



# The Bulletin 354

of

The Royal Society of New South Wales

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April 2012

## Understanding Multidrug Resistant Cancer: And how to treat it

Wednesday 2 May 2012 5:30pm

*Eastern Avenue Auditorium, Sydney University*

Delivered by A/Prof Mary Bebawy

### Future Events

Lectures in Sydney are held on the first Wednesday of the month at 6:30pm.

#### May

**Wednesday 2 May 2012 at 5:30pm**

University of Sydney University

***Understand Multidrug Resistant Cancer:  
And how to treat it***

Free for members and guests, see right for details.

#### Southern Highlands Branch

**Thursday 19 April 2012 at 6:30pm**

Drama Theatre at Frensham, Mittagong

***Advanced Radiation Oncology  
Modalities for Cancer Treatment:  
Current Status and Verification of  
Treatment Delivery***

delivered by Prof Anatoly Rosenfel,  
Centre for Medical Radiation Physics,  
University of Wollongong.

**Thursday 17 May 2012 at 6:30pm**

*Location to be advised*

***Coal Seam Gas (CSG):***

***What Does Science Tell Us About the  
Impacts?***

Delivered by A/Prof Bryce Kelly,  
Chief investigator with the National  
Centre for Groundwater Research and  
Training. (details on page 3)

*Event flyers also available on the website.*



A/Prof Mary Bebawy

Mary Bebawy is Associate Professor of Pharmacy at the Graduate School of Health, The University of Technology Sydney. She specializes in the role and regulation of the xenobiotic cascade in drug disposition and in cancer multidrug resistance. A/Prof Bebawy has 18 years experience in academic and research positions, including 2 years as Preclinical Drug Development Scientist with Johnson and Johnson, Research and one year in senior management as Associate Dean (Learning and Teaching) at The Pharmacy Faculty, USyd. She has consulted to academia and industry on matters concerning cancer cell biology, resistance and preclinical drug discovery and development.

Mary Bebawy is Associate Professor of Pharmacy at the Graduate School of Health, The University of Technology Sydney. She specializes in the role and regulation of the xenobiotic cascade in drug disposition and in cancer multidrug resistance. A/Prof Bebawy has 18 years experience in academic and research positions, including 2 years as Preclinical Drug Development Scientist with Johnson and Johnson, Research and one year in senior management as Associate Dean (Learning and Teaching) at The Pharmacy Faculty, USyd. She has consulted to academia and industry on matters concerning cancer cell biology, resistance and preclinical drug discovery and development.

Her team was the first group to discover a novel pathway for the intercellular acquisition of multidrug resistance in cancer. This finding has since resulted in the development of a new area of scientific investigation and her laboratory has made significant contributions in understanding the non-genetic acquisition of deleterious cancer traits.

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### Patrons of The Royal Society of NSW

Her Excellency Ms Quentin Bryce AC CVO, Governor-General of the Commonwealth of Australia

Her Excellency Professor Marie Bashir AC CVO Governor of NSW

## The Royal Society Forum 2012

### The media and scientific research: impact and influences

The Society's second annual Forum was held on Wednesday 4 April at the Powerhouse Museum.

The discussion was between Mark Scott AO, Managing Director of the ABC and Professor Jill Trehwella FRSN, Deputy Vice Chancellor, Research and Innovation at Sydney University. The topic of the discussion was "The influence of media on scientific research". The forum was moderated by Robyn Williams AM of the ABC.



Mark Scott AO

Mark pointed out that the role of national broadcasters (originally established to produce programmes that commercial companies could not or would not) has changed very significantly. The internet has made available thousands of TV and radio stations worldwide. The consumer is flooded with content. Gone are the days when listeners needed a licence – now all that is necessary is an internet connection. Nor are there barriers to entry for broadcasters. There are over 200 million web-sites worldwide and 60,000 blogs are introduced to the internet every day.

The role of the ABC is now even more important than it was formerly. It now provides a "town square" for content and opinion. It provides a broad plurality of views. Whereas the challenge for science is the narrowness of focus of much research is, the ABC provides a place where there is breadth not narrowness of interest. The gap between the ABC and content

providers is growing every day due to the challenge facing commercial providers in delivering a profit in a rapidly changing media sector. The challenge for scientists is to become effective communicators and, particularly, to cultivate interest among journalists.

Jill said how important it was to have institutions like the ABC that produce quality content and encourage public education and debate. The key roles of the media are to educate, to inspire and to promote public discourse, particularly as the world faces critical issues, not least the state of the natural world.

Nonetheless it is regrettable that the media often confuse opinion, fact and belief. Too much of the current debate focuses on belief. But belief is not important in many issues – what is important are matters of fact. This is particularly significant in major issues such as health and climate change where scientific knowledge is important. For example, in health investment in research is generally seen as overwhelmingly good. And it probably is but what about the unavoidable trade-offs in research in other areas? It is also regrettable that advertising is a major influence on public opinion and political processes.



Professor Jill Trehwella

Robyn then moderated a discussion that included questions from the audience and covered such issues as the "priesthood status" of peer-review, the polarisation of public opinion, climate change, the state of critical argument in Australia and the necessity for the scientists to produce a compelling story in order to engage the media.

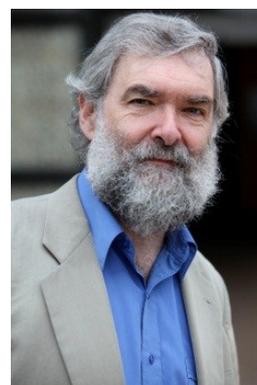
## Meet the President



Donald Hector is a chemical engineer who graduated from Sydney University in 1974. He also has a PhD in engineering. He has worked in industry all his professional life and for some years was managing director of the Australian and South/SE Asian operations for Dow Corning Corporation and, later, was managing director of APS Chemicals Ltd.

He currently works as a non-executive director of industrial and engineering consulting companies. Don is also a member of the Council of Newington College, one of Australia's oldest boys' schools.

### Professor D. Brynn Hibbert



Brynn Hibbert has occupied the Chair of Analytical Chemistry at the University of New South Wales since arriving from England in 1987.

His research interests are in metrology and statistics in chemistry, analysis of drugs (of abuse and in sports) and electroanalytical chemistry, but he also does a sideline in expert opinion, scientific fraud and presenting science to the public.

He has published around 230 papers, five books and three patents.

# From the President

Southern Highlands Branch

First, may I express my appreciation to the members of the Society for electing me its President. There is a long list of distinguished people who have contributed to the success of this institution going for well over 150 years and I will work hard to follow in their footsteps and take the Society forward.

There is no more committed antecedent than the immediate past president, John Hardie. John has been president of the Society first, in 1994 and then for five successive terms from 2007-2011. John has worked tirelessly to promote the interests of the Society and I'm sure I speak on behalf of all our members in thanking him for the extraordinary commitment that he has shown. I am delighted that he has agreed to continue on Council as ex officio Vice President. I would also like to acknowledge the contribution made by three outgoing Council members. Professor Bruce Warren FRSN, at one of our inaugural fellows and a former president of the Society (1981). Bruce has been a strong contributor to society over many years. Bill Sewell has also decided to step down this year. Bill has co-ordinated the awards programme to some years. He was assisted by Julie Haeusler who also made a valuable contribution this area. Thanks to all three for their great work

The Royal Society of NSW is not alone in facing the challenges of rapid social and technological changes that have many people questioning the relevance of institutions like ours. Many have seen decline in membership numbers as special interest groups and social media dominate the headlines. There is no doubting that these challenges exist but I am firmly of the view that if anything, the RSNSW has a greater relevance today than they did 50 years ago. Our act of incorporation was deliberately broad – we exist for “the encouragement of studies and investigations in science art literature

and philosophy”. Historically, there is been a strong emphasis on the physical sciences. A high proportion of our members are scientists or have some form of scientific or technological background. We certainly do not want to disengage from our current membership; on the other hand, it is important that we explore ways to engage with the other areas of knowledge and human endeavour that are part of our *raison d'être*.

The focus of the incoming Council will be to put into place a stimulating programme not just for our existing members but to make the Society of vibrant meeting place for stimulating thought and discussion across a range of related disciplines.

**D**onald Hector

## Find us on Facebook

The Royal Society of New South Wales has a brand new Facebook page. We will be adding more to the page each month.

Our Facebook page makes it easier for members to keep up to date with events and information.

If you are reading this on your computer click on the blue Facebook button to have a look, or cut and paste the URL from below.

*Don't forget to 'like' us.*



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<https://www.facebook.com/RoyalSoc>

## Coal Seam Gas (CSG): What Does Science Tell Us About the Impacts?

Thursday 17 May 2012 6:30pm

*Location to be advised*

Delivered by A/Prof Bryce Kelly

\$5.00 for members,

\$10 for non-members

Billions of dollars have already been spent on the development of Coal Seam Gas (CSG) exploration and infrastructure development. Extracting the gas from coal will clearly be part of our future in Australia, particularly in New South Wales and Queensland. If mistakes are made in extracting the CSG, then there are good reasons to be concerned about the resulting environmental impacts. These include groundwater contamination, aquifer interference, small earthquakes, and contributions to greenhouse gas.

Coal is formed via a variety of processes. The black Permian coals in NSW and the Bowen Basin in QLD were formed 300 to 250 million years ago. Plate tectonic movements resulted in crustal extension along the now eastern portion of Australia. As the land subsided, large basins formed and extensive cold climate peatlands developed. The Walloon seams in QLD are Jurassic (200 to 145 million years old) and formed in lakes surrounded by humid tropical forests. Locally, the coals in Queensland underwent very different tectonic processes compared to NSW. This means that at each CSG production site there will be different impacts. This presentation will discuss the many concerns in the media surrounding CSG production, discuss the issues in the context of the local geological and ecological settings, and present the scientific data to support the various for and against claims in the media.

# Address to Annual General Meeting 4 April 2012

By the outgoing President, Mr John Hardie

Five years ago we had a healthy Society but it was a small and rather isolated one. It had limited links to the outside world, a small membership base and a minimal public profile.

When I was elected President in April 2007 I saw my task as trying to:

- Create a new public profile
- Involve members more in the activities of the Society
- Increase membership
- Broaden the Society's range of activities
- Increase the relevance of the Journal and Proceedings
- Extend the Society's reach to regional NSW
- Develop relationships with like-minded organisations such as the Academies and professional and academic associations
- Make the Society's library available to researchers
- Build on the Society's historical achievements and develop a proper record of its illustrious history
- Find ways to obtain philanthropic and other funding
- Find a better home for the Society.



We have done some of these things but we still have a way to go. Our name, our 'brand' if you like, has wider currency now to the extent that arms of government, universities and other organisations have heard of us and know a bit about what we do. We are respected and valued more, still within a limited sphere, but we need to leverage off this to achieve our other aims.

Our *Journal and Proceedings* has seen great improvements, witness our latest issue which I received in hard copy today. This has its own momentum which means we are now generating a healthy body of good quality papers for future issues.

We have established a new Branch based in Orange which is now flourishing, and our Southern Highlands one continues to do so. In the right climate, other Branches should follow.

We have linked in with other like-minded organisations, such as the Australian Institute of Physics, the Geological Society of Australia and the Australian Academy of Science, in order to hold joint activities and cross-fertilise membership, and this has proved to be beneficial to all concerned.

We have established the designation of 'Fellow' which has enabled the Society to go to a higher level in terms of recognition of excellence and achievement. This has been welcomed at the highest levels of our community.

We have begun the process of entering some of our extensive library holdings on TROVE, the National Library of Australia's online database of Australian and online resources, and we have engaged a historian to write a proper history of the Society.

We have remained active with the Royal Societies of Australia, the national umbrella body for all the Royal Societies in Australia and have taken a leadership role with it, thereby maintaining links with our sister and brother organisations in other states.

There is much more to do to follow through with these initiatives and I thank the Council for its support in the achievements of the past five years. I also wish the incoming President, Dr Donald Hector, all the very best for his time at the helm. It is an exciting place to be.

**J**ohn Hardie

## To the editor

Has academia doomed humankind?

I'm sure when you read the title you are in disbelief and are now proclaiming the benefits of academic endeavor. It is true that much research and development, and invention within universities has helped humankind. But my point is this. When much of the founding principles of the different academic areas where developed, the thinking of those times was that the world is a non-interconnected place. Cause and effect was only a local phenomenon, and rarely did academic disciplines overlap, or even have an effect in another area. Everything logical was mainly black and white.

Now we have a different view. More recent studies over the last 50 years for example, show that everything is not isolated but interconnected. Cause and effect can be on a global scale, and not only is there overlap between academic disciplines, but many truths and build blocks considered to be unique to a specific discipline, are repeated in other disciplines but known under different terminology or jargon terms.

My point is that we are now starting to realise just how much we live in a transdiscipline world. How academic traditions and belief in founding principles based in a narrow-minded view developed in outdated logic is now limited true development of humankind. Thus impacting on our ability to solve the worlds problems, because of the not-invented-here mentality.

**T**ony Nolan

## Prizes to note

Nominations for the **Prime Minister's Prizes for Science** for 2012 close on 27 April. For further details see <http://www.innovation.gov.au/Science/InspiringAustralia/PrimeMinistersPrizesforScience/Pages/AboutthePrizes.aspx>

Entries for the **Australian Museum Eureka Prizes** close on 4 May see <http://eureka.australianmuseum.net.au/>

Nominations have now opened for the **Young Tall Poppy awards** sponsored by the Australian Institute of Policy and Science. See <http://www.aips.net.au/news/tall-poppy-nominations-open/> . Nominations close on 13 May.

The Australian Academy of Science Honorary Awards for 2013 are now open for nomination. See details at <http://science.org.au/news/media/13march12.html> . These are very prestigious awards totalling AUD\$200,000. Applications close on 29 July 2012.

## Proposals for Fellows of the RSNSW

Members are invited to forward proposals with a member as seconder for consideration for the 2012 nominations of Fellows of the RSNSW to be directed confidentially to the President.

Deadline for submissions is 1 June 2012.

H. Hora for the Fellows Committee of the Council.



### A quick note from the office

Do come and join the Society online.

Come and join a conversation, share photos or find out about upcoming events.

Visit the page at:

<https://www.facebook.com/RoyalSoc>

*Don't forget to let us know if your email or postal address changes.*

*Email the office at [royalsoc@royalsoc.org.au](mailto:royalsoc@royalsoc.org.au)*

## Royal Society of NSW Ties

Every purchase helps support the Society. Contact the Society's office for an order form. Just \$40.00 plus postage & handling.



## Professor Heinrich Hora

Professor Hora became Foundation Professor of Theoretical Physics at the University of New South Wales in Sydney, Australia from 1975 and is Emeritus since 1992. He is known for work on the theory of lasers and plasma interaction with quantum and relativistic effects including application to fusion energy. Theoretical applications include solid state physics about photo-detectors and growth of diamond. He is leading an international team with the latest result how to produce fusion energy with less nuclear radiation than burning coal. He has published 10 books and co-edited 14 including Dirac's "Directions in Physics" and "Edward Teller Lectures".

## Comment on

### “Science advice and policy-making” by Robert M. May

(Journal and Proceedings, vol 144, nos 3/4, Dec 2012)

Following publication in the recent edition of the Journal and Proceedings of the paper by Lord May of Oxford, “Science advice and policy-making”, this letter was received from one of our members.

Lord May was writing about the influence that science ought to have on policy and used climate change as an example. The editorial board decided not to publish this letter in the Journal, as it was referring to one of Lord May's several examples, rather than the trust of his article but felt that the subject is such a contentious one that publication of this criticism of Lord May's example was appropriate for the Bulletin.

If other members have different views, they would be welcome.

Ed.

#### By Mike Jonas

*In his article, Robert M May (RMM) gives a non-technical overview of the status of climate science, which seems to be unsupportable and unwise in a number of ways.*

RMM makes passing reference to just one or two of the uncertainties in climate science - time-scales for some important non-linear processes involving climate change, for example - yet he clearly accepts no possibility that the science is not yet settled. He categorises those who might question the science as being in 'denial', and refers to 'understandable similarities, in both attitudes and tactics, to the tobacco lobby'. These are unsavoury and unwarranted slurs. In the context of climate science, tobacco is no more relevant than Lysenko (agronomy), say, or Marshall and Warren (medicine). In science, issues are resolved on their own merits, not by reference to unrelated issues. In the end, it is only the actual evidence that counts.

To support his attack on sceptics, RMM says 'one recent study of top climate change scientists found "97%/98% agree on climate change"'. In the study to which I am sure he refers (Dorman and Zimmerman 2009), there was no reference to carbon dioxide or to greenhouse gases, and the "97%" comprised just 75 scientists out of the 10,257 to whom the survey was sent (3,146 replied). These numbers are given in the Dorman and Zimmerman paper.

Rather than rely on a questionable consensus, it would be better to address the evidence. RMM could perhaps start with cloud feedback, which is relied on for a decidedly non-

trivial 40% of CO<sub>2</sub>'s supposed warming in IPCC report AR4 (para 8.6.2.3, p.633). The IPCC indicates that it is an artefact of the computer models, and as far as I am aware there has never been any actual evidence that a feedback of this magnitude exists. However, there has been some evidence of different cloud behaviour, such as the CLOUD experiment at CERN (Kirkby 2011), and most recently, Xia 2012.

Dorman and Zimmerman 2009 - "Examining the Scientific Consensus on Climate Change" EOS, 90, 3, 20 January 2009.

[http://tigger.uic.edu/~pdoran/012009\\_Doran\\_final.pdf](http://tigger.uic.edu/~pdoran/012009_Doran_final.pdf)

Kirkby 2011 - "Role of sulphuric acid, ammonia and galactic cosmic rays in atmospheric aerosol nucleation" Kirkby et al, Nature 476, 429–433, 25 August 2011 doi:10.1038/nature10343 <http://www.nature.com/nature/journal/v476/n7361/full/nature10343.html>

Xia 2012 - "Significant decreasing cloud cover during 1954–2005 due to more clear-sky days and less overcast days in China and its relation to aerosol" Ann. Geophys., 30, 573–582, 2012

[www.anngeophys.net/30/573/2012/](http://www.anngeophys.net/30/573/2012/) doi:10.5194/angeo-30-573-2012.

<http://www.anngeophys.net/30/573/2012/angeo-30-573-2012.pdf>

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