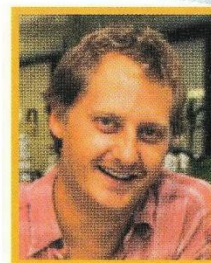


Third KIA Laureate Fundamental Research



- ◆ **Researcher:** Prof. Brett Anthony Neilan
 - ◆ **Nationality:** Australian
 - ◆ **Date of birth:** 1964
 - ◆ **Position:** Fellow of the Australian Research Council
 - ◆ **Scientific affiliation:** The University of New South Wales, Australia
- Project title:** The Molecular genetics of cyanobacterial toxins optoelectronic and sensing applications

Abstract: The cyanobacteria research group at the University of New South Wales is considered to be one of the world leaders in the genetics of toxic cyanobacteria (blue-green algae). As the founding member of this group, Professor Brett Neilan has characterised the genetic basis for the production of potent cyanobacterial toxins that contaminate our water supplies. The results of this basic research and other work on the evolution of cyanobacteria have revolutionised an entire field of environmental biology. This work has received worldwide acclaim, leading to Neilan's recognition by both fellow scientists and industry as an international expert and one of the top molecular geneticists in the field. Neilan's most significant contributions to the scientific knowledge base can be summarised into three categories: 1) Discovery of all four biochemical pathways responsible for the production of potent cyanobacterial toxins; 2) Introduction of a molecular taxonomy for toxic cyanobacteria, including *Microcystis*, *Nodularia*, *Anabaena* and *Cylindrospermopsis*, which has permitted a polyphasic approach to the systematics and evolution of toxic and ancient cyanobacteria; and 3) Discovery of nonribosomal peptide, polyketide, and alkaloid synthesis in cyanobacteria as the basis for the production of toxic secondary metabolites and potentially other bioactive compounds with pharmaceutical applications.

Biography: Prof. Brett Anthony Neilan is a Federation Fellow of the Australian Research Council, head of the University of New South Wales, Natural Products Research Laboratory and Deputy Director of the Australian Centre for Astrobiology. He received a Ph.D in 1995, from UNSW and has held postdoctoral positions at Stanford (NASA Fellow) and Humboldt University Berlin (Alexander von Humboldt Fellow). Since 1998, he has been a Fellow of the Australian Research Council. He is considered to be one of the world's leaders in the genetics of toxic cyanobacteria (blue-green algae). The results of his basic research and his other work on the evolution of cyanobacteria has revolutionised an entire field of environmental science. He is also engaged in "molecular bioprospecting", which has led him to study the secondary metabolism and evolution of unique microorganisms from extreme environments, such as Antarctica and the hypersaline coasts of Shark Bay in Western Australia. He has been awarded the Australian Academy of Science Fenner Medal in 2004 and the Eureka Prize for Scientific Research in 2001 and 2005. His work has been communicated in more than 170 peer-reviewed publications. Prof. Neilan has also consulted broadly to various governments regarding biotechnology and the environment.