



## The Royal Society of Victoria

**Promoting Science.**

**PATRON:** The Hon Linda Dessau AM  
Governor of Victoria

**PRESIDENT:** Dr William Birch AM

### Headlines...

**10<sup>th</sup> March:** From the Beginning to the End of HIV

**14<sup>th</sup> March:** History of the Scientific Revolution: European Tour Briefing

**18<sup>th</sup> March:** 2016 Symposium, "Conserving Eucalypts: the Why and the How"

**19<sup>th</sup> March:** Field Trip to Mt Rothwell Conservation & Research Centre

**19<sup>th</sup> – 20<sup>th</sup> March:** Melbourne Flower Show Volunteers Required

**23<sup>rd</sup> March:** History of the Scientific Revolution: European Tour Briefing

### 2016 Advance Notice:

**14<sup>th</sup> April:** How does Nature do it? Unlocking High-Performance Natural Composites & Inspiring New Materials using Computers

**28<sup>th</sup> April:** Annual General Meeting

# March 2016 Newsletter

*Print Post Approved 100009741*

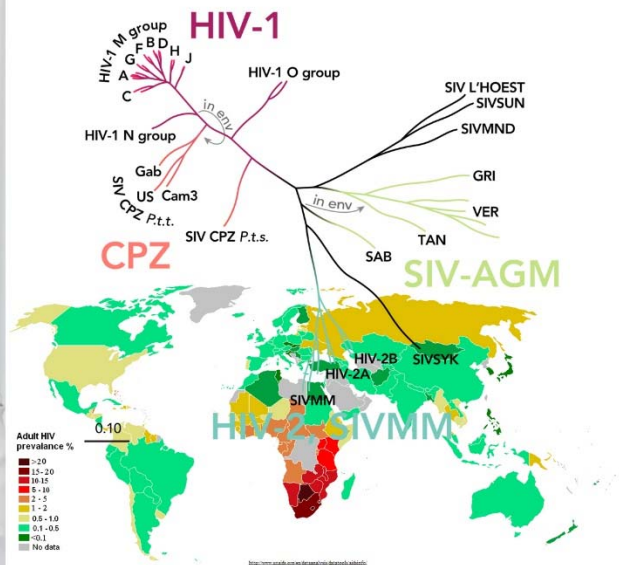


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## March Meetings & Events

### FROM THE BEGINNING TO THE END OF HIV: THE GREAT SUCCESSES & REMAINING CHALLENGES



The first March meeting of the Royal Society of Victoria will be held on **Thursday, 10<sup>th</sup> March 2016 at 7.00pm.**

**Speaker:** **Professor Sharon Lewin**  
**Director, Doherty Institute for Infection & Immunity**  
**Professor of Medicine, The University of Melbourne**

The advances in the treatment and prevention of HIV infection have been spectacular. Antiretroviral therapy (ART) has led to a major reduction in HIV-related mortality and morbidity. Life expectancy is now often normal for people living with HIV. Treatment is relatively simple, has few adverse effects and is currently available to 15 million people in low and middle income countries. In addition, treatment of HIV leads to a marked reduction in HIV transmission. New prevention strategies have also been developed and are highly effective, including pre-exposure prophylaxis and circumcision. Many believe that we now have the tools to see the end of AIDS as well as a major decline in new infections – but the challenge is in implementing and funding what we know works.

Despite these great advances, globally only 30% of people living with HIV are on effective treatment and in 2014 there were 37 million people living with HIV, 2 million new HIV infections and 1 million AIDS-related deaths. Stigma and discrimination also continue in many parts of the world with ongoing marginalisation of affected communities. In addition, treatment is lifelong and there is no cure. Most countries are still struggling to fund pre-exposure prophylaxis. Therefore, the search for an effective vaccine, a cure and ongoing investment in science and innovation remain a top priority to ultimately see the end of HIV.

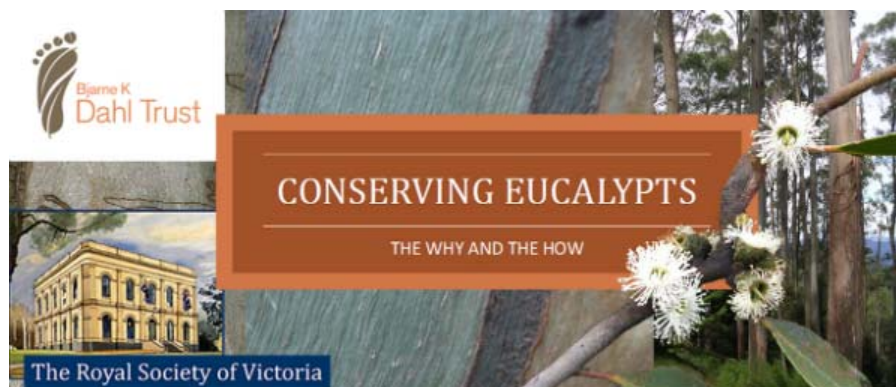
#### **About the Speaker:**

Sharon Lewin is the inaugural director of the Doherty Institute for Infection and Immunity; Professor of Medicine at the University of Melbourne; consultant infectious diseases physician, Alfred Hospital, Melbourne, Australia; and an Australian National Health and Medical Research Council (NHMRC) Practitioner Fellow. She is a member of the leadership team for the IAS Strategy for a cure and co-chair of the IAS Towards a Cure workshop held each year. Her lab focuses on the basic biology and clinical trials related to HIV latency and cure, immune reconstitution and HIV-HBV pathogenesis.



Book online now at <http://ow.ly/YFOVc> call or email the RSV office to secure your place: 9663 5259, [rsv@sciencevictoria.org.au](mailto:rsv@sciencevictoria.org.au). If you plan to join us for refreshments prior to our lecture from 6.15pm, please register your attendance so we can anticipate catering requirements. **All most welcome.**

## 2016 SYMPOSIUM



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

### CONSERVING EUCALYPTS: THE WHY AND THE HOW

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.



**Associate Professor  
Peter Vesk**

School of Biosciences,  
University of Melbourne  
ARC Centre of Excellence for  
Environmental Decisions



**Associate Professor  
Patrick Baker**

School of Ecosystem &  
Forest Sciences,  
University of Melbourne  
ARC Future Fellow, Silviculture  
& Forest Ecology



**Professor David  
Lindenmayer AO FAA**

Fenner School of  
Environment & Society,  
ANU  
Primary Investigator, ARC  
Centre of Excellence for  
Environmental Decisions



**Dr Suzanne Prober**

CSIRO Land & Water  
Flagship, Perth  
Principal Research Scientist



**Professor Andrew  
Bennett**

School of Life Sciences,  
La Trobe University  
Mallee Hawkeye Project



**Professor Brad Potts**

Biological Sciences,  
University of Tasmania  
Professor of Forest Genetics



**Dr Michael Bayly**

School of Biosciences,  
University of Melbourne  
Plant Systematics & Evolution  
Research Group



**Professor Michael  
McCarthy**

School of Biosciences,  
University of Melbourne  
ARC Centre of Excellence for  
Environmental Decisions



**Associate Professor  
Kevin Tolhurst**

Ecosystem & Forest  
Sciences, University of  
Melbourne  
Past Bushfire CRC Project  
Leader

The Symposium booklet detailing abstracts and the full program is now online at <http://ow.ly/TSweO>

Registration includes lunch, morning and afternoon tea, and drinks on conclusion of Friday's proceedings at the Royal Society of Victoria.

The Symposium will continue with an optional field trip to the **Mt Rothwell Conservation & Research Centre** the following day, **Saturday, 19<sup>th</sup> March**: separate registration is offered on the ticketing page for the Symposium, or RSV members can register just for the field trip (details on next page).

**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](mailto:rsv@sciencevictoria.org.au). Student rate \$70. Full registration for RSV members is discounted from \$130 to \$120. Payment in full on registration please.





## MARCH 2016 FIELD TRIP



The first of the RSV's 2016 Field Trips will take place on **19<sup>th</sup> March, 2016**

### MT ROTHWELL BIODIVERSITY INTERPRETATION CENTRE

As part of a new initiative to foster greater links between the scientific community, RSV members and the general public, the Royal Society of Victoria will convene its first field trip for the year with a visit to the highly-regarded Mt Rothwell Biodiversity Interpretation Centre near Little River, to the west of Melbourne.

This guided tour will depart from the Royal Society of Victoria at around 2.30pm (exact timing to be advised) and return at approximately 10.30pm.

This is an excellent opportunity to experience on of Victoria's signature conservation projects in action, led by research staff at Mt Rothwell.

Please join us to gain insight to the remarkable conservation and rewilding efforts underway, tour the remnant indigenous woodland eucalypt biota, enjoy a barbeque dinner and finish with a torch-lit walk on dusk to catch some of the returning crepuscular and nocturnal animals in action.



Mt Rothwell is a privately owned 420ha property located in a remnant habitat located 45km west of the CBD. This predator-free ecosystem is managed exclusively for the conservation of some of Australia's most threatened faunal species, including the Eastern Barred Bandicoot, Red Bellied Pademelon and Eastern Quoll. The management efforts are characterised by the careful use of apex predators like dingoes and sentinel dogs to ward off feral mesopredators like foxes and cats.

Mt Rothwell is of great significance to the heritage of Victoria's Indigenous peoples, with an archaeology site identified as a solar calendar system developed and utilised by the Wathaurong of the Kulin Nation.

The visit is suitable for all ages and children are warmly encouraged to join in with their families, bearing in mind the late night (anticipated return to RSV around 10.30pm). While the walks are graded as 'easy-medium,' please note disability access is limited.

**The cost of the trip includes the return bus ride from the RSV to the Centre, Centre entry, tours, afternoon tea, dinner and drinks.**



Book online now at <http://ow.ly/YFWAr>, call or email the RSV office to secure your place: 9663 5259, [rsv@sciencevictoria.org.au](mailto:rsv@sciencevictoria.org.au). Student rate \$90, kids under 15 \$75. Full registration for RSV members is discounted from \$120 to \$110. Payment in full on registration please.

## Nominations for RSV Membership

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

Ms **Sharon June WILLOUGHBY**, Public Program Manager, Royal Botanic Gardens  
Professor **David William WALKER**, Senior Scientist (Perinatology), Hudson Institute

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 14<sup>th</sup> April.

Recently elected members who have not yet signed the Society's membership book are invited to attend the 10<sup>th</sup> March meeting to be formally welcomed as members. Please inform the office if you plan to attend.

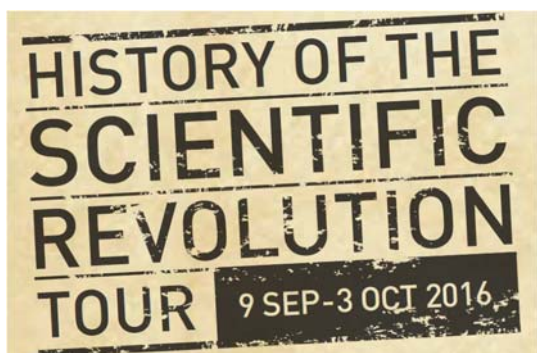
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## 2016 RSV Council Election

Members will have received electoral materials via post from Monday 15<sup>th</sup> February. Directions in the materials for completing ballot papers are correct, however please note the last newsletter's directions are not: please tick FIVE boxes (only) corresponding to your favoured candidates.

A reminder that all Ballot Papers must be returned to the Returning Officer, care of the Royal Society of Victoria, sealed in the envelope provided. Ballot Papers must be received by no later than 3.30pm on **Monday, 7<sup>th</sup> March 2016** to be considered valid.

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## 2016 European Tour: History of the Scientific Revolution

Recently retired head of the Physics program at PLC, Russell Downie and his partner Ellaine have created an outstanding tour package for the enthusiast of science history with Mission Travel. Russell and Ellaine invite RSV members to join them on a guided tour of Western Europe, discovering the history of the scientific revolution.

- Why did the Scientific Revolution happen in Western Europe?

- Why did it happen when it did?
- Why did it not happen somewhere else?
- Why was there a revolution?

This tour will journey from Italy, through France and into England. During the tour, Russell will deliver informative sessions, as well as leading discussions in the locations where some of science's most important discoveries were made. You will have the opportunity to visit universities where some of history's most accomplished scientists were educated, as well as museums, historical sights and some of Europe's most famous landmarks.

Full details are available online at <http://www.missiontravel.com.au/scientificrevolution2016/>.

Interested? Russell will provide a briefing, here at the Royal Society of Victoria, for our members at **3.00pm on the afternoon of Wednesday, 23<sup>rd</sup> March**. Please RSVP online at <http://ow.ly/YG1eO>, or call the office to register.

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## Research Spotlight

By Priya Mohandoss

### Catherine de Burgh Day

2015 RSV Young Scientist Research Prize Joint Winner for the Physical Sciences

**"Direct Shear Mapping: Measuring Weak Gravitational Lensing Directly for the First Time"**



Astrophysics PhD Graduate, Catherine de Burgh Day

Catherine's interest in Astrophysics came at an early stage of her university studies. While doing



1<sup>st</sup> year in Bachelor of Science, she did a unit called The Solar System and the Cosmos. Dr Rachel Webster, Catherine's PhD supervisor, took the unit and speaking about her research at the time. This inspired Catherine and although she kept her options open, was drawn to further study this specialised area of Physics.

Catherine's research into studying dark-matter distribution enabled her to discover Direct Shear Mapping, a new technique that uses an algorithm to measure shears (weak-lensing distortions) directly using the velocity maps of individual galaxies. The need to know about the distributions of matter in galaxies is necessary to get a grasp of galaxy formation and evolution. While other techniques, such as weak gravitational lensing have been applied before, these techniques they could only provide measurements indirectly and also required the observations of hundreds of galaxies.

At present she is working with researchers from the Victorian Life Science Computation Initiative (VLSCI), an initiative of the Victorian Government in partnership with The University of Melbourne and the IBM Life Sciences Research Collaborator in Melbourne. Later, she intends to utilise the expertise she has acquired from her PhD such as coding data analysis, statistics and problem solving skills to branch into other areas such as Epidemiology, Population Health or Bioinformatics.

### **Edward Nagul**

**2015 RSV Young Scientist Research Prize Joint Winner for the Physical Sciences**

**"Ultra-Trace Determination of Orthophosphate in Waterways using Polymer Inclusion Membranes & Flow Injection Analysis"**

Edward started his PhD research in Analytical Chemistry after completing his Master of Science at University of Melbourne. Analytical chemistry as a discipline that he was particularly interested as it provided him with the opportunity to study and combine different areas of Chemistry and be creative in the process.

His research focused on developing an effective means to detect ultra-trace levels of orthophosphate ( $\text{PO}_4$ ), a primary nutrient vital for both water quality assessment and studying biogeochemical cycling (the flow of chemical elements and compounds between living organisms and the physical environment) in waterways, with the potential to run autonomously for weeks at a time. He achieved this through designing a combined flow analysis

system using the UV-powered molybdenum blue reaction and a PIM. He is hopeful that his design can be made commercially available to use for monitoring this nutrient.



Analytical Chemistry PhD Graduand, Edward Nagul

Although there are already methods such as the classic 'molybdenum blue' method used for photometric orthophosphate detection, this agent only works for several hours. Other methods also require expensive optical equipment or time-consuming manual pre-treatment.

Edward intends to further his career in his field of Chemistry, especially in some active research or Research and Development position in either an academic or industrial setting. His own research has inspired him to do this. According to Edward, it is all about applying the tools one has, understanding the Chemistry that one is working with and having the notion to be creative in order to achieve the desired result.

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## **Wheat Protein and the Gluten-Coeliac Connection**

Our friends from the Wheat Protein and Coeliac Consortium are convening a public seminar at the Royal Society of Victoria on **Thursday, 17<sup>th</sup> March** from 6pm to propose a collaboration between the medical and food sciences in determining the efficacy of more thorough fermentation processes in the production of bread to minimise the gluten load, thus reducing exposure to individuals at risk of developing coeliac disease. Immunologists, gastroenterologists and neurologists are particularly encouraged to attend.

Full details and registrations are available online at <http://ow.ly/YG1Qn>.

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## Members' Forum: Setting Strategic Goals for the RSV

Grateful thanks once again to all members who provided such thoughtful feedback to our Strategic Prospectus, "Concord & Progress" over the Christmas/New Year period.

We are adjusting that document accordingly and will circulate the update for general inspection shortly. Meanwhile, we are also in the process of setting draft goals to guide our priorities and intentions over the coming three years, and have set a date and time for a further Members' Forum to rehearse and discuss these at some length.

We would appreciate the further input of our members' considerable mental faculties as we continue our planning process! If you can join us on the afternoon of **Thursday, 24<sup>th</sup> March** (the day before Good Friday), please register online at <http://ow.ly/YG3Mk>.

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## RSV Young Scientist Research Prizes 2016

Submissions will open for the for the 2016 YSRP on **1<sup>st</sup> March**, open to postgraduate doctoral students in third or fourth year of their candidacy, in all areas of the Biomedical & Health Sciences, Biological Sciences (Non-human), Earth Sciences and Physical Sciences.

Candidates should nominate themselves. Please bring these prizes to the attention of the talented emerging scientists in your network. Full details are available from our website at <http://www.royalsocietyvictoria.org.au/awards-and-prizes/young-scientist-research-prizes/>

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## Melbourne International Flower & Garden Show: Volunteers Required

The Melbourne Flower Show is on again across Victoria Street in the Exhibition Gardens. As with previous years, we are offering parking on site at the Royal Society of Victoria in exchange for a gold coin donation to our science programme, and we need volunteers to help direct the flow over the weekend of **19-20<sup>th</sup> March**.

While "parking cars" may not sound a scintillating use of your time, it is actually a great way to spend time with fellow members and is a pretty relaxed affair. Each year we've managed to raise a couple of thousand dollars, which we direct to our Young Scientist Research Prizes, a most worthwhile activity.

If you have a morning or afternoon spare on the 19<sup>th</sup> or 20<sup>th</sup> March, please call the office on 9663 5259 to register your availability. Many thanks!

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## RSV Medal for Scientific Excellence

Submissions will open for the RSV Medal on **31<sup>st</sup> March**. This year, nominations are invited for Category IV: Physical Sciences, which includes research in the disciplines of Astronomy, Astrophysics, Chemistry, Engineering, Mathematics, Physics and related sciences.

Award criteria are based on demonstration of the candidate's excellence and leadership in scientific research. The work shall have been carried out in Australia, or about Australia, with preference for work conducted in Victoria, or about Victoria.

Members and friends are encouraged to consider the high achievers in their networks and submit nominations. Submissions close at 5pm on 31 August, 2016. Full details are available online at <http://www.royalsocietyvictoria.org.au/awards-and-prizes/research-medal/>.

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## In Love with Betty the Crow: the First 40 Years of the Science Show

Our friends at Embiggen Books launch and stock a wonderful range of books concerned with science and society by Australian authors, with many in-store events of interest to RSV members.

On the evening of **16<sup>th</sup> March** they will be hosting Australian science communication hero Robyn Williams. After 40 years of broadcasting with Radio National, Robyn's new retrospective will address "why science matters," touching on topics such as "the flakes and the heroes," propaganda, our relationship with animals and the environment, women in science and much more. Come hear Robyn in action as he launches one of the most anticipated books of the year for the Australian science community.

**Bookings:** Embiggen Books, 9662 2062 or [events@embiggenbooks.com](mailto:events@embiggenbooks.com)



The Royal Society of Victoria

## 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 <sup>th</sup> February –       | Professor Gary Egan, “Imaging the Living Brain in Health & Disease: MRI & PET Scanning”  |
| 25 <sup>th</sup> February –       | Dr Marissa Parrott, “Threatened Species: Fighting Extinction”  |
| 10 <sup>th</sup> March –          | Professor Sharon Lewin, “From the Beginning to the End of HIV: the Great Successes & Remaining Challenges”                               |
| <b>24<sup>th</sup> March -</b>    | <b>No lecture (Easter Break)</b>   |
| 14 <sup>th</sup> April –          | Professor Tiff Walsh, “How does Nature do it? Unlocking High-Performance Natural Composites and Inspiring New Materials using Computers” |
| <b>28<sup>th</sup> April –</b>    | <b>Annual General Meeting</b>  |
| 12 <sup>th</sup> May –            | Professor Matthew King, “Continental Loss: the Quest to Determine Antarctica’s Contribution to Sea-Level Rise”                           |
| 26 <sup>th</sup> May –            | Dr James Waghorne, “Science in the State’s Interest: the Victorian Precursors to CSIRO” (Joint RHSV Lecture)                             |
| 9 <sup>th</sup> June –            | Professor David Vaux, “Researchers Behaving Badly: Misconduct in Science”  |
| 23 <sup>rd</sup> June –           | Dr Erin Matchan, “The Age of Volcanoes” (A W Howitt Lecture)   |
| 14 <sup>th</sup> July –           | Dr Maria Forsyth, “Energy Storage for a Sustainable Environment” (Joint ATSE Lecture)  |
| 28 <sup>th</sup> July –           | Dr Ian Polmear, “Ripping Yarns: Tales from the Research Trenches” (lunchtime lecture)  |
| <b>11<sup>th</sup> August –</b>   | <b>2016 Young Scientist Research Prizes (National Science Week)</b>  |
| 25 <sup>th</sup> August –         | Dr Linzi Wilson-Wilde, Forensic Science  |
| 8 <sup>th</sup> September –       | Professor Jonathan Stone, “Alzheimer’s Disease: Is the Brain Destroyed by the Pulse?”  |
| 22 <sup>nd</sup> September –      | Panel & Debate, “Future Melbourne: Population, Health, Resources & Infrastructure”   |
| 13 <sup>th</sup> October –        | Professor Elisabetta Barberio, “The Hunt for Dark Matter: Stawell’s Underground Physics Lab”   |
| <b>27<sup>th</sup> October –</b>  | <b>Phillip Law Postdoctoral Award for the Physical Sciences &amp; Lecture</b>  |
| <b>10<sup>th</sup> November –</b> | <b>Science Communication Graduate Prize &amp; Lecture</b>  |
| <b>21<sup>st</sup> November –</b> | <b>Very Young Scientists (Science Talent Search Bursary Recipients)</b>  |
| <b>8<sup>th</sup> December –</b>  | <b>RSV Research Medal Lecture &amp; President’s Soiree</b>   |