



The Australian Centre for Astrobiology presents:

The Evolution of Photosynthesis and Oxygenation of the Earth *S y m p o s i u m*

June 28-29 2011

**The University of New South Wales,
Sydney, Australia**

For more information see: <http://www.absociety.org/symposium/>



Australian Academy of Science



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Preliminary Program

Tuesday 28 June

- 09.00-09.15 Welcome and outline of program. Dr J M Anderson will give a short welcome. Prof Malcolm Walter will outline the program and the meeting logistics.
- 09.15-10.00 Keynote address by Dr Petra Fromme (Arizona State University) "Key steps in the evolution of an oxygen evolving complex"
Dr Fromme is a leading thinker on the evolution of photosynthesis.
- 10.00-10.45 Keynote address by Prof Roger Summons (Massachusetts Institute of Technology) "Geochemical evidence concerning the advent of photosynthesis"
Prof Roger Summons is a leading expert on evolutionary and environmental geological records as revealed by the study of molecular biomarkers.
- 10.45-11.00 Break
- 11.00-13.00
- Prof A Mulikidjanian (University of Osnabrueck). Phylogenetic evidence for the evolution of cyanobacteria from protocyanobacteria.
 - Prof Tony Larkum (Sydney University). From anoxygenic to oxygenic photosynthesis: lessons from phylogenetic and crystal structure analysis.
 - Dr Min Chen (University of Sydney). A new chlorophyll from a stromatolitic cyanobacterial film: implications for the evolution of photosynthesis.
 - Dr Dee Carter (University of Sydney). A newly discovered alga linking chromophytes to apicomplexan algae.
 - Prof Geoff McFadden (University of Melbourne). The evolution of the apicoplast and its importance for human disease.
- 13.00-14.30 Lunch
- 14.30-16.30
- Prof J William Schopf (University of California, Los Angeles). Microfossil evidence bearing on the origin of cyanobacteria.
 - A/Prof Nora Noffke (Old Dominion University). Extracting biological information from fossil microbial mats in siliciclastic sediments.
 - David Flannery (University of New South Wales). Were stromatolites of the Pilbara Craton's 2.7Ga Tumbiana Formation built by cyanobacteria?
 - Dr David Wacey (University of Western Australia). Approaches to the analysis of the stromatolites of the 3.43 Ga Strelley Pool Formation, Pilbara region.
- 16.30-17.00 Discussion
- 17.00-17.30 Laboratory tour
- 19.00 + Conference dinner

Wednesday 29 June

- 09.00-10.20
- Prof Julian Eaton-Rye (University of Otago). The lipoproteins of cyanobacterial Photosystem II.
 - Tamsyn Garby (University of New South Wales). Genetic diversity of cyanobacterial biomarkers.
 - Prof Arthur Grossmann (University of California, Berkeley). Metagenomic studies of hot springs and what they tell us about the evolution of photosynthesis.
 - Prof Murray Badger (Australian National University). Key features of cyanobacteria that fitted them for the world of oxygenic photosynthesis.
 - Prof Warwick Hillier (Australian National University). The evolution of photosystem II to accommodate water splitting and the release of molecular oxygen.
- 10.40-11.00 Break
- 11.00-13.00
- A/Prof Simon George (Macquarie University). New biomarker results from the 2.7 Ga Tumbiana Formation, Pilbara region.
 - Prof Kenichiro Sugitani (Nagoya University). Newly discovered microfossils from the Pilbara region.
- 13.00-13.40 Keynote address by A/Prof Ben Hankamer (University of Queensland) "Photosynthesis and biofuels"
A/Prof Hankamer is a leading expert on bio-fuel production systems using microalgae.
- 13.40-14.30 Lunch
- 14.30-15.15 Keynote address by A/Prof Jeremy Bailey (University of New South Wales) "The search for photosynthesis beyond Earth"
A/Prof Bailey is a leading astronomer involved in the study of the solar system, extrasolar planets and aspects of the chemistry of the interstellar medium.
- 15.15-16.00 Discussion session – "Reconciling the biological and geological records"

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