

Conference report: the 5th Asia Pacific Protein Association Conference joint meeting with the 12th International Symposium of the Protein Society of Thailand

James R. Ketudat Cairns^{1,2} · Voraratt Champattanachai¹ · Chantragan Srisomsap¹ ·
N. Monique Paricharttanakul¹ · Chris Verathamjamras¹ · Kriengsak Lirdprapamongkol¹ ·
Jisnusun Svasti¹

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The 5th Asia Pacific Protein Association Conference and 12th International Symposium of the Protein Society of Thailand (APPA/PST2017) was held at The Tide Resort, Bangsaen, Chonburi, Thailand, from the 11th to the 14th of July, 2017 (Fig. 1). It was hosted by the Protein Society of Thailand, Chulabhorn Research Institute, and Burapha University, in honor of the 60th birthday of Professor Dr. H.R.H. Chulabhorn Mahidol, the President of the Chulabhorn Research Institute, and a prolific contributor to chemical and biomedical research, as well as related social issues.

The Asia Pacific Protein Association (APPA; <http://www.pssj.jp/APPA/about/overview/>) grew from the Pacific Rim International Conference on Protein Structure (PRICPS), which was first held in Yokohama, Japan, in 2004. After that outstanding meeting, the organizers endeavored to continue in its tradition to organize the 2nd PRICPS in Cairns, Australia, in 2008 in conjunction with the Asia Oceania Human Proteome Organization (AOHUPO) Congress. At that meeting, the Asia Pacific Protein Association was formed, with the main purpose of organizing protein structure and function in the Asia Pacific region, in order to promote the development of

protein science and collaboration. Subsequently, the 3rd APPA Conference was held in Shanghai, China, in 2011, and the 4th APPA Conference in Jeju, Korea, in 2014, followed by this, the 5th in this series.

The Protein Society of Thailand (PST; www.proteinsocietythai.net) originated from similar goals to build a network of scientists working on proteins and to provide a forum for them to exchange their research and ideas. This network developed into the society known at the PST, which has held the conference series now called the International Symposium of the PST since 2006, at which international and local invited speakers, including senior scientists and notable young scientists, share their work in English to promote international interactions.

The APPA/PST2017 meeting included 7 plenary lectures, led by Thomas Steitz, who regaled the assembled group of 400 participants with his description of the ribosome structure and the use of bacterial ribosome structures in designing improved antibiotics (Fig. 1). In the second plenary, M.R. Jisnusun Svasti described the development of protein science in Thailand using illustrations from his own career. This was followed by the EMBO Keynote Lecture by Madan Babu, in which he described the importance of intrinsically disordered proteins and protein regions at a proteome- and genome-wide level. In his plenary, So Iwata described the use of the free electron laser to gain temporal insight into light-initiated reactions in bacterial rhodopsin and the photosystem II oxygen-evolving complex, while Ruiming Xu considered the structural basis of epigenetics, particularly histone acetylation and deacetylation. In the penultimate plenary, Akhilesh Pandey explored the identification and validation of protein–protein interactions in cells as the current frontier in

✉ James R. Ketudat Cairns
cairns@sut.ac.th

¹ Laboratory of Biochemistry, Chulabhorn Research Institute, Bangkok 10210, Thailand

² School of Chemistry, Institute of Science and Center for Biomolecular Structure, Function and Application, Suranaree University of Technology, Nakhon Ratchasima 30000, Thailand



Fig. 1 Scenes from the 5th Asia Pacific Protein Association Conference/12th International Symposium of the Protein Society of Thailand. Clockwise from top: The PST and APPA Councils are photographed with the representative of Prof. Dr. HRH Chulabhorn, Surapit Kirtiputra, during the Opening Ceremony; Thomas Steitz entertains the audience with the rhythms of the ribosome; Akhilesh Pandey discusses a poster with

Richard Simpson; Jisnusun Svasti comments on another speaker's talk; So Iwata answers a question after his plenary; Madan Babu poses a question to another speaker; Carol B. Post and Ruiming Xu share a light moment during preparation for the Opening Ceremony; and center: sunset on the beach in front of the hotel at the end of the conference

proteomics. Carol B. Post presented the final plenary, “The Protein Society Keynote Lecture,” in which she described an unusual mechanism for regulation of protein–protein interactions by phosphorylation in Syk tyrosine kinase.

Interspersed among the plenary lectures were 43 invited and 25 selected oral lectures, divided into 17 parallel sessions. These sessions focused on diverse areas of protein research, from advances in proteomics, systems biology and bioinformatics to structural investigations of protein–nucleic acid interactions and molecular processes, enzyme catalysis, dynamics of protein–protein interactions and signaling, as well as protein engineering to achieve new protein activities. Outstanding scientists from around the Asia Pacific region, together with Prof. Joan Steitz from the USA, were featured as invited speakers (Table 1). An 18th session honoring the 70th birthday of Prof. M.R. Jisnusun Svasti featured outstanding Thai protein scientists who have worked with Prof. Svasti during the development of their careers. Furthermore, a Systems Biology and Computational Biology Workshop, in which senior and local scientists shared their experiences and discussed their research and related issues, was included in the afternoon parallel sessions of 12th July, while the Synchrotron Light Research Institute (SLRI) sponsored a workshop on

Synchrotron Protein Research in the afternoon of 13th July to introduce researchers to the facilities available at the SLRI in Thailand, as well as in the National Synchrotron Radiation Research Center (NSRRC), Taiwan, China, and the SPring-8 facilities in Japan.

In addition to the lectures, 5 poster sessions allowed participants ample time to discuss the excellent work of young and a few senior scientists presenting in these sessions. Luncheon lectures from Bio-Rad, GE and Merck introduced participants to ways of collaborating with the companies, along with some of the latest technologies available from these companies, while other companies presented their products in the exhibition. Several young scientists also took advantage of the Young Scientist Program held just ahead of the conference (9th to 11th July) to learn from senior protein researchers and present their own research in short talks.

In short, the APPA/PST2017 conference provided an exciting forum for protein science, with some of the world's top protein scientists sharing their research results, with particular emphasis on research from the Asia Pacific region. The high quality of the research presented bodes well for the future meetings of the APPA, including the 6th APPA Conference to be held

Table 1 Invited lectures

Invited Speaker	Session		
Norie Araki	PS12	Kumamoto University, Japan	“Systems biology of cancer stem cells by integrated proteomics and glycomics”
Salvador Eugenio Caoili	PS9	University of the Philippines, Manila, The Philippines	“Antibodies, synthetic peptides and related constructs for planetary health under the precautionary regime of the contemporary Anthropocene”
Pimchai Chaiyen	JS 70 yr	VISTEC and Mahidol University, Thailand	“Flavin-dependent monooxygenases for sustainable technology”
Zengyi Chang	PS6	Peking University, China	“The biogenesis and quality control of beta-barrel outer membrane proteins in Gram-negative bacteria”
Yun-Ru (Ruby) Chen	PS3	Genome Research Center, Academia Sinica, Taiwan	“Understanding TDP-43 oligomers and dipeptide repeats in neurodegenerative diseases”
Maxey C.M. Chung	PS9	National University of Singapore, Singapore	“Mining the cancer secretome as a source for biomarkers”
Yuji Goto	PS6	Osaka University Japan	“Supersaturation-limited phase transitions of denatured proteins producing amyloid fibrils”
Damien Hall	PS1	Australian National University, Osaka University, Japan	“Physical biochemistry studies of amyloid”
Chwan-Deng (David) Hsiao	PS15	Academia Sinica, Taiwan	“Structure and function of the polymyxin-resistance-associated response regulator PmrA”
Mitsunori Ikeguchi	PS1	Yokohama University, Japan	“Molecular dynamics simulations of molecular rotary motors”
Syed Rashed Kabir	PS10	University of Rajshahi, Bangladesh	“Therapeutic evaluation of plant lectins as promising anticancer agents”
Yangmee Kim	PS8	Konkuk University, Korea	“Structures and dynamics of acyl carrier proteins from multi-drug resistant bacteria”
Kurt Krause	PS8	University of Otago, New Zealand	“Glutamate racemase from <i>Mycobacterium tuberculosis</i> is a new target for antituberculosis drug design”
Ubolsree Leartsakulpanich	PS7	National Center for Genetic Engineering and Biotechnology, Thailand	“Serine hydroxymethyltransferase for antimalarial drug”
Erinna F. Lee	PS7	La Trobe University, Australia	“Disarming the critical drivers of cancer”
Jooyoung Lee	PS1:	Korea Institute of Advanced Study, Korea	“Protein structure prediction/determination by global optimization”
Weontae Lee	PS15:	Yonsei University, Korea	“Oligomerization and adapter molecule interaction of proteoglycans reveals a unique molecular function related to cancer signaling”
Zhenfeng Liu	PS10	Institute of Biophysics (CAS), China	“Supramolecular basis for the light-harvesting processes in plants”
Ping-Chiang Lyu	PS7	National Tsing-Hua University, Taiwan	“Structural insights into the catalytic mechanism of dopamine N-acetyltransferase”
Jacqueline Matthews	PS13	University of Sydney, Australia	“Assembly of an activating transcription factor complex”
Osamu Nureki	PS13	University of Tokyo, Japan	“Molecular mechanism of CRISPR and structure-based development of genome editing tool towards medical application”
Ray Norton	PS3	Monash University, Australia	“Structural and dynamic aspects of antibody recognition of intrinsically disordered antigens”
Truong Quoc Phong	PS4	Hanoi University of Science and Technology, Vietnam	“Production of rotavirus recombinant VP6 protein and its specific antibody for development of the lateral flow immunoassay test strip”
Piamsook Pongsawasdi	JS 70 years	Chulalongkorn University, Thailand	“Glycosyltransferases for the synthesis of oligosaccharides and glycosides”
Terence Poon	PS11	University of Macau, Macau, China	“Application of proteomics approaches to discovery of biomarkers in cancer diagnosis – An impossible mission?”
Mohan Rao	PS3	Centre for Cellular & Molecular Biology, India	“Clusterin: full-length protein and one of its chains show opposing effects on cellular lipid accumulation”

Table 1 (continued)

Invited Speaker	Session		
Gavin Reid	PS2	University of Melbourne, Australia	“An integrated ‘omics approach toward understanding the role of aberrant lipid metabolism in colon cancer”
Polkit Sangwanich	PS2	Chulalongkorn University, Thailand	“Plant proteomics and their potential approaches in various applications”
Rajan Sankaranarayanan	PS14	Centre for Cellular & Molecular Biology, India	“Chiral proofreading: mechanism and functional implications”
Ichio Shimada	PS15	University of Tokyo, Japan	“Developments and applications of novel NMR methods to characterize functional dynamics of high molecular weight proteins”
Nikhat Ahmed Siddiqui	PS9:	Barrett Hodgson University, Pakistan	“Understanding the molecular basis and complexity of Schizophrenia through neuroproteomics and interactomics”
Richard Simpson	PS2:	La Trobe University, Australia	“Proteogenomic profiling of secreted colon cancer extracellular vesicle subtypes: functional insights”
Joan Steitz	PS13	Yale University, USA	“Nuclear noncoding RNAs: more surprises”
Chantragan Srisomsap	JS 70 years	Chulabhorn Research Institute, Thailand	“Cancer proteomics and marker discovery”
Bambang Sugiharto	PS10	Jember University, Indonesia	“The function and regulation of sucrose-phosphate synthase from sugarcane”
Wipa Suginta	PS8	Suranaree University of Technology, Thailand	“Structural and biophysical insights into chitin acquisition by marine <i>Vibrios</i> ”
Ratchanok Tinikul	PS14	Mahidol University, Thailand	pH effect study for exploring enzyme mechanisms-case studies from bacterial luciferase and succinic semialdehyde dehydrogenase
Ming Daw Tsai	PS14	Academia Sinica, Taipei, Taiwan	“Structural mechanism for the fidelity modulation of DNA polymerase λ ”
Kouhei Tsumoto	PS4:	University of Tokyo, Japan	“Recent progress on the analytical solutions for bio-pharmaceutics”
Xinquan Wang	PS5:	Tsinghua University, China	“MERS and SARS coronavirus cell entry: from structure to neutralizing antibody.”
Sopit Wongkham	PS12	Khon Kaen University, Thailand	“Glycomic analysis reveals the significance of high mannose N-glycan in progression of cholangiocarcinoma.”
Yeon Gyu Yu	PS11	Kookmin University, Korea	“A novel method for the preparation and stabilization of membrane proteins and its application for the biochemical analysis of GPCRs.”
Raja Noor Zaliha Raja Abd. Rahman	PS4	University Putra Malaysia, Malaysia	“A thermotolerant lipase with broad pH isolated from Antarctic <i>Pseudomonas</i> sp. AMS3”

in Sapporo, Japan, in July, 2020, in collaboration with the Protein Science Society of Japan and the Protein Society.

Compliance with ethical standards

Conflicts of interest James R. Ketudat Cairns declares that he has no conflicts of interest. Voraratt Champattanachai declares that he has no

conflicts of interest. Chantragan Srisomsap declares that she has no conflicts of interest. N. Monique Paricharttanakul declares that she has no conflicts of interest. Chris Verathamjamras declares that he has no conflicts of interest. Kriengsak Lirdprapamongkol declares that he has no conflicts of interest. Jisnusun Svasti declares that he has no conflicts of interest.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.