Young International Scientists Say

China-Denmark Partnership Promotes Innovation

By ZHONG Jianli & LONG Yun

Nick Y. Larsen. (COURTESY PHOTO)

Nick Y. Larsen's China experience goes beyond academic pursuits. It has become a journey of personal growth and cultural enrichment.

It began in 2014 when the Danish student came to China to do his Master's in neuroscience and neuroimaging.

The path to China

Larsen became interested in neuroscience during his undergraduate studies in biomedical engineering when he worked on a training program for children with cerebral palsy. This experience made him keen to understand the complexities of the brain.

However, when he searched for a Master's program in neuroscience in Denmark, he found none. Instead he discovered a unique opportunity: a new program had been established in collaboration with China at the Sino-Danish Center for Education and Research (SDC) at the University of Chinese Academy of Sciences and Aarhus University.

"The idea of joining a class with both international and Chinese students really appealed to me, especially since I'm half Chinese. It felt like the perfect opportunity to not only pursue my dream education but also experience living in China for a while," Larsen told *Science and Technology Daily (S&T Daily)*.

After his Master's, he continued his studies as a PhD candidate. He says his experience in China has enriched his scientific knowledge and enabled him to experience the fusion of Chinese and Danish cultures, showing the power of international collaboration and cross-cultural exchange in shaping both personal and academic growth.

"Researching in both China and Denmark has taught me to merge the strengths of each environment. China is driven by high productivity and cutting-edge facilities, while Denmark fosters open collaboration and values feedback," Larsen elaborated.

Unraveling mental health mysteries

For his PhD, Larsen worked with donated brain tissue from people with schizophrenia, depression and healthy controls. "I used various image processing techniques, including AI, to detect nerve cells under the microscope — those AI techniques were similar to the technologies used in autonomous cars to recognize cars and pedestrians," he explained.

His research revealed that individuals suffering from schizophrenia and depression had fewer pyramidal neurons, which are critical for brain communication. This fundamental research, published in *Translational Psychiatry* (Springer Nature, 2022), provides valuable insights that could eventually lead to improved diagnostic tools and treatments for mental health conditions.

Larsen attributes his project success to the collaboration between the Chinese and Danish institutions under the SDC program. "For my PhD project, we needed to use a specialized machine. There are only a few of them in the whole world. There was one in China but none in Denmark and Europe. On the other hand, the medical setup and access to patients' donated brain samples were things I couldn't have managed in China alone," he said.

Larsen said his supervisors were always approachable and ready to help when he faced challenges, whether it was troubleshooting experiments or discussing new ideas. Combining resources and expertise from China and Denmark made his project possible and advanced the work.

His Chinese supervisor Dr. Sun Fei, chief researcher at the Institute of Biophysics, Chinese Academy of Sciences, said the SDC provides opportunities for teachers from both China and Denmark to collaborate on research projects.

Sun said students from Denmark bring a different culture and ideas. Also, Chinese students have the chance to go to study in Denmark, which can enrich their life experiences.

Cultural enrichment and growth

Larsen cherishes the dynamic and diverse research environment at SDC, which hosts students from seven different Master's programs. This diversity enabled him to interact with peers from various backgrounds and experiences, broadening his perspective in ways he had not anticipated.

He also values the teaching styles of both the Danish and Chinese educators, which fostered a collaborative learning atmosphere and enriched his academic experience.

For Larsen, there are a lot of memorable moments at SDC, such as the inauguration of the SDC building in 2017 attended by Danish crown prince Feredrik X, who is now the king of Denmark, and celebrating the Chinese New Year with his lab team, which provided him with a sense of belonging and connection to his roots.

For future students considering similar paths in international study and research, Larsen emphasizes the importance of building relationships with people from diverse backgrounds, seeking guidance from mentors, and maintaining curiosity and flexibility.

Sino-Danish sci-tech cooperation

Larsen's story is a part of the larger China-Denmark partnership, with growing ties and collaboration. In 2025, the two nations will celebrate the 75th anniversary of their diplomatic relations which has expanded to diverse sectors today, including sustainable development, and joint efforts to tackle global challenges such as climate change.

Danish expert Troels Skrydstrup, a prominent figure in Denmark's scientific community, emphasizes that addressing climate change requires global collaboration: "To solve environmental challenges, we need a united global effort," he said in a recent interview with *S&T Daily*.

As a professor at Aarhus University and the current head of the Danish Carbon Dioxide Activation Center, Skrydstrup has initiated many collaborations with Chinese scientists to achieve shared environmental goals. His pioneering work on CO_2 activation and sustainable energy solutions is crucial to Denmark's green transition.

His optimism about the joint role China and Denmark can play in this endeavor is evident. "Both countries have made ambitious commitments, and while we may not have all the technologies yet, our collaboration can help us achieve these targets faster," he said.

One of the most important areas of Sino-Danish collaboration is the Green Joint Work Programme for 2023-2026 to strengthen cooperation in renewable energy, CO_2 emission reduction and energy transition. It reflects both nations' shared vision of leading the world in sustainable development.

Skrydstrup is particularly impressed by China's leadership in this area. "China is probably the most active country in sustainable development today. It's a global leader in renewable energy, especially solar and wind power," he said. With its rapidly advancing infrastructure and forward-thinking policies, China is well-positioned to be a key player in the global sustainability movement. "China can scale up technologies very quickly, which is exciting for scientists," he added.

Skrydstrup and Larsen exemplify how cross-border cooperation can drive innovation, enrich academic experiences, and address global challenges.

This article is written in cooperation with the University of Chinese Academy of Sciences.

Global Journal Observatory

BJN Expanding Frontiers of Nutrition Research

By John Mathers

John Mathers. (COURTESY PHOTO)

The *British Journal of Nutrition (BJN)* is the flagship journal of the Nutrition Society, founded in 1941 to advance the scientific study of nutrition and its application to the maintenance of human and animal health.

In 1947, the Nutrition Society launched the *BJN* as an international peer-reviewed journal that publishes papers across the full spectrum of nutritional science. The focus of all manuscripts submitted to the *BJN* should be to increase knowledge in nutritional science relevant to human or animal nutrition.

As for all sciences, rigorous and innovative methodology underpins advances in nutritional science. For more than 75 years, the *BJN* has published influential review articles that shape emerging fields of research. For example, a review on prebiotics (food substances that improve the gut microbiome) published in 2010 has been cited more than 1,500 times.

Rigorous peer review process

With support from our publishers, Cambridge University Press, we operate a peer review process that provides rigorous and fair evaluation of submitted manuscripts.

Manuscripts undergo an initial screening to ensure that the topic of the manuscript is within the remit and that the authors have complied with requirements — e.g. around ethical standards for reporting studies involving humans or experiments on animals.

Manuscripts are peer reviewed, normally by at least two expert reviewers, and may undergo review by one of our specialist Statistical Editors. Each manuscript is handled by a First Editor, an experienced researcher in the topic under study, who uses the reports from peer reviewers to provide a recommendation to a Deputy Editor. Deputy Editors are the decision makers within the *BJN* who write the Editorial Report that informs authors whether their manuscript has been accepted, requires revision or has been rejected.

Celebrating excellent research

In 2022, we celebrated the 75th anniversary of the *BJN* by publishing a special collection of our most highly cited papers. In addition to methodological and review papers in human nutrition, our top 10 highly cited papers included two in animal nutrition, one of which addressed the fundamental processes that enable ruminant animals to digest herbaceous plants.

In parallel, we published Invited Commentaries that discussed why each of these highly cited papers was so influential and how that area of science has subsequently developed.

For the past five years, we have made an annual Paper of the Year award for which all papers published in the previous year are considered. The short-list is determined by the Deputy Editors, each of whom chooses the best paper that they have handled over the previous year, based on the criteria of originality, significance and rigor.

An independent External Panel, composed of former presidents of the Nutrition Society and an internationally leading expert, ranks the short-listed papers and identifies the winner. The winning papers celebrate the breadth and depth of nutrition research globally and have included teams based in Japan, Ethiopia, Spain, Australia and Portugal. In addition to a prize, the winner is invited to make a presentation about their paper at the Nutrition Society Congress in the UK.

Robust nutrition study in China

This year, I visited China to meet with colleagues in Shanghai and Beijing to discuss current nutritional research and opportunities for publication in the *BJN*.

I was particularly impressed by the enthusiasm, expertise and ambition of the early career researchers whom I was privileged to meet. These excellent young researchers, together with China's sustained investment in laboratories, human cohorts, clinical and other facilities, set China on a path to becoming a global leader in nutrition research.

I expect more excellent research results from my Chinese counterparts. Together, we will push the frontiers of global nutrition research, striving to safeguard the health and well-being of both humans and animals worldwide.

The author is the editor-in-chief of the British Journal of Nutrition, professor of human nutrition at Newcastle University in the UK, and former president of the Nutrition Society.

Rizhao's Low-Altitude Economy Takes Off

Case Study

By Staff Reporters

Building low-altitude flight scenarios is crucial for developing new quality productive forces.

On November 19, a composite wing unmanned aerial vehicle (UAV) with a nearly seven-meter wingspan attracted the attention of numerous visiting experts on the campus of Shandong Vocational and Technical University of International Studies (SWUT). This drone, designed for artificial rain enhancement, was independently developed by SWUT and has already been put into use.

Li Jie, the lead researcher of the UAV major at SWUT, told *Science and Technology Daily* that their fire-fighting drone system has gained industry recognition. The breakthrough in electromagnetic fire extinguishing bombs and the successful execution of the world's first near space balloon based rocket launch mission highlight the team's achievements.

These advancements at SWUT exemplify the rapid rise of the "low-altitude economy" in Rizhao, a southeastern city in east China's Shandong province.

The composite wing unmanned aerial vehicle with a nearly seven-meter wingspan was developed by Shandong Vocational and Technical University of International Studies. (COURTESY PHOTO)

In recent years, Rizhao has attracted several high-quality enterprises, including Shandong Feiao Aircraft Engine Co., Ltd (Feiao Aircraft). These companies have formed a diversified development pattern that encompasses industries such as aviation maintenance and manufacturing, UAV research and production, flight training, and advanced materials. In the Rizhao Airport Economic Development Zone alone, more than 30 projects related to materials, R&D, manufacturing, maintenance and operational support have been established.

"We are striving to build an 'aviation + ' industrial ecosystem," said Li Feng, director of the Development and Reform Bureau of Rizhao's Donggang district. The goal is to expand the low-altitude economic chain to include areas such as aviation manufacturing and maintenance, flight training, and emerging fields like aerial sightseeing and scientific experiments, he said.

Inside Feiao Aircraft's workshop, various production processes, from design and forging to heat treatment, assembly and testing, operate seamlessly. Rows of finished engines are neatly stacked, awaiting shipment. Chang Shuzeng, chairman of Feiao Aircraft indicated an engine that can carry a maximum load of 200 kilograms. "[With that load] it has a single flight duration of five to 12 hours and a flight altitude of around 4,000 meters," he said.

According to Chang, the company currently offers over 50 products suitable for drones with takeoff weights ranging from 10 to 500 kilograms and provides customized production based on customer needs. After seven years of development, Feiao Aircraft's business now covers everything from raw material processing to complete engine assembly and testing. The company owns a full-process production line for UAV engines with fully independent intellectual property, and its self-research and self-production rate exceeds 90 percent. Their orders span more than 30 countries and regions.

"Rizhao has unique advantages in tapping into the new blue ocean of the low-altitude economy," said Yang Xiaodong, deputy director of the Commerce Bureau of Rizhao. The city has the largest designated low-altitude airspace in east China, covering 23,000 square kilometers, which is 4.3 times its land area. This airspace includes diverse terrain such as mountains, rivers and oceans, and it covers 70 percent of the application scenarios typical in coastal cities.

Institutions such as SWUT have recently introduced aviation-related subjects. The rapid establishment of multiple aviation R&D platforms is providing robust technological and talent support for the development of the local low-altitude economy.

The Rizhao Low-Altitude Economy Innovative Development Plan for 2024-2026 was officially launched on June 27 of this year. The local government is seizing this strategic opportunity to promote the construction of the city's low-altitude economy and accelerate the development of an integrated ecosystem.

Journal Review

With its rigorous academic approach and profound academic foundation, the *British Journal of Nutrition* (*BJN*) has become one of the most important journals in global nutrition research.

BJN has published numerous influential research papers, advancing the understanding of the relationship between diet and health. Several studies on dietary patterns, micronutrient deficiencies, and their links to chronic diseases have provided scientific support for the development of public health policies. The journal not only focuses on fundamental nutrition research, but also covers clinical applications and innovative nutritional interventions, profoundly influencing the direction of global nutrition research.

BJN remains committed to exploring the intersection of nutrition, metabolism and immunology. For example, recent studies published on the relationship between gut microbiota and metabolic diseases offer new perspectives for understanding the multidimensional effects of nutrition on health.

With its rigorous peer review system and high-quality academic output, *BJN* has garnered significant attention from Chinese scholars. We have strong reasons to anticipate deeper collaboration between *BJN* and Chinese scholars, as well as an increase in high-quality research from China published in *BJN*.

—— *Yu Kang, vice president and chief expert of the Chinese Nutrition Society, and director of the Department of Clinical Nutrition at Peking Union Medical College Hospital.*