

GLOBAL OUTLOOK

# NTU CACIB, U-Tokyo IQB Sign MoU for Advanced Computing Research

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The National Taiwan University Center for Advanced Computing and Imaging in Biomedicine (NTU CACIB) and the University of Tokyo Institute for Quantitative Biosciences (U-Tokyo IQB) signed a Memorandum of Understanding (MOU) on Academic Collaboration Activities on May 24, 2024, at the 2024 Conference of Advanced Computing and Imaging in Biomedicine: Asia-Pacific Spatial Omics Technology (APSOT). The MOU signing ceremony took place at the National Taiwan University Cancer Center with Distinguished Professor Pai-Chi Li representing NTU CACIB and Director Katsuhiko Shirahige representing U-Tokyo IQB. The MOU establishes a framework for future academic collaboration in biomedical computing, artificial intelligence (AI), and imaging research, opening the way for future international exchanges for professors and students from both institutions. A special parallel session preceding and following the MOU signing ceremony was also held at which 11 top scholars from NTU and U-Tokyo presented their latest research.

NTU CACIB was founded in 2023 and focuses on three main advanced technologies: computing, imaging, and multi-omics. The Center aims to find solutions to hitherto unmet medical needs in development, aging, cancer, neurological conditions, and psychiatric disorders. U-Tokyo IQB, established in 2018, focuses on the development of innovative tools in structural biology, bioinformatics, mathematics, physics, and AI. Under the MOU framework, NTU CACIB and U-Tokyo IQB will now have the opportunity to integrate their theoretical and applicational research, spurring new research topics and the development of advanced technologies.

The MOU signing ceremony was part of the 2024 Conference of Advanced Computing and Imaging in Biomedicine: APSOT, at which experts from both sides presented their research capabilities and findings on an international stage. The conference was planned by Dr. Ruby Yun-Ju Huang of NTU, with NTU CACIB as the organizer and the NTU Cancer Center as co-organizer. The conference drew over 30 local and international speakers and more than 300 participants from Japan, Singapore, Australia, the United States, and Thailand. The 3-day conference included sessions on the development of spatial multi-omics technology applications in tumor studies, providing support for clinical trial design and transforming pathology in spatial technology. Participating experts exchanged views and research on the future of spatial technology development, highlighting the advanced cutting-edge research in Taiwan and promoting future research collaborations. It is expected that these discussions and collaborations will have profound implications for basic research in the life sciences, the development of biotechnology, and the enhancement of clinical medicine.



NTU CACIB and U-Tokyo IQB signing an MOU on Academic Collaboration Activities via remote link, establishing a foundation for future international collaboration and exchanges.



Onsite and online participants at the NTU CACIB and U-Tokyo IQB MOU signing ceremony.

experiences intensified warming. To get ahead of this potential shift, scientists need a firmer grasp of the Earth's response timescales to human-induced climate change. To tackle this issue, the team has established an interdisciplinary research group called "TROPICS" (TROPical PacIfic SST Warming PatternS), bringing together experts in observation, modeling, and theory.

One of the group's key initiatives is to apply methodologies from an earlier study led by Professor Hwang, published earlier this year in *Proceedings of the National Academy of Sciences* (PNAS), investigating the factors shifting the tropical Pacific warming pattern. This study separated the responses to anthropogenic aerosols into fast and slow timescales, providing insights into the unexpected multidecadal cooling in the eastern tropical Pacific. The group plans to utilize similar approaches to study the effects of greenhouse gases, ozone, melting ice sheets, and other factors.

Ultimately, the mission of the international efforts in keeping with Prof. Hwang's research team is to refine climate models, sharpen predictive accuracy, and solve the intricate puzzles of our climate system. They're racing against time to anticipate the shift to an El Niño-like state before nature reveals the final answer.



The Climate Dynamics and Global Change research group led by Prof. Hwang.



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