

JSPSAAA NEWSLETTER

1. Editorial from JSPSAAA President

President – Associate Professor Graziella Caprarelli



Welcome to the first issue of the Japan Society for the Promotion of Science (JSPS) Alumni Association in Australia (AAA) Newsletter. What an appropriate time! Our inaugural Newsletter gets published after the Symposium (Oct 9-10, 2017) organized at the Shine Dome, in Canberra, to celebrate the first birthday of our Association. As your elected President, I had the pleasure and honour to greet guests from all over Australia and Japan, including Minister and Deputy Chief of Mission of the Embassy of Japan, Mr. Takashi Katae, JSPS Directors Dr. Mariko Kobayashi (International Programs) and Dr. Kazunori Higuchi (Overseas Fellowships Division), and the Australian Academy of Science Vice-President, Professor Jim Williams, and Foreign Secretary, Professor Cheryl Praeger. The Symposium was opened by two excellent keynote speakers: Prof. Dr. Fumitoshi Ishino, Director of the Medical Research Institute of Tokyo Medical and Dental University; and the winner of the 2017 Kyoto Prize in Basic Sciences, ANU's Distinguished Professor Graham Farquhar. Following the keynote addresses, the participants were treated to the contributed talks on exciting topics ranging from the microscopic world of molecules and cells, to the exploration of our Earth, the solar system and the universe, high-end computing, molecular electronics, nuclear physics, field work adventures, and technological advances and innovation in primary industries and medicine. The talks wowed the Symposium participants, while showing how international collaborations inspire, engage and enhance the scientific process. Pictures and additional details about the Symposium are reported in other sections of this newsletter. I take this opportunity to thank all the participants who provided feedback through the post-event survey ran by the

Australian Academy of Science: the response was overwhelmingly positive, and we look forward to doing even better next time.

The two days in Canberra were not all about the Symposium: we got down to business with our Annual General Meeting (AGM), the first since the Executive was elected last year, on October 19, 2016. Since then, the Association has been incorporated and formally recognized by the JSPS. I and the members of the Executive have set out operational procedures and have met regularly. We summarised our activities to date in our official AGM reports. A major item that was discussed and approved at the AGM was the procedural framework for the Bridge Fellowship Program. This is offered for the first time to Regular Members of the JSPSAAA. General information about the scheme can be found at the JSPS website: <http://www.jsp.go.jp/english/e-plaza/bridge/index.html>. More specific instructions and forms for the JSPSAAA will be linked to the web-site in due course, and disseminated to the members via email and through this newsletter. As reported at the AGM, every year one Bridge Fellowship Program JSPSAAA applicant will enjoy a generous package for visiting host Japanese institutions for 14-45 days, including travel and some research support for the host institute. The final selection for the award of the Bridge Fellowship rests with the JSPS, but our Alumni Association has responsibility for eligibility-screening and shortlisting of the applications. We have established our Association's internal working parameters, so our Regular Members can already apply to visit Japan in 2018.

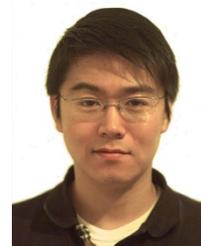
In the weeks following approval of our Bridge Fellowship Program internal guidelines, I have solicited expressions of interest to volunteer for the Nomination Subcommittee, which has now been appointed. Serving on this subcommittee is a big responsibility, and I therefore want to publicly express my gratitude, and congratulate the members of the first Nomination Subcommittee: Chair – Vice President of the JSPSAAA, Associate Professor Graeme Allinson (RMIT); Dr Gaetan Burgio (ANU); Associate Professor Ashraf Ghanem (University of Canberra); Associate Professor Chris Kellett (University of Newcastle); Dr

Withawat Withayachumnankul (University of Adelaide); Dr Alex Wyatt (University of Tokyo); Mr Ichiro Takahashi (Science Attaché, Embassy of Japan, Canberra). They have a very tight working schedule: by mid-March 2018, the Nomination Subcommittee must conclude its pre-selection and communicate the shortlisted applications to JSPS. Several JSPSAAA members have also already contacted me and JSPSAAA Secretary, Dr Ruth Eriksen, to register their intention to apply for the 2018 Bridge Fellowship Program: I have now transferred their names to the Chair of the Nomination Subcommittee, who will follow up with them in due course. For more information about the Bridge Fellowship Program, members are henceforward invited to contact directly the Chair of the Nomination Subcommittee by email at: graeme.allinson@rmit.edu.au. Updates on procedures and deadlines will also be posted to the members' email list as soon as they become available. If you are uncertain you are receiving updates, please contact the JSPSAAA Secretary, Dr Ruth Eriksen (ruth.eriksen@csiro.au).

Before closing this column, I invite you to start planning for next year Symposium and AGM. We aim for this event to become itinerant, and the Executive and I are looking forward to receiving proposals to host and co-organize the Symposium in your city or region. The regional representatives are looking forward to hearing from you on this and other local initiatives.

With the establishment of this quarterly newsletter the Executive and I will be providing updates regularly through these pages. However, urgent items requiring timely communication will continue to be distributed through emails, and (soon) through a dedicated web-site.

I close here by congratulating Dr Wei Zhang (Newsletter Editor, wei.zhang@unisa.edu.au) for this excellent first issue, and wish you all happy reading!



2. Introduction to JSPS Programs

The Japan Society for the Promotion of Science (JSPS) was established with an imperial endowment in 1932. JSPS has worked to advance science in Japan through supporting research covering all fields of academic disciplines. JSPS also puts strong emphasis on building a robust network for international collaboration. This year marks the 40th anniversary of the Memorandum of Understanding with the Australian Academy of Science which makes the researcher exchange program with Australia one of the longest-established bilateral exchange programs for JSPS. More than 650 Australian researchers have been supported by JSPS.

-Ms Machiko Takeuchi/JSPS Tokyo

3. Feature article

In memory of Professor Toshio Fujita (1929-2017), University of Kyoto, inventor of the field of Quantitative Structure-activity Relationships (QSAR)

David Winkler

Professor, Monash Institute of Pharmaceutical Sciences, Monash University,
Australia



Prof. Toshio Fujita was born on Jan. 26, 1929 in Kyoto, Japan. He received his undergraduate and PhD degrees in agricultural bioorganic chemistry from Kyoto University in 1951 and 1962. It was during his postdoctoral studies at the Department of Chemistry, Pomona College, California in 1963 that he made his most important discoveries with his supervisor, Prof. Corwin

Hansch. Hansch and Fujita were the pioneers of the QSAR (Quantitative Structure-Activity Relationship) method, a computational method for relating the structures and molecular properties of drug molecules to their effects on biological targets and organisms. The QSAR method has been extremely influential in the

discovery and optimization of drugs, veterinary drugs, and crop protection agents over the past 50-60 years. Their seminal publication¹ on the QSAR method has been cited almost 3000 times (Google Scholar) and is a citation classic. Professor Fujita completed a second postdoctoral fellowship at the University of Illinois in 1964 then returned to the department of Agricultural Chemistry at Kyoto University, initially as a lecturer, then Associate Professor and Professor (1982). He became Professor Emeritus in 1992 then worked as a consultant at the Fujitsu Kansai Systems Laboratory until 1998. He published 300 papers and edited four books, largely in the agrochemical research area.

His work on QSAR was recognized by numerous awards for research achievement, including the Pesticide Science Society of Japan, the Agricultural Chemical Society of Japan, the Agrochemical Division of the American Chemical Society, and the International Award in Pesticide Chemistry from the American Chemical Society. He was President of the Pesticide Science Society of Japan (1984 to 1986) and chairman of the Kansai Regional Section of Biotechnology and Agrochemistry (1988 and 1990). The Hansch Fujita Foundation (<http://www.hanschfujita.org>) recently established the Fujita Award to honor his contributions

Toshio Fujita was the host for my AAS/JSPS Fellowship at Kyoto University in 1988. He was a great scientist, a gracious host, and a life-long mentor for my research into computational design of drugs. He was one of those remarkable scientists who remained active and productive well after normal retirement age. He continued to pursue QSAR, publishing approximately 300 original papers and review articles and editing four books. I met with most recently several years ago at a conference in Korea where he asked me to co-author a paper clarifying the synergistic roles of the "two QSARs" (explanation vs prediction), sadly his last paper.² Prof. Fujita passed away on August 21, 2017 at his home in Kyoto.

1. Hansch, C.; Fujita, T. p - σ - π Analysis. A Method for the Correlation of Biological Activity and Chemical Structure. *J. Am. Chem. Soc.*, 1964, 86 (8), pp 1616–1626

- Fujita, T.; Winkler, D.A. Understanding the roles of the “two QSARs”, *J. Chem. Inf. Mod.* 2016, 56 (2), pp 269–274. See also commentary on F1000.com.

Acknowledgements: Cynthia Selassie and Yvonne C. Martin, the CompuDrug website, LinkedIn (<https://www.linkedin.com/pulse/qsar-pioneer-toshio-fujita-1929-2017-tudor-oprea>) written by Prof. Tudor Oprea, and the Hansch-Fujita Foundation provided material for this article.

4. JSPSAAA Regional Story: NSW and ACT

Professor John Black has been a regular visitor to Japan since 1983 and has lived there for various periods of time as a Visiting Professor to Nagoya University, Saitama University and Tohoku University. In addition he has held two Japan Society for the Promotion of Science (JSPS) Fellowships for long-stay research in Japan in the field of climate change and the environmental problems of cities. His research specialization is the mathematical modelling of complex systems with particular application to the economic, social and environmental consequences of sustainable urban transport systems.



He has a multi-disciplinary educational background with degrees from Faculties of Architecture, Arts and Engineering. John was appointed as the Foundation Professor of Transport Engineering at UNSW in 1984, is a former Head of the School of Civil and Environmental Engineering, and is now an Emeritus Professor. Currently he also holds an Honorary Professorship at the University of Sydney (Ageing, Work and Health Research Unit) and an Adjunct

Professorship at Southern Cross University advising the Dean of Engineering on Academic Collaboration with Japan.

Currently, he is: Member of Advisory Board UNSW Japanese Language Proficiency Testing; a Member of SLIM (Strategic Life Cycle Infrastructure Management) a NPO based in Tokyo, Japan; a member of the Australia-Japan Business Coordinating Committee (AJBCC) – Infrastructure Planning; and a former member of the Japan Society of Civil Engineers – Private Finance Infrastructure Committee (Chairs: Dr Masaki Arioka; Professor Kazuaki Miyamoto).

He has just completed a research project on the theoretical concepts of institutional change with particular reference to transport (in Japan) as a Visiting Researcher at the Transport Studies Unit (TSU) in the Oxford University Centre for the Environment (<http://www.tsu.ox.ac.uk/events/170214.html>). Previously, his major collaborative research projects in Japan have been: The Structure and Performance of Japanese Contactors and Consultants (ANU); Japanese highway planning (UNSW, ANU); Accessibility Properties of Japanese Cities (ANU); Preference Functions for the Journey to Work in Hokkaido (Shenshu University; Tomakomai National College of Technology); Managing Urban Growth in Asian Mega-cities (UNDP); Chinese Cities and the Environment (Tohoku University); Impacts of High-speed Rail in Japan (Institute of Transport Policy, Tokyo); Airport Privatisation (Institute of Transport Policy, Tokyo); Behavioural Travel Demand Modelling Using Logit Models (Saitama University); Barriers to Sustainable Transport in Japanese Cities (Nagoya University); Polycentric Employment Formation in Asian Mega-Cities (Nagoya University and East Asia Society for Transport Society); Climate Change and Cities (Tohoku University); Transit Oriented Development in Japan (Sydney University and NSW Roads and Maritime Services); Financing Urban Rail in Japan (Australia Indonesia Governance Reform Program); Post-tsunami Debris Management and “Green Hill” Design (SLIM, Tokyo); Post-tsunami Urban Reconstruction in Ishinomaki (University of Canberra, Ishinomaki City Council); Land-use Developments at Japanese High Speed Rail Stations (URaP International, North Strathfield); Modelling Ship Emissions in Osaka Port (IVL Sweden, Osaka Port Authority); Institutional Analysis of

Infrastructure and Public-Private Partnerships (Economic Intelligence Unit, The Economist; Japan Board of Audit); Communication Strategies and Knowledge about Natural Disasters (University of Canberra, Kagawa University, URaP International Social Enterprise Organisation).

As of October 2017 he is in negotiations with Tokyo City University about collaborative research into Transport in an Ageing Society, and with Kobe University into Flooding of Coastal Settlements in the 21st Century. In Japan, his hobbies are hiking, golf, relaxing in onsens, visual arts (sumi-e) and the tea ceremony.

5. Alumni member of the quarterly

In this issue of JSPSAAA newsletter, we have invited Dr Joshua Chou (Director of Biomedical Engineering, University of Technology Sydney, Joshua.chou@uts.edu.au) to share his past and current stories with JSPS fellowship program.

1) How did you get to know about JSPS fellowship in the beginning?

The JSPS is internationally known to be highly competitive and prestigious and many well-known researchers all had being awarded with JSPS fellowship so I was very well aware of the fellowship program. I found more information and application through the Australia Academy of Science.

2) How did you find or initiate the contact with your host?

I first knew my contact at a biomaterials conference and prior to my JSPS fellowship I was awarded the Australia Cheung Kong Endeavour Award which allowed me to work with my host for a period of six month. So we already had a well-established working relationship.

3) Where did you studied? What was your research topic?

I worked with Professor Makoto Otsuka at the Research Institute of Pharmaceutical Science at Musashino University in Tokyo between 2012 and 2014. During my time in Japan, I also worked very closely with our collaborators at Tokyo Medical and Dental University under the guidance of Professor Shohei Kasugai. My research was on the development of next-generation drug delivery system based on bioresorbable scaffolds for promoting bone tissue regeneration. We used it as a scaffold to enhance bone fracture healing in both



in-vitro and in-vivo model and successfully showed increase bone regeneration. In addition, as a drug delivery system we showed that it can be used to prevent deterioration of osteoporosis in-vivo. My research during my JSPS fellowship produced 22 publications within the 2-year period.

4) Is any connection with your host after you finished the fellowship?

Absolutely. My host is not only a mentor to me but also like a father and constantly guides me and continues to mentor and inspire me to this day. We continue to collaborate together as well as publishing together. This is also true with our collaborators at Tokyo Medical and Dental University and I still visit both institutions on an annual basis to present my research and maintain our research collaboration.



5) Your current work life and how did the fellowship lead to where you are now?

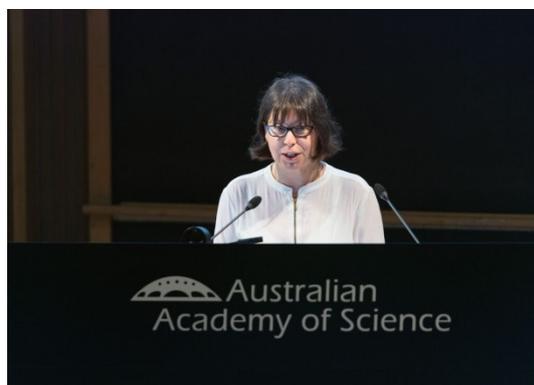
The JSPS fellowship opened a lot of opportunities for me afterwards as I was awarded another fellowship to

work in the world's top bone biology lab at Harvard School of Dental Medicine. During my time there I was awarded with the Dean's Scholar Fellowship at Harvard and I spend a total of 2 years there. I returned back to Australia in June 2017 to take up the position of Director of Biomedical Engineering at the University of Technology Sydney. These opportunities were only possible because of the JSPS fellowship which allowed me the protected time to really establish myself as an early career researcher and I believe my training in Japan helped in my personal development as well as my research maturity. Furthermore, the fellowship allowed me to meet my wife now and we also got married at the end of the JSPS fellowship.

6. Looking forward: Inaugural Symposium of the Association in 9th and 10th October, 2017.

The Japan Society for the Promotion of Science Alumni Association in Australia (JSPSAAA) held its first science symposium on 9 and 10 October at the Academy's Shine Dome. Formally established in February 2017, the JSPSAAA membership consists of former and current JSPS fellowship recipients. Its aims are to engage Australian scientists with collaborative links to Japan and to enhance the strong bilateral science and research relationship between Australia and Japan. The Australian Academy of Science was involved in the establishment of the JSPSAAA and now supports the executive committee with the association's operations and in preparation for the launch. Currently the JSPSAAA membership totals more than 220.

The symposium was opened by the inaugural chair of the JSPSAAA, Associate Professor Graziella Caprarelli. Then the Academy's Vice-President Jim



Williams gave a welcome address, acknowledging the history of collaboration

between Australian and Japanese researchers. Professor Williams was followed by Minister Takashi Katae, from the Embassy of Japan, and Dr Mariko Kobayashi, the Director of the JSPS International Program Department, who both recognised the strong relationship between Australia and Japan in the context of science, trade and industry.

Two keynote talks were delivered by Japanese and Australian researchers. Professor Fumitoshi Ishino from the Tokyo Medical and Dental University talked about the gene traits acquired by marsupial mammals. Professor Graham Farquhar from the Australian National University, who is this year's Kyoto Prize awardee, gave a talk on water efficient crops analysed by mathematical model. Sixteen JSPSAAA members delivered presentations on topics ranging from molecular biology, fisheries and space science, reflecting the variety of research fields the members engage in. It is hoped that the symposium will enhance the role of members to act as a bridge between the two countries.



Prior to this symposium the Australian Ambassador to Japan, The Hon Richard Court AC, hosted a reception at the Australian Embassy in Tokyo to celebrate the establishment of the JSPSAAA and the inaugural science symposium in Canberra. Dr Yuichiro Anzai, President of the JSPS, highlighted the long-term nature of research collaboration between Australian and Japanese researchers, as evidenced by the fact that 2017 is the 40th anniversary of the signing of a Memorandum of Understanding between the Academy and JSPS. 47 representatives from the public sector and universities attended to celebrate the occasion.