

# STEPPING UP TO THE GLOBAL STAGE

Kanazawa University started in 1862 as a smallpox vaccination centre. It is now making its mark through **WORLD-LEADING ADVANCES IN NANOTECHNOLOGY, HUMAN HEALTH, ENVIRONMENTAL SCIENCES** and other fields.

## As the 70th anniversary of its formal establishment approaches, Kanazawa

University can point to an illustrious history of providing world-class education and conducting trailblazing research in a diverse range of fields. Located in the castle city of Kanazawa, which is famed for its gold-leaf crafts, traditional Japanese gardens and samurai districts, the university has become the leading higher education institution on the Sea of Japan coast. Japan's third-oldest national university now has more than 10,200 students, including 600-plus international students, enrolled in undergraduate and postgraduate courses across its three campuses.

In 2014, the university was chosen as part of the Top Global University Project, a Japanese government initiative designed to enhance the international competitiveness of the country's higher education. Kanazawa University is committed to providing world-class education, fostering innovative research partnerships and encouraging people to develop a global outlook. "Diversity and interdisciplinary collaboration underpin our curiosity-driven and applied research," says the university president,

Koetsu Yamazaki (see top right photo on facing page).

## Two bold initiatives to foster world-leading research

In 2014, to stimulate top-level research and innovation, the university launched and funded two large-scale projects known as Chozen and Sakigake.

Translating to transcendental or aloof, *chozen* refers to the university's commitment to conducting outstanding research, while *sakigake*, meaning forerunner or initiative, refers to pioneering research.

The Chozen project focuses on the university's five priority research areas: nanoscience based on atomic force microscopy techniques, for which Kanazawa University is internationally renowned; nutrition-related diseases; cancer research and molecular biology; cultural resource management and heritage preservation; and materials science and supramolecular chemistry.

Interdisciplinary activities across several of those fields are yielding high-impact results. Nanoscientists, cancer researchers and chemists are collaborating to develop breakthrough nanoprobe technologies at the university's Nano Life Science Institute (NanoLSI), designated a



World Premier International (WPI) centre by the Japanese government in 2017.

**“WORKING TOGETHER, WE CAN COMBAT THESE DISEASES”**

In the same year, the World Health Organization Collaborating Center for Chronic Hepatitis and Liver Cancer (WHO-CC) was established at Kanazawa University, in recognition of the university's expertise in nutrition-related diseases and cancer research. Shuichi Kaneko (see bottom right photo on facing page), director of the WHO-CC, says: "In the next 10 to 20 years, liver diseases could increase significantly across

the world. Many disorders are linked to overnutrition, including diabetes, hyperlipidemia, hypertension and cancer. Working together, we can combat these diseases."

The Sakigake Project nurtures the next generation of researchers and reinforces the university's core strengths. As of 2018, seven research fields, including astrophysics, mechanical engineering, biomedicine, next-generation electronics and geoscience, have been adopted under the project. In the field of astrophysics, for example, the project supports research led by Daisuke Yonetoku, who has been awarded several prizes for his contributions to understanding gamma-ray bursts, the brightest explosions known to occur in the Universe.



Emerging fields such as artificial intelligence, big data and robotics are becoming increasingly important in the realization of Society 5.0 — the super-smart society promoted by the Japanese government. In this regard, Yamazaki notes that Kanazawa University has developed leading-edge technologies for self-driving systems and sensing equipment for automobiles.

“In view of Japan’s rapidly ageing society, we need to think about using artificial intelligence ethically and responsibly,” he says. “And globally, in terms of human health, some of the biggest issues are related to obesity, cancer and dementia. Through initiatives such as the WHO-CC, we are well positioned to help tackle these issues.”

#### **Promoting knowledge exchange and global thinking**

The university is committed to providing a conducive environment for top-class research. It initiated the Research Professor System in 2014 to strengthen the university’s capabilities and extend its collaborative research network. The system promotes a healthy exchange of knowledge and practical experience.

Research professors can be appointed in four ways. The first involves inviting internationally renowned researchers to stay at Kanazawa University. For example, Jean-Pierre Sauvage participated in this programme prior to being awarded the Nobel Prize in Chemistry in 2016 for his work on supramolecular chemistry. The second route recognizes

outstanding achievements by researchers at the university, while the third appoints young researchers who demonstrate great potential. The fourth path promotes a faculty member from within or outside the university who has significant experience in establishing a specific research base related to NanoLSI.

In 2015, the university launched the Institute for Frontier Science Initiative (InFiniti), an interdisciplinary hub that promotes research across 16 units related to cancer, biomedicine and health sciences, as well as cultural and social sciences. InFiniti promotes wider interaction between the sciences and humanities and enables effective communication between young principal

investigators, research unit leaders and graduate students.

To further internationalize education at Kanazawa University, there are plans to increase classes offered in English from the current 10–15% to 50% within the next three years, and to 90% within the next ten years.

“Kanazawa has a rich cultural history, with a unique blend of the ancient and modern,” Yamazaki says. “We warmly welcome those who wish to experience living here and working with us at Kanazawa University.” ■



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