

# UFO study continues

*“Former NASA astronaut claims aliens do exist”*

**A** researcher who investigated the mysterious world of UFO sightings, ufology and ufologists will be awarded a PhD at the University of Melbourne. Martin Plowman (pictured), investigated hundreds of UFO sightings and interviewed dozens of ufologists as part of his PhD thesis.

As part of his research Plowman visited key sites in the history of ufology, including Roswell, New Mexico; crop circle hotspots in Wiltshire, England; and the Valley of Elqui in the Chilean Andes, and examined the links between UFO sightings and religion, politics, national security and popular culture.

“Ufology is one of the longest enduring subcultures of the past century but its roots can be found way back in ancient culture and religion,” he says. “Ufology exists in practically every country on earth and the word UFO is spoken in almost every language.

“The intense reaction to recent claims by former NASA astronaut Edgar Mitchell that aliens do exist, shows that ufology remains a topic of great community interest and debate.”



## Fueling hybrid cars

**M**onash scientists have revolutionised the design of fuel cells used in the latest generation of hybrid cars which could make the vehicles more reliable and cheaper to build.

The breakthrough, published in the journal *Science*, revolves around the design of an electrically-generated fuel cell in which a specially-coated form of popular high tech outdoor and sporting clothing material Goretex is the key component.

The team of Monash scientists have designed and tested an air-electrode, where a fine layer -- just 0.4 of a micron thick, or about 100 times thinner than a human hair -- of highly conductive plastic is deposited on the breathable fabric. The conductive plastic acts as both the fuel cell electrode and catalyst.

Dr Bjorn Winther-Jensen said just as Goretex had revolutionised the outdoor clothing industry, it could hold similar promise for motorists.

“The same way as waste vapour is drawn out of this material to make hikers more

comfortable and less prone to hypothermia, so it is able to ‘breathe’ oxygen into our fuel cell and into contact with the conductive plastic,” Winther-Jensen said.

Professor Doug MacFarlane from the Australian Centre for Electromaterials Science said the discovery was probably the most important development in fuel cell technology in the last 20 years.

“The benefits for the motoring industry and for motorists are that the new design removes the need for platinum, which acts as the catalyst and is currently central to the manufacturing process,” MacFarlane said.

“Our reliance on platinum is making the likelihood of using fuel cells in everyday passenger cars, increasingly improbable.”

“The cost of the platinum component alone of current fuel cells for a small car with a 100kW electric engine is more than the total cost of an 100kW gasoline engine. Also current annual world production of platinum is only sufficient for about 3 million 100kW vehicles, less than one-twentieth of the current annual global production of vehicles.”

## How the fang happened

**U**niversity of Melbourne researchers have revealed a new model of snake evolution to explain how fangs specialized from early teeth to introduce venom into prey or attackers; their new weaponry may have enabled the massive expansion of snake species across all continents (except Antarctica) approximately 60 million years ago.

“Understanding the evolution of fangs sheds light on how snakes colonised new environments or adapted to feed on new prey,” says Department of Biochemistry and Molecular Biology’s Dr Bryan Fry.

“The evolution of these unique adaptations has been unravelled for the first time”.

Fry worked with a team from the Netherlands, US, Israel, and Adelaide.

All snakes with hollow front fangs were initially considered to all share a common ancestor but genetic evidence showed this was not the case. Hollow front fangs instead evolved independently on three separate occasions.

“The true innovation in venom delivery came with the development of hollow-syringe fangs to deliver the venom under high-pressure,” Fry said.



# Sexless bugs under fire

**A** new study has found that agricultural environments drive insects to reproduce without sex – a trait that is uncommon in most of the animal kingdom – but may provide methods for controlling their damaging effects.

Researchers at the University of Melbourne have found that when insect pests have a stable environment with abundant resources, such as grain crops, orchards, vineyards, pastures and

plantations where the same crops are grown every season, they were four times more likely to reproduce without sex compared to insects overall.

“So increasing the complexity and variability of agricultural environments provides a way of potentially controlling asexual pest species” said the Centre for Environmental Stress and Adaptation Research, Bio21 Institute’s Professor Ary Hoffmann.

These pests include species like aphids that suck sap, mites

that eat leaves, scale insect pests that feed on plant sap, beetles that eat plants and thrips that puncture plant cells.

“We looked at insects from Italy and North America, comparing databases of agricultural pest species with the insect species that can reproduce asexually, a method that is effectively cloning and so doesn’t require males and sex for reproduction.

“We discovered that the asexual species comprised 45% (North America) or 48% (Italy) of pest species in general

where asexual reproduction occurred, compared to an overall incidence of 10% or 16% in these genera.”

The Department of Genetics’ Dr Andrew Weeks said the advantage farmers have is that asexual pests will have difficulty overcoming control methods that require the evolution of changes at multiple genes, which is more easily achieved with sexual reproduction where two sets of genes combine to produce a more variable genetic make-up than just cloning. 

