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## Epigenetic changes associated with ageing

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**O**ur research is interested in identifying genes that relate to ageing, specifically focusing on epigenetic modification in genes with age-specific methylation sites. Methylation of these CpG sites may reflect changes in the expression of associated genes over time and development. The Norfolk Island (NI) population isolate is a unique founder population derived primarily from 18th century English Bounty mutineers and Polynesian women who relocated to NI from Pitcairn in the 1850s. In 2000 we initiated the Norfolk Island Health Study to dissect the genetics of complex disorders including migraine and cardiovascular disease. Health information, as well as blood samples, was collected in 2000 and at subsequent visits in 2007 and 2010. This data has been used for a range of genomic studies of complex traits including investigations of DNA methylation and expression data. We have been utilizing samples to identify CpG sites in the genome that are age dependent or change longitudinally and are investigating the relationship between DNA methylation and gene expression levels in such genes. Our studies investigating CpG sites in healthy adults over a 10-year longitudinal period have revealed genes in which both transcript and CpG methylation showed evidence of

a conjoint association with age ( $P < 0.05$  for both factors), suggesting a functional link between CpG and ageing in these genes. Interestingly, gene set enrichment analysis of these genes has implicated biological processes related to the cardiovascular system. We are continuing studies in this population and are currently undertaking whole genome epigenetic analysis in the NI cohort.

### Biography

Lyn Griffiths is the Executive Director, Institute of Health and Biomedical Innovation at QUT. She is a Molecular Geneticist who has been studying the genes involved in common human disorders for many years with a particular focus on neurovascular disorders. She has completed her Graduation in Biochemistry, UNSW and a PhD in Medicine, University of Sydney. She has published over 350 research papers, supervised 48 Postgraduates and received significant competitive grant and industry funding. She plays a significant role in the Human Genetics Society, Australasia as past Queensland President, current Chair Diagnostic Genomics Board of Censors and Director Masters in Diagnostics Genomics.

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