

# **Characterisation of Bacterial Symbionts in Amoebae**

Melissa Kim Hewett – Phd Thesis Abstract

School of Pharmaceutical, Molecular and Biomedical Sciences

University of South Australia and CRC for Water Quality and Treatment

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## **Summary**

This thesis attempts to broaden what is known about bacterial symbionts within amoebae by the use of a number of different molecular methods. Initially a number of different amoeba strains were screened for bacterial symbionts by 16S rRNA gene PCR, then the symbionts were identified by comparative sequence analysis and phylogenetic analysis. The amoeba strains containing bacterial symbionts were characterised by cell morphology, 18S rRNA gene sequencing, internal transcribed spacer sequencing and allozyme electrophoresis. Amoebae belonging to the genera *Acanthamoeba*, *Naegleria*, *Ripidomyxa* and *Saccamoeba* were identified as containing symbionts that belonged to a wide range of different bacterial genera. Relationships between bacterial symbionts and their host amoebae were analysed by the use of transmission electron microscopy and fluorescent *in situ* hybridisation using symbiont specific probes. Also described are attempts that were made to isolate and grow the bacterial symbionts outside of their host amoebae as well as experiments to try to transfer bacterial symbionts from one amoeba strain to another. Lastly the results from this study are discussed as a whole to put into perspective how they contribute to the body of knowledge of symbionts within protozoa,