MEDIA Release

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World-first genomic study of Aboriginal Australians

Some of the most ancient secrets of Australia's human past have been uncovered in a new study released today and led by Griffith University researchers.

Researchers from **Griffith University's Research Centre of Human Evolution (RCHE)** along with nine indigenous Aboriginal Australian Elders collaborated with an international team, including researchers from the University of Copenhagen led by Prof Eske Willerslev, on a large-scale project to sequence the complete genomes of 83 Aboriginal Australians and 25 Highland Papuans.

The study, published today in the world-leading journal *Nature*, involved Elders who worked as part of the team specifically with respect to discussions with various groups and helping to obtain samples, under strict ethical guidelines.

RCHE Professor David Lambert, who is one of the communicating authors, said saliva samples were collected for DNA sequencing in collaboration with Aboriginal Australian communities and individuals throughout the Australian mainland.

Prof Lambert says understanding just when Aboriginal people first arrived in Australia, and where they come from, has long been the subject of research and conjecture.

"Equally intriguing are the questions surrounding whether there was one colonising event or if different waves of people arrived over time," he says.

The new research entitled *A Genomic History of Aboriginal Australia* has determined that, for all Pama-Nyungan speaking Aboriginal people studied here, there appears to have been just one founding population, which later expanded across much of the continent.

All 83 Aboriginal Australians reported in this study belong to the Pama-Nyungan-speaking language group.

The study found that;

- Aboriginal Australians and Papuans diverged from Eurasians between ~58,000 thousand years ago, following a single out of Africa dispersal.
- Aboriginal Australians and Papuans later diverged ~37,000 years ago, long before the physical separation of Australia and New Guinea, some 10,000 years ago. These people, coming from mainland Asia and travelling into Australia, were the ancestral population to most if not all modern day Australians.
- Subsequently, the ancestral Australian population differentiated ~31,000 years ago into subgroups with the formation of the central desert likely acting as a barrier to migrations.

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The study made another important discovery; Aboriginal Australians living in desert conditions may have developed specific biological means of coping with those highly challenging environments.

“Unique morphological and physiological adaptations have been identified in Aboriginal Australians living in the desert areas today,” Prof Lambert says.

“In particular, the evidence suggests that desert groups are able to withstand sub-zero night temperatures without showing the increase in metabolic rates observed in Europeans under the same conditions.”

Professor Lambert says the paper lays a new foundation for understanding how the First Australian population changed over deep time.

“Further study of modern genomes, especially from the non-Pama-Nyungan regions of northern Australia, as well as ancient genomes pre-dating European contact in Australia will undoubtedly provide more insights into the intriguing complexity behind the ancient history of Aboriginal Australia,” he says.

One of the most significant aspects of this study is that nine Aboriginal leaders who assisted with gathering the data are also co-authors of this research.

“This is a very important development in Indigenous research because it will help to break down the widely-held view that scientists and indigenous people are separate groups,” Prof Lambert says.

“One group (scientists) study the other group (indigenous people). This publication will help to break down this distinction and open a new approach to such studies where Indigenous people are given the opportunity to play a far more active role in research about themselves.”

Elder Thomas Wales, of the Thanakwith Pine River People, said it was important to look at Aboriginal history in new ways because in many parts of Australia oral history could be lost.

“I hope that what we do will open up doors for non-Aboriginal people to respect their country,” he said.

“It is good we can participate and instruct how we want things to be done. I’m learning more about our people, myself and my land.

“I’m encouraging others to open their doors and learn about their culture through science.”

NOTE TO JOURNALISTS: Footage and stills available on request. These include interviews and overlay with researcher Dr Michael Westaway and Elder Thomas Whales on location in north Queensland, and lab shots of Dr David Lambert.

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