

# **Evolving a new approach to high school science education using astrobiology**

**Carol Oliver**

*Australian Centre for Astrobiology  
Macquarie University  
Building E8C 153, North Ryde, NSW 2109  
AUSTRALIA  
[coliver@els.mq.edu.au](mailto:coliver@els.mq.edu.au)*

**Jenny Fergusson**

*Macquarie ICT Innovations Centre  
Macquarie University, North Ryde, NSW 2109  
AUSTRALIA*

**Daniella Scalice**

*NASA Astrobiology Institute  
Ames Research Center, Moffett Field, California 94035-1000  
USA*

**Rhodri Evans**

*Centre for Astronomy and Education  
University of Glamorgan, Pontypridd CF37 1DL  
WALES*

**Tom Gaskins**

*NASA Learning Technologies  
Ames Research Center, Moffett Field, California 94035-1000  
USA*

**Malcolm Walter**

*Australian Centre for Astrobiology  
Building E8C 153, North Ryde, NSW 2109  
AUSTRALIA*

**Patrick Hogan**

*NASA Learning Technologies  
Ames Research Center, Moffett Field, California 94035-1000  
USA*

Results from a small high school astrobiology-related education project in 2003 hinted that many students may be leaving high school with no clear understanding of how science is really done. Of the 24 participating 16-year-olds from ten high schools, none came with clear knowledge of the methodology that scientists use in their work. Two of the students reversed a decision to end their science education in Grade 10 as a direct result of this education project, one to study physics, the other biology. Two-thirds of the students said the experience had positively influenced or reinforced their choices of science subjects for Grade 11.

A larger, multinational, astrobiology project, aimed at the same high school grade, is currently under way to test these findings in a wider arena. For this purpose, we have developed a method to deliver this science experience potentially to tens of thousands of students. We have employed new NASA Learning Technologies (NLT) tools in conjunction with a research-based curriculum project, suitable for 16-year-olds, with the kind of multiple possible outcomes typically encountered in scientific research. It also exploits an opportunity for the NASA Astrobiology Institute and one of its international partners, the Australian Centre for Astrobiology at Macquarie University, Sydney, to share data, ideas and perhaps products via the coincidental development of this curriculum project with a proposed NAI Astrobiology Field Guide. This effort is the centrepiece to a Space Act Agreement between the ACA and the NAI.