THE UNIVERSITY OF MELBOURNE

THE BOTANY FOUNDATION
ANNUAL REPORT 2016

CONTENTS

THE BOTANY *FOUNDATION*

The University of Melbourne Botany Foundation supporting the discipline of Botany – the study of plants and plant processes

The Foundation supports excellence in education and research in the School of BioSciences through student awards and scholarships, support for research programs, and a partnership with the Royal Botanic Gardens Victoria. Plant science contributes to Australia's National science and research priorities and capacity building in the areas of biosecurity, agriculture and food production, the environment, conservation and health.

REPORT FROM THE FOUNDATION *BOARD CHAIRMAN*

The Botany Foundation Board continued its support in 2016 of plant science research, students and community engagement in the School of BioSciences. The Board met regularly this past year to manage the distribution of earnings of our various endowed subtrusts, and is very grateful for the continued support of our donors and alumni.

I am pleased to report that this year the Foundation supported 16 students through our awards, prizes and scholarships. The projects of three of these students, in the fields of weed ecology, plant biodiversity and plant cell growth, are reported on pages 7 to 9, highlighting the quality and significant contribution of the School's postgraduate research.

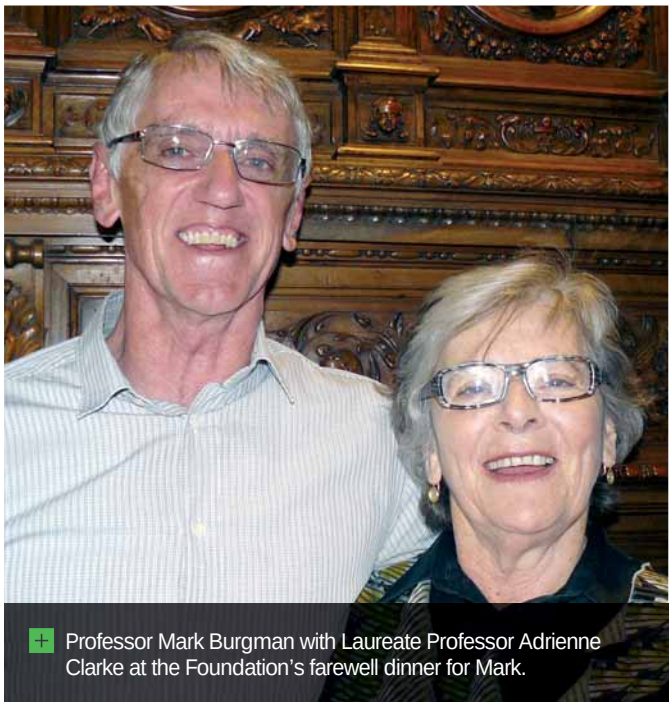
Professor Mark Burgman FAA, who holds the Adrienne Clarke Chair of Botany, has announced that he is leaving the School of BioSciences to take up the prestigious position of Director of the Environmental Science Centre at Imperial College London in 2017. Although we are sorry to lose him, the Foundation is pleased to have supported Mark with the Clarke Chair, which was established through the fund-raising activities of the Foundation. We are working with the School and the Dean of the Science Faculty to make a new appointment in an important area of botanical research.

Celebrating the University's System Garden and Herbarium

We were pleased to participate in the University's celebration of the 160th Anniversary of the System Garden. The System Garden was established by Fredrick McCoy, Professor of Natural Science (1854-99), and designed for the University to show the systematic order of plants in nature. The Anniversary event included lectures on botany and architectural history as well as tours of the University of Melbourne Herbarium. The Herbarium holds significant reference collections of plants that are integral to plant biodiversity and taxonomic research today. The Botany Foundation aims to support the Herbarium through a new subtrust and welcomes your donation towards this initiative (see p.14).

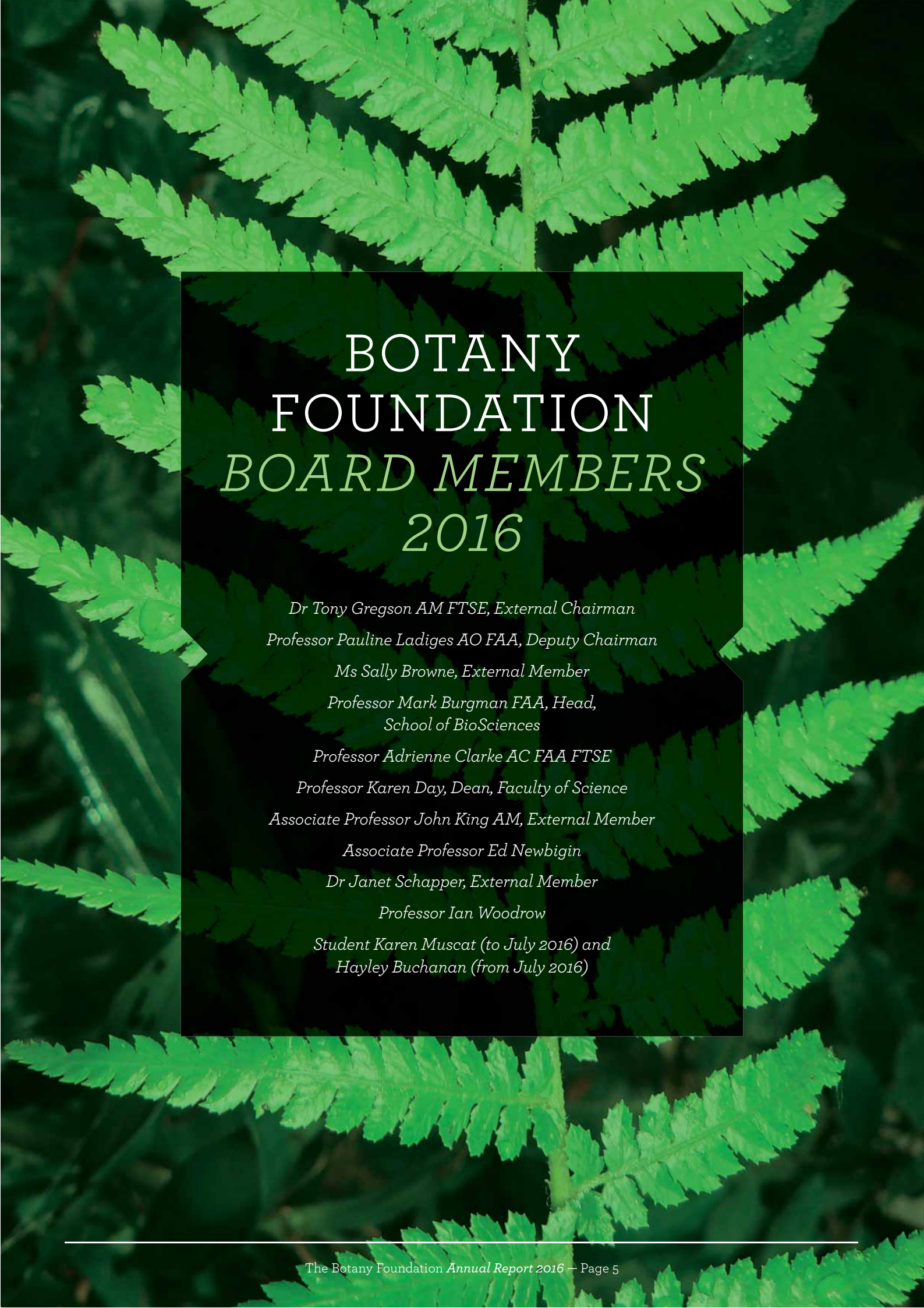
A new fellowship for women

The Botany Foundation recently received a gift to establish during 2017 the "Women In Science of the Environment (WISE) Fellowship" within the University of Melbourne Botany Foundation. The gift is for the purpose of supporting in perpetuity an award to one or more female early career researcher(s) in ecology or environmental science in the School of BioSciences. The Foundation will support this initiative through further fund-raising.



Professor Mark Burgman with Laureate Professor Adrienne Clarke at the Foundation's farewell dinner for Mark.

Dr Tony Gregson AM FTSE
Chairman, Botany Foundation



BOTANY FOUNDATION *BOARD MEMBERS 2016*

Dr Tony Gregson AM FTSE, External Chairman

Professor Pauline Ladiges AO FAA, Deputy Chairman

Ms Sally Browne, External Member

Professor Mark Burgman FAA, Head, School of BioSciences

Professor Adrienne Clarke AC FAA FTSE

Professor Karen Day, Dean, Faculty of Science

Associate Professor John King AM, External Member

Associate Professor Ed Newbigin

Dr Janet Schapper, External Member

Professor Ian Woodrow

Student Karen Muscat (to July 2016) and Hayley Buchanan (from July 2016)

SCHOLARSHIPS AND *PRIZES IN BOTANY*

The Foundation's endowed scholarships allow students to achieve their potential for the future of Australia. Prizes recognise their excellence and achievements. Each award is governed by the Foundation's University Trust Regulation, and eligibility criteria relate to the wishes of the original donors.

Student research is contributing to: our understanding of how plants function, finding better ways to control fungal diseases of crops, insect pests of plants, controlling weeds, bioavailability of iron in food plants, how to use fire in managing ecosystems, understanding drug targets for malaria, and discovering new terrestrial and marine species.

Students recognised in 2016

Forty students applied for awards this year and the successful recipients included: 11 PhD students, one Masters student and four undergraduate students. The awardees were:

Kia Matley (left) attended the Australasian Quaternary Meeting in New Zealand, presenting on palynology and past vegetation of the Nullarbor Plain.

Botany Prize in 2015
Stephen Tobin,
Top 3rd year botany major

Bruce Knox Honours Prize
Hayley Buchanan,
Top honours student in 2015

David H Ashton Scholarship
Hugh Davies, Fire ecology on the Tiwi Islands (PhD) and Estibaliz Palma, Functional traits of invasive species (PhD)

David Ashton Travel Award
Caitlin Selleck, Insect pests of Victorian blue mallee (MSc)

Sophie Ducker Postgraduate Scholarship
Vanessa Marcelino, Biodiversity and evolution of limestone-boring algae (PhD)

Megan Klemm Postgraduate Research Award
Ronan Broad, Bioavailability of Fe in staple crops (PhD) and Andrew Urquhart, Pathogenicity genes in *Leptosphaeria maculans* (PhD)

Ethel McLennan Award
Tahir Uddin, Drug targets for malaria (PhD)

Kingsley Rowan Marine Botany Prize
Floranne Everson
(3rd year student)

G.A.M. Scott Research Award
Brooke Sullivan, The ecology of Australian seagrasses (PhD) and Emily Baldwin, Buloke in Wyperfeld National Park (PhD)

John S. Turner Postgraduate Scholarship
Amelie Mendrinna, Root hair growth in *Arabidopsis thaliana* (PhD)

Gretna Weste Plant Pathology and Mycology Scholarship
Megan Rixon, Interrelations between plants, insects and fungi (PhD)

Travel support (conference)
Kia Matley (Graduate Diploma, Advanced)

Protist Systematic Research Fund (publication support)
Vanessa Rossetto (PhD)

STUDENT RESEARCH *PROJECTS*

BIODIVERSITY OF AUSTRALIA'S GRASS TREES, *XANTHORRHOEA*

— Todd McLay, *PhD student*

My research was on the Australian grass trees, *Xanthorrhoea*, an iconic component of the native flora. My major research aim was to resolve the phylogeny of *Xanthorrhoea* to help interpret species boundaries in this taxonomically challenging genus.

I used several high-throughput sequencing techniques to generate datasets from the chloroplast and nuclear genomes; these data were analysed using phylogenetic and population genetic methods. The evolutionary history of *Xanthorrhoea* is complex and is reflected in the difficulty in phylogenetic reconstruction and species delimitation.

Todd McLay came to the University of Melbourne after completing a Masters degree at Massey University, New Zealand. The Botany Foundation provided financial support towards living expenses while he was finalising the submission of his PhD thesis, 2016.

PhD student Todd McLay in the field sampling *Xanthorrhoea*

EXPLORING HOW *PLANT CELLS GROW*

— Amelie Mendrinna, *PhD student*

My PhD research aims to elucidate how plant root hairs maintain their cell wall integrity during polar (unidirectional) cell growth, and how a particular receptor protein contributes to this delicate process.

Plant root hairs are tubular shaped cells emerging from the outermost cell layer of the root. They extend the root surface immensely and thereby optimise the plant's capacity to absorb water and nutrients. Root hairs, furthermore, serve as a docking station for nitrogen fixing bacteria and help to anchor the plant in the soil. These features make root hairs very important for plant-soil interactions and research in this area holds future implications for agriculture in changing soil environments in the course of climate change.

My research is focused on root hair growth and factors that help to maintain the integrity of the dynamic cell wall that surrounds the hairs, and that change during growth. In particular, I am fascinated with how various extra- and intra-cellular components, including calcium ions, reactive oxygen species, pH, the cytoskeleton and vesicular trafficking, are coordinated to sustain polar growth.

More precisely, I have discovered that a particular receptor protein orchestrates these factors under pH stress. Plants that lack the receptor protein cannot maintain root hair polarity, which results in uncontrolled expansion of the root hair tip when they are grown in low pH environments. My hypothesis is that the receptor protein senses the stress and informs various components inside the root hair to assure that it responds properly to the stress.

I have used a range of molecular, genetics and cell biology-based techniques to reach these conclusions. I was awarded the John S. Turner Postgraduate Scholarship in 2016, which provided me with the opportunity to buy a high performance laptop to use in particular for microscopy image-processing.

Amelie Mendrinna

RESEARCH ON PLANT FUNCTIONAL TRAITS INFORMS AUSTRALIA'S *FIGHT AGAINST WEEDS*

— Estibaliz Palma, *PhD student*

Approximately 28,500 exotic plants have been introduced to Australia since European settlement. Around 300 have been classified as "weeds" or "invasive plants" due to their potential to cause agricultural loss and adverse effects on native biodiversity. Management of these plants costs the economy over $4 billion per year.

Australia's biosecurity scheme aims to reduce the entry of potentially harmful biota into the country to minimize their undesired impacts. The system relies on the identification of plant traits that increase the risk that a species becomes invasive. Despite research effort to identify characteristics that promote a plant's invasion ability, few clear patterns have emerged. There are two reasons for this. First, what is meant by invasive ability is not always clear or consistent among studies. Invasion ability has often been defined as a combination of a plant's capability to reproduce, spread and establish in new locations. Combining multiple traits into a single definition has led to lists of invasive species based on different criteria (e.g. focused on spread only or reproduction only). Second, the importance of specific traits in particular environments or particular demographic processes has largely not been considered, even though we know successful plants come in all shapes and forms and rely on different survival mechanisms.

Recently, my supervisors, Associate Professor Jane Catford and Professor Peter Vesk, along with other colleagues, demonstrated that lists of invasive plants often conflate species that rely on a variety of mechanisms to become successful. Building on that research, a component of my PhD thesis investigates the links between plant traits and four objectives, demography-based invasion metrics: local abundance (i.e. invasive plant dominance over native vegetation), spread rate (i.e. quick versus slow spreaders), geographic range size (i.e. widely versus locally distributed plants), and environmental range size (i.e. diversity of invaded environments). My project is based on a case study of more than 60 exotic plant species established in Victoria, Australia. I posit that traits promoting invasion vary depending on how we define and quantify invasion ability. For example, I expect plant height to: promote spread rate and geographic range size through longer dispersal distances, promote local abundance through preferential capture of light, but restrict environmental range size. If found to be true, such findings would support the idea that a universal group of traits that promote invasion ability do not exist, rather particular traits have a role in some invasion mechanisms but do not affect others.

I am grateful for the funding provided by the Botany Foundation, through The David H. Ashton Scholarship, to undertake this project. The financial support has contributed towards extending my field work over another season, and has allowed me to participate in a workshop at the BioProtection Research Centre (Lincoln University, New Zealand), where I had the opportunity to discuss issues related to uncertainty surrounding classification of invasive species and to present my research findings at the Ecological Society of Australia Annual Conference.

Estibaliz Palma recording field observation at Fernbamk VIC

CLASSIFICATION AND EVOLUTION *OF THE CITRUS FAMILY (RUTACEAE) IN AUSTRALIA*

— Dr Michael Bayly

The plant family Rutaceae has a near cosmopolitan distribution with major centres of diversity in the tropics, in southern Africa and in Australia. About 43 genera and more than 486 species occur in Australia, making Rutaceae one of the ten largest plant families in the country.

Rutaceae *Correa glabra*

Rutaceae *Zieria* unnamed species

Many aspects of the classification in the family, which is historically based on morphological features, remain uncertain. In particular, the limits of some genera are unclear and species level classification has proved difficult in some groups.

My research lab, including postgraduate and honours students, and my collaborators are using genetic data to better understand evolutionary relationships of the family in Australia to resolve taxonomic uncertainty, underpin conservation prioritisation, and reveal biogeographic patterns. Since 2013 this has involved work to identify the major clades in Australasia, resolve relationships in the genus *Zieria*, revise the generic limits of *Boronia*, understand introgression between species of *Correa*, and assessment of variation in the rainforest genus *Halfordia*; the last study suggested the presence of three species in the genus, rather than just the one that is currently recognised in *Flora of Australia*. Further work, in collaboration with Royal Botanic Gardens Victoria, Royal Botanic Gardens Sydney and the Queensland Herbarium on *Zieria* and on relationships of *Philotheca* and *Phebalium*, is also well advanced.

To date, these studies have used conventional DNA sequencing approaches. Although these have improved understanding of classification and evolution of the family, there are limits to what can be achieved using these methods. This year, with seed funding from the Botany Foundation, we have begun to apply newer methods of high throughput DNA sequencing to studies of Rutaceae. These methods provide much better samples of plant genomes and will allow us to answer previously intractable questions. We have started by using sequences of whole chloroplast genomes to test the limits of Australian genera, especially among the groups of closely related sclerophyll plants traditionally classified in the tribe Boronieae. Once genera have been clearly delineated we hope to also apply these DNA sequencing methods to questions of species taxonomy in “challenging” groups.

DISCOVERING THE MARINE ALGAL 'TREE OF LIFE' – *COMPARING GENOMES OF GREEN AND RED SEAWEEDS*

— Dr Heroen Verbruggen

The Algal Biology Research Laboratory in the School of BioSciences has received financial support through the Botany Foundation from a series of donations. The funding is supporting research on the evolutionary biology and systematics of marine algae.

A diverse patch of marine algae from Gabo Island.

Despite the enormous importance of algae in global carbon cycles and coastal habitats, many aspects of their evolutionary history are not well understood. Due to their ancient age and long and diverse evolutionary history, algae serve as a testbed for a range of evolutionary questions. Red and green algae are particularly useful in this regard, with a history of more than 1.2 billion years, a significant fossil record, and a wide range of functional traits and life cycle characteristics. These features allow hypotheses to be tested about the timing and nature of plant evolution before the colonisation of land by embryophytes (land plants) 400 million years ago. A major obstacle that is currently preventing us to tackle these questions is that the evolutionary relationships among the red and green algae have been difficult to resolve. Funding through the Botany Foundation is enabling us to sequence and compare chloroplast genomes of diverse green and red algae to infer the algal 'tree of life'.

Together with the Royal Botanic Gardens Victoria, the Botany Foundation has also committed co-funding for a grant application from the Australian Biological Resources Study (Department of the Environment and Energy). If the application is successful, this project will revise the Australian species of structurally simple siphonous green algae (order Bryopsidales in the phylum Chlorophyta) using modern molecular tools combined with morphological observations. A central aspect of the project is to incorporate important historical collections archived in herbaria into the taxonomic framework using the latest high-throughput sequencing techniques.

THE MELBOURNE POLLEN COUNT *AND THUNDERSTORM ASTHMA*

— Ed Newbigin, *Associate Professor*

The thunderstorm asthma event in Melbourne on 21st November 2016 raised the question what made the last hay fever season so bad and why did this tragic event occur?

In simple terms thunderstorm asthma is a sudden surge in cases of acute respiratory illness coinciding with local thunderstorms. Thunderstorm asthma events can range in scale from small, affecting handfuls of people, to large-scale epidemics like the recent one that hit Melbourne, affecting a whole city and placing severe stress on health services.

Thunderstorm asthma results from a complex interaction of meteorological and biological factors. On 21st November, the meteorological factor was a squall line with embedded storms that hit Melbourne and Geelong late in the afternoon and the biological factor was most likely rye grass pollen because grass pollen levels in Melbourne air that day were extreme.

We don't yet know the clinical circumstances and allergic sensitivities of those people who were affected, but it is likely most were allergic to rye grass pollen, although in these kinds of events about a third of affected people will have had no previous experience of asthma.

Even though this event was Melbourne's worst experience of thunderstorm asthma, it is a long way from being our first experience of the phenomenon. For instance on 24-25th November 2010 Melbourne's ambulance service was also overwhelmed by a massive number of calls from people with acute respiratory problems due to thunderstorm asthma. Looking back at the scientific literature, it's clear that Melbourne has experienced many thunderstorm asthma episodes in the past. The earliest reported episode was on 11th November 1984 with other events on 9th November 1987, 30th November 1989 and 20th November 2003.

Given this history it would be imprudent to dismiss the latest catastrophic episode of thunderstorm asthma as a "freak event" that is unlikely to reoccur. In fact it is better to consider thunderstorm asthma in Melbourne as a recurrent seasonal phenomenon.

Forecasting pollen levels

Since 1990 the Melbourne Pollen Count, supported by the Botany Foundation, has been involved in monitoring pollen levels in Melbourne's air. Forecasting the levels and types of pollen is one way to better understand, predict and mitigate thunderstorm asthma.

In 2016 Melbourne Pollen Count became part of AusPollen, a team of researchers and stakeholders involved in providing care and education to those affected by pollen allergies. Over the next three years AusPollen will measure and provide information on grass pollen levels in Melbourne, Canberra, Sydney and Brisbane. The information will be provided directly to the public via apps tailored to their city. Funding for AusPollen comes from the National Health and Medical Research Council (NHMRC). This information will then be used to develop a system to forecast the load and distribution of grass pollen.

Partnership between researchers, allergy and respiratory doctors, Asthma Australia and government will help public health authorities put in place warning systems for those at risk.

Lolium perenne, rye grass. Photo: Ian Clarke, from the State Botanical Collection, Royal Botanic Gardens Victoria. See the new online flora for Victoria at https://vicflora.rbg.gov.au

THE 160TH ANNIVERSARY OF *THE SYSTEM GARDEN*

The System Garden in the 1870's

The Botany Foundation supported the University's celebration of the 160th Anniversary of the System Garden, hosting a series of public lectures linking botany, landscape architecture and history, and providing morning teas for people to interact.

One of the four foundation professors of the University, Fredrick McCoy, Professor of Natural Science (1854-99), established a botanical garden in the University to display labelled plants in a systematic (taxonomic) order, around an octagonal conservatory in the north-western corner of the University Grounds. But only later was the garden referred to as the System Garden. Over the last century the University Herbarium was also established for the teaching and research of plant systematics and taxonomy. The current Director of the Herbarium Associate Professor Andrew Drinnan presented one of the public lectures on the nature of plant classification, the Garden's intent and design, and the link to the herbarium, while curator Dr Jo Birch led tours of the herbarium.

The System Garden in 2016

Curator Dr Jo Birch hosting a tour of the University Herbarium

HERBARIUM FUND – A SIGNIFICANT BOTANICAL RESEARCH AND *CULTURAL COLLECTION*

Built up over nearly a century, the University of Melbourne Herbarium houses 150,000 specimens of plants, fungi and algae, including historically important collections and artwork.

Herbarium specimen in the MELU collection: a red alga *Rhodophyllis membranacea* data-based on 28 May 2014, originally collected and identified as *R. gunnii* on 4th November 2011.

Named MELU, it is part of Australia's network of herbaria, is represented on the Council of Heads of Herbaria and is registered with the Convention on International Trade in Endangered Species (CITES) and Australian Quarantine.

This year, the Botany Foundation established a new subtrust, "The University of Melbourne Herbarium Fund", to build the capacity of the Herbarium in the School of BioSciences. The Fund was able to be established through a bequest from Mr Michael Mavrogordato for research into the classification of plants and matching funds from the Foundation's unrestricted account.

The goal is to raise the value of the fund to $1 million through donations to the Botany Foundation.

Annual income from the trust fund will be directed initially at:

- Digitising significant collections for greater accessibility
- Greater output of taxonomic research by staff and training of students
- Coordination and expansion of the volunteer program.

WHY THE HERBARIUM IS *VALUABLE*

The University of Melbourne Herbarium:

- Provides factual records of plant distributions over time, informing the impacts of climate change and habitat loss that may have led to increased rarity or extinctions
- Supports taxonomic research, increasing knowledge of Australian biodiversity and plant classification for conservation biology and biosecurity
- Is a source of plant DNA, extractable from historical and modern collections for genetic analyses
- Engages with international researchers, facilitating scientific exchanges through specimen loans and images
- Provides specialist teaching to students, undergraduate courses, graduate research and training in curatorial skills
- Contributes to the cultural and engagement program of the University, through a volunteer program, tours, exhibitions and alumni events
- Complements the National Herbarium of Victoria, through collaborative research and student training.

THE V SARAFIS *BEQUEST*

Vassilios Sarafis bequeathed his residuary estate to the University for the V Sarafis Research Fund, for work on bryophytes, ferns, gymnosperms, algae or fossil plants, with awards to commemorate the names of George Scott and Ilma Stone (in bryology) and Isabel Cookson (in fossil botany), who were associated with the former School of Botany.

The final receipt of funds was received during 2016 and income earned will be applied to research in future years.

Professor Sarafis, who died on 13 June 2012, was a biologist, microscopist and physicist. He had a varied and extensive academic career, which commenced in 1963 and included lectureships and professorships at various academic institutions both in Australia and overseas. Having opted for early retirement in 1997 to pursue his research interests, he held a number of senior honorary appointments including the University of Melbourne.

DONATIONS
2016

Adrienne Clarke Chair of Botany

Adrienne Clarke AC

David H Ashton Scholarship

Leon Costermans

Brian Snape AM

David Ashton Travel Award

Valarie Tarrant OAM

Ethel McLennan Award

Valarie Tarrant OAM

Gretna Weste Plant Pathology and Mycology Scholarship

Valarie Tarrant OAM

Kingsley Rowan Marine Botany Prize

Robert Everson and Floranne Everson

Jenneth Sasse

John S. Turner Postgraduate Scholarship

Anon. x 2

Carrick Chambers AM and Margaret Chambers

Richard Groves and Margaret Groves

Ernest Perkins OAM and Lesley Perkins

Valarie Tarrant OAM

Megan Klemm Research Award

Neil Hallam

Pauline Ladiges Plant Systematics Research Fellowship

Consultancy income

Leon Costermans

Tony Gregson AM

Pauline Ladiges AO

Susan Morgan

Philip Moors AO

Gareth Nelson

Max Richards AM and Margaret Richards

Jenneth Sasse

Jennifer Steinicke

Valarie Tarrant OAM

Plant Systematics Research Fund

Royalty income, Pearson Australia

Fee for service income, Murdoch University

Josephine Kenrick

Mary Playford

Protist Systematics Research Fund

Anon.

Roberta Cowan

Sophie Ducker Postgraduate Scholarship

Juliet Flesch

Ann Rusden

Richard Tudor OAM and Elizabeth Tudor

*Unrestricted**

Anon. x 9

John Anderson

Mark Burgman and Andrew Robinson CEBRA consultancy funds

Biljana Cvetic

H. Trevor Clifford and Gillian Clifford

FlashAir

Attila Edvi-Illes and Donna Edvi-Illes

Mark Gehrmann

James Grant AM

John Harrison

Margaret Hine

Helen Kershaw

James Litchfield

Ian Macfarlane

Mary Maslen

Anthony Nicholls PSM

Jay Pachyalyappan

Harmeet Rajput

Jef Tan

Anthony Von Moger

Sing Wong

**Includes research for Pollen count and donations for the WISE fellowship*

V Sarafis Research Fund

Estate of Vassilios Sarafis

Robert Everson and Floranne Everson

Donald Gaff and Janet Gaff

The University of Melbourne Herbarium Fund

Consultancy income

Contribution from Unrestricted Fund

Estate of Michael Mavrogordata

Andrew Drinnan

John King AM and Heather King

Pauline Ladiges AO

Michael Kotteck and Caryll Waugh

FOUNDATION FINANCIAL *SUMMARY 2016*

	Balance at 01.01.2016	Income[1]	Awards & Expenses[2]	Revaluation[3]	Balance at 31.12.2016
Adrienne Clarke Chair of Botany Trust	3,181,430	128,114	-68,176	84,363	3,325,731
Botany Foundation Trust					
Unrestricted Funds[4]	1,272,877	-31,371	-33,576	28,205	1,236,136
David Ashton Travel Award	41,724	1,677	-1,441	1,130	43,091
David Ashton Scholarship	114,473	5,638	-4,103	2,755	118,763
Sophie Ducker Postgraduate Scholarship	65,717	4,923	-2,259	1,562	69,943
Megan Klemm Research Award	100,197	3,717	-3,3288	2,303	102,929
Bruce Knox Prize	38,599	1,376	-1,034	912	39,851
Pauline Ladiges Plant Systematics Research Fellowship	1,118,162	52,903	-45,451	27,704	1,153,317
Ethel McLennan Award	55,013	1,926	-1,848	1,238	56,330
Plant Systematics Research Fund	240,102	12,587	-217	5,695	258,166
Protist Systematic Research Fund	40,705	8,474	-1,037	940	49,082
Kingsley Rowan Marine Botany Prize	22,040	1,247	-770	532	23,049
G.A.M. Scott Research Fund	123,753	4,428	-4,111	2,939	127,009
John S. Turner Postgraduate Scholarship	75,522	4,480	-2,769	1,854	79,086
Gretna Weste Plant Pathology & Mycology Scholarship	35,163	1,306	-1,032	865	36,302
The Fern Research Fund	24,326	906	-23	610	25,820
V Sarafis Research Fund	10,556	41,391	-24	1,322	53,246
The University of Melbourne Herbarium Fund		450,185	-357	26,070	475,898
Botany Foundation Trust - Total	3,378,929	565,793	-103,340	106,636	3,948,019
Total of the Two Trusts	6,560,359	693,907	-171,516	191,000	7,273,750

NOTES

1. Income includes donations and earnings on investments; for Unrestricted Funds, includes transfer of untied funds to the Herbarium Fund
2. Expenses include administration charges
3. Revaluation amounts represent the change in unit price of the capital units during 2016 of respective Trusts
4. Unrestricted Funds support research initiatives, events and student awards

Visit the Botany Foundation web site for information and how to donate:

science.unimelb.edu.au/engage/giving-to-science/botany-foundation

FOR FURTHER ENQUIRIES

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THE UNIVERSITY OF MELBOURNE