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## Virus capsid assembly in circoviruses

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The assembly and regulation of viral capsid proteins into highly ordered macromolecular complexes is essential for viral replication. Here, we utilize crystal structures of the capsid protein from the smallest and simplest known viruses capable of autonomously replicating in animal cells, circoviruses, to establish structural and mechanistic insights into capsid morphogenesis and regulation. The beak and feather disease virus, like many circoviruses, encode only two genes: A capsid protein and a replication initiation protein. The capsid protein forms distinct macromolecular assemblies during replication and here we elucidate these structures at high resolution, showing that these complexes reverse the exposure of the N-terminal arginine rich domain responsible for DNA binding and nuclear localization. We show that assembly of these complexes is regulated by single-stranded DNA (ssDNA) and provide a structural basis of capsid assembly around single-stranded DNA, highlighting novel binding interfaces distinct from the highly positively charged N-terminal ARM domain.

## **Biography**

Jade K Forwood has completed his BBiomedSc at James Cook University and his PhD in Biochemistry and Molecular Biology at the John Curtin School of Medical Research (Australian National University). He was awarded a University Medal in 1998 and the Frank Fenner Medal in 2002 for most outstanding PhD thesis. In 2007, he has joined the School of Biomedical Sciences at Charles Sturt University to coordinate and lecture in biochemistry.

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