



**Australian Government**  

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**Department of Innovation  
Industry, Science and Research**



# **Australia-Japan Workshop**

## **on Biodiversity**

**Shine Dome**

**Canberra**

**27-28 October 2009**



*Australian Academy of Science*



## **Australia–Japan Workshop on Biodiversity**

**Shine Dome**

**Canberra, 27-28 October 2009**

### **Welcome message**

On behalf of the Australian Academy of Science I am delighted to welcome the Japanese and Australian researchers who will participate in the Australia-Japan Biodiversity Workshop.

Australia and Japan are important research partners with complementary capabilities in science and technology. The workshop will give participants the opportunity to discuss the critical topic of biodiversity and identify opportunities for mutual scientific cooperation between our two countries.

The Academy would like to thank the Australian Government Department of Innovation, Industry, Science and Research for supporting this event. We also extend our thanks to our colleagues at the Japan Science and Technology Agency for their assistance in organising and supporting the Japanese delegation.

I look forward to learning about the outcomes of this bilateral workshop.

Kurt Lambeck

Professor Kurt Lambeck  
President  
Australian Academy of Science



**Professor Kurt Lambeck**

President, Australian Academy of Science

Email: [kurt.lambeck@anu.edu.au](mailto:kurt.lambeck@anu.edu.au)

Kurt Lambeck is a distinguished Professor of geophysics at the Australian National University and president of the Australian Academy of Science (AAS). His research interests cover the disciplines of geophysics, geodesy, geology, climate and environmental science, and space science. He has been at the Australian National University since 1977, including ten years as director of the Research School of Earth Sciences. He is currently also strategic science advisor to National Geospatial Reference System of Geoscience Australia. Kurt was elected to the AAS in 1984 and to the Royal Society in 1994. He is a foreign member of the Royal Netherlands Academy of Arts and Sciences (1993), Norwegian Academy of Science and Letters (1994), Academia Europaea (1999), and the Académie des Sciences, Institut de France (2005).

Kurt's recent work has focused on aspects of sea level change and the history of the Earth's ice sheets during past glacial cycles, including field and laboratory work and numerical modelling. Past research areas have included determination of the Earth's gravity field from satellite tracking data, examination of tidal deformations and the rotational motion of the Earth, the evolution of the Earth–Moon orbital system, and lithospheric and crustal deformation processes.

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## Workshop program

**Monday 26 October 2009**  
**Shine Dome**

### **Afternoon**

Technical visits for Japanese delegation

### **Evening**

- 5.00 Drinks and afternoon tea  
Jaeger room
  
- 5.30 Open lecture  
Dr David Patterson  
*The Encyclopaedia of Life*
  
- 6.30 Informal welcome reception  
Jaeger Room

**Tuesday 27 October 2009**  
**Shine Dome**

8.30 Welcome and opening remarks  
Professor Jenny Graves, Foreign Secretary, Australian Academy of Science

8.40 Welcome and workshop remarks  
Mr Akira Takamatsu, Executive Director, Japan Science and Technology Agency

**Workshop: *Informatics of rare animals and plants***

**Chair Dr Arthur Chapman**

8.50 Plenary address  
Professor Motomi Ito  
*Biodiversity informatics and its role for conservation and sustainable use of biodiversity*

9.30 Dr Donald Hobern  
*The Atlas of Living Australia: Integrating biodiversity data*

10.10 Professor David Miller  
*Coral genetics and genomics: Japan/Australia collaboration*

10.50 Morning tea  
Jaeger Room

**Chair Professor Motomi Ito**

11.15 Professor Hidenori Tachida  
*Population genetic analyses of closely related tree species*

11.55 Professor Robert Henry  
*New tools for biodiversity assessment*

12.35 Lunch and photo opportunity  
Jaeger Room

1.35 Dr Nozomi Yto  
*How a taxon can be rare in biodiversity databases*

2.15 Professor Daniel Faith  
*International collaborations to support a global Biodiversity Observation Network (GEO BON): research challenges ranging from microbes to a global 2010 biodiversity target*

**Workshop: *Biodiscovery and chemical ecology in terrestrial and marine organisms***

**Chair Professor Barry Osmond**

## Workshop program

- 2.55 Professor Lewis Mander  
*Structural and biosynthetic studies on the alkaloids from the Australian rainforest tree, Galbulimima belgraveana*
- 3.35 Afternoon tea  
Jaeger Room
- 4.00 Professor Daisuke Uemura  
*Bio-organic studies on marine natural products: Diverse chemical structures and bioactivities*
- 4.40 Professor Ian Woodrow  
*Australian mallee eucalypts: Biofactories for useful natural products*
- 5.20 Dr Hiroyuki Osada  
*Chemical biology of microbial metabolites*
- 6.00 Close of day one

### Evening

- 7.00 Welcome dinner in honour of visit by Mr Akira Takamatsu  
The Lobby Restaurant, King George Terrace, Parliamentary Triangle

**Wednesday 28 October 2009**  
**Shine Dome**

**Workshop: *Biodiscovery and chemical ecology in terrestrial and marine organisms (continued)***

**Chair Dr Hiroyuki Osada**

8.30 Professor Hiroshi Tomoda  
*New antimycobacterial peptides produced by microorganisms*

9.10 Dr Joe Holtum  
*Cryptic Australian Huperzia: The lure of biology, a promise of natural products and the challenges of conservation*

**Workshop: *Investigation, conservation and utilisation of Australian and Japanese bio-resources and ecosystems***

**Chair Professor Daniel Faith**

9.50 Professor Adrian Gibbs  
*Potyvirus: From where and when did they emerge?*

10.30 Professor Masatsugu Yokota  
*Disjunctive distribution of some subtropical plants in Australia and the Ryukyus*

11.10 Morning tea  
Jaeger Room

11.40 Dr Pieter Poot  
*Western Australia's biodiversity: How special is it and what have we got to lose?*

12.20 Professor Yugi Isagi  
*Conservation of biodiversity based on information obtained by UBIQUITOUS GENOTYPING*

1.00 Lunch  
Jaeger Room

**Chair Professor Yugi Isagi**

1.45 Professor Hiroyuki Matsuda  
*Quantitative projection of plant species loss for 1,697 taxa of Japanese vascular plants and its implication for achieving the 2010 biodiversity target*

2.25 Professor Kazuki Tsuji  
*Environmental disturbances and biological invasion*

3.05 Professor Barry Brook  
*Integrating bioclimate with population models to improve forecasts of species extinctions under climate change*

## **Workshop program**

- 3.45 Summary and closing remarks  
Professor Motomi Ito and Professor Barry Osmond
- 4.15 Close of workshop  
Depart for airport

## **Thursday 29 October 2009**

### **All day**

Technical visits for Japanese delegation in Townsville



### **Professor Motomi Ito**

Department of Systems Science  
Graduate School of Arts and Sciences  
University of Tokyo, Japan

Email: [cmiito@mail.ecc.u-tokyo.ac.jp](mailto:cmiito@mail.ecc.u-tokyo.ac.jp)

### **Biodiversity informatics and its role for conservation and sustainable use of biodiversity**

By the end of the 20<sup>th</sup> century, global environment issues had become a serious problem and had attracted attention internationally, such as global climate change and a rapid loss of biodiversity. The former has now become a major issue in the world. To deal with the latter, we now have the 'Convention on Biological Diversity' as an international framework. However, the present situation seems far from successful. This is because we do not have enough knowledge of biodiversity and it is difficult to access and analyse the existing biodiversity information.

From the last quarter of the 20<sup>th</sup> century we had two innovations that we could apply to these problems. One is the rapid development of computer power and informatics, and the other is molecular techniques in biology or biotechnology. The combination of these two innovations has resulted in bioinformatics, mainly in gene and genome science. Now, we need to establish the other part of bioinformatics; biodiversity informatics. Here I will talk about the potential power of biodiversity informatics for conservation and sustainable use of biodiversity and discuss how we can make progress in this new scientific field.

### **Curriculum vitae**

Occupation: Research Associate at Makino Herbarium, Faculty of Science, Tokyo Metropolitan University in July 1987; Associate Professor, Faculty Science, Chiba University in April 1993; Associate Professor, Graduate School of Arts and Sciences, The University of Tokyo in April 2000.

Research Area: Plant Systematics, Evolutionary Biology, Biodiversity Informatics

## Symposium convenors



### **Professor Barry Osmond FAA**

Visiting Fellow

School of Biochemistry and Molecular Biology

Australian National University, Australia

Email: [barry.osmond@anu.edu.au](mailto:barry.osmond@anu.edu.au)

### **Biography**

Barry Osmond is a well-known Australian plant biologist whose career in the now deconstructed Research School of Biological Sciences, Australian National University was interspersed with senior appointments in the US and collaborations world-wide. He studies the functional biodiversity of photosynthesis (especially responses to excess light) and in 1981 organised the first Japan-Australia bilateral workshop in Nagoya. As director of Columbia University's visionary Biosphere 2 Center from 2001 to its premature closure in 2003, he stimulated experimental ecosystem and climate change science. He is a Fellow of the Australian Academy of Science (1978), the Royal Society of London (1984), and the German National Academy of Science, Leopoldina (2001).



### **Professor Jenny Graves FAA**

Research School of Biological Sciences  
Australian National University, Australia

*and*

Department of Zoology  
University of Melbourne, Australia

Email: [jenny.graves@anu.edu.au](mailto:jenny.graves@anu.edu.au)

### **Curriculum vitae**

#### RESEARCH

Seminal contributions to the understanding of mammalian genome organisation and evolution, exploiting the genetic diversity of Australia's unique mammals as a source of genetic variation to study highly conserved genetic structures and processes. This strategy is used to shed light on the organisation, function and evolution of mammalian genomes, leading to influential new theories of the origin and evolution of human sex chromosomes and sex determining genes. Early work made classic contributions to our understanding of the molecular mechanism of X chromosome inactivation and the control of DNA synthesis in mammalian cells.

Leader in international comparative gene mapping and genomics from the 1980s. As co-chair and co-editor of the Comparative Committee of the Human Gene Mapping workshops from 1987, recognised and promulgated the value of comparison of gene maps, and the special value of including distantly related vertebrate species. Led movement to fully sequence the genomes of Australian mammals (kangaroo and platypus), participated in major international genome sequencing projects.

#### QUALIFICATIONS

- |      |   |
|------|---|
| 1964 | BSc Hons (1st class), University of Adelaide. Three year undergraduate one year honours project.  |
| 1967 | MSc, Genetics, University of Adelaide. One year research project  |
| 1971 | PhD, Molecular Biology, University of California, Berkeley. Research supervisors Morgan Harris and Daniel Mazia. Thesis title "Control of DNA replication in interspecies mammalian heterokaryons and hybrids". |

## Guest speakers

### PROFESSORIAL POSITIONS

1969 – 1971	Research Assistant, University of California, Berkeley, USA
1971 – 1977	Lecturer in Genetics, La Trobe University, Melbourne, Australia
1978 – 1987	Senior Lecturer in Genetics, La Trobe University, Australia
1988 – 1991	Reader in Genetics, La Trobe University, Australia
1991 – 1998	Research Fellow, NOAHS Center, Smithsonian, Washington DC
1991 – 2001	Professor of Genetics, La Trobe University, Australia
2001 –	Professor, Australian National University, Canberra, Australia
2001 –	Professorial Fellow, University of Melbourne
2004 –	Director, ARC Centre for Kangaroo Genomics
2006–	Foreign Secretary, Australian Academy of Science

### AWARDS AND HONOURS

1962	Sir Ronald A. Fisher Prize in Genetics
1964	CSIRO Senior Postgraduate Fellowship
1965 – 1971	Fulbright Travel Grant
1991	Elected Fellow of the Australian Academy of Science
2000	Honorary Life Fellowship, Museum Victoria
2001	Centenary Silver Medal, services to Australian genetics, genomics
2005	Distinguished Fellow, UCLA Centre for Society and Genetics
2006	UNESCO-L'Oreal Women in Science (Asia/Pacific Laureate)
2006	Macfarlane Burnet Medal for Biology (Aust. Academy of Science)
2007	Australian Thinker of the Year (International School of Thinking)



### **Dr David Patterson**

Senior Taxonomist

Marine Biological University, USA

Email: [dpatterson@mbl.edu](mailto:dpatterson@mbl.edu)

### **The Encyclopaedia of life**

The Encyclopaedia of Life ([www.eol.org](http://www.eol.org)) is an ambitious project that is realising the vision of EO Wilson to create a web page for every species on earth. The project is organised around components that provide the secretarial support (Smithsonian Institution) deal with informatics (Marine Biological Laboratory, Woods Hole), research (Field Museum), learning and education (Harvard University), page content (Smithsonian Institution), and the biodiversity literature (the Biodiversity Heritage Library – a consortium of over 30 libraries world-wide). It is expanding to include an array of national regional nodes; agreements have been made with the Netherlands, Australia and China, and many more are under development). A little over two years from receiving its first funding, EOL now delivers about 1,500,000 species pages. The rate of growth has been made possible by its strategy of aggregating data objects that are already available on-line from the web sites of content partners. EOL uses names to index information, and has developed devices to overcome the problems caused by one species having more than one name, and one name being used for more than one species. This 'taxonomically intelligent' infrastructure is now being made available so that it can be used by any project that manages biodiversity information. EOL actively supports the distribution of information and welcomes participation. Content is freely available under Creative Commons attribution licenses, the code base is openly available, and we provide Lifedesks ([lifedesks.org](http://lifedesks.org)), a biological content management system to assist taxonomists get information onto the internet.

### **Biography**

David Patterson is currently the Senior Taxonomist of the Encyclopedia of life project, and currently is based at the Marine Biological Laboratory (Woods Hole, Massachusetts, USA).

His prior academic interests were in the evolution and systematics of protozoa at the Universities of Bristol (England) and Sydney (Australia). He has published over 160 scientific

## Guest speakers

papers and books. As the inaugural head of the Biodiversity Informatics Group of EOL, he was responsible for establishing the infrastructure and web-site for that project. He is an advocate for the importance of incorporating taxonomic thinking within biodiversity informatics, and that biodiversity informatics should define future taxonomy. He is a member of the International Commission of Zoological Nomenclature, and a senior advisor to the Sloan Foundation.



**Mr Akira Takamatsu**

Executive Director

Japan Science and Technology Agency, Japan

### **Biography**

Mr Takamatsu was born on November 10, 1949 in Kyoto, and graduated from Kyoto University faculty of Law and entered the Ministry of Foreign Affairs in 1974.

He was sent to Harvard University in Boston from 1975 to 1977 to study Soviet Union Affairs and from 1977 to 1978 he studied at Moscow State University. Then from 1979 to 1986, he served for Foreign Service in Tokyo.

From 1986 to 1992, he served at the Japanese Embassies in the Soviet Union and in France and from 1992 to 1994, he served for MITI and from 1994 to 1996, he worked as Director in charge of Arms Control and Disarmament Issues in Tokyo. From 1996 to 2001, he served at the Japanese Embassy in South Korea and then at the Permanent Mission of Japan in Geneva to the United Nations and Other International Organisations. In 2001, he was assigned to Vladivostok, Russia as the Japanese Consul General.

In 2003, he was assigned to the Deputy Director-General for Arms Control and Disarmament Issues and in 2004 he was assigned to the Director-General of the Special Unit to make disposal of the absolute CW abandoned by Japanese Imperial Army in China in 1945. From October 2007 to March 2009, he served as Ambassador Extraordinary and Plenipotentiary of Japan to the Republic of Cuba.

Since August 2009, Ambassador Takamatsu has been serving as Executive Director of Japan Science and Technology Agency (JST).

## Participants



### **Professor Barry Brook**

Director of Climate Change  
The Environment Institute  
University of Adelaide, Australia

Email: [barry.brook@adelaide.edu.au](mailto:barry.brook@adelaide.edu.au)

### **Integrating bioclimate with population models to improve forecasts of species extinctions under climate change**

Climate change is already affecting species worldwide, yet existing methods of risk assessment have not considered interactions between demography and climate and their simultaneous effect on habitat distribution and population viability. In collaboration with researchers in the US, Australia, Spain, France and the UK, we are developing a new research framework to address this deficiency, bringing together leading species distribution and population modellers together with taxonomic specialists and specialist ecologists. Our work is focused on developing methodological standards and case studies for integrating bioclimatic and metapopulation viability models, to provide more realistic forecasts of population change, habitat fragmentation and extinction risk under climate change. We consider several challenges, using case studies from a wide range of taxa and regions. These include spatial and temporal scale contingencies, choice of predictive climate models and methods of downscaling, land-use, soil type and topographic variables, procedures for ensemble forecasting of both global climate and bioclimate models, and developing demographic structures that are realistic and species-specific and yet allow generalisations of traits that make species vulnerable to climate change. The goal is to provide general guidelines for assessing the Red-List status of large numbers of species potentially at risk due to the interactions of climate change with other threats such as habitat destruction, overexploitation and invasive species.

### **Biography**

Professor Barry Brook holds the Foundation *Sir Hubert Wilkins Chair of Climate Change* at the University of Adelaide. He has published two books and over 150 peer-reviewed

## Participants

scientific papers, and regularly writes opinion pieces and popular articles for the media. He has received a number of distinguished awards in recognition of his research excellence (including the Australian Academy of Science *Fenner Medal*). His focus is on climate change, computational and statistical modelling, systems analysis for sustainable energy and the synergies between human impacts on Earth systems.

## Participants



### **Mr Arthur Chapman**

Australian Biodiversity Information Services  
Toowoomba, Australia

Email: [biodiv\\_2@achapman.org](mailto:biodiv_2@achapman.org)

### **Biography**

Mr Arthur Chapman spent over 25 years working in a number of capacities for the Australian Government, mainly in data management and quality control, information analysis, environmental modelling, development of environmental decision support systems. Working for the Australian Biological Resources Study (ABRS) he prepared the *Australian Plant Name Index* - a four volume publication and on-line database listing over 60,000 Australian plant names - as well as being involved in the production of a number of volumes of the *Flora of Australia*.

From 1990–2002 Mr Chapman worked for the Environmental Resources Information Network (ERIN) which was responsible for developing some of the world's first on-line environmental data management and analysis tools. He was part of teams at ERIN that won the Computer World Smithsonian Award in 1993 and two Australian Government Technology Productivity Gold Awards in 1994 and 2001 for innovative Web developments and was awarded the Centenary of the Australian Public Service Medal in 2002 for Sustained Excellence.

Mr Chapman has advised on data management and environmental modelling in a range of institutions and agencies around the world, and especially in many developing countries. He has worked on projects for the United Nations Environment Program, the World Bank, the Food and Agriculture Organisation, Bioversity International, the Convention on Biological Diversity and the Global Biodiversity Information Facility.

During 2003–2004, Mr Chapman worked as a Visiting Professor at the Reference Centre for Environmental Information (CRIA) in Brazil, assisting development of innovative and

## Participants

practical on-line environmental data cleaning tools, as well as improving environmental data, methodologies and tools available in South America for environmental modelling, reserve selection, data management and visualisation.

Mr Chapman is currently working as an Environmental Consultant based in Toowoomba, Queensland.

## Participants



### **Professor Daniel Faith**

Principal Research Scientist  
The Australian Museum, Australia

Email: [danf@austmus.gov.au](mailto:danf@austmus.gov.au)

### **International collaborations to support a global Biodiversity Observation Network (GEO BON): Research challenges ranging from microbes to a global 2010 biodiversity target**

A new global Biodiversity Observation Network (GEO BON) will include observations on genetic and phylogenetic diversity. A working group co-chaired by Australian and Japanese scientists is investigating alternative monitoring strategies, including use of large-scale models of genetic/phylogenetic turnover as a “lens” to interpret remotely sensed changes in land/water condition. Innovative approaches by microbial ecologists for modelling biodiversity may provide general strategies for such monitoring programs. These efforts to incorporate phylogenetic/genetic diversity are supported by another collaborative effort with Australian and Japanese colleagues. This bioGENESIS project within DIVERSITAS will promote evolutionary aspects of biodiversity, and will work to integrate these with conservation instruments and policy. Our research linked to GEO BON and DIVERSITAS suggests that, in contrast to current pessimism, the 2010 biodiversity target (for a significant reduction in the rate of biodiversity loss) can be achieved through an integrated approach. Further, biodiversity models for 2010 may incorporate phylogenetic/genetic diversity.

### **Biography**

Daniel P Faith was born in Chicago, Illinois, and was awarded a BA in mathematics in 1973 from The University of Chicago. He was awarded a PhD in Ecology and Evolution from Stony Brook University (New York) in 1979. He then moved to Australia to take up a post-doc at CSIRO in Canberra, in a Division then known as “Land Use Research”. Dr Faith in November this year will celebrate 30 years in Australia. He has been a research scientist at various Divisions of CSIRO, including Wildlife and Ecology. For the past ten years, Dr Faith has been a research scientist at the Australian Museum in Sydney, specialising in biodiversity. This research has integrated elements of phylogenetics, economics, philosophy of science, bio-informatics and conservation planning.



### **Professor Adrian Gibbs FAA**

School of Botany and Zoology  
Australian National University, Australia

Email: [adrian\\_j\\_gibbs@hotmail.com](mailto:adrian_j_gibbs@hotmail.com)

### **Potviruses: From where and when did they emerge?**

The first described potyvirus was Potato virus Y', hence the name. The potyviruses are one of the two largest groups of plant viruses (at least 250 species each). They cause significant damage in a wide range of crops around the world. They are also widespread in wild plants. Phylogenetic analyses, based on gene sequences and dated using historical records, indicate that they are evolving as fast as many animal viruses (eg influenza and HIV). They have emerged and diversified since the invention and spread of agriculture, and are probably fostered by it.

### **Biography**

Adrian Gibbs is a virologist who works on the evolution of viruses, especially plant viruses and, occasionally, influenza virus. He was a member of staff of the Australian National University for many years and, before that, of Rothamsted Experimental Station, UK.

## Participants



### **Professor Robert Henry**

Centre for Plant Conservation Genetics  
Southern Cross University, Australia

Email: [robert.henry@scu.edu.au](mailto:robert.henry@scu.edu.au)

### **New tools for biodiversity assessment**

Advances in DNA analysis tools are providing new approaches to the assessment of biodiversity. Next generation sequencing is allowing analysis of even complex organisms at the whole genome level. Examples of applications to Australian plants and to major crop species will be provided. Specific applications include phylogenetic analysis at the genome level, genomics, population genomics, gene discovery, SNP discovery, plant identification, and ancient DNA analysis. High throughput genotyping is advancing the analysis of diversity using variation discovered by new sequencing platforms.

### **Biography**

Robert Henry is Professor of Plant Conservation Molecular Genetics at Southern Cross University. Robert Henry has interests in the Australian flora and plants of economic and social importance. A common focus of much of this work has been the application of genetic technology to the improvement of the quality of crops (especially cereals) and agricultural and food products. His research also targets the characterisation of plant genetic resources especially Australian wild relatives of crop plants and more recently the identification of links between climate and plant biodiversity. In 1996 he established the Centre for Plant Conservation Genetics at Southern Cross University and in 2001 the Australian Plant DNA Bank. Robert Henry is a highly cited researcher and has written and edited several books on plant molecular biology and plant diversity.



### **Dr Donald Hobern**

Director

Atlas of Living Australia

CSIRO Entomology, Australia

Email: [donald.hobern@csiro.au](mailto:donald.hobern@csiro.au)

### **The Atlas of Living Australia: Integrating biodiversity data**

The Atlas of Living Australia (ALA) is a government-funded infrastructure project to integrate data from Australia's natural history collections and herbaria, ecological fieldwork, laboratory research and resources on taxonomy, identification, biology and management.

The ALA is part of a national e-research strategy which includes the Terrestrial Ecosystem Research Network, the Taxonomy Research and Information Network, the Australian Biosecurity Information Network and two major phenomics projects. It will also serve as the interface to international data networks including the Global Biodiversity Information Facility (GBIF) and the Encyclopaedia of Life (EOL).

The ALA is developing systems to handle different classes of biodiversity data (including names and classification, geospatial data, images, sequences, literature, identification tools and species interactions). The central component will be an information repository which catalogues all data sources and maintains a semantically-interconnected model of the linkages between data sources, species, geographic areas, habitats, species traits and other key biodiversity concepts.

### **Biography**

Donald Hobern is currently working for CSIRO Entomology in Canberra as Director of the Atlas of Living Australia project. He is also Chair of TDWG, the international organisation for biodiversity informatics standards.

Prior to his current position he worked as a software developer for IBM and as Deputy Director for Informatics for the Global Biodiversity Information Facility in Copenhagen, Denmark.

## Participants



### **Dr Joseph Holtum**

School of Marine and Tropical Biology  
James Cook University, Australia

Email: [joseph.holtum@jcu.edu.au](mailto:joseph.holtum@jcu.edu.au)

### **Cryptic Australian *Huperzia*: The lure of biology, a promise of natural products and the challenges of conservation**

Of eleven species of *Huperzia* in Australia, ten are slow-growing epiphytes restricted to the Wet Tropics of north Queensland. Four are listed as endangered, four are vulnerable and two are rare. Members of the most basal extant vascular plants on the planet, the Lycopodiophyta, *Huperzia* tend to have wide ranges over which they are rare but may be locally common, a phenomenon that possibly reflects the distribution of strains of mycorrhizae upon which the long-lived, non-photosynthetic gametophytes are myco-heterotrophic. Collectors and logging have reduced population sizes such that some taxa may become extinct in the wild in the near future.

In addition to horticultural interest, *Huperzia* are of pharmaceutical interest because they produce an acetylcholinesterase inhibitor that reportedly reduces short-term age-related memory impairment in humans. Plants are currently the only source of huperzine-A which is available in the USA as an over-the-counter supplement.

*Huperzia* underperform their horticultural and industrial potential because supply is restricted by slow growth, high rates of attrition, no methods of sexual propagation and limited availability of species in culture. The genetic variation of individuals in horticulture is low, with the industry based on growing a few species sourced from a small number of vegetatively-cloned plants. The restricted availability of *Huperzia* in nurseries, and their consequent high cost, has undoubtedly contributed to the pressures on wild populations from poachers. Moreover, uncertainties in naming species have commercial and conservation consequences by making more difficult the identification and both the registration of provenances with biotechnological and horticultural promise.

I shall discourse briefly upon studies of basic science that may assist preserving *Huperzia* biodiversity, revitalising a traditional resource-based horticultural business and creating a new pharmaceutically-oriented industry.

### **Biography**

A reader in Tropical Plant Sciences at James Cook University, a university in the Australian tropics, I have published extensively on the biochemistry and ecophysiology of plants with Crassulacean acid metabolism (CAM) and on the physiology of herbicide resistance in weeds. Between 2001 and 2006 I co-directed OzFACE, the only Free-Air CO<sub>2</sub> Enrichment (FACE) experiment yet performed in the tropics.

Current research interests include i) the feasibility of *Agave tequilana*, *Agave sisalana* and cassava as biofuel feedstocks in the tropics, ii) pathways of photosynthesis in Australian desert plants, iii) survival strategies of Australian desert trees such as *Acacia peuce*, iv) responses of tropical plants to rising concentrations of CO<sub>2</sub>, and v) how hydraulic morphology and water-use adjusts during the transition from vine to hemiepiphyte.

## Participants



### **Professor Yuji Isagi**

Laboratory of Forest Biology  
Division of Forest and Biomaterials Science  
Graduate School of Agriculture  
Kyoto University, Japan

Email: [isagi@kais.kyoto-u.ac.jp](mailto:isagi@kais.kyoto-u.ac.jp)

### **Conservation of biodiversity based on information obtained by ubiquitous genotyping**

In order to conserve biodiversity properly, genetic information for endangered species such as clonal structure, genetic diversity, genetic structure, genetic differentiation, gene flow, inbreeding coefficient and relatedness are required. Many problematic activities for biological conservation without genetic information have been made so far. They are, for example, propagation and plantation of a few lineages of a species, transplantation without consideration of intraspecific genetic differentiations, breeding without consideration of relatedness, hybridising with related species that causes genetic pollution, etc.

We have selected 50 critically endangered plant species whose remnant individuals are less than 100s, then, the habitats and genotypes for ALL plant individuals growing in the wild have been determined. We call this research approach as ubiquitous genotyping. By taking advantage of information from the ubiquitous genotyping, we will be able to evaluate genetic traits of plants regenerated, select appropriate plant individuals for artificial crossing, determine appropriate places of transplantation based on genetic structure, detect genetic pollution, prevent illegal digging of plants and evaluate sustainability of populations.

### **Curriculum vitae**

#### ACADEMIC QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

1983: B. Sc., Faculty of Science, Hiroshima University

1985: M. Sc., Graduate School of Science, Hiroshima University

1985: Researcher, Forestry and Forest Products Research Institute, Ministry of Agriculture, Forestry and Fisheries of Japan

1992: Senior researcher, Forestry and Forest Products Research Institute, Ministry of Agriculture, Forestry and Fisheries of Japan

1994: Ph. D., Hiroshima University

2000: Associate Professor, Hiroshima University

2006: Professor, Kyoto University

### RESEARCH INTERESTS

Conservation genetics for endangered species

Patterns and processes of plant reproduction in forest ecosystems

## Participants

### Dr Nozomi Yto

Graduate School of Life and Environmental Sciences  
Gene Research Centre  
University of Tsukuba, Japan

### How a taxon can be rare in biodiversity databases

What is a rare species, or more generally rare taxon? Practically animals and plants listed in the IUCN Red List or the like issued by local authorities. It could be defined as taxa of small population in material world, of either global or local scale. Rareness in biodiversity databases is unnecessary limited to abundance of animals and plants in the material world. It may imply limited number of occurrence (including both observation and specimens) records, record recovery and reference to taxon names. Occurrence records are limited not only by occurrence in the real world but also focus on each collection managed by taxonomists of special interest. Databases may be configured to restrict access to records of some taxa such as threatened or valuable taxa. This reduces the recovery of records of the taxa which results in rare taxa artifact (as intended). Taxon names may change from time to time according to the progress of the understanding by taxonomists, which can also result in rare taxa artifact.

### Curriculum vitae

#### Employment history:

1992 to date University of Tsukuba

1992 - 2003 Institute of Biological Science,

2000 to date Gene Research Center, University of Tsukuba

2004 to date Graduate School of Life and Environmental Sciences, University of Tsukuba

1992 - 1993 Research Assistant

1993 - 2000 Research Associate

2000 to date Lecturer

1998 - 1999 Foreign scholarship of the Ministry of Education, Culture, Sports, Science and Technology of Japan at Division of Protista & Mathematics, Department of Zoology, the Natural History Museum, London

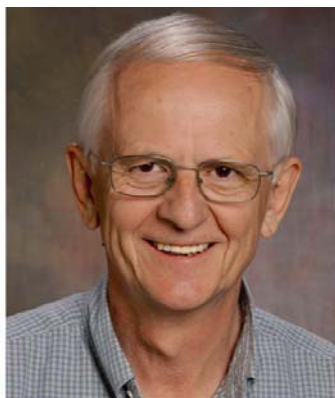
#### Academic qualifications:

Bachelor of Science from University of Tsukuba, Japan in 1987 Ph. D from University of Tsukuba, Japan in 1992

### Awards:

2002 First Ebbe Nielsen Prize (GBIF) awarded at Canberra

## Participants



### **Professor Lewis Mander FAA**

Research School of Chemistry  
Australian National University, Australia

Email: [mander@rsc.anu.edu.au](mailto:mander@rsc.anu.edu.au)

### **Structural and biosynthetic studies on the alkaloids from the Australian rainforest tree, *Galbulimima belgraveana***

The structures have been determined for 22 unique alkaloids isolated from the bark of the rain forest tree *Galbulimima belgraveana* which is the sole surviving species from the relic family Himantandraceae found in Northern Australia, Papua New Guinea and Indonesia. The alkaloids vary considerably in structure and biological activity, but one, namely himbacine, was found to be a potent cardio-selective muscarinic antagonist, due to its ability to bind selectively with M<sub>2</sub>/M<sub>4</sub> muscarinic receptors. Thus, himbacine became a lead compound in the search for new drugs for the treatment of neurodegenerative conditions such as Alzheimer's disease. While interest in himbacine has waned, a synthetic analogue has been shown to be a potent orally active thrombin receptor (PAR-1) antagonist and is presently undergoing stage 3 clinical trials for the treatment of acute coronary syndrome and for secondary-prevention in patients who have had a prior myocardial infarct or stroke. In addition to the 22 alkaloids described earlier, we have isolated and determined the structures of a further seven alkaloids with a view to shedding light on their biosynthesis and therapeutic potential.

### **Biography**

Lew Mander was born in Auckland, New Zealand, where he completed his BSc and MSc (hons.) degrees at the University of Auckland. After moving to Australia, he obtained his PhD in 1964 at the University of Sydney then undertook two years of postdoctoral studies initially at the University of Michigan and then at the California Institute of Technology. He returned to Australia as a lecturer in organic chemistry at the University of Adelaide then moved to the Research School of Chemistry at the Australian National University in 1975. He was appointed Professor in 1980, serving two periods as Dean (1981–85; 1992–95). He was a Nuffield Fellow at Cambridge University in 1972 and a

## Participants

Fulbright Senior Scholar at the California Institute of Technology in 1977 and at Harvard University in 1986. He has been an Eminent Scientist of RIKEN, Saitama, Japan (1995–96), and a Distinguished Alumnus Professor at the University of Auckland (1992).

He has also been a visiting Professor at the Universities of Sydney, Cambridge, Alberta, Colorado, and Canterbury (New Zealand). He is a Fellow of the Australian Academy of Science and The Royal Society (London). His research interests are concerned with the development of methods and strategies for the assembly and manipulation of complex natural products with a special interest in the role of gibberellins in plant growth and development.

## Participants



### **Professor Hiroyuki Matsuda**

Faculty of Environment and Information Sciences  
Yokohama National University, Japan

Email: matsuda@ynu.ac.jp

### **Quantitative projection of plant species loss for 1697 taxa of Japanese vascular plants and its implication for achieving the 2010 biodiversity target**

In order to quantify the risk of extinction, the Japanese Red Data Book compilation project monitored changes of population size during the past ten years for 1,697 threatened plant taxa in each of 3,781 map grids of ca.100 km<sup>2</sup>. More than 500 citizen botanists contributed to monitoring those taxa from 1994-1995 and from 2003-2004. This massive data set enabled us to carry out the world's first quantitative projection of plant species loss at national level with stochastic simulations. As a result, 553 taxa were projected to become extinct during the century, if the declining trends over the last decade continue. Our monitoring also suggests a pathway to reduce this rate of loss and so addresses the 2010 biodiversity target of "significant reduction in the rate of loss of biodiversity".

### **Biography**

Hiroyuki Matsuda, PhD, a Professor at the Yokohama National University, is the first Pew Fellow in Marine Conservation from Japan. He is a mathematical ecologist, received both his MSc and DSc degrees from Kyoto University, Kyoto, Japan. His interests include bioresource management, ecological risk management and evolutionary ecology. He is also the chair of Japan Program Committee for UNESCO's Man and the Biosphere Programme.



### **Professor David Miller**

School of Marine and Tropical Biology  
Centre of Excellence in Coral Reef Studies  
James Cook University, Australia

Email: david.miller@jcu.edu.au

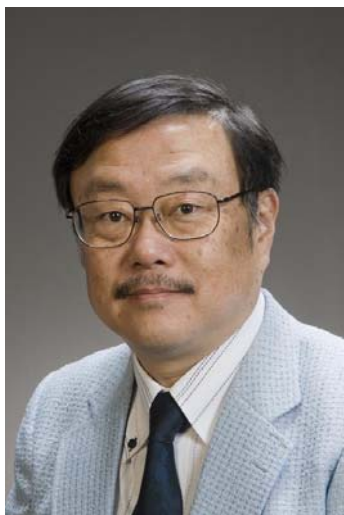
### **Coral genetics and genomics: Japan/Australia collaboration**

For the last 20 years, my laboratory has worked on characterising genes and gene families in *Acropora millepora*, one of the Indo-pacific staghorn corals. Despite common interests, only during the last two-three years have I developed collaborations with Japanese laboratories working in similar areas, and this has largely been enabled by the Academy's exchange program and by the return to Japan of former PhD students. We now have strong working relationships with several Japanese groups in the areas of genomics and immunity.

### **Biography**

David Miller leads a Program ("Genomics in Coral Biology") in the Centre of Excellence in Coral Reef Studies at James Cook University, which is located close to Australia's Great Barrier Reef. Although trained in microbial biochemistry and genetics in the UK, his interest in biology was originally driven by a fascination with coral reefs, and his move to James Cook University in the mid 1980s led to an inevitable shift in focus to corals. Since that time, his laboratory has stubbornly pursued the use of the coral *Acropora* as a model organism for understanding the evolution of developmental mechanisms and animal genomes. This has recently culminated in *Acropora* being selected as the first animal for which a fully Australian genome sequencing project will be undertaken.

## Participants



### Dr Hiroyuki Osada

Chemical Biology Department  
RIKEN Advanced Science Institute, Japan

Email: [osadahiro@riken.jp](mailto:osadahiro@riken.jp)  
<http://www.antibiotics.riken.go.jp/>

### Chemical biology of microbial metabolites

Discovery of new bioactive compounds and the elucidation of the molecular target of these are important subjects in chemical biology. In this presentation, I will talk on the following two topics.

1) Pathway engineering for creating chemical library: Fumitremorgins (FTM) are diketopiperazine mycotoxins produced by *Aspergillus fumigatus*. FTM-C is a potent and specific inhibitor of breast cancer resistance protein (BCRP). To produce various FTM related compounds, we cloned and engineered the biosynthetic gene cluster of FTM. Many derivatives of FTM were isolated from the genetically engineered strain of *A. fumigatus*. The structure-activity relationship of the derivatives against BCRP will be reported.

2) Proteomic approach for target identification: To understand the molecular target of the small molecules, proteome Profiling of small molecule-treated HeLa cells was performed using a 2-dimensional fluorescence differential gel electrophoresis (2D-DIGE) system. HeLa cells were treated with authentic inhibitors, and the characteristic patterns of proteome were accumulated in the database. The similarity of 2D-DIGE pattern suggests us the possible target of the compound compared with the known compound.

### Curriculum vitae

#### EDUCATION:

1974-1978 (Bs), The University of Tokyo, Department of Agricultural Chemistry  
1978-1983 (Ph. D), Graduate Course, The University of Tokyo, Faculty of Agriculture

### APPOINTMENTS:

1983-1991: Scientist, Antibiotics Laboratory, RIKEN  
1985-1986: Research Fellow, National Cancer Institute, NIH, USA.  
1992-present: Chief Scientist, Antibiotics Laboratory, RIKEN  
2008- present: Director, Chemical Biology Department, RIKEN ASI  
Concurrent position, Visiting Professor of Saitama University

Editorial Board Member;

Actinomycetologica

Cancer Science

Journal of Antibiotics

Journal of General and Applied Microbiology

Journal of Microbiology and Biotechnology

Oncology Research

Advisory Board Member;

ACS Chemical Biology

Chemistry Asian Journal

### AWARDS:

Research Promotion Award of Agricultural Chemical Society of Japan (1991)  
Sumiki-Umezawa Memorial Award from Japan Antibiotic Research Association (1996)  
Award of the Society for Actinomycetes Japan (2000)  
Award of the Minister of Education, Culture, Sports, Science and Technology (2001)  
Award of the Bioindustry Association (2007)  
Award of Japan Society of Bioscience, Biotechnology and Agrochemistry (2009)

## Participants



### Dr Pieter Poot

Faculty of Natural and Agricultural Sciences  
University of Western Australia, Australia

Email: [pieterp@plants.uwa.edu.au](mailto:pieterp@plants.uwa.edu.au)

### Western Australia's biodiversity: How special is it and what have we got to loose?

Compared with many other regions in the world Western Australia has a remarkable biodiversity. It contains eight out of 15 National Biodiversity Hotspots and has the only global biodiversity hotspot (the SW Australian Floristic Region). Most of the hypotheses addressing the origin of Western Australia's remarkably diverse flora and fauna centre around its antiquity and unusually long period of geological and climatic stability. The majority of WA's landscapes are extremely old and weathered and have not undergone any glaciations, volcanism or significant mountain building for at least 200 million years. Thus WA's biota had a very long time to evolve and adapt to a relatively flat and extremely nutrient poor environment without any major disruptions. Most of WA's contemporary plant species evolved after Australia's separation from Antarctica some 35 million years ago, when the climate started becoming drier and colder and fire became more prevalent. In order to secure WA's unique biodiversity for future generations our societies will have to find a better balance between economic growth and environmental sustainability.

### Biography

Dr Pieter Poot is a plant scientist from the Netherlands who arrived in WA almost 11 years ago. Since his arrival in Australia Pieter has worked on a range of topics including: the diversity of water-use patterns of different functional groups in a *Banksia* woodland (contributing to a multi-authored paper in *Nature*), the ecophysiology of rare plants restricted to shallow-soiled ironstone communities and the role of drought in crown decline of *Eucalyptus wandoo*. In general he is interested in the ecophysiological and evolutionary drivers of plant species distribution patterns with an emphasis on rare and endangered species. Currently Pieter has a shared position between UWA and the Department of

## Participants

Environment and Conservation. At UWA he is the program co-ordinator for Conservation Biology and lectures in plant conservation biology, plant ecology and biometrics.

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### Professor Hidenori Tachida

Department of Biology  
Faculty of Sciences  
Kyushu University, Japan

Email: htachscb@mbox.nc.kyushu-u.ac.jp

### Population genetic analyses of closely related tree species

Because genetic diversity is one of the major constituents of biodiversity and provides the basis for evolutionary potential of a species, it is important to characterise it. Population genetics provides useful tools for characterising and interpreting genetic diversity. In this talk, I will first explain the statistics used in population genetics to characterise genetic diversity and how their expected values are related to parameters of various population genetic models. Using tools of population genetics, we analysed two pairs of closely related tree species. The results show that levels and patterns of genetic diversity differ even between closely related species because of differences in their population histories and geographical structures. Based on these results, the importance of assessing genetic diversity of various species is discussed.

### Curriculum vitae

Research area: population genetics

Research interests: evolution and maintenance of genetic variation

1982 Doctor of Science (under Professor. T. Mukai), Kyushu University

1982-1988 Postdoctoral research associate and visiting assistant Professor, Department of Statistics, North Carolina State University, USA

1988-1992 Assistant Professor, National Institute of Genetics, Japan

1992-present Associate and Full Professor, Department of Biology, Faculty of Sciences, Kyushu University, Japan



### **Professor Hiroshi Tomoda**

Graduate School of Pharmaceutical Sciences  
Kitasato University, Japan

Email: [tomodah@pharm.kitasato-u.ac.jp](mailto:tomodah@pharm.kitasato-u.ac.jp)

### **New antimycobacterial peptides produced by micro-organisms**

Our research group has focused on drug discovery from micro-organisms. Tuberculosis is the greatest single infectious cause of mortality in the world. For the discovery of new antimycobacterial agents, we have searched for microbial metabolites which selectively inhibit the growth of *Mycobacteria smegmatis*. Over 30,000 culture broths of actinomycetes, fungi and bacteria were screened and only two strains, actinomycete KOI-B0171 and fungus FKI-4905, were selected. The former strain, identified as *Rhodococcus jostii*, was found to produce new cyclopeptides designated lariatins A and B. Lariatins A consisted of 18 amino acids with an internal linkage between  $\alpha$ -amino group of Gly1 and  $\gamma$ -carboxy group of Glu8, and was folded into a lasso structure. The latter strain, identified as *Mortierella alpina*, produced a new hexapeptide designated calpinactam with a caprolactam ring at the C terminal. Lariatins A and calpinactam inhibited not only the growth of *M. smegmatis* but also *M. tuberculosis*. The proposed mechanism of action of lariatins A will be also presented.

### **Biography**

Hiroshi Tomoda is Professor of the Graduate School of Pharmaceutical Sciences, Kitasato University. He graduated from the Faculty of Pharmaceutical Sciences, University of Tokyo, in 1978, and received his PhD degree in the Graduate School of Pharmaceutical Sciences from the same university in 1983. He worked as a researcher (1983-1991) and a chief researcher (1991-2000) at the Kitasato Institute. He also worked as a post-doctoral fellow in the Department of Biology, the Johns Hopkins University in 1987-1989. He was promoted to Professor in Graduate School of Infection Control Sciences, Kitasato University, in 2001. Then, he moved to the present position in 2005. His research interests include discovery of

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new bioactive and anti-infective compounds from micro-organisms and study on the mechanism of action of the compounds he discovered.



### **Professor Kazuki Tsuji**

Faculty of Agriculture  
University of the Ryukyus, Japan

Email: [tsujik@agr.u-ryukyu.ac.jp](mailto:tsujik@agr.u-ryukyu.ac.jp)

### **Environmental disturbances and biological invasion**

Invasion by exotic species is a major threat to biodiversity worldwide. Exotic ants such as the Argentine ant and the fire ant are often among the worst invaders; therefore they have recently attracted great attention from scientists both in the basic and applied basis. So far most researchers studying ant invasion take the approach assuming that a community at equilibrium in which competition and niche are the major ecological factors forming the community structure. However, nobody has seriously considered the fact that invasive ants (and possibly invasive exotic species in general) are usually disturbed habitat specialists. In order to understand the causal relationship between human-caused disturbance of environments and invasion of exotic species I am currently conducting extensive empirical and theoretical studies (see references).

Nakamaru M, Beppu Y and Tsuji K (2007) Does disturbance favor dispersal? An analysis of ant migration using the colony-based lattice model. *Journal of Theoretical Biology* 248: 288–300.

Matsuura K, Vargo EL, Kawatsu K, Labadie PE, Nakano H, Yashiro T, Tsuji K (2009) Queen succession through asexual reproduction in termites. *Science* 323(5922) : 1687-1687.

### **Biography**

My major scientific interest has been the evolution of social behavior in insects such as ants and termites. Recently I have been extending my focus to conservation biology and community ecology. After receiving a PhD at Nagoya University in 1989 under the supervision of Yoshiaki Ito, I did postdoctoral research at the University of Würzburg, Germany, where I was supervised by Bert Hölldobler. I was hired for a tenured position at

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Toyama University in 1995, and in 2001 I moved to the University of the Ryukyus, Okinawa, Japan. Currently, I am the director of the university museum and a Professor of the Faculty of Agriculture, University of the Ryukyus, where I teach ecology, evolutionary biology, and entomology. I was chief editor of the *Journal of Ethology* from 2002 to 2004 and will be an editorial board member of *biology letter* from 2010.



### **Professor Daisuke Uemura**

Department of Biosciences and Informatics  
Faculty of Science and Technology  
Keio University, Japan

Email: [uemura@bio.keio.ac.jp](mailto:uemura@bio.keio.ac.jp)

### **Bio-organic studies on marine natural products: Diverse chemical structures and bioactivities**

The diversity of novel natural substances provides a new paradigm which can lead not only to a better understanding of ecological phenomena, but also to valuable information in the search for physiologically and biologically intriguing compounds. We have focused on the identification of natural key compounds that control biologically and physiologically intriguing phenomena in the marine organisms. Recently, we successfully isolated a novel macrolide, luminaolide, which induces settlement and metamorphosis in hermatypic coral larvae. Furthermore, we isolated a super-carbon-chain compound (SCC), symbiodinolide, from the dinoflagellate *Symbiodinium* sp. and found that it may serve as a defence substance for symbiotic dinoflagellates to prevent digestion of their host animals. Recently, we isolated a novel spiroketal compound, symbiospirol A, from *Symbiodinium* sp., which inhibited PKC activation induced by phosphatidylserine. These compounds will contribute to the understanding of the marine ecological systems and may become useful tools for physiological studies. In this presentation, I introduce recent findings in our major work.

### **Biography**

Daisuke Uemura was born in Gifu in 1945, and received his PhD in 1975 from Nagoya University under the direction of Professor Yoshimasa Hirata. He was an Assistant Professor at Nagoya University (1973–1979), Associate Professor at Shizuoka University (1979–1991), Professor of Chemistry at Shizuoka University (1991–1997) and Professor of Chemistry at Nagoya University (1997–2008). Since 2008, he has been a Professor of Biosciences and Informatics, Keio University. He is a Professor Emeritus of Nagoya University. His research interest is the diverse chemical structures and bioactivities of marine natural products. He received The Chemical Society of Japan Award for Young

## Participants

Chemist in 1977, The Chemical Society of Japan Award in 2006, The Chunichi Cultural Prize in 2007 and The Naito Foundation Research Prize in 2009.



### **Professor Ian Woodrow**

Deputy Head  
School of Botany  
University of Melbourne, Australia

Email: [iewood@unimelb.edu.au](mailto:iewood@unimelb.edu.au)

### **Australian mallee eucalypts: Biofactories for useful natural products**

One of the remarkable aspects of many mallee eucalypts is the large size and density of their foliar essential oil glands. We have identified and cloned rare individuals with over 50% of their leaf sub-dermal volume allocated to oil glands. We are using these exceptional plants in clonal forestry projects, which aim to enhance plantation yields of pharmaceutical grade eucalyptus oil, and as tools for basic research. Interestingly, functional isolation of the oil glands has revealed that rather than simply producing a mixture of mono- and sesquiterpenes (essential oil), the glands make a range of structurally diverse non-volatile compounds, which are also sequestered in the metabolically inert glandular lumen. Given the diversity of compounds that are transferred into the gland lumen, the size of the glands and various agronomic properties of mallees, these eucalypts may prove to be an excellent biofactory system for useful natural products.

### **Biography**

Professor Ian Woodrow gained his science degree from the University of Melbourne and PhD in plant biochemistry from the University of Sheffield (UK). He held post-doctoral positions at the University of Münster (Germany), the Technical University of Berlin (Germany), the Australian National University and the Carnegie Institution of Washington at Stanford University (USA) before taking up a lectureship at the James Cook University in Queensland (Australia). He stayed in Queensland for five years before moving to the University of Melbourne where he is currently the Deputy Head of the School of Botany and leader of the Plant Physiology Research Group. The group's main interest is in the physiology of trees, particularly in secondary metabolism. The group has strong links with both pharmaceutical and mining companies.

## Participants



### **Professor Masatsugu Yokota**

Laboratory of Ecology and Systematics

Faculty of Science

University of the Ryukyus, Japan

Email: yokota@sci.u-ryukyu.ac.jp

### **Disjunctive distribution of some subtropical plants in Australia and the Ryukyus**

The Ryukyu Archipelago, Japan, is an arc of continental islands that lies between Kyushu Island of Japan and Taiwan, and during the Neogene there was more than one period when the islands were connected to surrounding land masses: Kyushu to the north, and south-eastern China via Taiwan to the south. The Ryukyus are characterised by their rich flora of subtropical rainforests, which is most closely related to those of Taiwan and southern Kyushu. However, some species are lacking in Taiwan and Kyushu, and disjunctly distributed in Australia. This disjunction was already pointed out by Hatusima (1971) with examples of *Solenogyne mikadoi* and its Australian congener (Asteraceae), *Oxalis exilis* (Oxalidaceae), *Cassytha glabella* and *C. pubescens* (Lauraceae), *Eriachne armitti* (Poaceae), and others. We have just started to conduct morphological and molecular phylogenetic studies to answer questions on whether this disjunctive distribution can be explained sufficiently by long-distance dispersal or by the extinction of wide-spread species in intermediate regions, or whether it is better to consider polyphyletic evolution in Australia and the Ryukyus.

### **Biography**

I was born in Otsu City, Shiga Prefecture in 1955 and learned and studied plant cytogenetics at Hiroshima University. In 1983 I became an assistant Professor at the University of the Ryukyus, Okinawa Prefecture, and in 1988 acquired a degree of doctor of science by karyomorphological study on *Habenaria* (Orchidaceae) and allied genera of Japan and neighboring areas. Now a Professor of botany, I give lectures on plant morphology, cytogenetics and the evolution of vascular plants. The Ryukyu Archipelago contains over a hundred islands belonging to both Kagoshima and Okinawa Prefectures, and their floras are

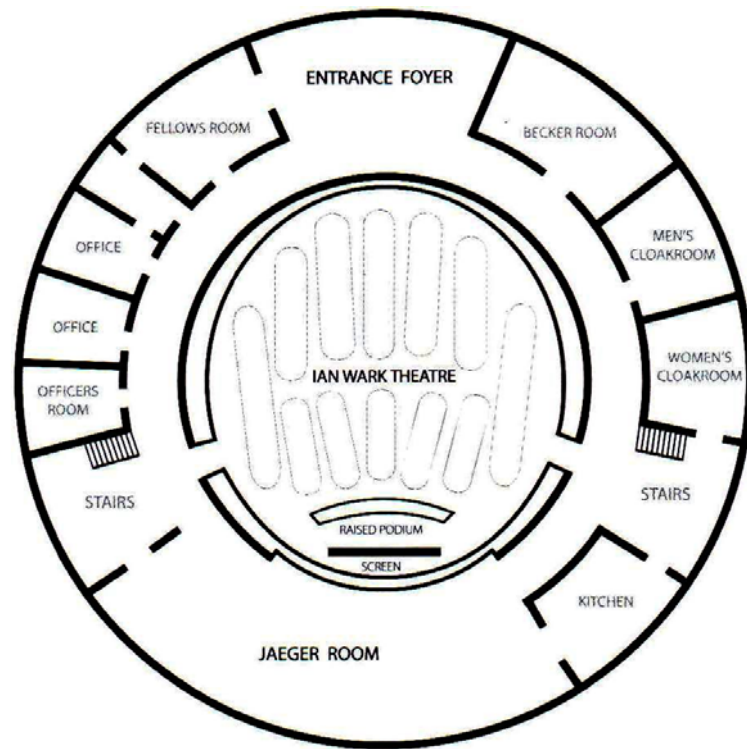
## Participants

characterised by diversity and high endemism. Currently I am devoted to clarifying the origin and evolution of vascular plants in the Ryukyus and also the conservation of threatened floras and ecosystems of the Ryukyus.

## Participants

# Floor plan

## Shine Dome



## Ian Potter House

