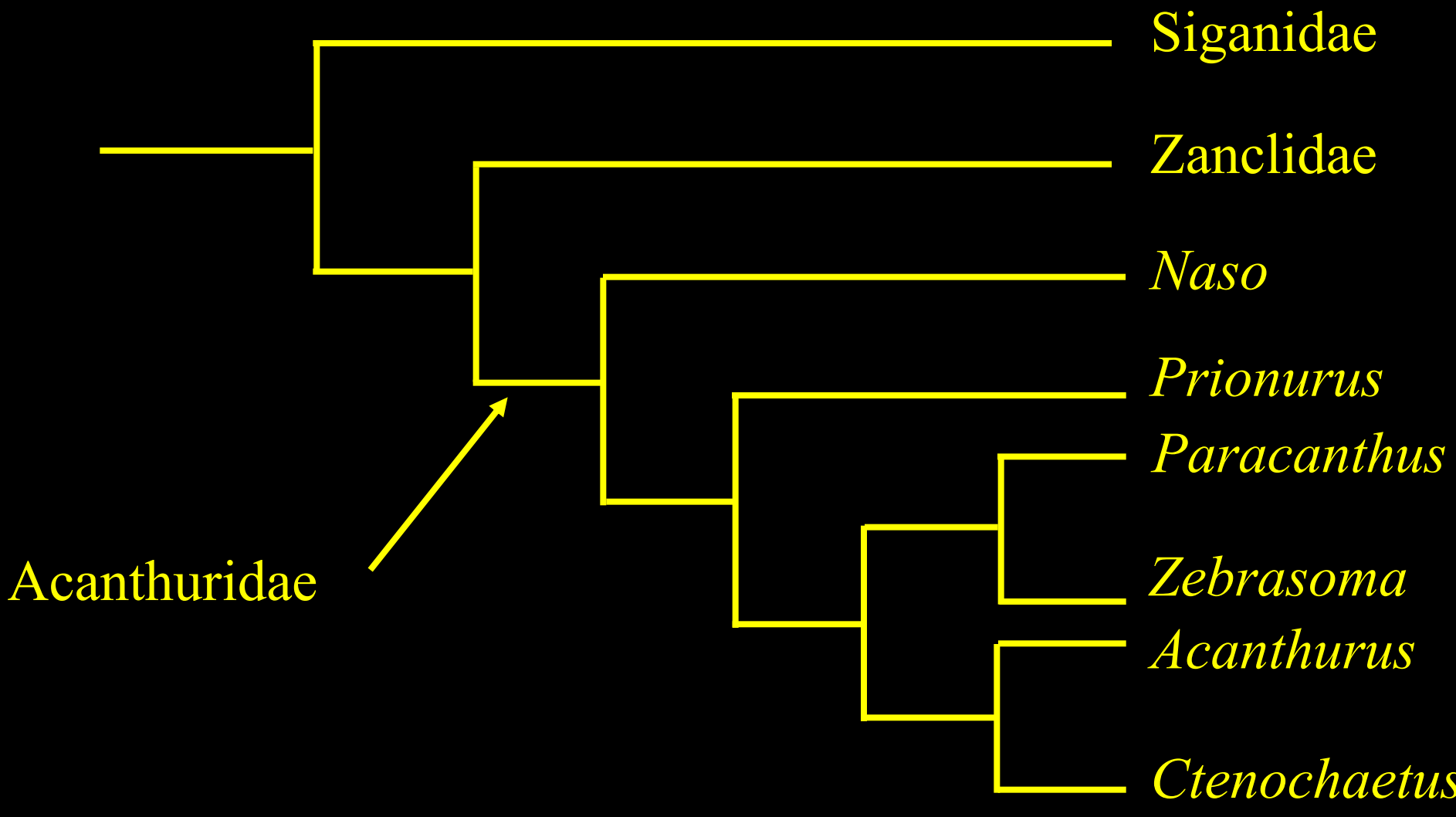
Phylogeny of the Acanthuroidea

after Winterbottom (1993)



Patterns of evolution of the gut

We have isolated three major steps in the evolution of the complicated structures of the gastro-intestinal tract:

1. oral sucker loss; oesophageal bulb evolution
2. oesophageal lengthening and thickening; reduction of caeca
3. super-coiling of oesophagus

Ecological correlations

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

Future directions

- exploration of geometric morphometric techniques for phylogenetic inference
- fine level analysis of host-parasite evolution

Summary

- molecular phylogenies
- character mapping
- phlyogenetic correlation of gut structure
- specialisation of gut induced ecological correlation between gyliauchenids and acanthuroids