



The Royal Society of Victoria

Promoting Science.

PATRON: The Hon Linda Dessau AM
Governor of Victoria

PRESIDENT: Dr William Birch AM

Headlines...

10th December: RSV Medal Lecture: "Using Climate Science to Inform Decision Making" & **President's Soirée (booked out)**

14th December: 2015 Growing Tall Poppies Symposium: STEM Skills & Careers

2016 Advance Notice:

11th February: Imaging the Living Brain in Health and Disease: MRI and PET Scanning

25th February: Victoria's Threatened Species – Fighting Extinction

18th March: Symposium, "Conserving Eucalypts: the Why and the How"

December 2015 Newsletter

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Forthcoming Events



A free, half-day symposium will be held on the morning of Monday, 14th December, 2015

The Royal Society of Victoria is delighted to partner with the [Growing Tall Poppies Science Partnership Program](#) to convene their 2015 Symposium. The express aim of the Program is to increase the number of girls who study the physical sciences to address the gender inequity in the uptake of physics and maths, subjects that empower career choice for individuals and transform outcomes for society. This troubling imbalance means we are not harnessing the STEM talent and potential of half our population to innovate for economic and social prosperity.

The symposium will explore different pedagogical approaches to the science curriculum for more effective learning and teaching while providing students and teachers of science an opportunity to network and make contacts with members of the science community. **RSV members who have registered as volunteers to work with local schools and teachers are particularly encouraged to attend.**

Eventbrite

Book online now at <http://ow.ly/Vinll> call or email the RSV office to secure your place: 9663 5259, rsv@sciencevictoria.org.au. **All most welcome.**



A full-day symposium will be held on 18TH March, 2016, in partnership with the Bjarne K Dahl Trust.

The [Bjarne K Dahl Trust](#) and the Royal Society of Victoria present a one day symposium highlighting eucalypt diversity and conservation. Providing scientific insights to the future of Australian forests, woodlands and biota, **Conserving Eucalypts** will engage scientists, forest managers and anyone interested in the response of eucalypt forests and woodlands to environmental threats in the 21st century.

Featuring leading researchers in forest ecology, the biosciences, and environmental and resource management.

Eventbrite

Book online now at <http://ow.ly/TSweO>, call or email the RSV office to secure your place: 9663 5259, rsv@sciencevictoria.org.au. Student rate \$70. Full registration for RSV members is discounted from \$130 to \$120. Payment in full on registration please.

From the President

As we come close to the end of another year, it's an appropriate time to review how the Society has fared. However, that's a task for my extended annual report, not for this, the last issue of the newsletter for 2015. Instead, we can use the events of the previous month, November, as a snapshot or cross section of the various activities members have engaged with through the year.



Bill Birch with CSIRO's Matthew Hill

And what an eventful month it was! It commenced with the thought-provoking lecture by CSIRO's **Associate Professor Matthew Hill** on the latest developments in innovation and commercialisation involving nanoporous materials.



The 2015 Members' Forum getting underway

Then followed our fund-raising involvement at the annual open-house Family Fun Day at **Cruden Farm**, where Society volunteers set up experiments to expose the science at work in everyday objects and materials, along with demonstrations from our CoderDojo participants

and families; and a well-attended and enlightening **members' forum** conducted by Mike Flattley, following on from the members' survey.



RSV Demonstrators & CoderDojo at Cruden Farm



Graham Burrows manning the stalls at Cruden Farm

The month came to a rousing end with the celebration of the 'Very Young Scientists' who had won bursaries sponsored by the Society in the annual **Science Talent Search** run by the Science Teachers Association of Victoria. Students, families and teachers packed the Ellery Theatre and later the Burke and Wills room for a wonderful few hours together.



RSV members Catherine de Burgh-Day and Caitlin Gionfriddo delivered two inspiring presentations to primary and secondary school student recipients of RSV Science Talent Search bursaries.



Dr Bill Birch with two Science Talent Search winners



A Very Young Scientist presenting his work to the Royal Society of Victoria



Hilarious “conman” science performer Nicholas Johnson delighted and horrified our audience, pictured here with (from left) Caitlin Gionfriddo, Catherine de Burgh-Day, Science Programme Chair Sandra Rees and Outreach Programme Chair Helen Gardiner.

November was also busy administratively, as the monthly newsletter, annual membership renewals, copies of the Proceedings and election notices all had to be sent to our members.

On the face of it, December seems quieter, but perhaps the Society's most auspicious event, the annual **Research Medal** presentation, will bring the year to a close. On this occasion, we are delighted to welcome our new Patron, **the Honourable Linda Dessau AM**, Governor of Victoria, to the Society for the first time, to present the Research Medal to **Professor David Karoly**. This will be followed by the **President's Soiree**.

I'm sure most of you will agree with me that this year has gone faster than ever. It has brought us some exciting new developments and some not-insignificant challenges, which will continue into the New Year. In the meantime, I extend to all our members, and of course to our hard-working staff, Mike, Malourie and James, best wishes for a restful and enjoyable festive season.

Dr Bill Birch, President

Research Spotlight

By Priya Mohandoss

Featuring: Dr Eamonn Fahy

2015 YSRP Prize Winner for the Biomedical & Health Sciences



Glaucoma and the Road to Recovery

After completing his Bachelor of Medicine, Surgery and Obstetrics and internship at the University of Ireland, Galway in 2010, Dr Eamonn Fahy came to Australia to pursue his medical training, working for one and a half years in hospitals situated within Perth and Melbourne. Although he planned to study Ophthalmology, Eamonn aspired to do a PhD as well. His interest in researching glaucoma (disease due to increased pressure or poor blood supply to the eye's optic nerve) emerged due to the lack of knowledge about the condition, its detection and treatment.

Presently at the Centre for Eye Research Australia (CERA), affiliated with the University of Melbourne, his research incorporates performing optic nerve stress tests on retinal ganglion cells of mice in healthy, recovered and injured states. Using techniques of patch clamping, that enable ion channels in individual ganglion cells to be investigated, he has been able to determine that injured cells have impaired excitability. He has also shown that the cells can recover their excitability in the later forms of the disease and regain the ability to produce signals within the optic nerve.



Dr Eamonn Fahy, 2015 recipient of the RSV Young Scientist Research Prize for the Biodomedical & Health Sciences. Photo: Priya Mohandoss

These findings suggest that reversal of ganglion cell dysfunction is possible in patients with early glaucoma and in a practical context, provides information to clinical researchers also working at CERA about developing techniques to diagnose glaucoma earlier and monitor disease progression and response to treatment. However overall, the aim is to contribute in saving the sight of those experiencing glaucoma.

After accomplishing his PhD, Eamonn plans to begin his training in Ophthalmology and allocate time towards PhD supervision as well as managing his own laboratory group. After completion of his fellowship, he is interested in working as a clinical researcher at CERA.

Further congratulations are in order for Eamonn, who in November distinguished himself on the global stage by taking out first place in the international Three Minute Thesis competition – a big year for a talented communicator!

Nominations for RSV Membership

Nominations for membership of the Society have been received on behalf of:

Mr **Andrew BARLING**, Corporate Counsel & Executive Director

Miss **Parvaneh SADEGHIPOUR**, Student, Victoria University

Unless Members request a ballot, they will be considered for election by Council and if elected, will be announced at the Ordinary Meeting of the Royal Society of Victoria held on 11th February.

Recently elected members who have not yet signed the Society's membership book are invited to attend the 10th December meeting to be formally welcomed as members.

In Review: 2015 Joint Symposium “Managing Victoria’s Biodiversity under Climate Change” 8th -9th October 2015

This symposium was jointly organised by the Victorian National Parks Association, the Royal Society of Victoria, and the University of Melbourne, generously supported by The Department of Environment Lands Water and Planning, Parks Victoria and Bio21 at the University of Melbourne, who provided the venue. VNPA provided extensive in-kind support to the running of the symposium.



An advisory committee consisting of Phil Ingamells (VNPA), Andrew Bennett (La Trobe University), Ary Hoffman (University of Melbourne), Bill Birch and Lynne Selwood (RSV) have spent the last year producing the programme which was available on the RSV and VNPA websites. Ecologist, Ian Lunt will write the final report and organise the releases into social media. Phil Ingamells, who chaired the committee, orchestrated a tremendous programme with speakers of high quality; facilitators who helped raise the level of

discussion and a diverse and interactive audience who contributed greatly to the discussion, particularly on the issue of management.

The broad basis of the symposium was to establish the current biodiversity status in Victorian flora and fauna and predict the possible impacts of climate change by 2050 and 2100 and then to discuss management proposals to attempt to counter these proposed impacts. Comments from the audience noted that some important parts of biodiversity, which are probably crucial to overall biodiversity, for e.g. soil microbes, are little studied. The expected climate changes over the century are summarised in the CSIRO web site [HTTP://www.climatechangeinaustralia.gov.au](http://www.climatechangeinaustralia.gov.au) which provides a handy climate futures tool to look at predictions of change.



Average projections of change by 2050 were:

- Temperature up 1.2 - 2.5°C by 2050
- Temperatures in summer over 40°C will be 2-4 times more frequent
- Heat waves will be more frequent and longer, winter frosts less frequent
- Melbourne will have a climate similar to Wagga Wagga, NSW
- Soil moisture content will be less
- More extreme weather events and days of extreme fire danger will occur
- Less rainfall in Winter and Spring; Summer and Autumn rainfall is expected to be variable; the rainfall that occurs will tend to occur over a shorter time period
- Less snow pack in Alpine areas
- Sea level expected to rise by about 25 cm by 2050 and 50 cm by 2100.

Will Victoria still be the “Garden State” by the end of 2100?

The effect of these changes is that our natural habitat will be significantly altered, biodiversity will probably decline further in most habitats and human behaviour and expectations will have to change. What is remarkable about these

predictions is that I heard similar, albeit broader, predictions made in a seminar 30 years ago. We all know that predictions that eventuate are good evidence that the science is correct.



It was clear from the symposium that good term records of biodiversity are only available for some habitats and getting a full account of these will be a major task. Management approaches to prevent further decline in biodiversity are expected to be diverse and variable.

The symposium discussions highlighted that climate change and its impact will require major transformation of human behaviour. It will be impossible financially to maintain what we have at the moment for e.g. the right to build in fire prone areas or in areas predicted to be affected by rising sea levels, let alone maintain levels of biodiversity. The Symposium had a diverse audience who participated widely and creatively in suggestion of possible management approaches. The contents and conclusions coming from the symposium will be compiled by Ian Lunt and published on-line and via social media as a series of management recommendations, before a final on-line report appears. You can expect to be notified of these posts on the VNPA and RSV web sites.

**Professor Lynne Selwood,
Immediate Past President, RSV**

RSV Volunteers – Scientists in Schools

Case Study:

Dr Mary Familiari & St Columba's College

By Priya Mohandoss

Since 2010, long-standing RSV member Dr Mary Familiari has contributed her time and scientific expertise to students at St Columba's College, a Catholic secondary girls' school situated in Essendon, as part of CSIRO's Scientists and Mathematicians in Schools (SMis) Program.

While working as an academic in the School of Biosciences at the University of Melbourne, Mary

has liaised with some of the College's teachers to organise various science-based activities such as planning visits for Year 11 Biology students to explore the Parkville campus' Harry Brookes Allen Museum of Anatomy and Pathology and Tiegs Museum, where curator Associate Professor David Young provides an informative talk about zoological specimens dating from the late 19th century to present. Mary planned field trips for these students to explore seaside locations such as Organ Pipes National Park in Victoria's central region.



Two of St Columba's College's silver medallists in the 2013 Titration Chemistry Competition national finals

Over the years, Mary has facilitated post-graduate students from the School of Biosciences to provide presentations and, in particular, inform this group of secondary students about their projects and their motivations for pursuing science and research. This year, a science forum was held for the first time during Science Week, with a group of scientists coming together to discuss environmental issues.

Mary has also presented career sessions on science to cater for the needs of the College's Year 11 Biology students. She responds to queries from their Laboratory Staff, more specifically related to molecular biology practicals.

On the whole, Mary has a wonderful, supportive relationship with the school's teaching and

learning community and a rewarding experience of contributing purposefully to the next generation of STEM-literate citizens.



St Columba's College students display their outstanding results from the 2013 ICAS Science Competition.

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In the year ahead, RSV members interested in volunteering or wishing to network with other volunteers will be invited to a series of outreach forums and workshops to discuss the experience of working with and supporting primary and secondary science teachers in their immediate context. Please inform Mike Flattley in the RSV office (9663 5259) if you haven't yet registered as a science volunteer. For more information about participating in CSIRO's SMis program, please go to their website <http://www.scientistsinschools.edu.au/>.

Donations & Bequests

Donations to the RSV Science Foundation are very welcome and can be made at any time. As we continue to build our Foundation in support of science literacy, activity, engagement and promotion in Victoria, we would be grateful if you could consider a contribution to this future fund as a component of your enduring legacy. This can be made as a **general bequest**, or be purposed towards a **specific activity**. To discuss **making a bequest** to the RSV Science Foundation, please contact Mike Flattley in the office.





Ordinary Meetings & Lecture Schedule, 2016

Ellery Theatre, The Royal Society of Victoria, 8 La Trobe St, Melbourne

All lecture details and bookings are available online from:

<http://www.royalsocietyvictoria.org.au/lecture-program/>

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| 11 th February – | Professor Gary Egan, “Imaging the Living Brain in Health & Disease: MRI & PET Scanning” |
| 25 th February – | Dr Marissa Parrott, “Threatened Species: Fighting Extinction” |
| 10 th March – | Professor Sharon Lewin, “From the Beginning to the End of HIV: the Great Successes & Remaining Challenges” |
| 14 th April – | Professor Leone Spiccia, “Solar Energy Conversion into Fuels & Electricity” |
| 28th April – | Annual General Meeting |
| 12 th May – | Professor Matthew King, “Continental Loss: the Quest to Determine Antarctica’s Contribution to Sea-Level Rise” |
| 26 th May – | Dr James Waghorne, “Science in the State’s Interest: the Victorian Precursors to CSIRO” (Joint RHSV Lecture) |
| 9 th June – | Professor David Vaux, “Researchers Behaving Badly: Misconduct in Science” |
| 23 rd June – | Dr Erin Matchan, “The Age of Volcanoes” (A W Howitt Lecture) |
| 14 th July – | Dr Maria Forsyth, “Energy Storage for a Sustainable Environment” (Joint ATSE Lecture) |
| 28 th July – | Dr Ian Polmear, Prof Jim Warren, “Ripping Yarns: Tales from the Research Trenches” (lunchtime lecture) |
| 11th August – | 2016 Young Scientist Research Prizes (National Science Week) |
| 25 th August – | Dr Linzi Wilson-Wilde, Forensic Science |
| 8 th September – | Professor Jonathan Stone, “Alzheimer’s Disease: Is the Brain Destroyed by the Pulse?” |
| 22 nd September – | Panel & Debate, “Future Melbourne: Population, Health, Resources & Infrastructure |
| 13 th October – | Professor Elisabetta Barberio, “The Hunt for Dark Matter: Stawell’s Underground Physics Lab” |
| 27th October – | Phillip Law Postdoctoral Award for the Physical Sciences & Lecture |
| 10th November – | Science Communication Graduate Prize & Lecture |
| 21st November – | Very Young Scientists (Science Talent Search Bursary Recipients) |
| 8th December – | RSV Research Medal Lecture & President’s Soiree |