Zenobia Jacobs has been funded by the L'Oréal "For Women in Science "Fellowship (2009) scheme to re-date some of the earliest archaeological sites in Australia using single-grain OSL methods.

On the world stage, Australia holds the key to understanding when the ideas and genes associated with the first anatomically modern humans left Africa, as well as the speed and likely pattern of dispersal worldwide. Consensus holds that only one species of human — *Homo sapiens* — made landfall in Australia. The key site is Lake Mungo, in western New South Wales, where Australia’s oldest skeletal remains – including the world’s earliest-known ritual ochre burial and the first recorded cremation – are estimated to be 40,000 years old, with stone artefacts extending to perhaps 50,000 years ago. These ages were obtained near the start of this millennium using OSL dating, and are slightly younger than the thermoluminescence (TL) and OSL ages of 53,000–60,000 years for the two oldest archaeological sites on the continent – Malakunanja and Nauwalabila in far northern Australia.

Some archaeologists view these age estimates as documenting a watershed event in Australia’s prehistory – the arrival of people in a previously uninhabited continent and the extinction of the native megafauna. Other archaeologists, however, contest these ages, challenging their accuracy on the basis that they conflict with existing radiocarbon chronologies and may, instead, reflect post-depositional disturbance. These proponents argue for colonisation no earlier than 45,000 years ago.

Establishing when humans made first landfall in Australia is critical to understanding the time-depth of Aboriginal occupation. But despite its importance for Australia’s cultural heritage, little progress has been achieved since the initial claims for early colonisation were made in 1990. This project will break this stalemate, by making use of revolutionary developments in modern scientific dating methods over the past decade – and especially in OSL dating. The results will have profound implications for deciphering the archaeological record of when modern humans reached different parts of the planet, and the consequences of their arrival for the native biota.

This project is closely related to an ARC Discovery Project awarded subsequently to Chris Clarkson (University of Queensland), "Modern human origins and early behavioural complexity in Australia and South East Asia" (2011-2015), on which Richard Fullagar is a Chief Investigator and Zenobia Jacobs is a named collaborator.
Main Collaborators

- Sue O’Connor, Department of Prehistory, Australian National University
- Chris Clarkson, Department of Archaeology, University of Queensland
- Richard Fullagar, CAS, University of Wollongong

Key publications