

# **An evolutionary hypothesis for the radiation of the Gyliachenidae**

Goto & Matsudaira, 1918 (Platyhelminthes: Digenea)

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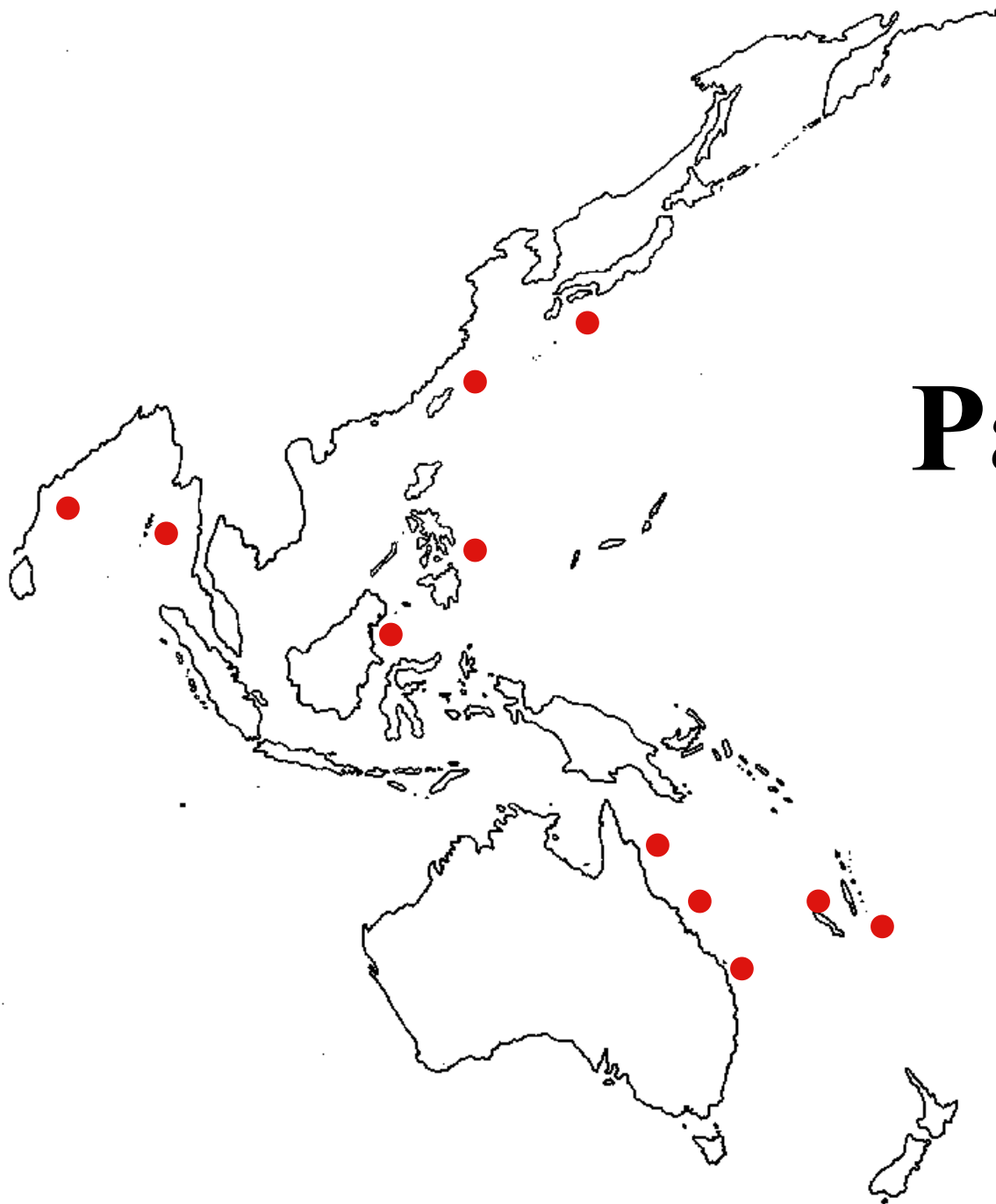
**Kathryn A. Hall<sup>\*1,2</sup>**

T. H. Cribb<sup>1</sup>, R. A. Bray<sup>2</sup> and D. T. J. Littlewood<sup>2</sup>

1. The University of Queensland, Brisbane, AUSTRALIA

2. The Natural History Museum, London, UK

# Pacific Ocean



● Distribution of  
Gyliachenidae

# Methodology

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## Available data:

- 49 species characterised by morphological data  
(light microscopy, literature review)
- 19 species characterised by sequence information  
(ND1 mtDNA, 28S rDNA)

## Analysis:

- parsimony analysis: heuristic searches and quartet puzzling within PAUP\* (Swofford, 1999)

# Phylogenetic correlation of gut adaptation

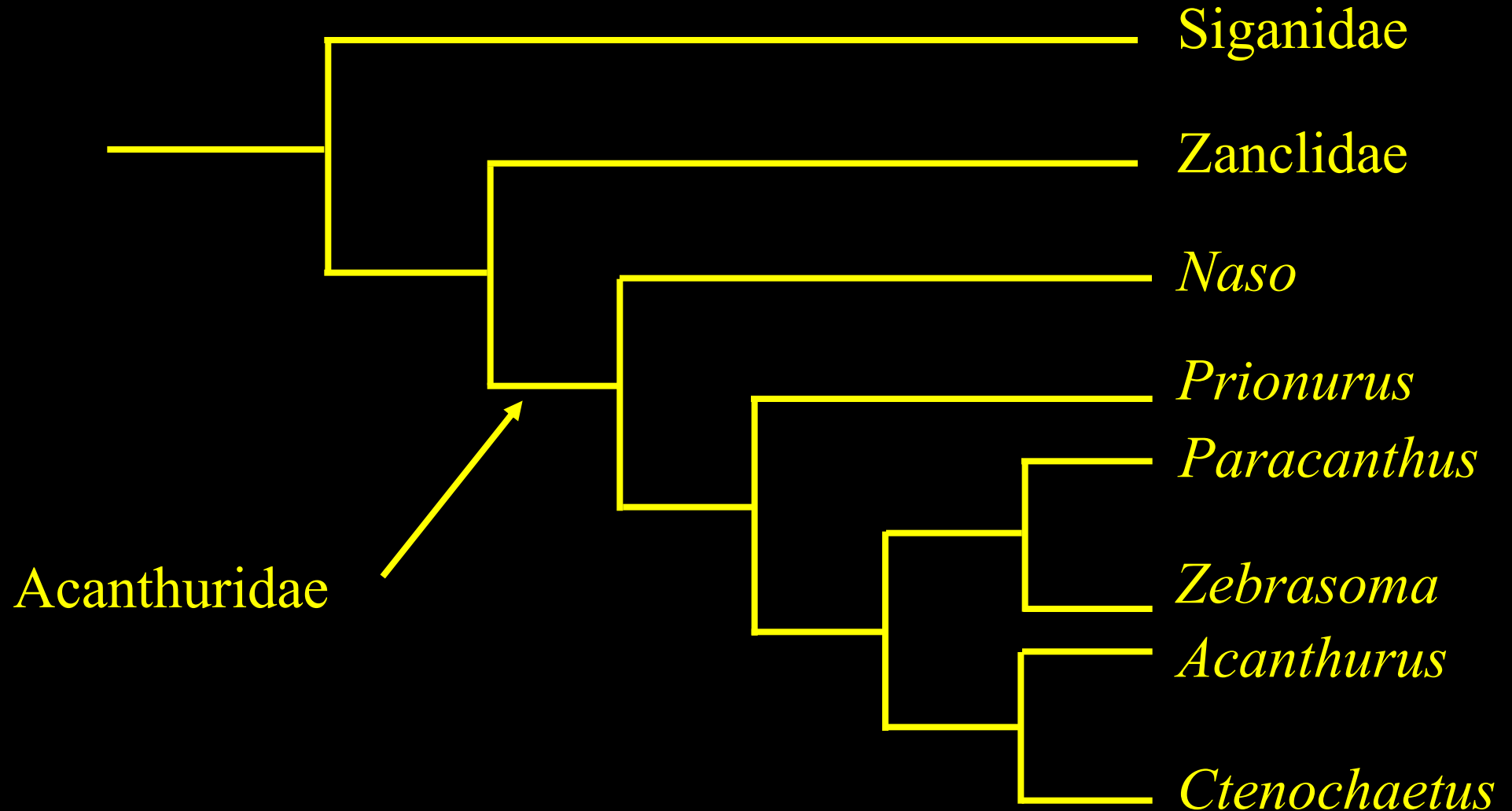
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- gut becomes more complex through time
- hierarchy of synapomorphies for gyliauchenid clades
- heritability of characters has taxonomic implications

# Phylogeny of the Acanthuroidea

after Winterbottom (1993)

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# Ecological correlations

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- acanthuroid fishes are predominantly herbivores
- host gut structure broadly conserved
- extreme gut adaptations restrict opportunity for host-switching
- specificity to acanthuroid fishes is an ecological association
- gyliachenid radiation does not necessarily involve co-evolution

# Further testing

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- further collecting in south Pacific and east Indian oceans
- incorporation of any new taxa into phylogenies
- host mapping
- biogeography mapping
- fine level analysis of host-parasite evolution

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