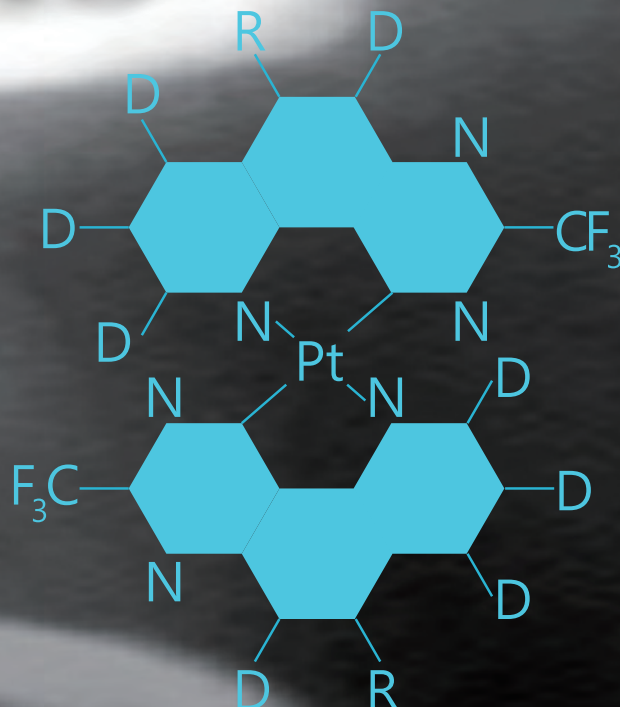




A Warmer Campus

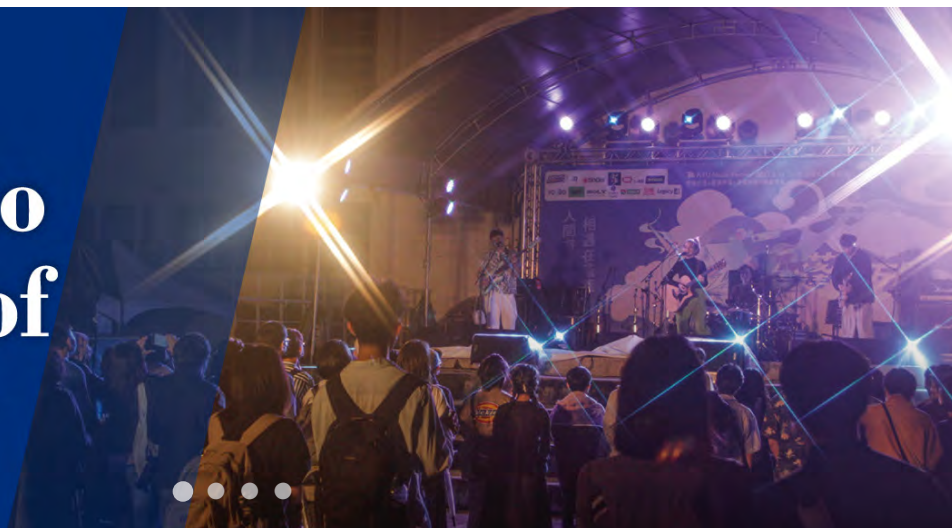
- Globalization Revisited
- New Horizons in Pharmaceutical Science
- Improving Online Dating Platforms



Decoding Genomics with Precision

PEOPLE

Welcome to the Town of Frequency



FEATURES



A Warmer Campus: Interview with Prof. Shi-Wei Chu, Vice President for Student Affairs

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"A key element in college life is whether there are opportunities to make friends," observed Prof. Shi-Wei Chu, Vice President for Student Affairs. Besides offering subsidies to help Taiwanese students interact with the international students, OSA actively provides assistance to the student clubs established by international students. For example, the Alumni Association of...

[...more](#)

GLOBAL OUTLOOK



Streams of Visits From Partner Unis

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[...more](#)

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The Ebb and Flow of Globalization: Developing University Reform and Cultivating Global Citizens

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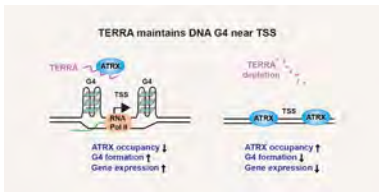
ACHIEVEMENTS



Record Breaking Research on Organic Strong Light Emission: Polyatomic Molecules with Emission Quantum Yields > 20% Enable Efficient Organic Light-emitting Diodes in the NIR (II) Window

The research team led by Professor Pi-Tai Chou of the Department of Chemistry broke the world record for organic strong light emission—held by the team itself—of 840-930 nanometers and reaching 1000 nanometers. This stellar research achievement was published on October 10, 2022 in the renowned journal *Nature Photonics*.

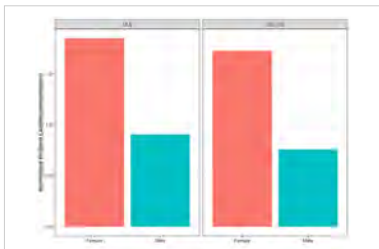
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Novel Mechanism of Long Non-Coding RNA in Epigenetic Regulation Found

Epigenetic regulation is a crucial mechanism for the regulation of gene activity; the process includes changes in DNA modification, DNA structure, histone modification, and association of non-coding RNAs. The majority of the human genome is transcribed into long non-coding RNAs (lncRNA). Certain lncRNAs have been found to be implicated in...

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Reducing Recommendation Inequality on Online Dating

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Presence of Saber-Toothed Cats in the Pleistocene of Taiwan

Associate Professor Cheng-Hsiu Tsai of NTU's Department of Life Sciences and University of California, Berkeley collaborated on an international paleontology research project. Their findings confirmed for the first time that saber-toothed cats (Machairodontinae) were present in the Pleistocene of Taiwan.

...more

TEACHING & LEARNING



Teaching that Transcends Time, Space and Campus

Ever since its inception, the Summer College at NTU has been dedicated to equalizing education and minimizing the learning gap to realize educational justice. After 4 years of hard work, it has connected with over 70 partner ...



...more



The Exploratory Learning Program

D-School's Exploratory Learning Program is one of several Future NTU action plans. NTU is the first university in Taiwan to give academic credits for exploratory learning, creating space and flexibility for students to find their interests. Students who enter the Exploratory Learning Program retain their...



...more



New Horizons in the Field of Pharmacy

The Taiwan Joint Conference of Pharmacy and Pharmaceutical Sciences is a grand annual event of the pharmaceutical industry, organized jointly by the Pharmaceutical Society of Taiwan and Taiwan Society of Health-System Pharmacists. In 2022, the NTU School of Pharmacy and NTU Hospital's Department of Pharmacy had the honor of co-hosting the event, and the 12 major professional pharmaceutical organizations were also invited as co-organizers...



...more

PEOPLE



Passion Worker Book Forum: Journey to the Stars

NTU's Career Center and its student editorial staff organized their first forum to launch the *2023 Passion Worker NTUer Workplace Handbook*. The forum featured two exciting sessions. In Session 1 the student editorial staff explained the steps they took in creating the handbook, and in Session 2 two interviewees from the handbook shared their career development stories with the audience. Tablets...

...more



World Champion Team From A Dorm Lounge

The Kibo Robot Programming Challenge (Kibo-RPC) is an educational program created and hosted by Japan Aerospace Exploration Agency (JAXA) and the National Aeronautics and Space Administration (NASA), which began in 2020. Last year, the 2022 championship was awarded to NTU's KIBO la na tsu bu KIBO/Robology Awesome Aliens for their outstanding programming...



...more



International Year of Millet : Successful Restoration

Millet was one of the early staple food crops of the Bunun tribe in Xinyi Township, Nantou. However, millet farming gradually declined due to the adverse indigenous policies during the period of Japanese ...

...more



Welcome to the Town of Frequency

Themed "The Town of Frequency," the ninth annual NTU Music Festival is aimed to express the students' post-pandemic ruminations. Whereas last year's theme "Immortal Island's Ark" evoked a sense of adventure, this year, in the words of the coordinators Shao-En Lin and Shan...

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| FEATURES

A Warmer Campus: Interview with Prof. Shi-Wei Chu, Vice President for Student Affairs

Share:     

Better Services for International Students

During the past several years, the Office of Student Affairs (OSA) has dedicated significant resources for offering assistance to international students, such as encouraging exchanges with local students and providing counseling in English to help the international students adapt to life on NTU campus.

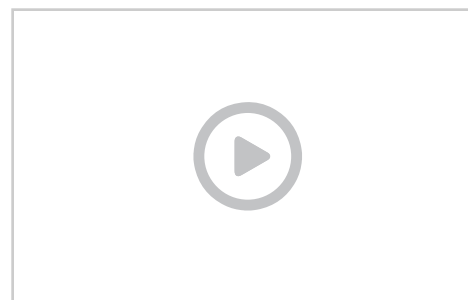
“A key element in college life is whether there are opportunities to make friends,” observed Prof. Shi-Wei Chu, Vice President for Student Affairs. Besides offering subsidies to help Taiwanese students interact with the international students, OSA actively provides assistance to the student clubs established by international students. For example, the Alumni Association of NTU, Malaysia has over 600 members who facilitate mutual support among students from abroad.

Additionally, the Center for Student Well-Being commenced services in 2021. Dedicated counselors have been made available at each college, to better serve each Department and Graduate Institute with unique environment and features. The Center provides preliminary counseling services. If the students need further assistance in academic or personal counseling, they will be referred to OSA or the Student Counseling Center.

“International students could experience considerable stress coming to Taiwan all by themselves.” Language can sometimes be a barrier that prevents international students from communicating their needs. However, Prof. Chu pointed out that all the dedicated counselors speak foreign languages so the international students can always have someone to talk to whenever the need arises, someone to help them adapt to life in Taiwan in timely fashion.

Collaborating with Student Organizations to Create a Support Network on Campus

Prof. Chu also hopes NTU students will think outside the box instead of constantly comparing themselves with other people. To this end, he encourages students to participate in extracurricular activities and build support networks, as well as spread positive energy. The Global Initiatives Symposium in Taiwan (GIS Taiwan)



Intro Video of Prof. Shi-Wei Chu, Vice President for Student Affairs.



Prof. Chu is now Vice President for Student Affairs and Professor at the Department of Physics. His research focuses include nonlinear optics, nanomaterials, biomedical imaging, and brain science.

hosted by NTU students each year is a great example. It is an event at which students empower other students by sharing a global vision and increasing the willingness for social participation.

To effectively match university resources with actual student needs, OSA maintains close interactions with student organizations. In 2022, the NTU Student Association and the Student Assistance Division of OSA conducted a survey on the “Warmth of Department Buildings” to gain insight into how life on campus and learning spaces interact and support each other. In addition, the survey results provided by the Graduate Student Association on the labor conditions of graduate students on campus contributed to the salary increase of teaching assistants.

Prof. Chu observed that what the students remember most about their campus days in later life is the touching moments, and the main mission of OSA is helping them create and accumulate such great touching memories.



Prof. Chu expects the Office of Student Affairs to build a warmer campus for the students, creating more opportunities for students to form touching memories during their campus life.

| GLOBAL OUTLOOK

Streams of Visits From Partner Unis

Share:     

NTU and Cornell are very similar in terms of the faculty/student demographics and research fields. The deep relationship also stems from the 66 Cornell alumni who currently serve at NTU. The two Universities are a natural fit for collaboration in pursuit of academic excellence.

Since February, NTU has been visited by several prestigious guests from Cornell University, USA, University of Tsukuba, Japan, and Mahidol University, Thailand.

The first delegation was Cornell University, led by Prof. Michael I. Kotlikoff, Provost, Prof. Wendy Wolford, Vice Provost for International Affairs, and Ms. Hongnan Ma, Asia Director for International Alumni Relations. The delegations were greeted by Prof. Hsiao-Wei Yuan, Vice President for International Affairs at NTU, who is also a Cornell Alumni, and met with NTU representatives to have an in-depth discussion on how to deepen bilateral research collaboration with Cornell's Global Hubs under multiple themes such as Future City, Big Data, AI, and Sustainable Development. In addition, NTU President Prof. Wen-Chang Chen also hosted a dinner banquet, gathering NTU faculty members who graduated from Cornell to reunite with our honorable VIPs.

Shortly after, NTU welcomed the delegation from University of Tsukuba (UT), including Prof. Nagata Kyosuke, President, Prof. Kanaho Yasunori, Vice President, and Prof. Ohneda Osamu, Executive Officer for International Strategy. After many online meetings and events during the pandemic, it was very meaningful



Global Innovation Joint-Degree Program (GIP-TRIAD Program), a joint master's program in Agro-Biomedical Science between University of Tsukuba, NTU, and the University of Bordeaux in France.

to host this delegation in person at NTU. President Chen, and Prof. Jiun-Haw Lee, Associate Vice President for International Affairs, received the delegation on behalf of NTU, and discussed with UT about future research collaboration, overseas internship exchange, and student community exchange.

In addition, President Nagata and President Chen had the opportunity to witness the first in-person meeting between the NTU Center for Artificial Intelligence and Advanced Robotics (AIROBO), the UT Center for Artificial Intelligence Research, and the Industrial Technology Research Institute (ITRI). Prof. Li-Chen Fu, the Director of AIROBO, shared the future plans of this trilateral collaboration during the delegation ceremony.

Last but not least, Prof. Banchong Mahaisavariya, the President of Mahidol University (MU), and Assoc. Prof. Nopraenue Sajjarax Dhirathiti, MU's Vice President for International Relations and Corporate Communication, led representatives from MU's diverse faculties to visit NTU's campus. President Chen and VP Yuan were delighted to welcome these representatives and host a ceremony to commemorate the signing of cooperation agreements. President Chen gave remarks to open the ceremony, sharing excitement about growing opportunities for transnational exchange and the strengthening relationship between Thailand and Taiwan. In his remarks, President Banchong mentioned that MU looks forward to deepening their research collaborations with NTU. VP Yuan and VP Dhirathiti also delivered insightful briefings on their university's internationalization strategies. The signing ceremony marked the extension of the MOU and student exchange program, reinforcing the longstanding partnership between MU and NTU.



From left to right, VP Dhirathiti and President Mahaisavariya of Mahidol University, President Chen and VP Yuan of NTU.

| GLOBAL OUTLOOK

Decoding Genomics with Precision

Share:     

| Dr. Yen-Hsuan Ni, Director of CGPM (third from the right, back row) and the team of CGPM.

NTU Centers of Genomic and Precision Medicine (CGPM) is committed to doing research that benefits society. The primary feature of CGPM is platform-based integration of basic research and clinical studies in translational medicine in conjunction with the synergy of NTU's medical system and the biomedical industry. In the shadow of the COVID-19 pandemic, CGPM actively conducts research related to policy development and clinical treatment. As the pioneer in working on SARS-CoV-2 whole genome sequencing and phylogenetic analysis, it aims to identify the possible origins and transmission pathways of the viral strain.

CGPM leverages multiple omics research methods in addressing three unmet medical needs—infectious diseases, stress biology, and cancer. It aims to reduce incidence rates and fatality rates in infectious diseases and cancer by proposing targeted treatment plans for individual or racial variants. With resources and expertise in multiomics, bioinformatics, and structural biology, CGPM has built a solid scientific platform with international academic collaborations.

With well-equipped core labs and ample biomedical resources, CGPM is a top research center integrating translational medicine and multiomics in Taiwan. While Genomic Research Center at Academia Sinica is larger in size, it is focused



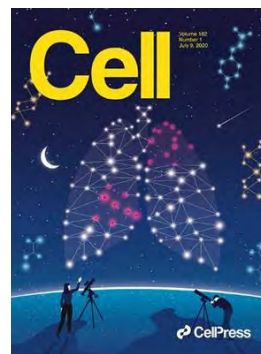
NGS & Microarray Core Lab of CGPM's participation in the USA's Cancer Moonshot Project featured on the cover of Cell in 2020.

solely on basic research. Few universities in Asia host such a research center with commitment to clinical medicine. 48% of the CGPM members are healthcare professionals with clinical backgrounds. For years, CGPM and the College of Medicine have been facilitating international collaborations. All of the over 100 scholars and experts, as well as several university presidents, who have visited CGPM from Europe, America, and Japan, regard it as a great model for emulation.

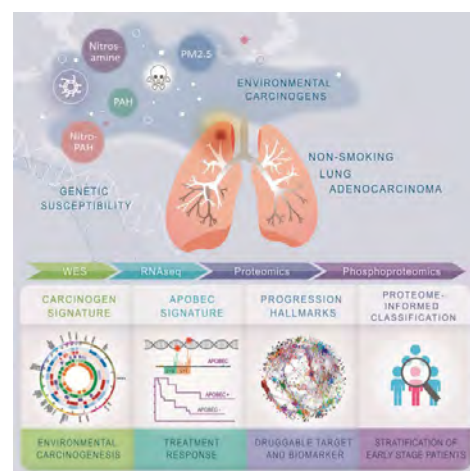
NTU is committed to educating and training first-rate researchers and leaders. To this end, CGPM has adopted multiple approaches for undergraduates, graduate students, postdocs, and faculty. By working with NTU Promotion Center of Precision Medicine, NTU SPARK, BioGroup, and NTU Center for Biotechnology, CGPM has organized programs for 500 physicians, scholars, postgraduates, and college students from NTU and beyond. It takes considerable effort to build a biomedicine ecosystem on campus. During the past five years, CGPM has trained 622 postgraduate students and recruited 181 high-level researchers. It has also published 323 academic papers in international journals, including 71 high-impact ones. In the meantime, 31 (18 local and 13 international) collaborative studies among industries and research labs have been published. Industry players have contributed over TWD 50 million in support of these projects. CGPM also engages in projects with multiple international partners, such as a cancer research center with MD Anderson Cancer Center in America, and TRANSCAN with France, Italy, and Belgium. CGPM aspires to become a representative and primary collaborator on behalf of NTU and medical research in Taiwan.



Click or Scan the QR code to visit the website of NTU Centers of Genomic and Precision Medicine for more details.



NGS & Microarray Core Lab of CGPM's participation in the USA's Cancer Moonshot Project featured on the cover of Cell in 2020.



Since 2016, CGPM has participated in the Taiwan Cancer Moonshot Project organized by Academia Sinica as one of the founding members in the Cancer Moonshot Project launched by the National Cancer Institute in the U.S.



Director Ni's vision for the future of CGPM.

| GLOBAL OUTLOOK

First Post-Pandemic International Symposium

Share:     

| PSU x CLS 2023 International Field Ecology Course Discussion.

Last December, the College of Life Science (CLS) received old friends from Prince of Songkla University (PSU) Thailand—a six-person delegation led by Associate Professor Anchana Prathep, the Dean of the Faculty of Science, PSU.

A long-term partner university of the College of Life Science, PSU has been co-hosting international field ecology courses with CLS for years together with Tung-Hai University and universities in Japan and Indonesia. Unfortunately, the close collaboration was suspended during the pandemic. Nevertheless, following the in-person bilateral academic exchange at the end of 2022, all parties are thrilled that the multinational field ecology courses will soon be offered again.

Besides arranging the International Field Ecology Course discussion, PSU also co-hosted a mini-symposium with CLS during their five-day visit, creating precious new opportunities for academic collaboration in the near future. Moreover, the PSU delegates paid visits to several prominent academic institutions, including the College of Science, the Institute of Oceanography, the Department of Geology, NTU Advanced Research Center for Green Materials Science and Technology (ARC-GMST), Academia Sinica, and Tung-Hai University, with the assistance of CLS faculty.



Group photo of the PSU delegation with Prof. Shih-Tong Jeng (Dean of CLS, fourth from the right), and Prof. Chau-Ti Ting (Associate Dean of CLS, third from the right).



Group photo taken at PSU x CLS Mini-Symposium Session 1.

CLS is grateful to host the first in-person meeting with visitors from a partner university in the post-pandemic era, and is looking forward to further in-person academic exchanges with partner universities from around the world.



Group photo taken at PSU x CLS Mini-Symposium Session 2.

| GLOBAL OUTLOOK

The Ebb and Flow of Globalization:

Developing University Reform and Cultivating Global Citizens

Share:     

Prof. Bruce Stronach is passionate about globalization and university reform. He holds the opinion that while professional knowledge is important, without diverse critical thinking and problem-solving skills, along with the ability to look at the big picture, one's education would be incomplete.

During the past several years, trends in globalization have shifted dramatically due to the pandemic, the Russia-Ukraine War, and other factors. To promote international collaboration and broaden global horizons, the Office of International Affairs is honored to invite a seasoned scholar in this field, Professor Bruce Stronach, the former Dean of Temple University Japan Campus, to share his personal experience as a visiting scholar at NTU.

Teaching at NTU: A Course to Build New Perspectives on Globalization

Prof. Stronach returned to NTU in the fall of 2022 on receiving an invitation from the previous Vice President for International Affairs of Temple University, Professor Hai-Lung Dai, as a visiting scholar. He offered the course "Japan in the Age of Globalization" at the Graduate Institute of National Development in cooperation with Professor Yu-Ting Lee of that graduate institute. The course analyzes Japanese history, society, politics, and economics in the context of



Intro video of Prof. Bruce Stronach, former Dean of Temple University Japan Campus: Broadening Global Horizons from Japan.

contemporary globalization, as well as encouraging students to look at several case studies from different perspectives.

When asked why he is interested in teaching this course, Prof. Stronach replied that his reason was that, “Japan now has a strong need for globalization as one of the most homogenous countries in history.” He directs the students’ attention to Japan’s cultural background and how its process of globalization has evolved in that context. Students who take this course develop a broader outlook, and indeed the course is aimed to cultivate global citizens. This aim is consistent with the feedback we’ve received from many students who took Prof. Stronach’s class, who described his teaching as “eye-opening.” The course has allowed them to see and analyze the world at large in brand new ways.

One reason Prof. Stronach decided to come teach at NTU is the inseparable historical contexts of Taiwan and Japan. He likes to observe the cultural nuances between the two countries through the educational systems and social interactions. For example, he noticed how the basic curriculum at NTU maintains many features inherited from its establishment under Japanese rule. Additionally, the public transportation infrastructure is very similar to that of Japan, including the high-speed rail and MRT. People also politely line up to board the trains as they do in Japan. Prof. Stronach integrates these observations into his teaching, inspiring the students to take macro perspectives as well as noticing the influence of globalization in their daily life.

“You teach learning before you teach knowledge”
– Prof. Bruce Stronach

Prof. Bruce Stronach’s Footprint in Japan and Taiwan

1976:

Visiting researcher at NTU’s partner university—Keio University

1980:

Lecturer at the International Center at Keio University; The Chairman of the School of International Studies, International Education Center (IEC)

1990:

Associate Professor of Japanese Studies, International University of Japan

1994:

Dean of the Graduate School of International Relations, International University of Japan

2004:

President of Yokohama City University; the first non-Japanese president of a public university in Japan

2007:

First visit to NTU as President of Yokohama City University

2008-2020:

Dean of Temple University Japan Campus (TUJ)

2022:

Lectured on “Japan in the Age of Globalization” at NTU

| ACHIEVEMENTS

Record Breaking Research on Organic Strong Light Emission:

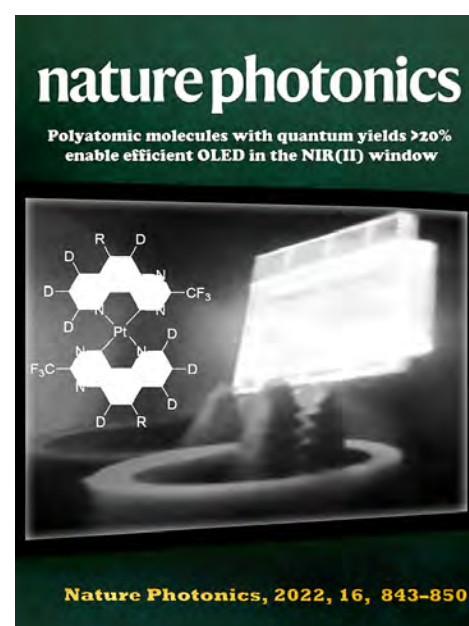
Polyatomic Molecules with Emission Quantum Yields > 20% Enable Efficient Organic Light-emitting Diodes in the NIR (II) Window

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The near-infrared (NIR) wavelength range of 1000-1700 nm is commonly known as the second infrared region (NIR(II)). It can pass through skin tissue and blood vessels for deep imaging detection. In addition, it is also an important wavelength range for optical fiber technology in information transmission because of reduced absorption loss. If NIR(II) emitting materials are to be considered for more general applications in the future, organic molecular materials with great synthetic versatility will be the best choice. However, the development for such applications has long been stymied by the “energy gap law,” that is, when the energy difference between the excited and ground states of an organic molecule is lower, the excitons-vibration coupling will be stronger, causing the relaxation of excitons to the ground state in terms of heat.

To breach this barrier, Professor Chou’s team decided to return to the theoretical basis of the problem in 2017. They considered that if the coupling is an inevitable law, then perhaps other methods could be used to reduce the coupling strength of the excitons/vibrations of organic materials in the NIR(II) region. Then, through a collaboration with Professor Yun Chi of National Tsinghua University, Professor Wen-Yi Hong of National Taiwan Ocean University, and Dr. Wei-Tsung Chuang of National Synchrotron Radiation Research Center, they successfully breached the barrier. Their article in *Nature Photonics* describes the brilliant strategy of using platinum metal coordinated by more π electron-conjugated, planarized ligand to facilitate self-assembly, thus reducing the exciton-vibration coupling. By doing this and replacing the C-H hydrogen atoms in the ligand with deuterium to further reduce the contribution from exciton-high frequency vibration coupling, they broke through the shackles of the energy gap law, reaching 1000 nm emission with an internal quantum yield of 21%, as well as an external quantum yield of 4.2% in OLED, both of which are world records.



Applying a strategy of platinum metal coordinated by more π electron-conjugated, planarized ligand to facilitate self-assembly and replacement of C-H hydrogen atom of the ligand by deuterium, the exciton-vibration coupling has been drastically reduced. As a result, the highly intense near IR 1000 nm emission can be obtained, having an internal quantum yield of 21%, and an external quantum yield of 4.2% in OLED, both of which are world records.



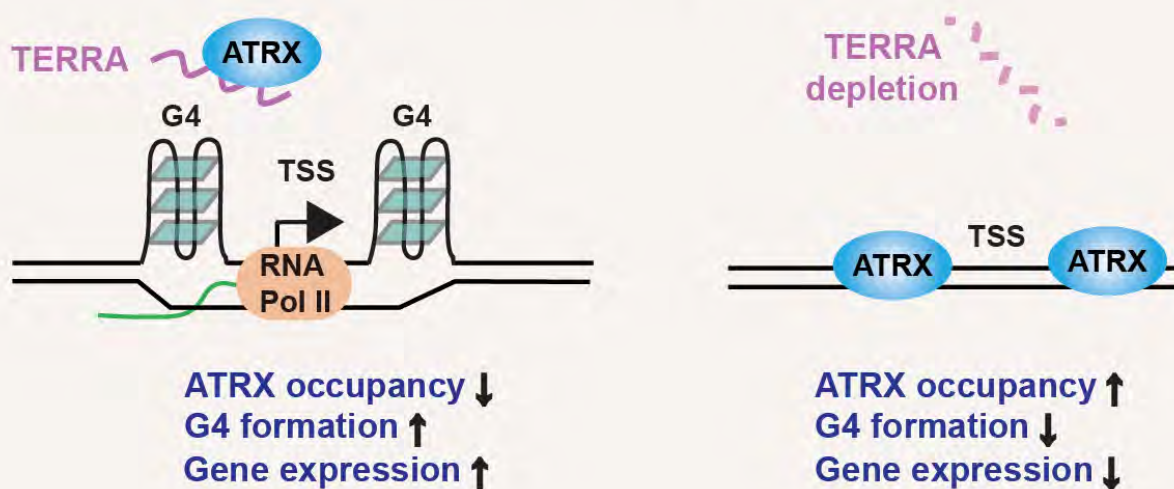
Click or Scan the QR code to read the journal article in *Nature Photonics*.

| ACHIEVEMENTS

Novel Mechanism of Long Non-Coding RNA in Epigenetic Regulation Found

Share:     

TERRA maintains DNA G4 near TSS



| TERRA maintains DNA G4 near TSS.

Epigenetic regulation is a crucial mechanism for the regulation of gene activity; the process includes changes in DNA modification, DNA structure, histone modification, and association of non-coding RNAs. The majority of the human genome is transcribed into long non-coding RNAs (lncRNA). Certain lncRNAs have been found to be implicated in a wide range of developmental processes and human diseases. Dr. Hsueh-Ping Chu and her team at the Institute of Molecular and Cellular Biology discovered a new mechanism of long non-coding RNA in epigenetic regulation.

The genome consists of non-B form DNA structures, such as G-quadruplexes (G4), which are stacked guanine tetrads involved in regulation of transcription activity by recruiting transcription factors. TERRA, a long non-coding RNA with telomeric repeat sequences, can fold into an RNA G-quadruplex and interact with chromatin remodeler ATRX. Several graduate students, including Ru-Xuan Tsai, Kuo-Chen Fang, Po-Cheng Yang, Yu-Hung Hsieh, and I-Tien Chiang, discovered that TERRA regulates the DNA G4 structures and ATRX occupancy near transcription start sites to regulate gene expression. This is the first study to disclose

that a long non-coding RNA is capable of regulating DNA G4 structures across the genome.

ATRX, a chromatin modifier with DNA G4 binding ability, has been identified as one of the genes most commonly associated with human intellectual disability. ATRX mutations lead to ATRX syndrome associated with clinical features such as mental retardation, facial, skeletal, and urogenital abnormalities, as well as mild thalassaemia. In particular, Dr. Chu's group found that TERRA prevents ATRX from binding to chromatin and thus maintains DNA G4 structures. The property of G-rich sequences in TERRA RNA is responsible for sequestering G4 binding proteins, which prevent DNA G4 from unwinding. These findings suggest potential applications for RNA therapy to control genomic structures, which in turn can regulate gene expression for the treatment of human diseases.



Click or Scan the QR code
to read the journal article
in *Nucleic Acids Research*.

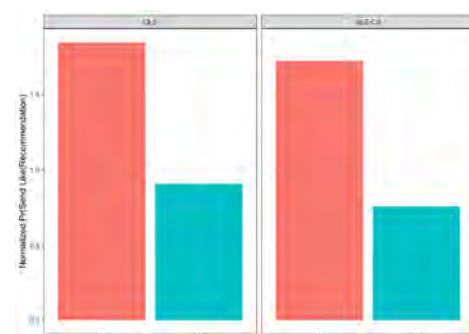
| ACHIEVEMENTS

Reducing Recommendation Inequality on Online Dating

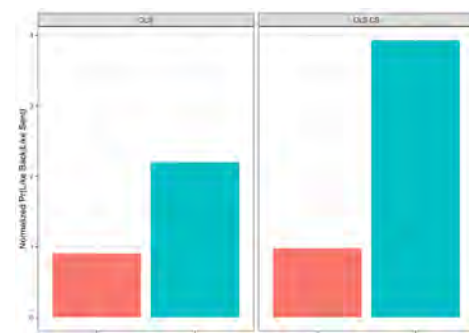
Share:     

Online two-sided platforms, such as dating apps, have gained widespread popularity in recent years. However, these platforms often suffer from recommendation inequality such that recommendations are concentrated on a small group of users in terms of both counts and matches. This can lead to congestion in that multiple users are recommended to a single user, which ultimately discourages user participation and reduces market thickness. To address this issue, a research team including Prof. Ming-Jen Lin, Kuan-Ming Chen of the Department of Economics, and Prof. Yu-Wei Hsieh from Amazon with a prominent dating platform in Taiwan to design and implement a new dating recommender system based on a stylized two-sided matching model. The recommender system was assessed through a large-scale randomized field experiment via the platform's mobile app, with results suggesting its effectiveness in reducing recommendation inequality, improving predictive accuracy, and generating substantially more matched couples compared to competing algorithms.

The new recommender system makes recommendations according to the user's own "Likes." Each user is recommended to their most "suitable" users rather than the most attractive ones. In the experiment, the research divided all registered users of the platform into a treatment group that implements the recommender and two control groups. The results showed that the treatment group had significantly reduced recommendation inequality compared to the two control groups, particularly in terms of increasing coverage rate for female users and eliminating the number of "superstar" users (those with a high number of recommendations). The treatment group also had the highest predictive accuracy for female users and the highest feedback rate for male users. Additionally, the treatment group achieved the most matches, with more than 1.2 times more compared to the control groups.



Click rate is defined as the probability of sending a Like to someone on the recommendation list. We normalize the control group results to 1 for each gender respectively, and plot the relative click rates conditional on being recommended. The treatment group also had the highest predictive accuracy for female users.



Feedback rate is defined as the probability of receiving a Like, conditional on sending a Like to someone on the recommendation list. We normalize the control group results to 1 for each gender respectively and plot the relative feedback rates. The treatment group had the highest feedback rate for male users.



Click or Scan the QR code to read the journal article in *International Economic Review*.

| ACHIEVEMENTS

Presence of Saber-Toothed Cats in the Pleistocene of Taiwan

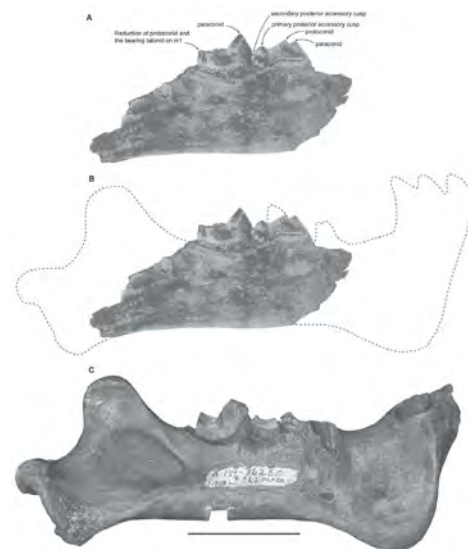
Share:     

Associate Professor Cheng-Hsiu Tsai of NTU's Department of Life Sciences and University of California, Berkeley collaborated on an international paleontology research project. Their findings confirmed for the first time that saber-toothed cats (Machairodontinae) were present in the Pleistocene of Taiwan.

Machairodontinae, including the famous *Smilodon* and *Homotherium*, was an iconic Pleistocene carnivore lineage that occupied a critical paleoecological niche. The species is thought to have exerted a profound impact on the ice-age ecosystem structure. Recent ancient molecular studies on *Homotherium* suggest a wider distribution than that inferred from the extant fossil record, highlighting the need for additional fieldwork, fossil collection, and research in understudied geographic regions. After the original publication 80 years ago that identified a Pleistocene carnivore fossil as *Felis* sp. in Taiwan, the present study revised its identification and demonstrated the presence of the large machairodontine cat, *Homotherium* sp., in the Pleistocene of Taiwan, indicating the eastern-most occurrence of this lineage in Eurasia. The research result also underscores the importance of fossil curation and in-depth research for elucidating hidden regional diversity and lost ecosystem structure for understanding faunal turnover and the origin of modern biodiversity.



Click or Scan the QR code to read the journal article in *Papers in Palaeontology*.



A. the first confirmed saber-toothed cat from Taiwan; B. the reconstructed mandible of the saber-toothed cat from Taiwan; C. a well-preserved mandible of a saber-toothed cat from Alaska, USA.



A reconstructed scene in the Pleistocene Park. Three saber-toothed cats preying on a juvenile mammoth. Illustrated by Mauricio Antón.

| TEACHING & LEARNING

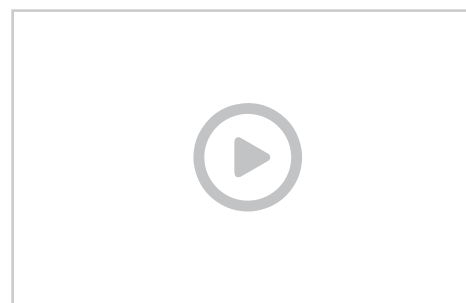
Teaching that Transcends Time, Space and Campus

Share:     

| Demo session of the 2022 Stone Rubbing and Cultural Asset Preservation Workshop.

Ever since its inception, the Summer College at NTU has been dedicated to equalizing education and minimizing the learning gap to realize educational justice. After 4 years of hard work, it has connected with over 70 partner schools all over Taiwan to offer over 125 general education courses. In the meantime, it has created diverse, flexible, and spontaneous learning fields by offering quality courses with different topics. In the future, the Summer College aspires to build on the present program and enrich the courses with further collaborations, allowing faculty members and students from all over Taiwan to learn and grow together in new environments with infinite possibilities.

The Summer College continues to host extension activities at the end of the courses to encourage further exchanges. Examples include the 2022 Southern Taiwan Local History and Culture Research Seminar and the Chinese and Western Medical Workshop, allowing more knowledge to be transmitted outside of the walls of the classroom, as well as maintaining the connections between the



| Introduction video of the Summer College for university students.

teachers and students. These meaningful events not only prove that knowledge can be acquired in local settings in Taiwan but also enhance the spirit of whole-person education and resource sharing.

The Summer College welcomes university and high school students to explore quality general education courses during their summer vacation. The diverse curriculum can help students find the future direction of their lives. Discover more about the program on the official website!



Click or Scan the QR code to explore the courses and activities organized by the Summer College.



Group photo of the 2022 Stone Rubbing and Cultural Asset Preservation Workshop.



The food-sharing session of Summer College's student reunion.

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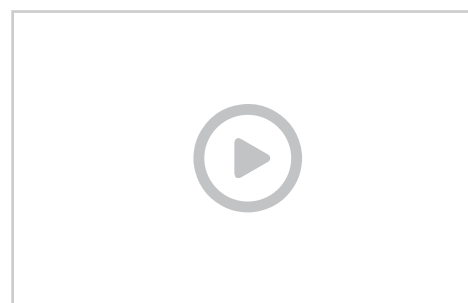
The Exploratory Learning Program

Share:     

| Group photo of the students participating in the end-of-term sharing session of the Exploratory Learning Program.

D-School's Exploratory Learning Program is one of several Future NTU action plans. NTU is the first university in Taiwan to give academic credits for exploratory learning, creating space and flexibility for students to find their interests. Students who enter the Exploratory Learning Program retain their student status while making the most of NTU's resources to discover infinite possibilities on and off campus. Since its launch in 2021, the program accepted 36 students from nine colleges as of 2022, with 17 faculty members offering support and guidance along the way.

In 2022, 13 students who participated in the program shared their stories with themes including entrepreneurship, music creation, internship, and returning to campus after some much-needed rest. Through exploratory learning, they regained a sense of control in their studies. They stressed that exploratory learning is different than temporarily dropping out of university. Indeed, with the support offered by faculty members and D-School, they never felt they were alone. At the end-of-term sharing session, then President Dr. Chung-Ming Kuan said that approximately 20% of NTU students choose to delay graduation each year, citing



| D-School Exploratory Program end-of-term sharing session.



| A participant sharing her journey in music creation.

the lack of self-exploration as one of the reasons. If students could find out what they really want or can do during an exploratory period, they would have the opportunity to try something different and quite possibly embark on a different life journey.

Dean of D-School Robin Bing-Yu Chen congratulated the students on making their respective explorations for several months. He believed that they would return to campus with more determination and a sense of purpose so that their university years would be more meaningful. NTU will continue to promote the Exploratory Learning Program so that more students can explore what they really want to do and live for, opening more space for their imagination by breaking the boundary between learning fields and university courses.



A participant sharing how students can face and find themselves in the learning process.

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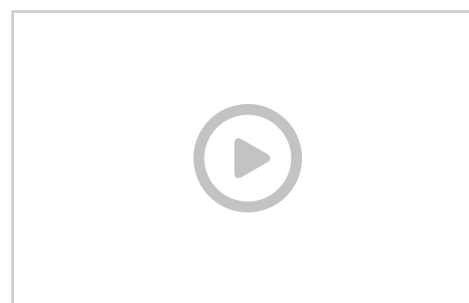
New Horizons in the Field of Pharmacy

Share:     

| Group photo of the participants of the 5th Taiwan Joint Conference of Pharmacy and Pharmaceutical Sciences.

The Taiwan Joint Conference of Pharmacy and Pharmaceutical Sciences is a grand annual event of the pharmaceutical industry, organized jointly by the Pharmaceutical Society of Taiwan and Taiwan Society of Health-System Pharmacists. In 2022, the NTU School of Pharmacy and NTU Hospital's Department of Pharmacy had the honor of co-hosting the event, and the 12 major professional pharmaceutical organizations were also invited as co-organizers. Many prominent professionals in the pharmaceutical field gathered for the academic exchange with expectations to encourage collaboration among pharmaceutical organizations and, most importantly, advance the development of pharmacy and the pharmaceutical professions.

Everyone at the conference, themed “New Horizons for Pharmacy,” was keenly aware that art and performances meant so much to society during the COVID-19 pandemic. To this end, the Ching Kang Foundation for Pharmacy Promotion arranged a special performance by the Atayal School Youth Choir at the opening ceremony, celebrating the start of the conference with the beautiful voices of indigenous children. 73 speakers, scholars, and experts from home and abroad



| Slideshow of the closing ceremony of the 5th Taiwan Joint Conference of Pharmacy and Pharmaceutical Sciences.



| Group photo of members on the Organizing Committee and Academic Committee.

were invited, including Academician Chi-Huey Wong who presented the keynote address on *Precision Health and Universal Vaccine Development* and Dr. Sheng-Jean Huang who discussed *Person-Centered Aging, the Pandemic, and Integration*. The conference attracted more than 1,000 submissions of oral presentations and posters, and over 1,300 guests participated in the event.

Five sub-topics were discussed on the second day of the conference, each of which was specialized yet resonated with each other while responding to the conference theme. The spotlighted goals included applying precision medicine to innovative pharmaceutical services through pharmaceutical science and drug development, and promoting the expertise and efficacy of pharmacy through competency-oriented education. Last but not least, the conference hoped to revolutionize the environment in which pharmacists practice through research on the effectiveness of pharmaceutical care and health policies, opening up a new vision of pharmacy development.



Post-conference group photo of the organizers and hosts.

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Passion Worker Book Forum: Journey to the Stars

Share:     

NTU's Career Center and its student editorial staff organized their first forum to launch the *2023 Passion Worker NTUer Workplace Handbook*. The forum featured two exciting sessions. In Session 1 the student editorial staff explained the steps they took in creating the handbook, and in Session 2 two interviewees from the handbook shared their career development stories with the audience. Tablets were provided at the forum venue so the attendees could read the electronic version of the handbook as well as interact with the editorial staff and guests there.

The two guest speakers, NTU Alumni Danny Yang and Yen-Te Wu, were invited to share their career paths with the participants. Danny Yang discussed how he successfully started up his business using the necessary management and organizational skills he had learned in NTUESC (a cake-baking club) and the varsity team. In concluding, he encouraged every student to do their very best in absolutely everything during their university years.

When facing frustrations on your career path, Yen-Te Wu declared, what matters



Guest speakers Danny Yang, Founder of TERRA Bean to Bar Chocolate (first right) and Yen-Te Wu Founder of Do You a Flavor (second right) discussing their career paths with the student editorial staff.

most is to accept who you are. He reminded everyone, “You can stay down when you fall instead of forcing yourself to bounce back up. Get up only after you have had enough rest. When you are well rested, you can do better.”

“Journey to the Stars” was chosen as the theme for this event, since our life is like an adventure in space, full of uncertainties. There will be surprises, confusions, and frustrations as one hurtles through the edge of space in a spaceship. Remember that everything is a part of the journey—taking a rest stop at the interstellar station, wandering around the universe, plunging down wormholes when you are scared out of your wits! NTU’s Career Center and the student editorial staff all sincerely hope that the experiences shared by the 15 alumni in the book will help students to navigate those moments of frustration and confusion along their life path.



Participants could read the e-book version of the 2023 *Passion Worker NTUer Workplace Handbook* on tablets at the venue and interact with the editorial staff and guest speakers.



Group photo of the guests, faculty members, and participants at the 2023 Passion Worker Book Forum.

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World Champion Team From A Dorm Lounge

Share:     

| Livestream of KIBO la na tsu bu KIBO/ Robology Awesome Aliens participating in the final round of The 3rd Kibo Robot Programming Challenge 2022.

The Kibo Robot Programming Challenge (Kibo-RPC) is an educational program created and hosted by Japan Aerospace Exploration Agency (JAXA) and the National Aeronautics and Space Administration (NASA), which began in 2020. Last year, the 2022 championship was awarded to NTU's KIBO la na tsu bu KIBO/ Robology Awesome Aliens for their outstanding programming and problem-solving skills.

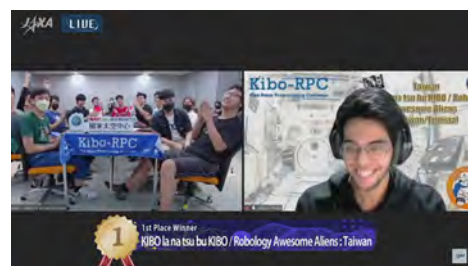
Kibo-RPC challenges students to hone their programming skills in a unique space setting, learn the most advanced methodologies in science, practice creating real-world simulation programs within errors of margins, and control robots through simulation trials. The competition also gives students the opportunity to meet and learn from other international participants.

Teams are given a fictional scenario—the International Space Station (ISS) has encountered space debris and a new air leak has been detected. In this challenge, students must repair the air leak by developing codes to program an Astrobe, NASA's free-flying robot on the ISS. Teams must move Astrobe to two different points and illuminate the center of the target using Astrobe's laser.

KIBO la na tsu bu KIBO / Robology Awesome Aliens is a mixed team whose



Members of Taiwan's KIBO la na tsu bu KIBO/ Robology Awesome Aliens: Chu-Rung Chen, Yio-Hua Chen, and Guan-Ying Chen of NTU's Department of Electrical Engineering (left to right).



JAXA announcing Taiwan's team as the first place winner (Photo credit to TASA).

members hail from different departments, universities, and nationalities, recruited by team captain Guan-Ying Chen of NTU's Department of Electrical Engineering. "I just sat in the lounge in NTU First Men's Dorm and asked passersby if they wanted to join me and compete together," Chen confessed. He ended up recruiting team members from the Departments of Electrical Engineering, Mechanical Engineering, Computer Science and Information Engineering, and Engineering Science and Ocean Engineering. The team also welcomed a student from National Cheng Kung University (NCKU) and an international student from Tunisia to meet the competition's team requirements.

The team's diversity and the members' different areas of expertise enabled them to outperform their rivals in the competition. The student from Tunisia wrote the code for the program, overcoming the robot's moving-range limitations and thus enhancing the laser's precision. The member from NCKU noticed that the team could use the simulation machine's score to confirm the order of the programming and added defensive programming to prevent the robot from hitting the ISS. By working together, the team successfully overcame the complex challenges in the final round of the competition.

"Having the courage to try is what matters, results come second," remarked Chen, recalling this journey; "I learned to solve problems and help members stay on the right track through communication. I wanted our team to truly become a team." With a smile, Chen added, "Though NTU does not have rocket research, as NCKU and National Yang Ming Chiao Tung University do, we boast bold, wild, and innovative students. With all those talents at NTU, we can do crazy things to make things happen."



Japanese astronaut Koichi Wakata inputting the team's program at the ISS (Photo credit to TASA).



Director General of TASA Jong-Shinn Wu presenting the first prize of TWD 60,000 to the team (Photo credit to TASA).



Click or Scan the QR code to visit the website of Kibo Robot Programming Challenge.



Click or Scan the QR code to visit the website of the Taiwan Space Agency (TASA).



| Livestream of the announcement of the winner and the award ceremony of The 3rd Kibo Robot Programming Challenge 2022.

<https://ntuhighlights.ntu.edu.tw/enews/95>

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International Year of Millet : Successful Restoration

Share:     

From left to right: Deputy Director of the NTU Experimental Forest Chiang Wei, Principal Chi-Yo Shih of Tong-Fu Junior High School, Principal Savungaz Tanapima of Mahavun Elementary School in Xinyi Township, Committee Member of the Experimental Forest Bagkall Haivangang, Co-management Committee Member Shu-Ying Kan, Director of the Experimental Forest Ming-Jer Tsai, Dean of the College of Bioresources and Agriculture Huu-Sheng Lur, Prof. Yann-Rong Lin of the Department of Agronomy, Ko-Hsuan Shao, PhD student of the Department of Bio-Industry Communication and Development. The bunch of millet in Mr. Shao's hands is special in that it is the first indigenous millet variety in Xinyi Township that was planted and donated by a local resident who worked with the team. (Photo credit: Staff photo.)

Millet was one of the early staple food crops of the Bunun tribe in Xinyi Township, Nantou. However, millet farming gradually declined due to the adverse indigenous policies during the period of Japanese rule and the subsequent market economy. Native millet species and related Bunun annual rituals also disappeared due to these pressures. In effort to restore millet farming and consumption, the Experimental Forest of NTU's College of Bioresources and Agriculture launched a millet revival initiative in August 2020. Subsequently, NTU collaborated with E.SUN Commercial Bank in launching a millet revival project in March 2022, aimed to bring native millet seeds back to the tribes to begin larger-scale participatory millet crop restoration actions and promote the Six-Level Industries Development Program.

The Experimental Forest held a series of activities at the beginning of the year in conjunction with the International Year of Millets declared by the Food and Agriculture Organization of the United Nations (FAO) in 2023. In mid-January,

<https://ntuhighlights.ntu.edu.tw/enews/95>



NTU Experimental Forest organizes a presentation of Bunun millet restoration in Xinyi Township, Nantou County on January 14, 2023. (Photo credit: Circling Taiwan Co., Ltd.)

a presentation about successful millet restoration and tasting session was held in Xinyi Township, to inform the public about the team's effort to restore millet farming during the past two years. Indigenous millet seed packets and instruction manuals were distributed to the attendees, who were also invited to taste and describe the taste of the different millet species. The participants included many local youths, experts, and scholars who care deeply about millet restoration.

The initiative restored 28 millet strains with different physical qualities, flavors, and traditional contexts. In traditional Bunun culture, these millet varieties are used to make different dishes, such as millet rice, millet cake, and millet wine, and for different purposes, such as banquets and rituals; certain millet varieties are selected for the elderly, pregnant women, and young children, respectively. By sharing the results of the restoration initiative and research with the local communities, the millet restoration team anticipates promoting a new outlook for the tasty and nutritious native millet varieties that are rooted in Taiwan's indigenous cultures.



Besides presenting the 28 restored millet strains, millet seed packets, instruction manuals, and snack boxes were presented to the participants. (Photo credit: Circling Taiwan Co., Ltd.)



The participants were invited to taste 4 different millet varieties at the presentation. All the varieties have different common names, tastes, and traditional purposes.

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Welcome to the Town of Frequency

Share:     

Themed “The Town of Frequency,” the ninth annual NTU Music Festival is aimed to express the students’ post-pandemic ruminations. Whereas last year’s theme “Immortal Island’s Ark” evoked a sense of adventure, this year, in the words of the coordinators Shao-En Lin and Shan-Yu Kuo, “The Town of Frequency” evokes a place where you can come back to rest if you ever grow tired of chasing your dreams.”

Promoting Student Bands

The NTU Music Festival is a student-organized event. Moreover, in the words of the event coordinators, Shao-En and Shan-Yu, “The ultimate goal is to put student bands on stage so that they can build their fanbase and hopefully obtain funding. This is why besides attracting regular audiences, we also invite record labels, music critics, and venue managers to discover the performers through their music.”

Over the years, the Music Festival has encouraged many young people to start a band and make their own music by organizing open calls for bands, inviting audiences to vote for their favorite bands, and inviting professional judges for band selection.



Following the sense of adventure evoked by last year’s theme “Immortal Island’s Ark,” the theme of this year’s NTU Music Festival “The Town of Frequency” is a place “where the students can always come back to rest.” (Photo credit: NTU Music Festival)

The two bands that reached the finals in this year's popular vote are "Rain Day Preparation" and "Dinner Salute." Rain Day Preparation was formed in response to the announcement of the Music Festival. Lead singer Chun-Pai Chen invited Daphne, Yu Houng, and Dino from the same music studio to start a band the very minute he found out about the open call. Dinner Salute was greatly encouraged by the popular vote. Drummer Hsun-Yu Wang said, "I did not realize so many people support us!" Another band that made it to the finals through the judges' selection was Alpaca Band. Lead singer Melissa gathered music talents from different fields to spark new creations. Drummer Josh said the Music Festival offers them a real venue to make different attempts and breakthroughs in terms of music arrangement as students.

Not Just A Performance But the Formation of A Self-sustaining Band

Shao-En and Shan-Yu are convinced that for a band to make it, besides talent and a good sound, they need an effective agent and marketing. As the pandemic recedes and people go out more, bands have to excel at live concerts.

This in mind, there are two innovations this year. The first one is an outdoor stage for student performances, to facilitate the bands' entry into the music scene and increase their exposure. Second, some professionals in the music industry are invited to share their knowledge of the necessary skills and know-how. Moreover, music creators are allowed to meet with event planners and discuss further dimensions of the industry.

As to the expectations of the Music Festival, Shan-Yu hopes it will allow student bands of various styles to "sing at their own frequencies, tell their own stories, and let the stories resonate with each other in the Town of Frequency—because this is the gift given to everyone by music."

2023 NTU Music Festival

Time: May 13 (Sat)-14 (Sun)

Location: NTU Gymnasium

Line-up Performers: hue, Who Cares, GGteens..... many more to come!

Organizer: The 9th NTU Music Festival Preparatory Committee

Special Thanks: Fantimate1990:



Coordinators Shao-En Lin and Shan-Yu Kuo affirm that "Stories resonate with each other. This is the foundation of mutual trust."



Rain Day Preparation includes guitarist Yu-houng, lead singer Chun-pai, drummer Dino, and bassist Daphne (from left to right). Together, they created the demo song "I Feel Better" for the festival. Chun-pai said that like their band name, the song conveys the hope that everything will get better. The band was formed one week before the open call ended. They had no idea they would win second place by popular vote. They are grateful that the NTU Music Festival has given them the opportunity to perform on stage. (Photo credit: Rain Day Preparation)



"Everybody can gather in the Town of Frequency where music rules while staying true to their unique selves." The outdoor stage of NTU Music Festival—where the student bands can perform and get vital exposure. (Photo credit: NTU Music Festival)



Click or Scan the QR code to visit the Facebook page of NTU Music Festival.