

ASIAN MYCOLOGICAL CONGRESS (AMC) 2015

The Asian Mycological Congress 2015 was held during 7–10 October 2015 at the Dr Shyama Prasad Mukherjee Indoor Stadium, located in the picturesque Goa University campus of verdant Goa, India. The Congress was declared open at a grand inaugural session by Shri Laxmikant Parsekar, Chief Minister of Goa, on the forenoon of 7 October 2015. The function was presided over by Satish Shetye, Vice-Chancellor of Goa University. B.N. Johri, President of the Mycological Society of India, graced the occasion with an inaugural address. A special First-Day postal cover was released and a Fungal Philately exhibition was held on the sidelines of the inaugural session. Chandralata Raghukumar, Convener of the Asian Mycological Congress 2015, welcomed the delegates, invitees and guests, and B.F. Rodrigues, Organizing Secretary and Head of Botany Department Goa University, proposed a vote of thanks.

Highlights from the four day conference included:

- Four plenary lectures, by C. Manoharachary, Pedro Crous, D.J. Bhat and Toru Okuda. In his lecture 'Are cryptic species real?', Pedro Crous spoke on the importance and need of systematic study of fungi from a morpho-molecular approach. C. Manoharachary, elaborated on the diversity and biotechnology of fungi of India. Highlighting the implications of the Melbourne 2011 *Code* for mycology, D.J. Bhat traced the history, evolution and current status of the taxonomy of conidial fungi. Toru Okuda dealt with key scientific issues related to achieving success in natural product drug discovery programmes.
- The conference comprised 10 symposia in three parallel sessions. Each symposium had keynote lectures. The keynote speakers of the Symposia were Keith Seifert and Tsutomu Hattori (Diversity, Phylogeny and Systematics), John Dighton (Fungi and ecosystem functioning), D.J. Bagyaraj, T.S. Suryanarayanan, Jae-Seoun Hur (Non-pathogenic association of fungi with plants), Naweed Naqvi

(Pathogenic association with plants), Oded Yarden (Physiology and Biochemistry), D.P. Kasbekar (Genomics, proteomics and transcriptomics), T. Satyanarayana (Biotechnology and Industrial Mycology), E.B. Gareth Jones and K.R. Sridhar (Marine and Freshwater mycology), and Akira Suzuki (Ecosystem Functioning and Culinary and Medicinal Fungi).

- A Special Interest Group, led by Daisuke Honda and S. Raghukumar, discussed the 'Straminipilan fungi' during the Congress.
- A special and much-needed workshop on 'conservation of fungi' was led by K.V. Sankaran and Peter Buchanan. A large number of delegates attended this session, and more information is provided elsewhere in this issue (pp. (40)–(41)). The establishment of an Indian Society for Fungal Conservation was proposed at the workshop.
- An 'industry-academia' interactive session, held at Goa Chamber of Commerce, Panaji, during the Congress, was moderated by Shreekumar Suryanarayanan, a renowned technocrat and former vice-President of BioCon, India.
- A popular lecture, 'Five Microfungi that changed the World', was delivered on 8th October 2015 by Keith Seifert, IMA President, at the Institute Menezes Braganza auditorium, Panaji, Goa. A large number of people from all walks of life attended and enjoyed this wonderful public lecture.
- A total of 205 presentations, comprising 112 oral and 93 poster presentations were made.
- In all, 276 delegates attended the conference. Of these, 67 were from overseas countries such as Japan, Korea, Malaysia, Nepal, Philippines, Singapore, Indonesia, Iran, Egypt, and Vietnam in Asia, besides ones from The Netherlands, UK, Germany, North America, Canada, Australia, and South America. A

large number of delegates were from various universities and scientific institutes in India.

- The delegates were treated to two grand dinners, one of which featured a cultural program of Goan folk dances and music.
- The Asian Mycologist Award was given to K.R. Sridhar of Mangalore University, India, while the Young Asian Mycologist Award was given to Baokai Cui of Beijing Forestry University in absentia.

While the delegates included several senior mycologists and young researchers, representatives from mycological societies of the UK, USA, Canada, and New Zealand also participated in the Congress. Notable overseas mycologists included Keith A. Seifert (IMA President), Pedro W. Crous (Director, CBS-KNAW Fungal Biodiversity Centre, The Netherlands) E.B. Gareth Jones (UK), Peter Buchanan (New Zealand), and national representatives of the Asian Mycological Association. Several leading Indian mycologists came to Goa and participated in the Congress. Unfortunately, no Chinese delegates could attend as a consequence of delays in obtaining visas, and also none came from Thailand.

The Asian Mycological Congress witnessed several particularly interesting papers, both in oral and poster forms. One of the highlights was the session on 'Marine and Freshwater Mycology' led with a keynote address by E.B. Gareth Jones. Several poster award presentations were given. Overall, AMC-2015 turned out to be an intellectual feast of a rare kind to mycologists from this part of the world. As curtains were drawn for the event on 10 October 2015, in a brief closing ceremony, hosts of the next AMC in 2017, the Mycological Society of Vietnam, extended a warm invitation to all delegates. As part of the Organizing Committee, we are very happy and delighted that the programme was most fruitful and the event a memorable one.

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Scenes from the Asian Mycological Congress (2015) in Goa.

2ND IRANIAN MYCOLOGICAL CONGRESS (IMYC2)

The Iranian Mycological Society (IMS) was founded in 2009 during the 19th Iranian Plant Protection Congress, with the purpose of encouraging and promoting the visibility of mycology in its widest sense in Iran. One of the most important programmes of IMS was to hold national mycological meetings to gather Iranian mycologists nationwide in order to enhance and strengthen mycological integration and collaboration between members. Iranian mycological congresses are set to happen every two years.

After the successful organization of the 1st Iranian Mycological Congress (IMyC1) in 2013, hosted by the University of Guilan (Guilan province, Rasht), the University of Tehran, in collaboration with the IMS, organized the 2nd Iranian Mycological Congress (IMyC2) on 23–25 August 2015; meetings were held in the College of Agriculture and Natural Resources in Karaj.

IMyC2 consisted of diverse programmes, and apart from oral and poster sessions, organized two post-congress workshops (on the “population genetics of fungi” and “spore production for edible mushroom cultivation”), side-meetings, excursions (including free tickets for the

swimming pool and museum of zoology in the University), a session on improving mycology teaching in Iran, the general assembly of IMS members, as well as an exhibition which was well-attended by participants.

The oral sessions consisted of six keynote lectures and 30 plenary lectures, and in addition there were 207 poster presentations. The themes of the congress were: biodiversity of fungi of Iran, phylogeny and taxonomy of fungi, population genetics and genetic diversity of fungi, biology of fungi, fungal biocontrol agents and their application, mushrooms and industrial fungi and their application, and the role of mycorrhizal fungi, endophytic and lichens in natural ecosystems. An interesting keynote lecture was presented by Walter Gams (The Netherlands) entitled “Lumpers and splitters, past and present”.

During a ceremony at the General Assembly, the IMS presented Walter Gams with the Award of Excellence in recognition and appreciation of the quality, originality and quantity of his published research, support of many young Iranian mycologists,

and services to the field of mycology; he was also elected as an honorary member of the Society.

The IMS also established a new award, the “Dr Hedjaroud’s Award”, to be made every two years to an Iranian mycologist who has established an outstanding mycological career, or acknowledge the contributions of its members. Ghorbanali Hedjaroud, who founded this award, is currently Vice-president of the IMS, and a retired professor of the University of Tehran. The first “Dr Hedjaroud’s Award” was presented to Djafar Ershad, a retired professor of the Iranian Research Institute of Plant Protection, for 50 years of fruitful services to the field of mycology in Iran.

The Congress was closed on the last day with a report from the IMyC2 President and some artistic presentations, including poetry (an amusing mycological poem) and *Shahnameh-Khani* (the epic of the Persian kings) presented by children.

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ESSENTIAL SKILLS FOR YOUNG MYCOLOGISTS

Students attracted to a research career in mycology are often interested in approaches that can help build towards such a professional future. In light of this need, a workshop in mycological skills was held recently for students and early career researchers (ECRs) at the 2015 scientific meeting of the Australasian Mycological Society (AMS) in Canberra, Australia. The workshop was organized and chaired by the AMS student representative Susan Nuske, and featured four AMS members with different areas of mycological research expertise. The presenters were Ana Traven (Medical Mycology), Jeff Powell (Fungal Ecology), Diana Leemon (Applied Mycology), and Tom May (Fungal Systematics). Their brief was to outline what had inspired them to become a mycologist, the skills they had acquired which had been instrumental in their careers, and how young scientists could gain these skills.

The first speaker, **Ana Traven** (Monash University, Melbourne), had started her scientific career at the University of Zagreb in Croatia where she completed a PhD in Mary Sopta’s laboratory on transcriptional regulation in the model yeast, *Saccharomyces cerevisiae*. After a postdoctoral position at St Vincent’s Institute of Medical research in Melbourne and a short postdoctoral visit to Aaron Mitchell’s lab, then at Colombia University, she now runs the Fungal Pathogens and Gene Expression Control Laboratory at the Faculty of Medicine, Nursing and Health Sciences in Monash University. Ana focuses her research on the molecular mechanisms of pathogenesis in *Candida albicans*. She became interested in working with fungi when she realised they were great model organisms for understanding fundamental biological questions. Ana highlighted that networking is key to building a scientific

career and that it was important to stay in touch with friends and colleagues who may provide opportunities for collaboration at some stage. PhD and Masters students should appreciate that their supervisor is their mentor but also that ownership of the project should be taken and that



Medical Mycologist, Ana Traven.



Scenes from the Iranian Mycological Congress (IMyC2) held in the College of Agriculture and Natural Resources of the University of Tehran in Karaj on 23–25 August 2015.

help with experimental difficulties should be actively sought, and not necessarily just *via* their formal supervisors. Ana encouraged students to be brave: to embrace new technologies, to move locations if professionally favourable (e.g. to leading laboratories and universities), to ask “what is the most exciting thing to work on?” and to not be afraid to change research questions and even fields. Although it was important to continue to take up new challenges, she also recommended building on expertise and knowledge already learnt. As a molecular mycologist she suggested students and ECRs acquire skills in quantitative biology, bioinformatics, cell-imaging, *in vivo* animal and clinical models, and also work with other fields (e.g. chemistry, immunology, structural biology) to answer scientific questions. To be successful she also advocated thinking about how best to frame the scientific question, to do things differently or better than others in the field and to keep in mind that key experiments, can also be simple experiments.

Jeff Powell (University of Western Sydney) explained he did not intend to be a mycologist, and indeed this was his plan C (behind plan A of becoming a vet, and plan B of working in insect nematology). He became interested in fungi when he completed a PhD in soil ecology with microbial ecologist John Klironomos at the University of Guelph, Canada. He carried out postdoctoral research in ecological bioinformatics with Matthias Rillig in Berlin before moving to the Hawkesbury Institute for the Environment, University of Western Sydney. His current research is largely focused on community dynamics in mycorrhizal and other root-associated fungal communities, attempting to understand the mechanisms underlying these processes, their effects on ecosystem properties, and how they are impacted by environmental change. Jeff is concerned that the different ecological strategies occupied by fungi are often not appreciated by people that are trying to model and manage ecosystems. He is excited about working with this challenge. Jeff agreed with Ana’s philosophy of being flexible in one’s career ambitions and also in developing expertise that sets one apart from the norm. He also believed that targeting research groups with people who are well respected (and not necessarily the biggest and most prestigious laboratories) is the way to strategize one’s career. Statistics and the statistical computing and graphic software programs

like ‘R’ are important skills for students and ECRs to acquire in the fungal ecology area. Jeff maintains that statistics are your friend (and not your downfall!) and that they are the only way to confirm suspicions about patterns in data. The best time to learn programs like ‘R’ is as a student. He also stated that one should never be intimidated by new techniques and that the best way to learn these was to shadow someone who uses them (if they can do it, you can do it!). One should also be nice to taxonomists and ‘classical’ scientists as they know so much more about fungi than you do. He advocated continually reading the scientific literature (including publications on other taxa) to find answers to questions you are pursuing or to find out that your research is covering uncharted waters. Jeff said don’t be afraid to ask questions or to share ‘dumb’ ideas. Such approaches can lead to useful scientific discussions, may lead to new questions being asked, and are a useful networking tool. Good ideas for research should be followed up on, and results of investigations should be published before someone else gets there first.

Jeff responded to a number of questions from the audience. When asked “how do you know what journal to publish in?”, he suggested that one’s supervisor could assist here, or use impact factors or the expertise of the editor as a guide. When asked “how did he find time to supervise”, he said you have to sacrifice something, which for him was actually getting into the laboratory himself. On this theme, he strongly recommended that postdoctoral staff assist with supervising students (formally or not) as this was good experience for such staff and might lead to a name on a publication. When asked “how do you balance teaching duties with research” he and others suggested that time management and prioritizing was key.

Diana Leemon (Queensland Department of Agriculture, Fisheries and Forestry) stated that she had had a fairly unconventional research career. She had initially worked as a research assistant in plant pathology and timber pathology at Queensland University, then trained and worked as a High School biology teacher, before having a family. She then commenced a career in applied mycological research as a scientist in the Queensland Department of Primary Industries. While leading livestock ectoparasite biocontrol projects, she also completed a PhD through Queensland University investigating the mechanisms of



Fungal Ecologist, Jeff Powell.

pathogenesis in entomopathogenic fungi. She is now a Principal Research Scientist at the Queensland Department of Agriculture, Fisheries and Forestry, where she co-ordinates and is actively involved in a range of projects researching the fungal biocontrol of agricultural pests, including whiteflies, macadamia weevils, nuisance flies, and the small hive beetles that can devastate beehives in eastern Australia. Diana never ceases to be both amazed and fascinated by fungi in terms of what they are, where you find them, what they do, and what we can use them for (e.g. food, medicines, industrial chemicals, biocontrol). She also appreciated that many taxa are easy to grow in a Petri dish and therefore make good experimental subjects. The things that were instrumental to Diana’s career included a range of practical lab skills (particularly microscopy), general biological knowledge, a passion for understanding fungi, a wide breadth of knowledge about fungi, communication and networking skills and an ability to look for opportunities. She felt that the skills that are essential for a young mycologist to gain in applied mycology included learning all you can about fungi, coming to understand the fungal organism, developing a wide range of lab skills with fungi, gaining a good knowledge of the area you are working in (e.g. livestock industries, plants) and developing good communication skills. To develop these skills students and ECRs should regularly attend conferences, work on building up one’s research network, choose good mentors and not be afraid to



Applied Mycologist, Diana Leemon.

ask for advice, help or work experience. Diana also felt that it is critical to understand the industry you are working in and build links with key stakeholders, to understand the goals of your industry funding body and to continuously be alert for research and employment opportunities.

The final speaker of the session was **Tom May** (Royal Botanic Gardens Victoria, Melbourne). Tom had had a childhood interest in natural history and was exposed to citizen science during a spell in Scotland as a teenager, where he participated in the UK Bumblebee Distribution Maps Scheme. He completed a PhD in mycology at Monash University, in the days when time was not so pressing for completion; and had the luxury of working on his target genus (*Laccaria*) but also spending much time in the field getting to know all groups of fungi. He has been employed at Royal Botanic Gardens Victoria as a mycologist since 1990 and through close connections with community groups, established Fungimap, a not-for-profit citizen science association dedicated to the study and appreciation of Australian fungi. From a research perspective, he was initially interested in the population genetics of fungi but became sidelined into checklists and taxonomy and now how has an emerging role in

international committees (such as that of Secretary to the Nomenclature Committee for Fungi). The availability of new molecular taxonomic techniques is now being used to answer many of his initial questions on fungal population genetics. Tom's favourite thing about studying fungi (apart from spending time in the field looking at fungi in the natural environment) is the detective work involved in taxonomy – bringing together different pieces of information to solve problems, such as what are the limits of a species or working out which genus a species belongs in. Skills that are important for fungal systematists include microscopy, culturing and the abilities to learn one facet/skill well and to look out for emerging methods (e.g. genomics, bioinformatics and pipelines). Tom also advocated getting to know fungi in the field – indeed many model organisms in the laboratory have trophic roles and relationships (often symbiotic) in the natural environment. It is also important to be aware of the whole fungus; both asexual and sexual morphs. Tom stressed that fungal taxonomy is a science and not an art and that voucher specimens are crucial for research and should be lodged in fungaria and culture collections while type specimens are vital reference points for the naming of taxa. Taxonomy is crucial to many branches of mycology and correct species delimitation has major implications for the repeatability of research and for practical aspects such as drug resistance and treatment of patients. Tom suggested that students and ECRs assess their own emerging skills, which can assist in making decisions to specialize in an approach, a technique or a taxon or be more flexible in your research expertise, keeping in mind you don't have to be good at everything. Also, ask yourself do you like managing projects or providing the key component of projects? He also recommends taking opportunities to teach and to attend conferences — where you should present your work well, look out for emerging research and take the opportunity to network and establish collaborations. Keep in touch with your friends and



Fungal Systematist, Tom May.

contemporaries. Remember, that heavy-metal t-shirt wearing guy sitting near you in the undergraduate lecture theatre may one day be a future leader.

In summary, networking is a key skill for young mycologists, and indeed this has been recognized as a key aspect of any scientific career. Be brave; present your work at conferences, ask those niggling questions, be vigilant for opportunities for collaboration or jobs. Remember to keep in contact with your friends and contemporaries; you never know when an opportunity for collaboration will pop up. Flexibility is also key. New technologies and techniques may be intimidating but by mastering them, they may also be the crucial to answering your research questions. Choose a good mentor and shadow them for the techniques they can teach you. At the same time it is also good to build on the expertise and knowledge you have already learnt. By developing proficiency and doing things differently and better than others in your field, this may set you apart to get that job in mycology!

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