

## Meeting Report

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### **The 1st International Conference on Genomic Big Bang**

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Genomic Big Bang is a recent catchphrase coined by Dr. Takashi Gojobori, who is a Yushan Scholar and a professor at National Cheng Kung University. Under this fascinating concept, Dr. Gojobori, along with his colleagues and collaborators, organized a three-day international conference in Tainan, located in Southern Taiwan. While this catchphrase appeared to signify the biodiversity arising from genomic evolution, the conference covered a broad range of research topics, including recent advancements in biotechnologies, which successfully strengthened the significance of the meeting. In fact, the first keynote speaker, Dr. Wen-Hsiung Li, who is a world-renowned researcher, lectured on the technological aspects of genomics, while the second keynote speaker, Dr. Nina Yasuda, an up-and-coming researcher, delivered a presentation about the biodiversity of coral reef organisms.

The regular sessions commenced with discussions on global-warming issues and were followed by presentations on plant biology, evolutionary studies, microbiology, etc. It is noteworthy that, in addition to standard genomics work employing recent advanced DNA sequencing technologies, large-scale sequencing was widely utilized in other areas, such as ecology and environmental biology. This implied that massive DNA or RNA sequencing has become indispensable for laying the foundation in numerous branches of modern biology. The conference program is attached at the end of this report,

Tainan is a cozy ancient town with a long history spanning nearly 400 years. The residents of Tainan are well-known for warmly welcoming visitors with uniquely flavored foods, and their hospitality reminds the benign climate of this town. Feeling the gentle southern breeze, we were all eager to revisit this place and hold the second conference here again soon in the near future.

### **"Genomic Big Bang" Symposium Program**

May 8th, 2024

8:50-9:10 Background speech: Dr. Takashi Gojobori

9:10-9:50 Keynote speech 1: Dr. Wen Hsiung Li

Title: Genome technology, C4 leaf development and rice grain yield improvement

Session 1: Biodiversity, Global warming and impacts

10:20-10:35 S1-1: Dr. Sheng-Tzong Cheng

Title: Global digitization while global warming

10:35-10:50 S1-2: Dr. Benny Kwok Kan Chan

Title: Evolution of the coral-barnacle symbiotic relationship -essentials in understanding coral reef symbiosis

10:50-11:10 S1-3: Dr. Satoshi Nagai

Title: Comparative genome analysis among the genus *Skeletonema*, the most cosmopolitan marine diatom group. Why are they so prospering?

11:10-11:25 S1-4: Dr. Yun-Che Wang

Title: Bio-enhanced mountain slope stability for sustainability in ecology and economy through agriculture

11:25-11:40 S1-5: Dr. I-Ching Chen

Title: Global redistribution of biodiversity and conservation paradigm shifts

11:40-11:55 S1-6: Dr. Haruko Takeyama

Title: Single-cell genomics studies of marine microbes in Suru Minetaga Bay, Japan, elucidate their adaptations to the marine environment

11:55-12:10 S1-7: Dr. Yu-Hsun Hsu

Title: Latitudinal variation and local adaptation in damselfly wing colors under the lens of climate change

Session 2: Seed biology and plant adaptation

14:05-14:20 S2-1: Dr. Toshiki Ishikawa

Title: Solving a sphinx enigma in plant science: the challenges for crop improvement and a new green bio product by metabolic engineering of sphingolipids

14:20-14:35 S2-2: Dr. Masaru Ohme-Takagi

Title: Signaling factors that regulate synchronized development of embryo and endosperm during seed formation

14:35-14:50 S2-3: Dr. Hsing-Juh Lin

Title: Co-benefits of managing mangroves for biodiversity and carbon sink

14:50-15:05 S2-4: Dr. Wen-Chieh Tsai

Title: Genome evolution and phenotypic adaptation of orchids

15:05-15:20 S2-5: Dr. Ming-Jung Liu

Title: Unveiling the hidden: exploring translating genes in plants and plant viruses

15:20-15:35 S2-6: Dr. Iwai Ohbayashi

Title: not listed

15:35-15:50 S2-7: Dr. Masatoshi Yamaguchi

Title: Master regulators of formation of secondary cell wall, main target of the woody biomass

Session 3: Evolution, adaptation under stresses

16:20-16:35 S3-1: Dr. Ya-Fu Lee

Title: Brood success and conservation needs of socially polyandrous and sex-role-reversed pheasant-tailed jacobins in a changing world

16:35-16:50 S3-2: Dr. Ya-Zhu Ko

Title: Exploring the deep population structure of *Nypa fruticans* Wurmb, a species with potential for functional food and medicine development, in the Indian-West Pacific geographical isolation

16:50-17:05 S3-3: Dr. Kuo-Fang Chun

Title: Evolution of a mega-diverse clade: phylogenomics of begonia

17:05-17:20 S3-4: Dr. Su-Chiung Fang

Title: Comparative transcriptomics enables studies of the specialized developmental programs in phalaenopsis orchids

17:20-17:35 S3-5: Dr. Akira Sasaki

Title: Evolution of pathogen in heterogeneous metapopulations

17:35-17:50 S3-6: Dr. Chau-Ti Ting

Title: Evolution of Fatty acid elongase gene family in Drosophila

17:50-18:05 S3-7: Dr. Hurng-Yi Wang

Title: The role of transposable elements in opsariichthys speciation and gobioides diversification

18:05-18:20 S3-8: Dr. Yuzuru Tozawa

Title: Studies on industrially important proteins based on in vitro translation

May 9th, 2024

8:30-9:10 Keynote Speech 2: Dr. Nina Yasuda

Title: Exploring genomic seascape: understanding diversification of coral reef organisms in the Indo-Pacific

9:10-9:25 S3-9: Dr. Yun-Chu Chen

Title: Signals for plant defense priming

9:25-9:40 S3-10: Dr. Woei-Jiun Guo

Title: A sweet-mediated sugar competition between plants and microbes

9:40-9:55 S3-11: Dr. Masashi Yamada

Title: The role of a small peptide in root meristem development

9:55-10:10 S3-12: Dr. Yoko Satta

Title: Two selective hard sweeps for lactose tolerance in Europe and South Asia

10:10-10:25 S3-13: Dr. So Nakagawa

Title: Diversity and evolution of RNA viruses (including SARS-CoV-2) revealed by massive nucleotide sequencing data analyses

10:25-10:40 S3-14: Dr. Masato Nikaido

Title: Genetic mechanism of parallel evolution of lip hypertrophy in cichlids revealed by comparative genomics

10:40-10:55 S3-15: Dr. Naruya Saitou

Title: Yaponesian genome project FY2018-2022: Our achievements

10:55-11:10 S3-16: Dr. Katsuhiko Mineta

Title: Population genomics in Arabian Peninsula and its implications

11:10-11:25 S3-17: Dr. Toshinori Endo

Title: A novel model for de novo gene birth by multi-omics analysis

11:25-11:40 S3-18: Jer-Young Lin

Title: Divergence in temporal gene activities programming late embryo development between soybean and Arabidopsis

11:40-11:55 S3-19: Dr. Ying-Lan Chen

Title: A vascular sap peptide conserved across flowering plants positively regulates lignin biosynthesis, biomass and immunity

11:55-12:10 S3-20: Dr. Yoshitaka Nishiyama

Title: Response of photosynthesis to strong light

13:00-13:15 S3-21: Dr. Atsushi Ogura

Title: Convergent evolution of eye

13:15-13:30 S3-22: Dr. Yoshimoto Saito

Title: Genome sequencing of Sakura shrimp *Lucenosegria lucens*: new insight into the evolution of the Decapoda

Session 4: Carbon Sequestration and Microbiology

14:40-14:55 S4-1: Dr. Sen-Lin Tang

Title: From community to individual: it is the time for scrutinizing individual microbes and their ecological functions

14:55-15:10 S4-2: Dr. Wan-Yu Liu

Title: Craving a greener future? Unveil the secrets of nature's carbon vaults

15:10-15:25 S4-3: Dr. Shugo Watabe

Title: Metagenomic approach to characterize microbial communities in aquatic environments in Japan

15:25-15:40 S4-4: Dr. Chao-Li Huang

Title: The role of needle-decomposing fungi in shaping contrasting fire adaptations between two pinus subgenera

15:40-15:55 S4-5: Dr. Hsiao-Pei Lu

Title: Using metagenomics to characterize marine plankton diversity

Session 5: Biotechnology and Microbiology

16:30-16:45 S5-1: Dr. Dr. Ling Yuan

Title: How flowers and fruits change colors?

16:45-17:00 S5-2: Dr. Sumire Fujiwara

Title: Exploration and functional analysis of useful transcription factors in plants

17:00-17:15 S5-3: Dr. Nobutaka Mitsuda

Title: Plant transcription factor engineering for our sustainable future

17:15-17:30 S5-4: Dr. Dewi Sukma

Title: The current research on molecular aspects of phalaenopsis resistance to soft-rot disease

17:30-17:45 S1-8: Dr. Takefumi Nakazawa

Title: not listed

Edited by SAITOU Naruya