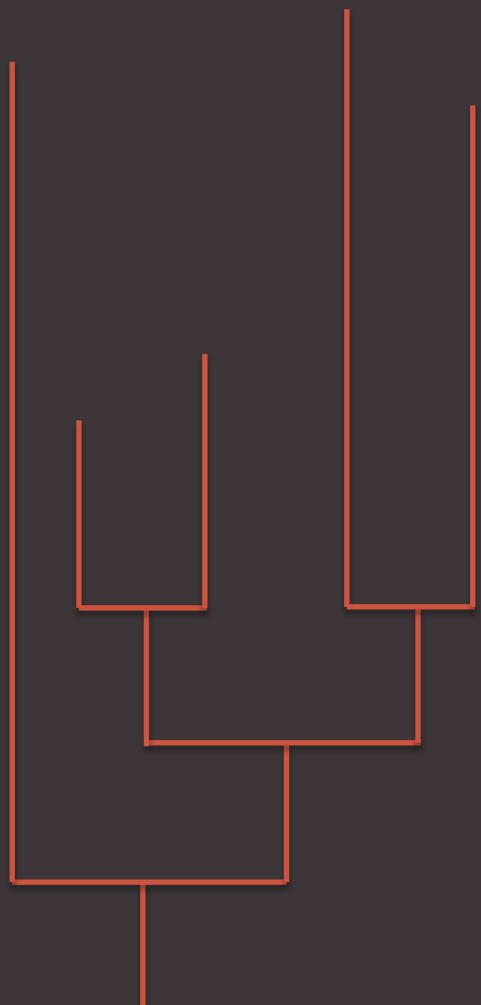




Towards a Comprehensive Phylogeny of Staphylinidae (Coleoptera)

Progress Report

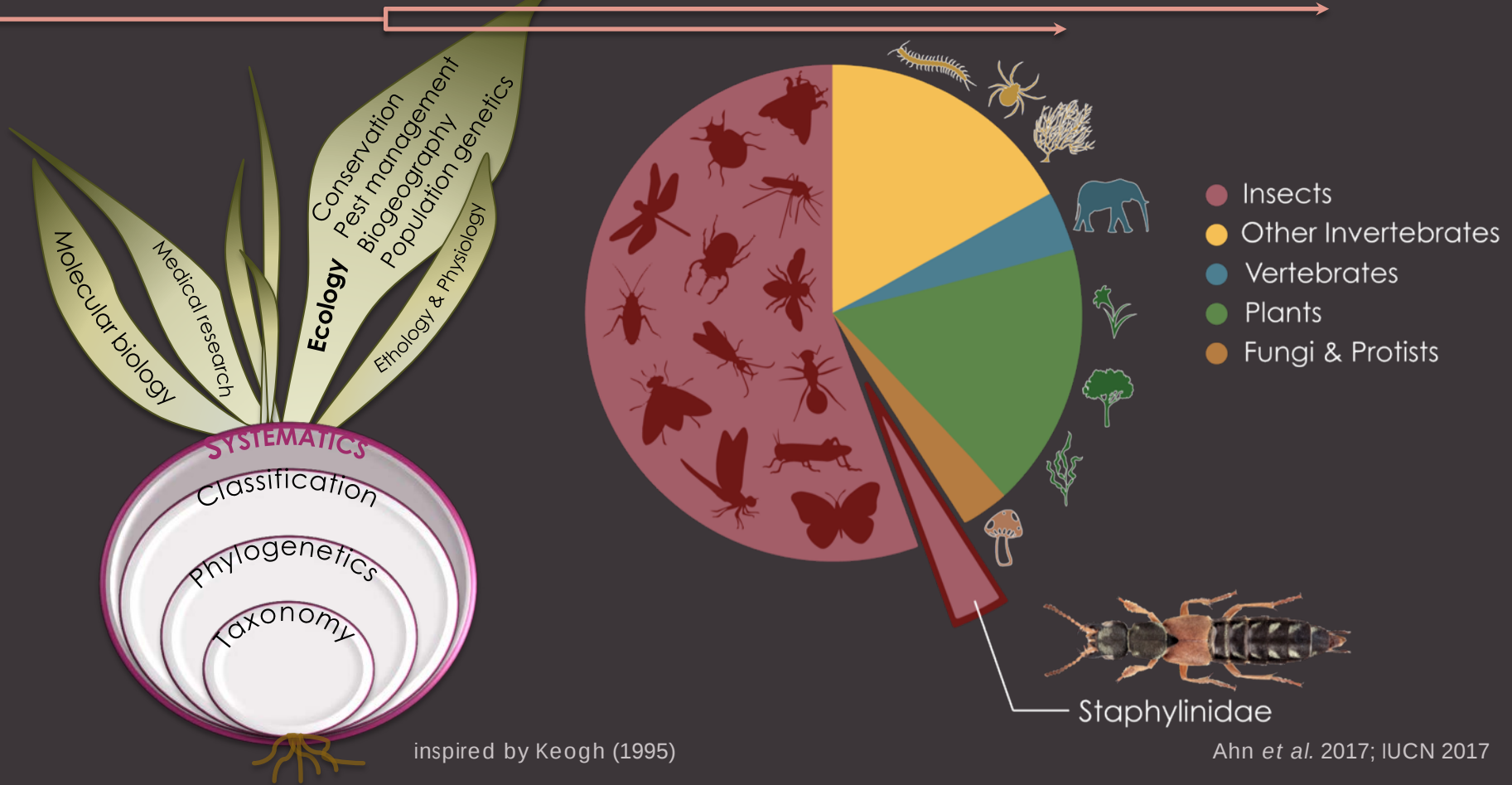
Janina L. Kypke

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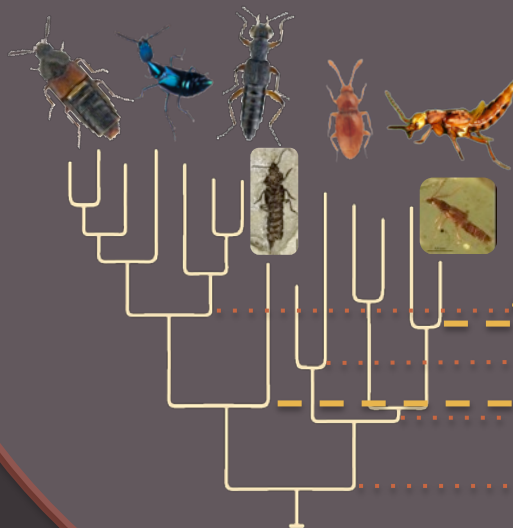


Why study systematics of Staphylinidae?



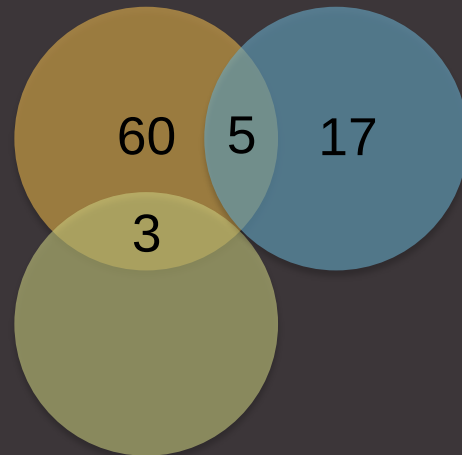
morphology

molecules

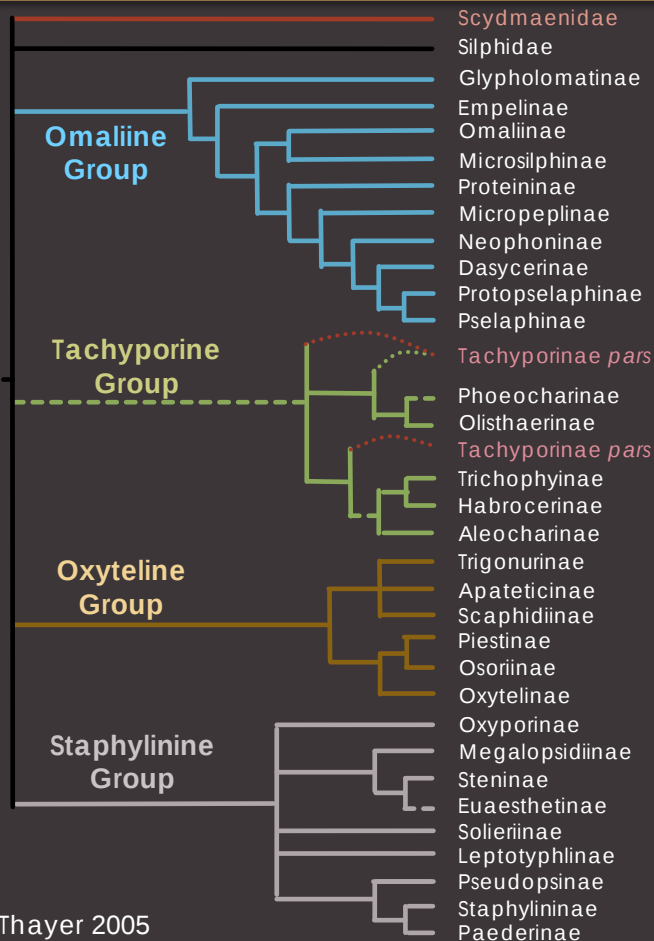


fossils

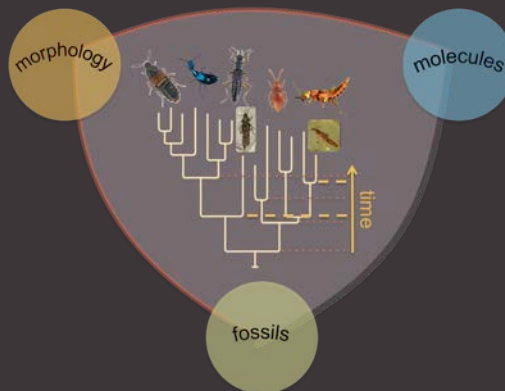
1980-2017:



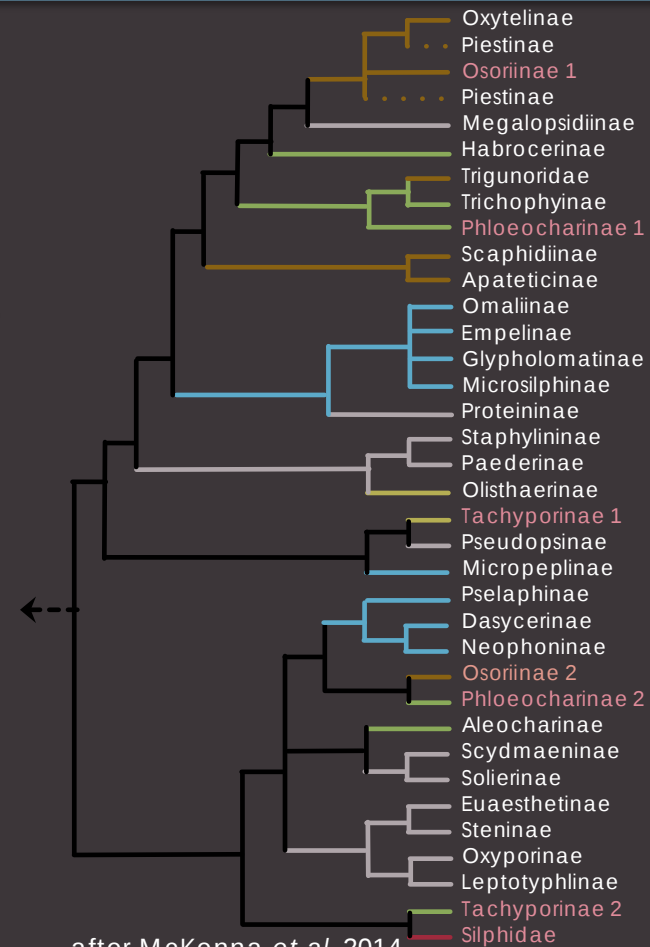
Morphology



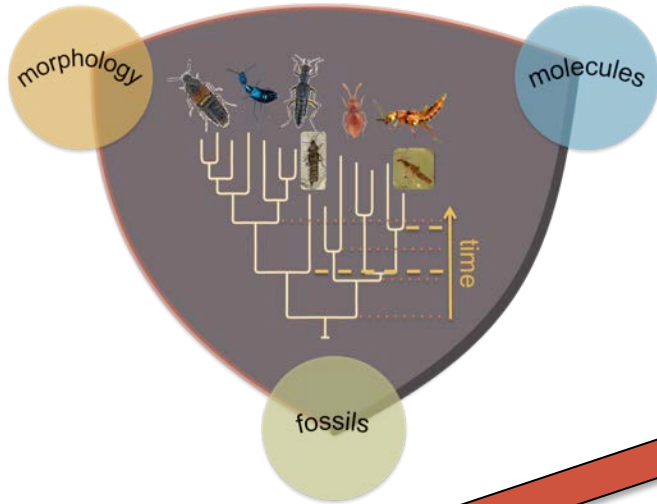
Thayer 2005



Molecules



after McKenna *et al.* 2014



The present and the past through phylogenetic analysis: the
beetle tribe Othini now and 100 million years ago

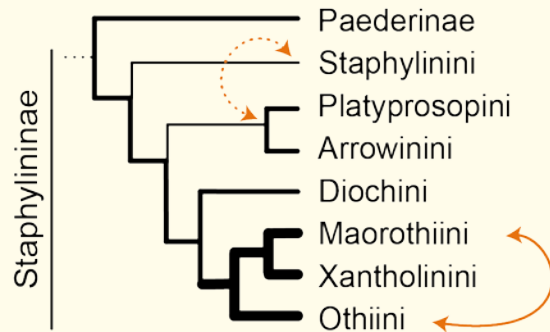
Submitted

Overview

Staphylininae

[**M**aorotiini + **O**thiini + **X**antholinini] + Staphylinini + Platyprosopini + Arrowinini + † Thayeralinini + Diochini

A



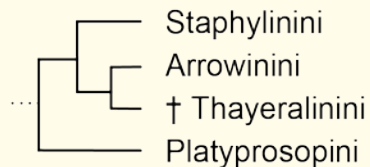
— Solodovnikov & Newton 2005¹;
McKenna *et al.* 2014²

— The above and Brunke *et al.* 2016²

— Solodovnikov *et al.* 2013¹

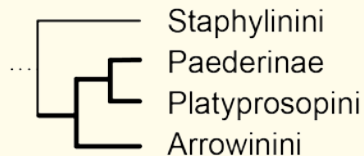
--- McKenna *et al.* 2014²

B



Solodovnikov *et al.* 2013¹

C



— Brunke *et al.* 2016²;

— The above and Schomann & Solodovnikov 2016²



Othiini



Othius (126 spp.)

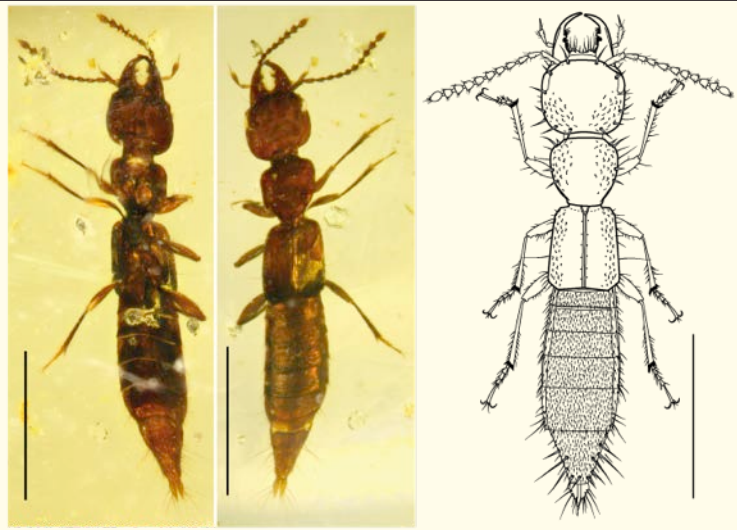
Atrecus (13 spp.)

Parothius (2 spp.)

Caecolinus (1 sp.)



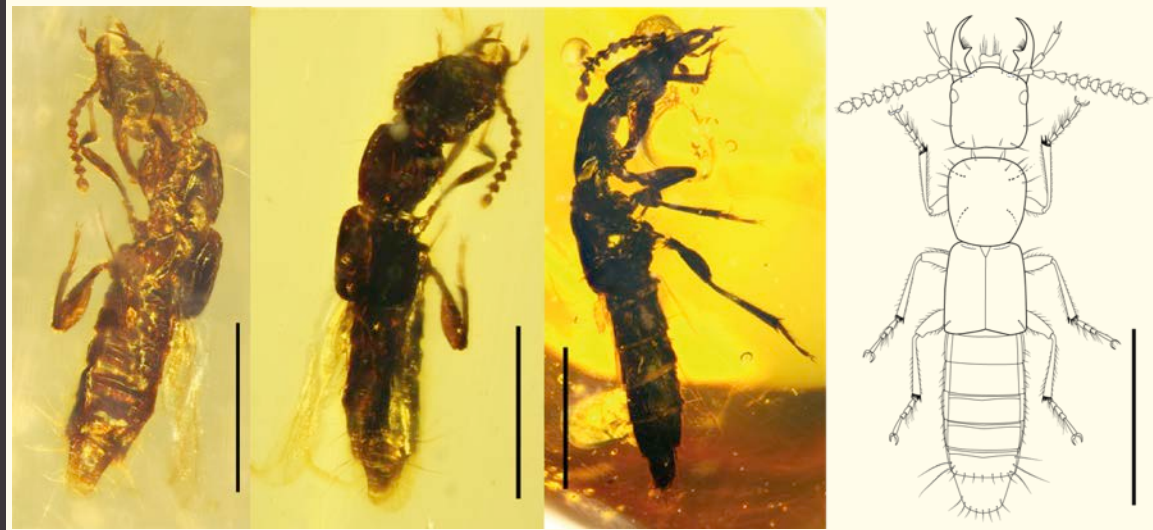
Morphospecies 1 & 2



fossil 1

♀

- ◆ 2.5 mm long
- ◆ Setose, with microsculpture
- ◆ Pronotum narrow posteriad



fossil 2

♀?, ♂

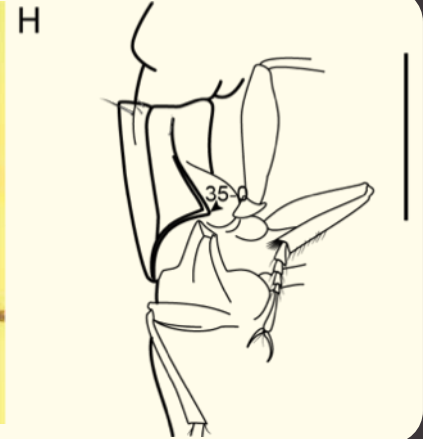
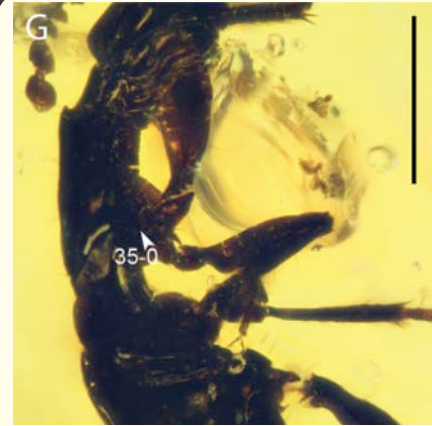
- ◆ 2.4 mm long
- ◆ Few setae, smooth surface
- ◆ Pronounced hind angles

Characters in context



Antesternal plates absent

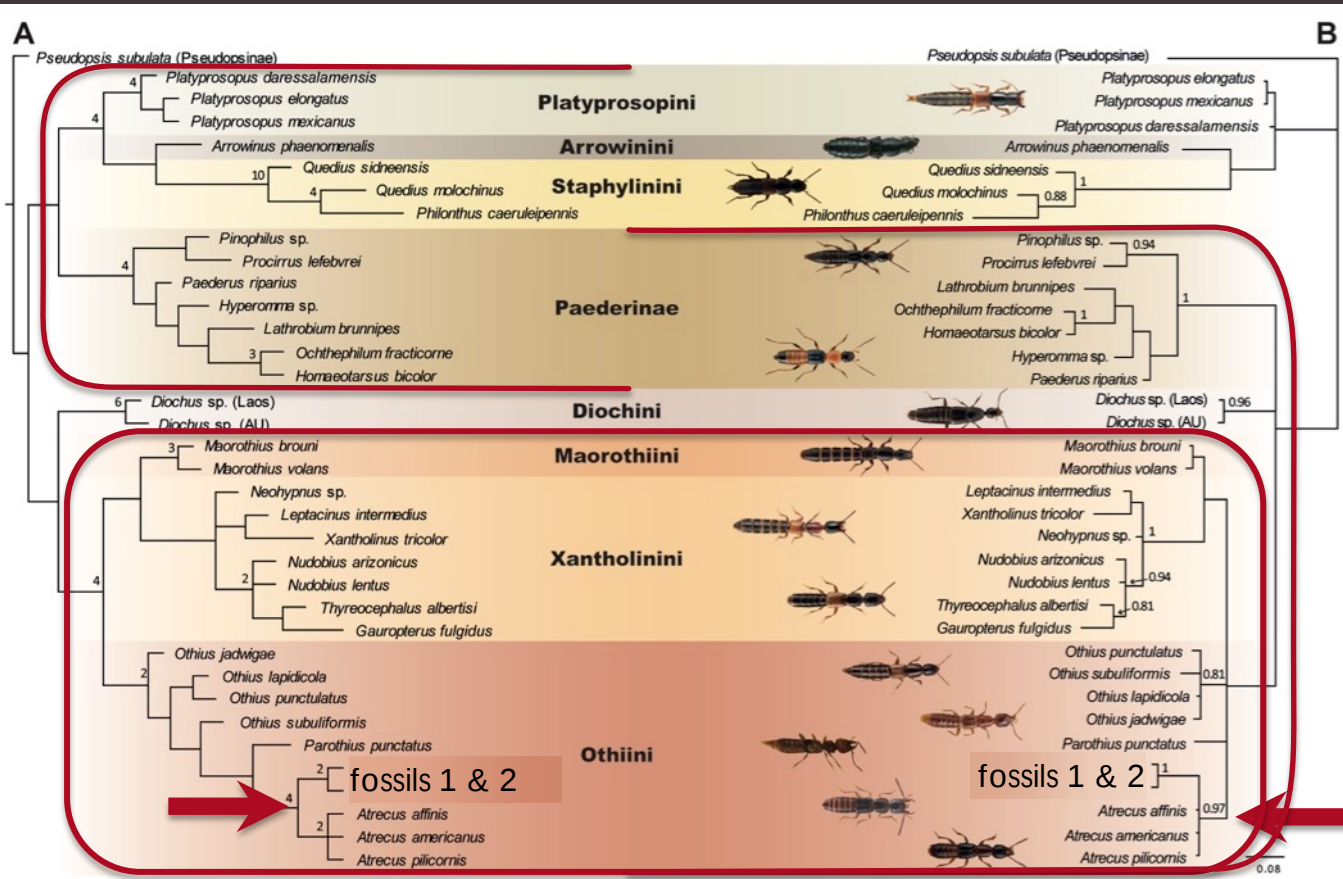
- ◆ Present state is MOX-clade characteristic



Postcoxal process present

- ◆ Characteristic for Paederinae

Phylogenetic reconstruction



- ◆ 38 species
- ◆ 65 morphological characters
- A: Maximum Parsimony
- B: Bayesian Inference



Vetatrecus adelphae *V. secretum*
 gen. n. & sp. n.

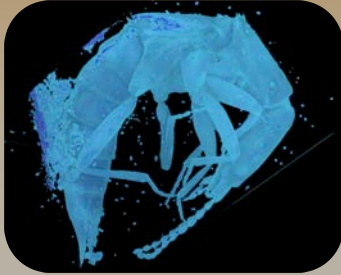
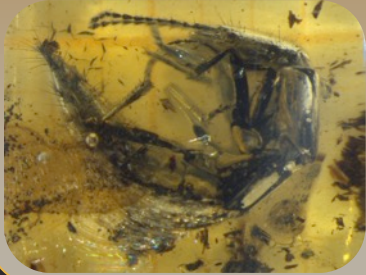
- ◆ *Vetatrecus* sister to *Atrecus*
- ◆ Paederinae within Staphylininae
- ◆ MOX-clade recovered

Most important characters
for Othiini:

- ◆ Ventral basal ridge strongly projects anteriorad
- ◆ Apex of male sternite VIII evenly arcuate

Analyze 2 microCT scans of Paederinae in Baltic amber

- describe new species
- place with phylogenetic analysis
- comparison: microCT scan vs. light microscopy



Chapter 2



Cornell University

Score ~80 Staphs + outgroups in morphological matrix

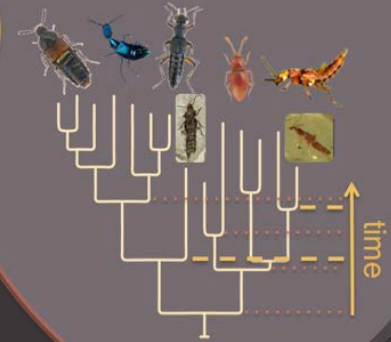
Phylogeny and classification of the staphyliniform beetle families (Coleoptera)

By MICHAEL HANSEN

morphology

molecules

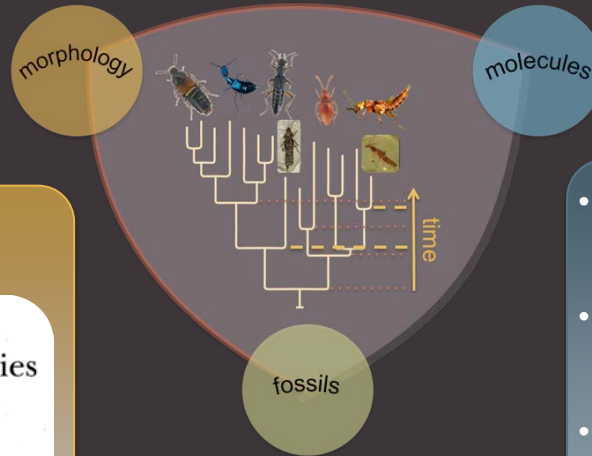
fossils



Score ~80 Staphs + outgroups in morphological matrix

Phylogeny and classification of the staphyliniform beetle families (Coleoptera)

By MICHAEL HANSEN



- ~3000 single-copy orthologous genes from *N. vespilloides* genome identified
 - 21 transcriptomes (1KITE & CSIRO)
 - 10 assembled, 11 pending
 - NGS of ~60 Staphs + outgroups
- Target capture or genome re-sequencing??

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thank
you!

Alexey Solodovnikov

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Aslak Kappel Hansen

Oliver Niehuis

Karen Meusemann

Solodovnikov Lab + Big4 Members



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