spectroscopy with ultrahigh surface sensitivity. The shell-isolated nanoparticle-enhanced Raman spectroscopy (SHINERS) they invented can be used in trace analysis on any surfaces or materials. It enables *in-situ* investigations of intermediates and dynamic processes of important catalytic reactions, revealing the reaction mechanisms at the molecular level. They developed electrochemical tip-enhanced Raman spectroscopy (EC-TERS) for nanoscale analysis of solid-liquid interfaces with their chemical fingerprints.

In humanities and social sciences, XMU has developed unique strengths in Taiwan studies, Southeast Asian studies, as well as research on higher education, economics, and accounting, with numerous research reports published.

Research innovations at XMU have also improved its rankings. It is ranked 54th among global academic institutions, based on the Nature Index 2020 Annual Tables. And 18 disciplines are ranked among the global top 1%, according to Essential Science Indicators (ESI) field ranking. Within China, XMU's chemistry, marine science, biology, ecology, and statistics disciplines were selected for the national Double First-class Initiative.

Enhancing talent incubation

Cultivating professional talent is a central focus of XMU. As a pioneer in China's higher education, XMU has many firsts, including cultivating China's first doctorate degree-holders in fields from accounting, auditing, and finance, to oceanography and higher education. Since 1921, XMU has produced more than 400,000 graduates, many of whom have become distinguished scientists, educators, entrepreneurs, or social activists. More than 60 members of the Chinese Academy of Sciences or the Chinese Academy of Engineering have either studied or worked at XMU.

With recent efforts to implement education reform, XMU has an emphasis on student-centred learning, to align with rapid technological revolution. Its undergraduates are actively involved in scientific innovation. In China's fourth 'Internet+' competition, held in 2018, XMU ranked first in the number of awards

won among participating institutions. It was also selected by UNESCO as a model case for building an effective 'internal quality assurance' system, a catalyst for higher education reform.

Reaching out globally

Building a global university is another goal of XMU, set out at its beginning. "Going global is important for us to gather education and innovation resources," says Rong Zhang. "It allows us to play a greater role on the world academic stage."

With an international vision, and an open attitude, XMU has forged partnerships with more than 250 universities across the world, and has initiated or participated in 14 multilateral platforms. XMU has also co-established 14 Confucius Institutes and 46 Confucius Classrooms in 12 countries and regions.

Expanding from its three campuses in Xiamen, XMU launched XMUM in early 2016, opening a new era for its 'go global' strategy. XMUM aspires to become a university with a distinct global outlook, featuring first-class teaching and research, and embracing cultural diversity. It currently has nearly 6,000 students from 29 countries. Its campus, which will be fully completed in 2023, will boast state-of-the-art facilities and multidisciplinary programmes, strengthening XMU's ties with the rest of the world.

Committed to advancing the frontiers of knowledge, cultivating professional talent, and expounding world cultures, XMU is poised to become a world-class university in its next century. "We are confident of becoming a major force of science and technology innovation, a source of novel ideas, and a base for talent incubation," says Zhang. "We will extend our founder's ambition of advancing social progress." ■



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