

# DR. MEGAN STRIDE

**Honours 2006**

**PhD 2011-2014 UTAS**

**AIMS@JCU honours scholarship (JCU)**

**APA (UTAS)**

**School of Marine Biology & Aquaculture**

**Supervised by:**

**Prof. Paul Southgate**

**Dr. Mike Hall**

## **The nutrient composition and nutritional value of new species of tropical microalgae for use in aquaculture**

Megan was born and raised in Northern NSW. She moved to Townsville in 2003 and completed her BSc majoring in Aquaculture through JCU. Megan was awarded an AIMS@JCU honours scholarship to undertake research into microalgae, and received first class honours at the end of 2006.

Megan's honours project addressed a serious gap in the knowledge of the potential use of tropical microalgae in tropical aquaculture. At the time of her project, nearly all species of microalgae used in tropical aquaculture were of temperate origin. It was important to assess promising tropical species in an attempt to find better suited live-feed species for use in tropical aquaculture.

Megan's project determined the nutritional value of *Chaetoceros* sp. (CS-256) and *Micromonas pusilla* (CS-170) when fed to brine shrimp (used as the 'model' aquaculture species). These species were chosen on the basis of their appropriate cytomorphological characteristics, relatively high growth rates and geographical origin.

The study also demonstrated how the biochemical composition of these microalgae species could be manipulated by altering their culture conditions. Two factors (salinity, and nutrient limitation) were tested at three levels each (salinity – 15, 25 & 35 ppt; nutrient limitation – nitrogen limiting, phosphorus limiting or no limitation).

After the biochemical composition was assessed, selected conditions were chosen and a feeding trial was conducted.

Megan's project showed that both test species were readily ingested by brine shrimp and that microalgae grown under manipulated conditions supported significantly higher growth rates with significantly higher in levels of key nutrients (e.g. saturated fatty acids 14:0 and 16:0 and monounsaturated fatty acid 16:1n-7) providing the basis for their greater nutritional value for aquaculture species over their temperate counterparts.

Since graduating from JCU, Megan has worked for the Department of Agriculture, Fisheries and Forestry and the Australian Quarantine Inspection Service in Sydney. More recently, in 2011, she moved to Tasmania to undertake her PhD in aquatic animal health under the supervision of Prof. Barbara Nowak. She recently completed her project entitled 'Novel Chlamydia-like agents of epitheliocystis in wild and cultured Australian finfish', submitting in less than three years, with 5 published papers. She is due to graduate with her PhD in December 2014.



## Publications

STRIDE, MC, Polkinghorne, A & Nowak, BF (2014). Chlamydial infections of fish: Diverse pathogens and emerging causes of disease in aquaculture species. *Veterinary Microbiology*, 171, 258-266.

STRIDE, MC & Nowak, BF (2014). Epitheliocystis in three wild fish species in Tasmanian waters. *Journal of Fish Diseases*, 37, 157-162.

STRIDE, MC, Polkinghorne, A, Powell, MP & Nowak BF (2013). 'Candidatus Similichlamydia laticola', a novel Chlamydia-like agent of epitheliocystis infections in seven consecutive cohorts of farmed Australian barramundi, *Lates calcarifer* (Bloch). *PLOS ONE*, 8, e82889.

STRIDE, MC, Polkinghorne, A, Miller, TL & Nowak, BF (2013). Molecular characterisation of 'Candidatus Similichlamydia latridicola gen. nov., sp. nov.' (Chlamydiales: Parilichlamydiaceae), a novel Chlamydia-like epitheliocystis agent in striped trumpeter, *Latris lineata* (Forster). *Applied and Environmental Microbiology*, 79, 4914-4920.

STRIDE, MC, Polkinghorne, A, Miller, TL, LaPatra, SE, Groff, JM & Nowak, BF (2013). Molecular characterisation of *Candidatus Parilichlamydia carangidicola*, a novel Chlamydia-like epitheliocystis agent in Yellowtail Kingfish, *Seriola lalandi* (Valenciennes), and the proposal of a new family, *Candidatus Parilichlamydiaceae* fam. nov. (Order Chlamydiales). *Applied and Environmental Microbiology*, 79, 1590-1597.

## Conferences and invited presentations

STRIDE, MC, Polkinghorne, A., Powell, M. and Nowak BF, 'Novel Chlamydia-like epitheliocystis agents in Australian farmed Barramundi', *16th International Conference of Fish and Shellfish Diseases*, 2 – 6 September 2013, Tampere Finland (2013). [Oral Presentation]

STRIDE, MC and Nowak BF, 'Epitheliocystis in three wild fish species in Tasmanian waters', *16th International Conference of Fish and Shellfish Diseases*, 2 – 6 September 2013, Tampere Finland (2013). [Poster Presentation]

STRIDE, MC, Polkinghorne, A., Powell, M. and Nowak BF, 'Novel Chlamydia-like epitheliocystis agents in Australian farmed Barramundi', *2nd FRDC Australasian Aquatic Animal Health Scientific Conference*, 8 – 12 July 2013, Cairns QLD Australia (2013). [Oral Presentation] – Awarded Best Student Presentation

STRIDE, MC, Polkinghorne, A, Miller, TL and Nowak BF, 'Novel Chlamydia-like epitheliocystis agents in Australian farmed Yellowtail kingfish, Striped trumpeter and Barramundi', *Australian Chlamydia Conference*, 21-22 November 2012, Brisbane QLD Australia (2012) [Invited Oral Presentation]

STRIDE, MC, Polkinghorne, A, Miller, TL and Nowak BF, 'Epitheliocystis in finfish: an Australian perspective', *Australasian Aquaculture – the next 10 years Scientific Conference booklet*, 1-4 May 2012, Melbourne VIC Australia (2012). [Oral Presentation]

## Conferences and invited presentations, cont.

STRIDE, MC, Polkinghorne, A and Nowak, BF,  
'Molecular characterisation of a Chlamydia-like  
epitheliocystis agent in Yellowtail kingfish, *Seriola  
lalandi*', *3rd Australian National Network in Marine  
Science postgraduate conference*, 29 November  
– 1 December 2011, Perth WA Australia (2011).  
[Poster Presentation]

STRIDE, MC, Polkinghorne, A and Nowak, BF,  
'Molecular characterisation of a Chlamydia-like  
epitheliocystis agent in Yellowtail kingfish, *Seriola  
lalandi*', *1st FRDC Australasian Aquatic Animal  
Health Scientific Conference*, 5 – 8 July 2011,  
Cairns QLD Australia (2011). [Oral Presentation]

## Scholarships, grants and awards

2013

UTAS Conference Support Scheme (\$2500)  
ABRS Student Travel Bursary (\$1000)  
FSBI International Travel Award (£1000)  
ESCMID Attendance Grant (850 €)  
EAAP Student Award (400 €)  
Best Student Presentation – Australasian Aquatic  
Animal Health Conference, Cairns QLD

2012

3MT Finalist – UTAS, Hobart TAS

2011 – 2014

Australian Postgraduate Award