Phylogenetic relationships of a new schizorhynch genus refute the monophyly of *Schizochilus* Boaden, 1963 (Platyhelminthes, Rhabdocoela)

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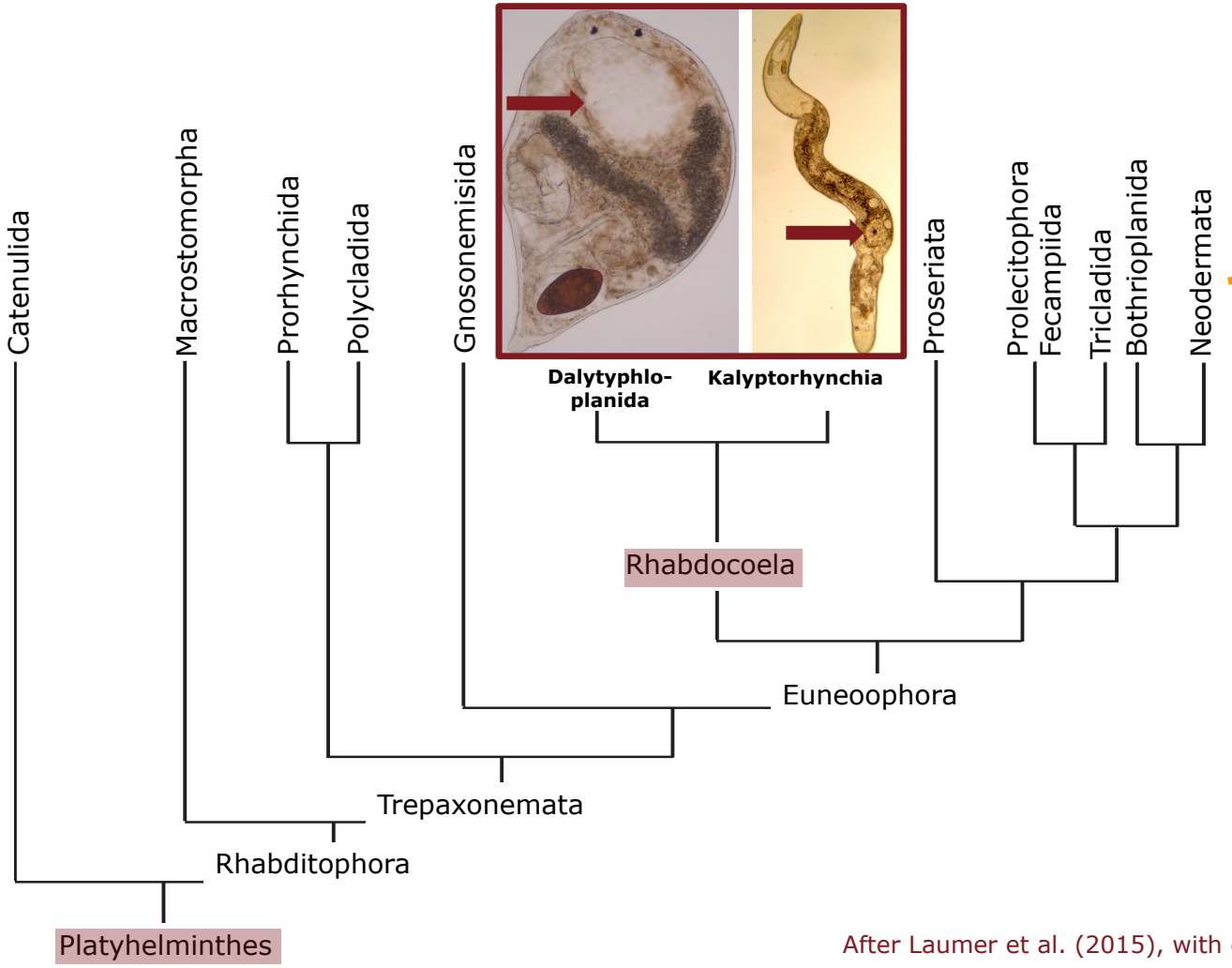
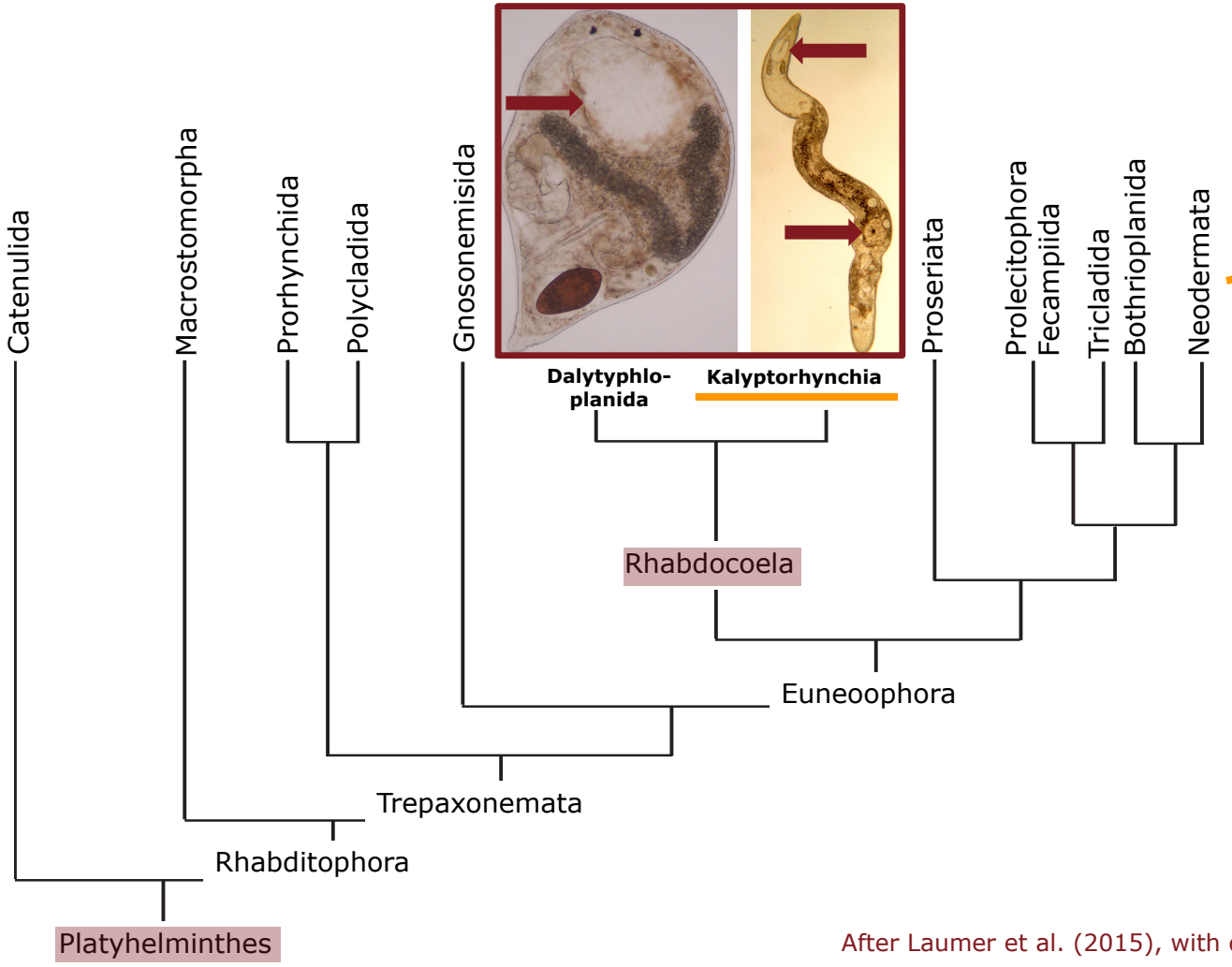


Schizochilus?

After Laumer et al. (2015), with data from Willems et al. (2006) added



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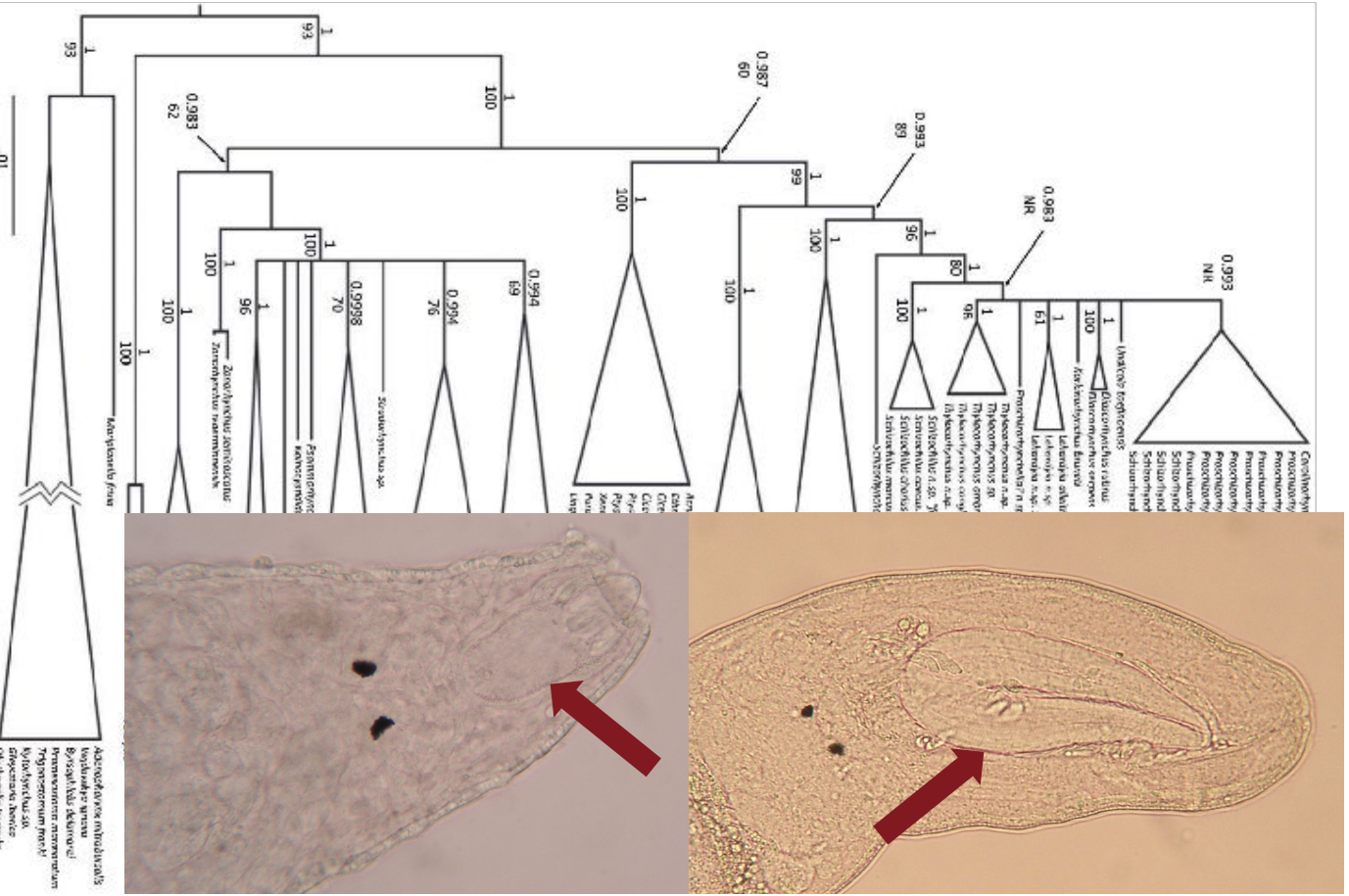


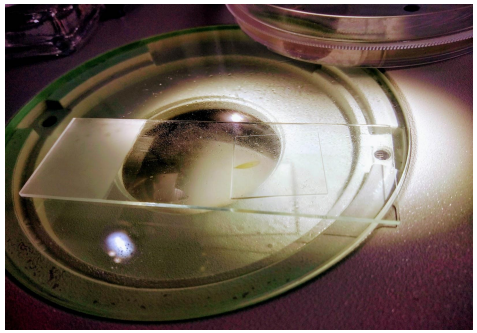
‘Eukalyptorhynchia’

Schizorhynchia

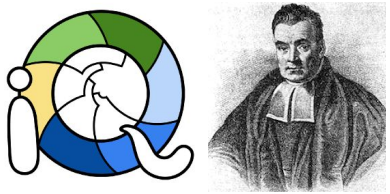
Smith et al. (2015)

Schizochilus?

Collecting animals



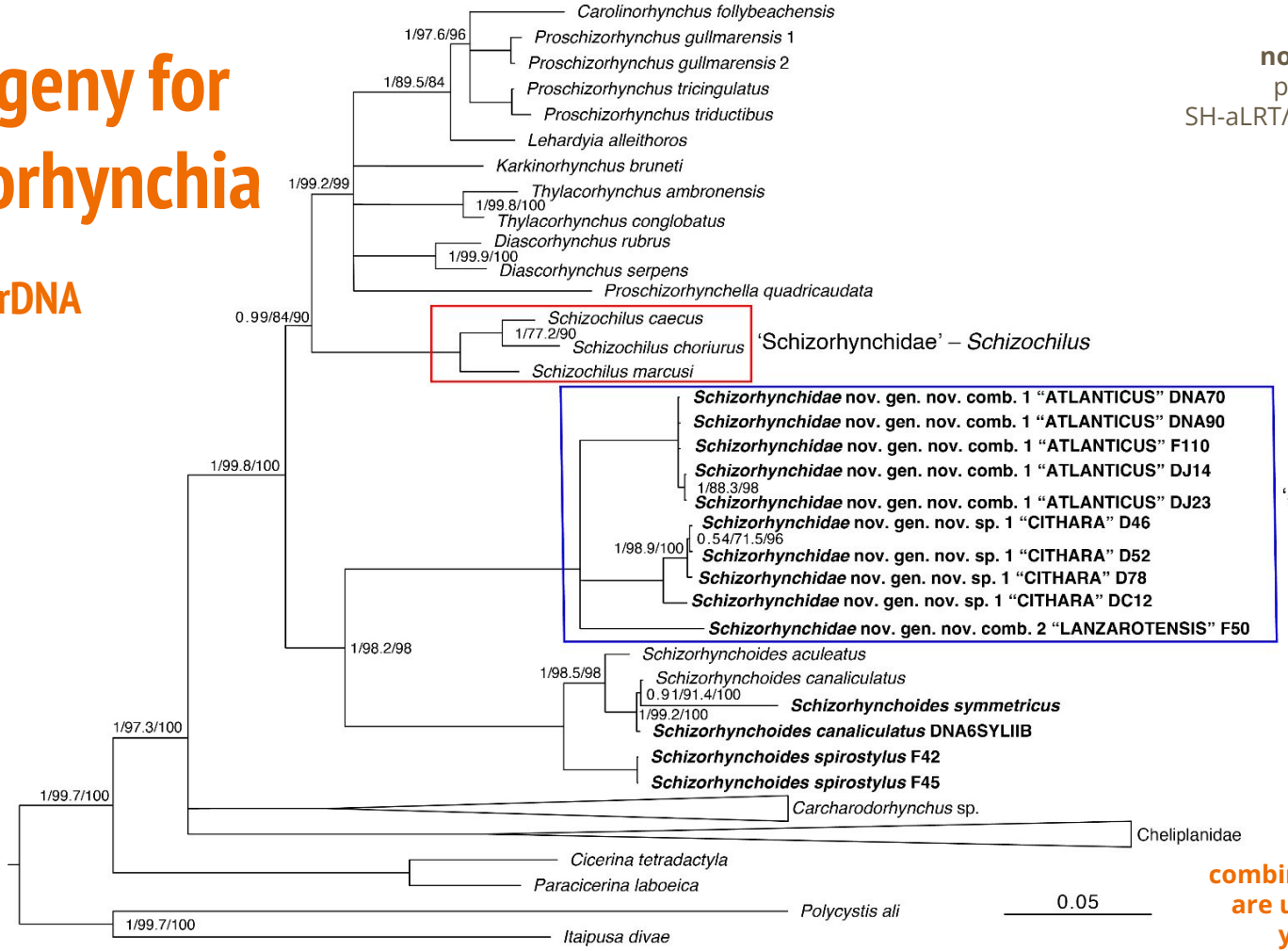
live photos
drawings
whole mounts
DNA material



phylogenetic work
- *maximum likelihood*
- *bayesian analyses*

Phylogeny for Schizorhynchia

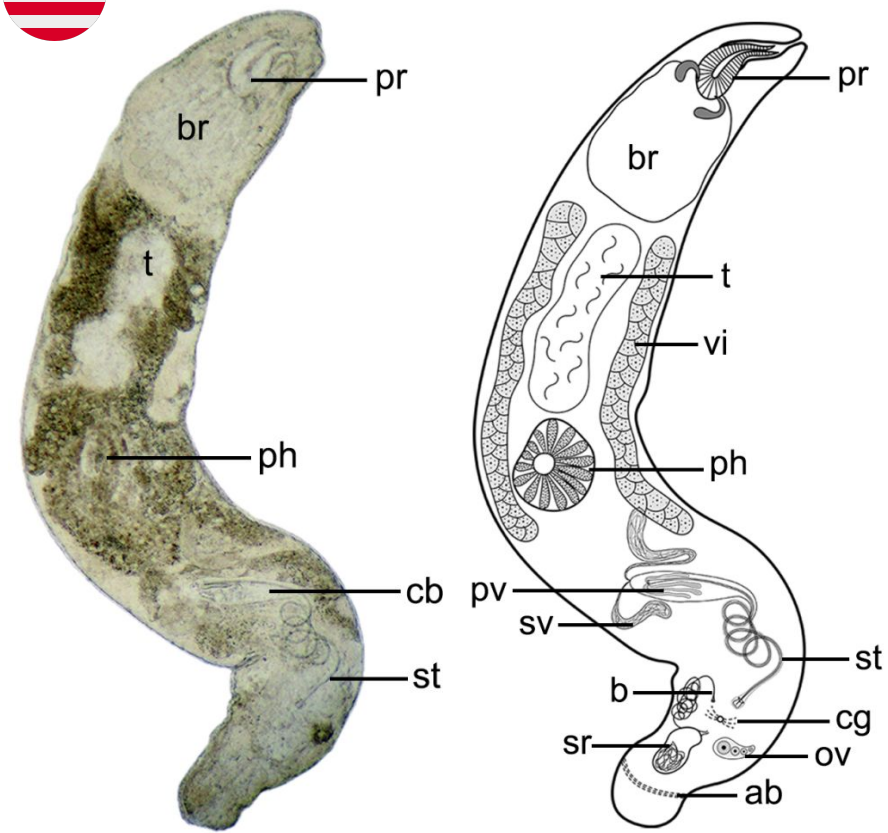
18S+28S rDNA



node support values:
posterior probability/
SH-aLRT/ultrafast bootstraps

! Species names and combinations in bold/caps are unpublished and not yet available for use.

Schizorhynchidae nov. gen. nov. sp. 1
“CITHARA” – TYPE SPECIES



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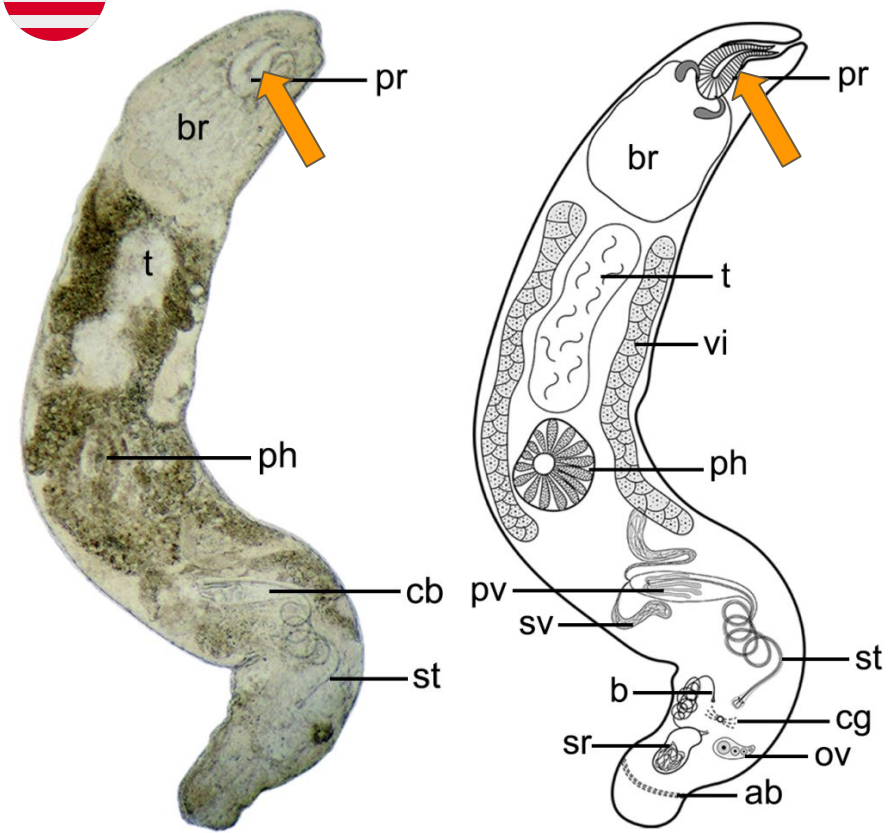

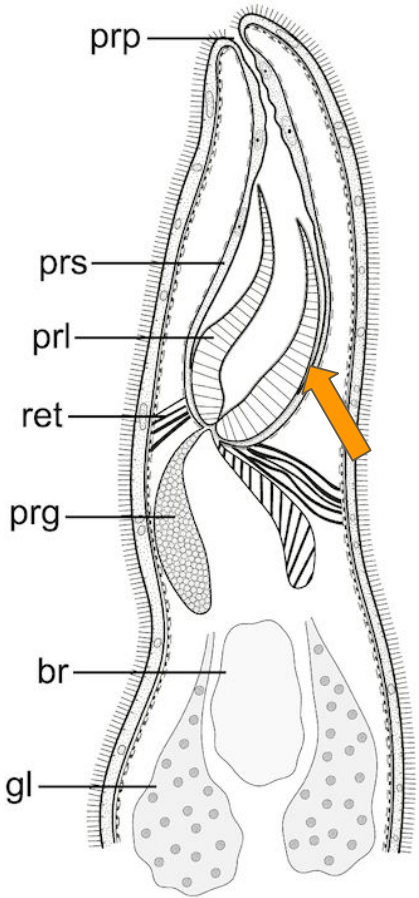

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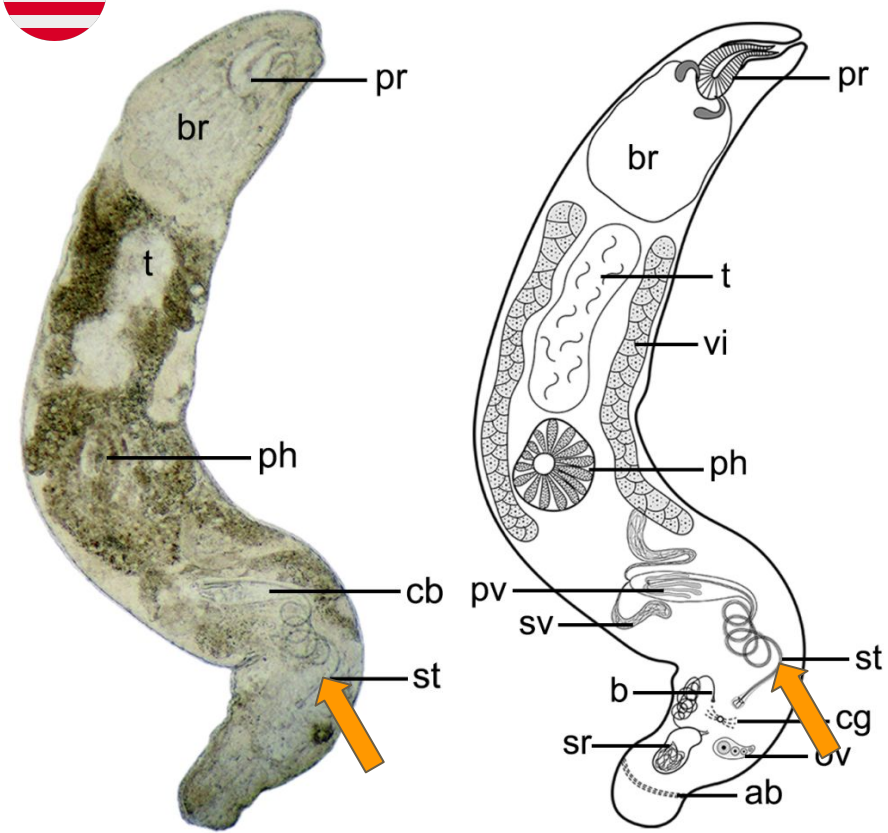

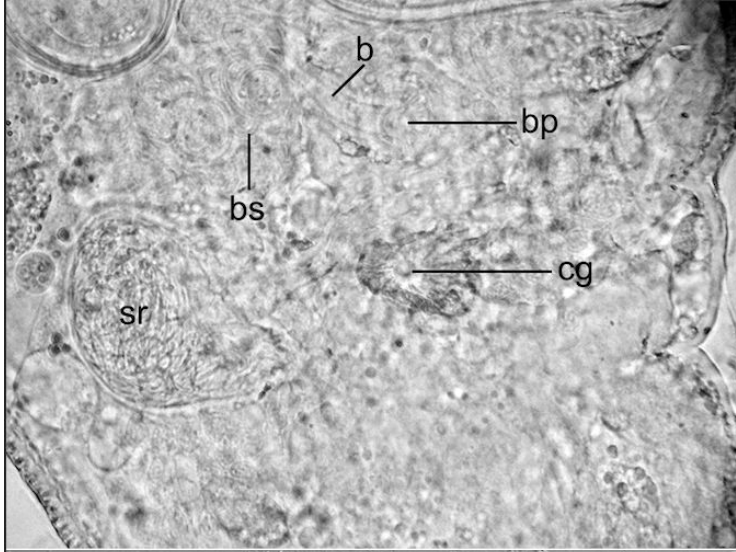

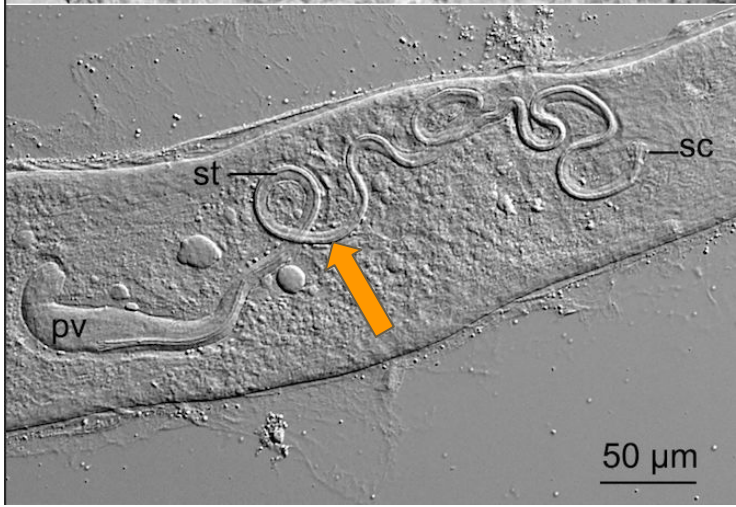

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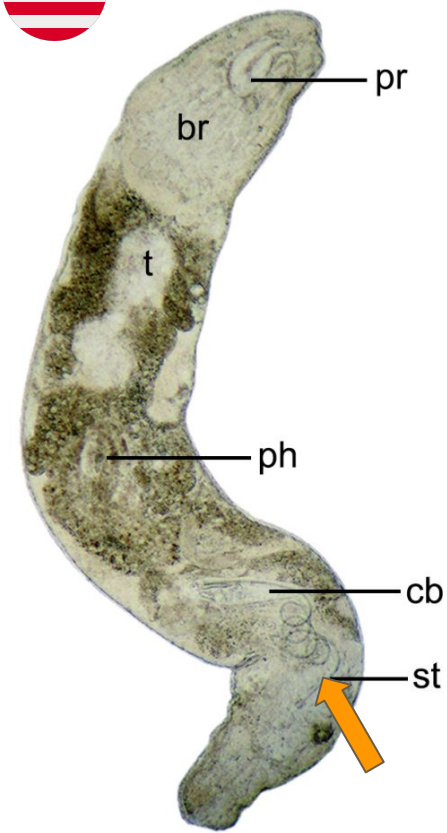
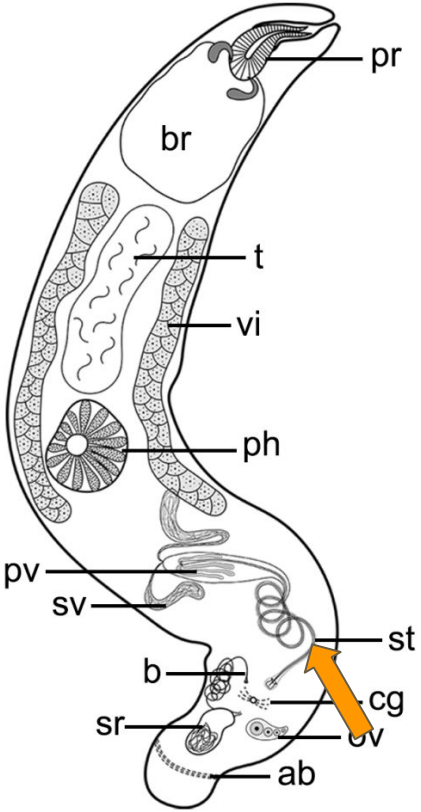
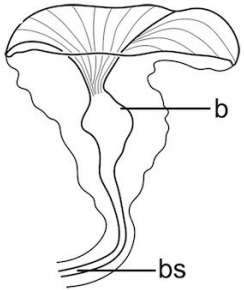
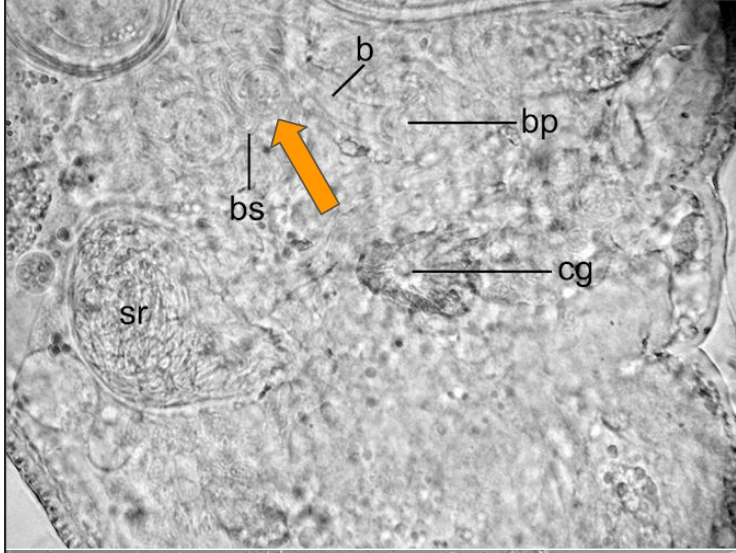
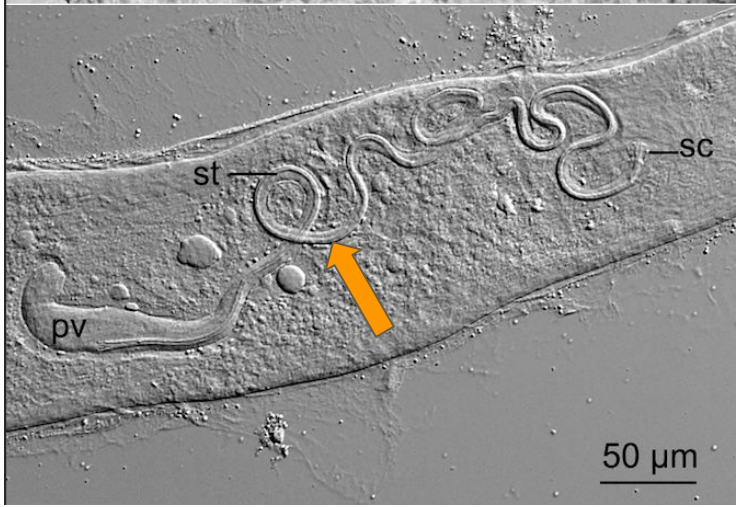


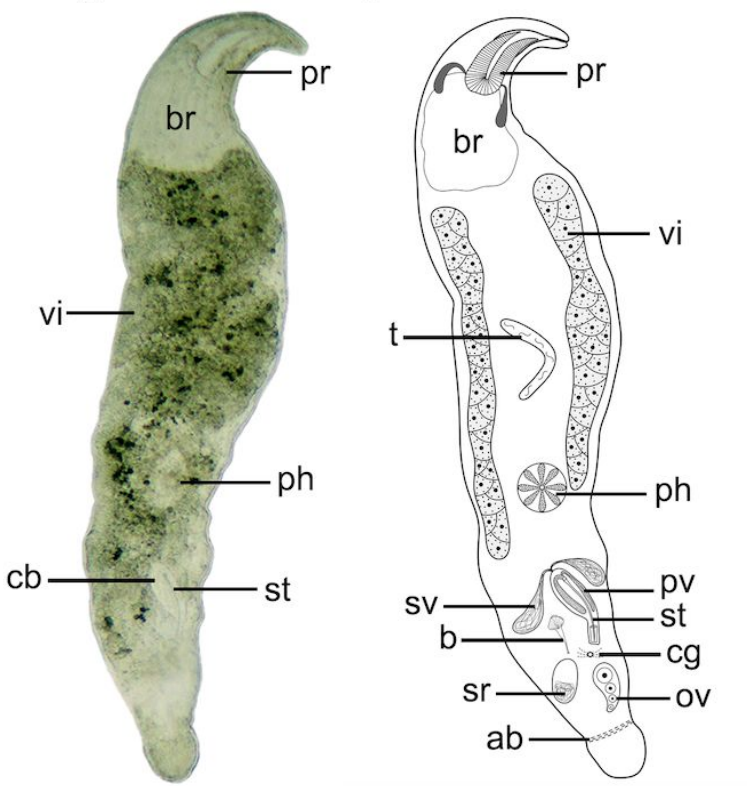








Schizorhynchidae nov. gen. nov. sp. 2 “OCCIDENTALIS”



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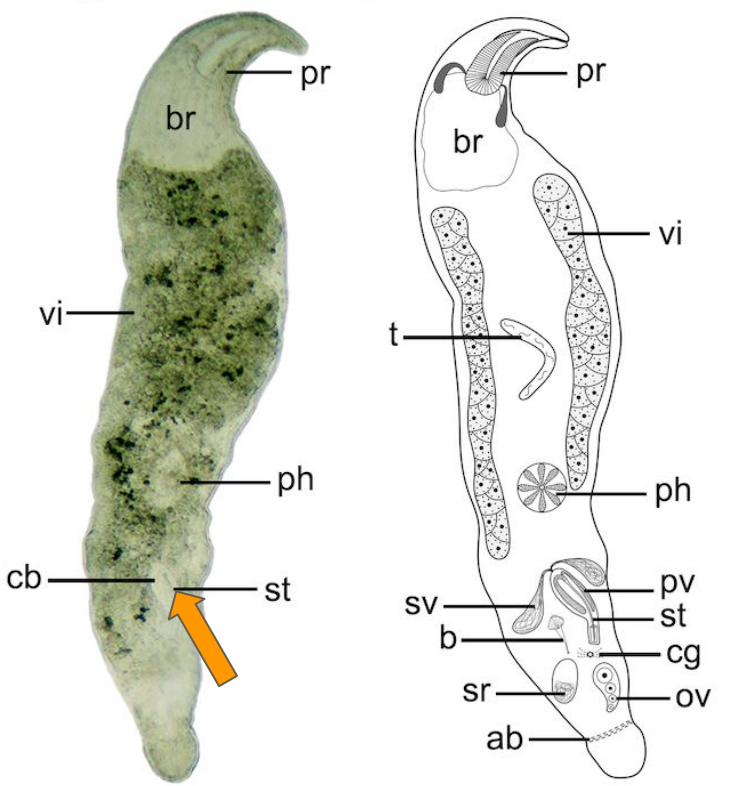

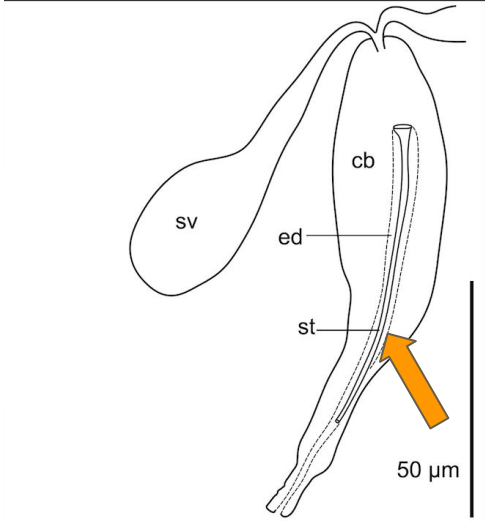

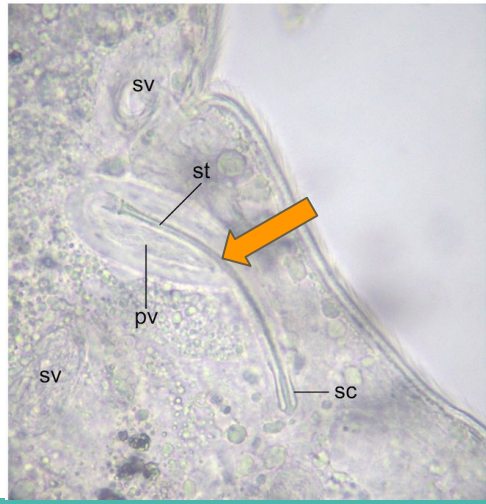

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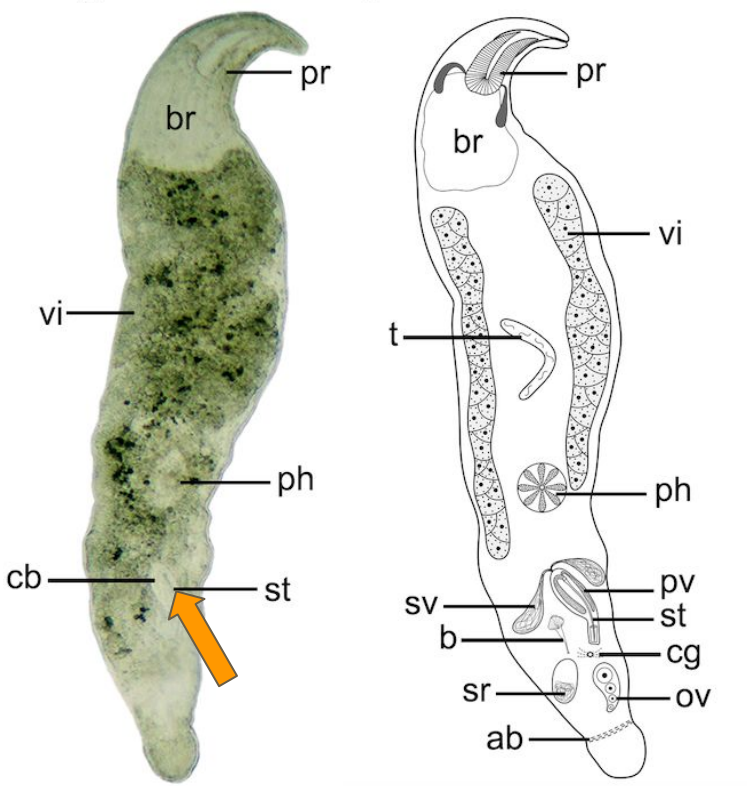
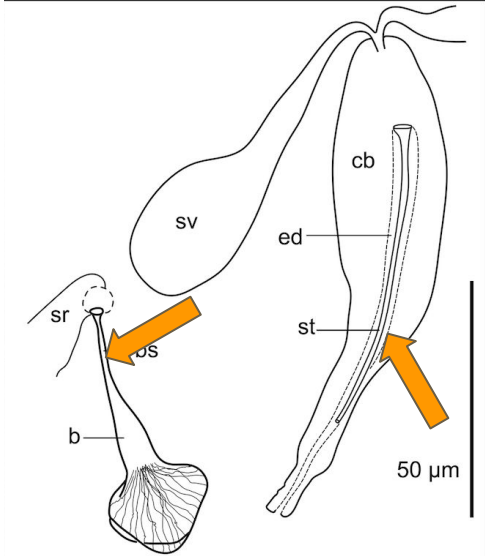
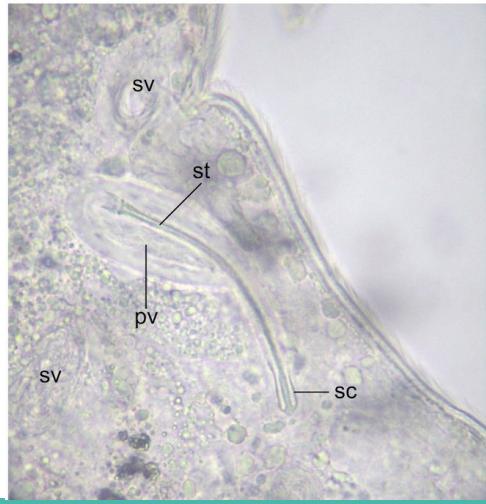
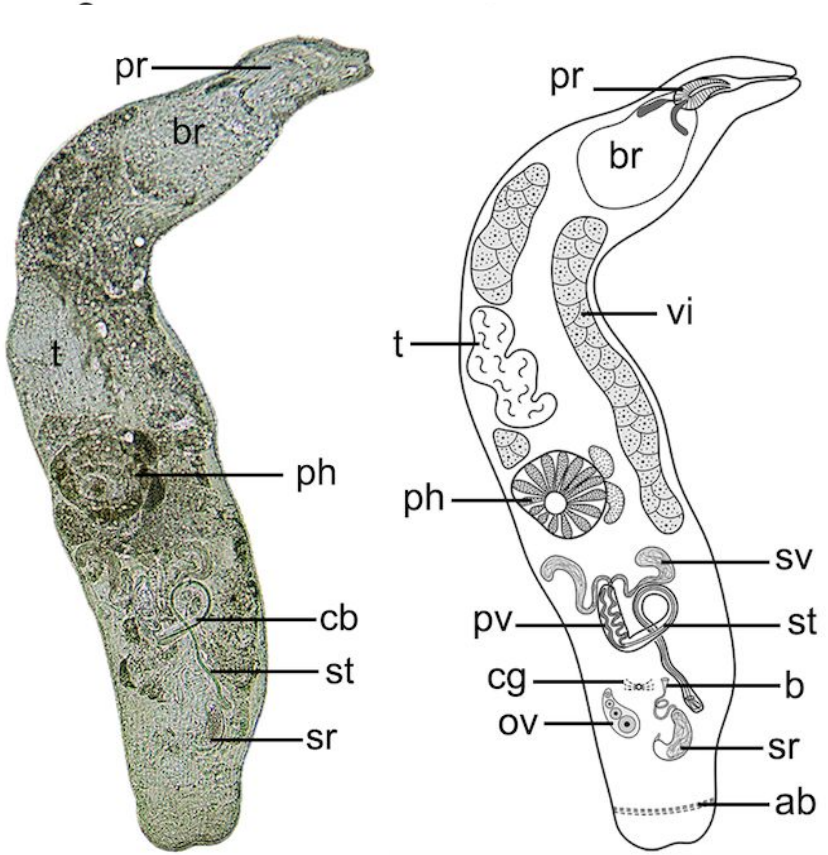
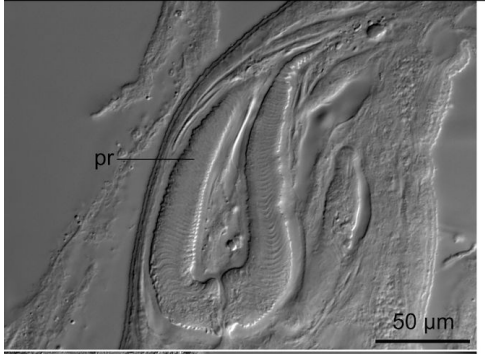


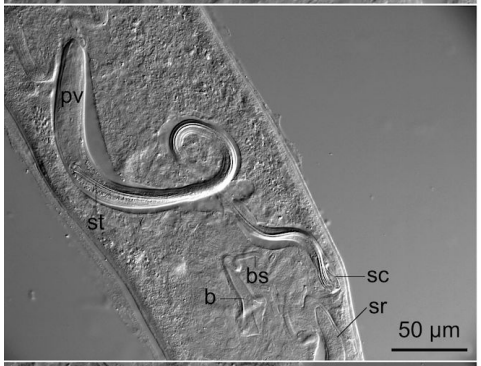


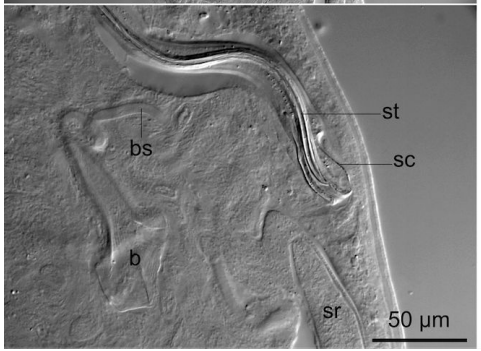


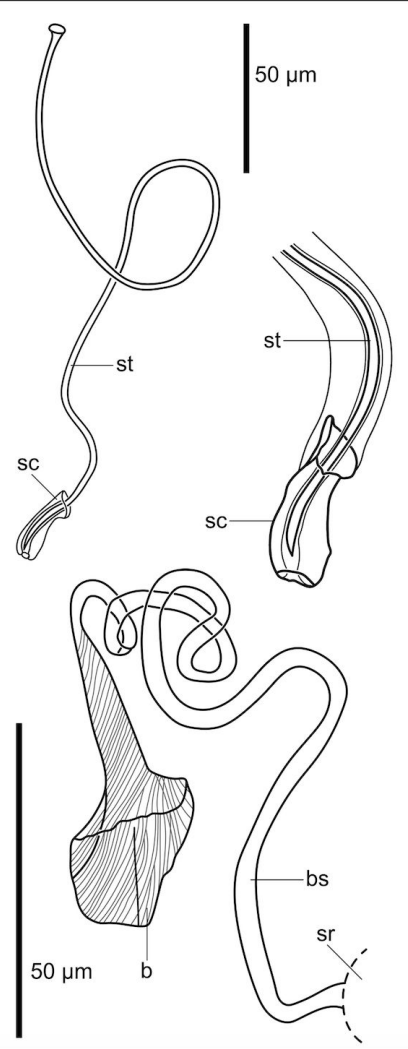
Schizorhynchidae nov. gen. nov. sp. 3 “ORIENTALIS”











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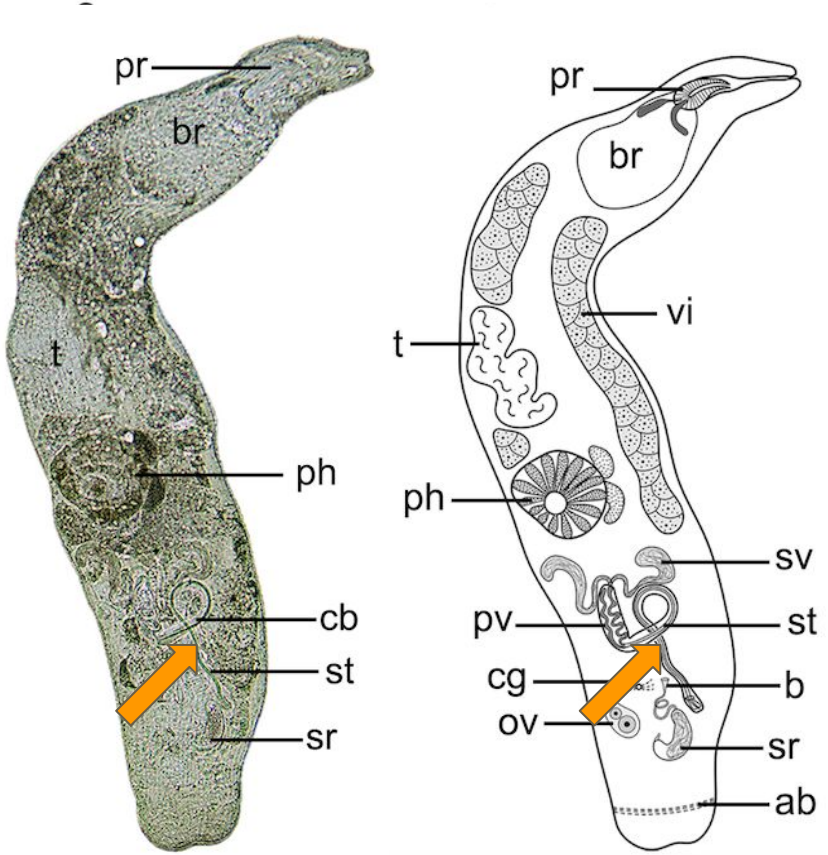

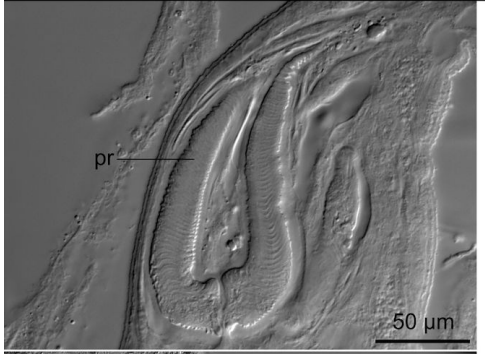

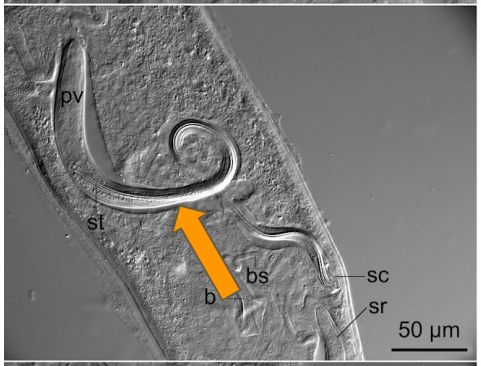

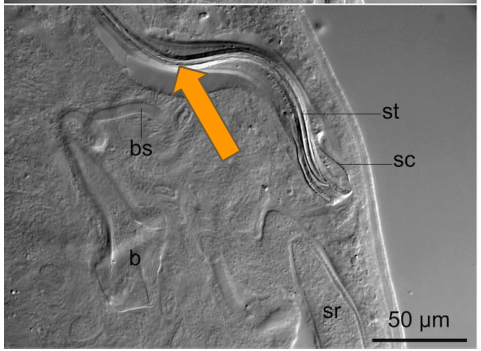

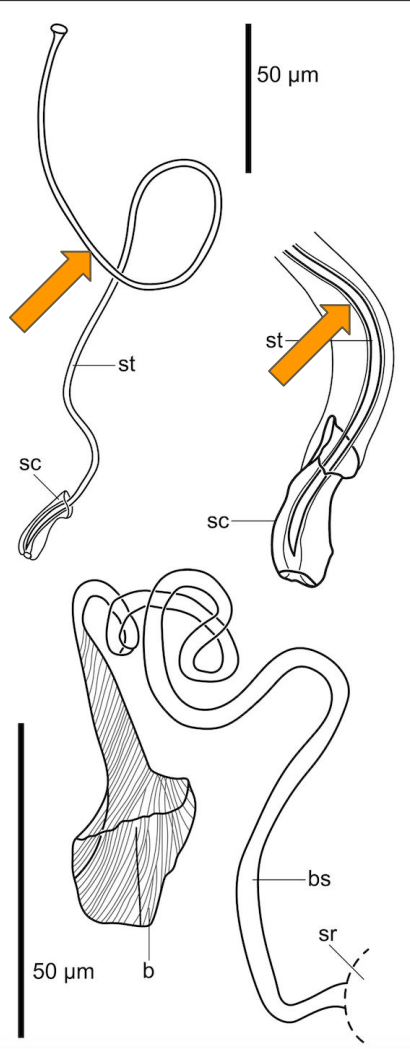

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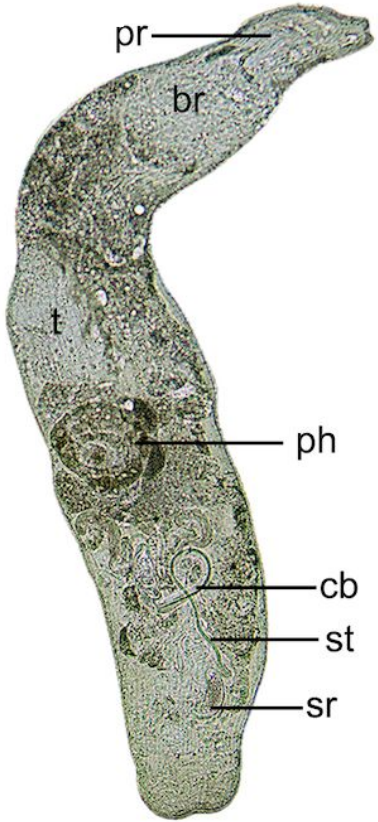
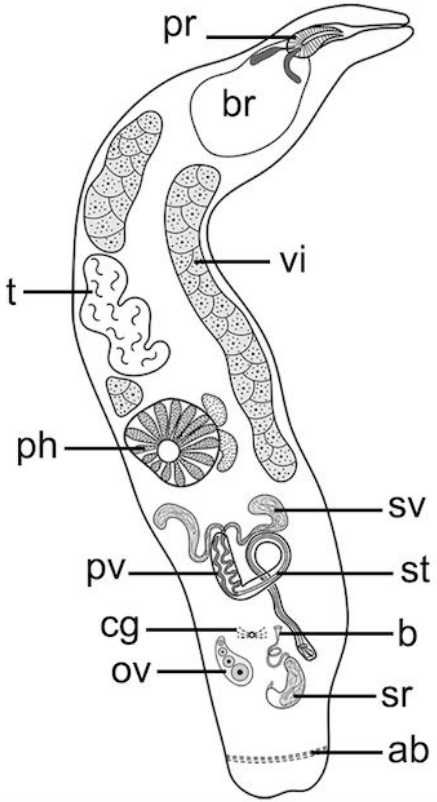
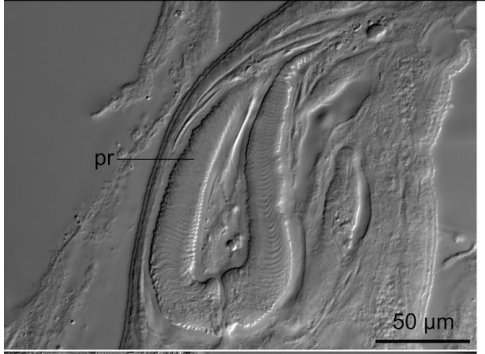
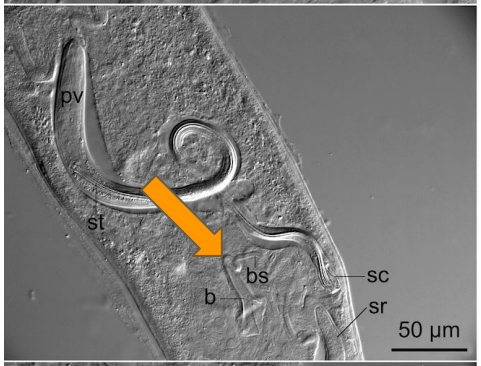
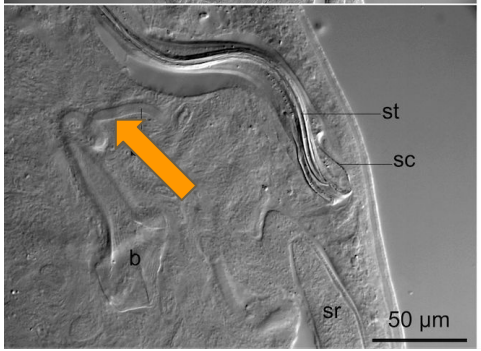
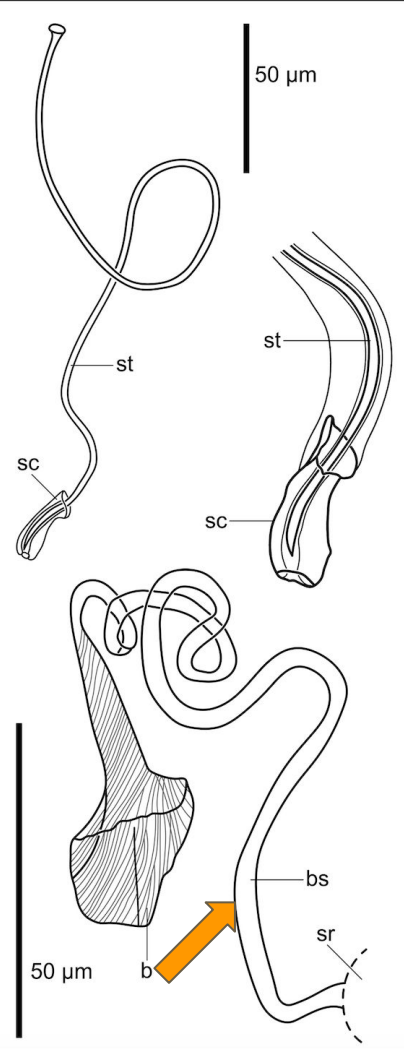






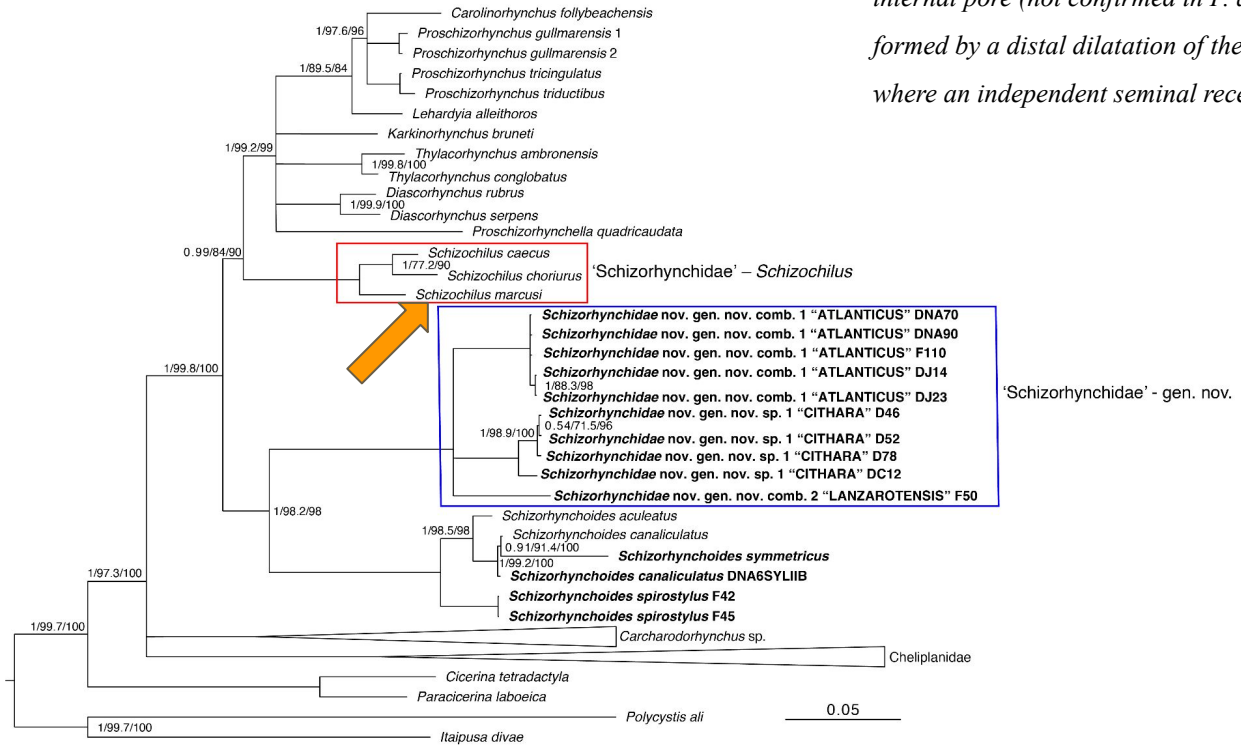






Why a new genus?

*Taxon of "Schizorhynchidae" with male copulatory organ of conjuncta-duplex type, in most species ending in a sclerotised cap, encompassing the prostate vesicle and a stylet. A single testis or several testes in a row anterior to the pharynx. Female system with a bursa proximally connected to the digestive parenchyma via an internal pore (not confirmed in P. atlanticus **comb. nov.**). Seminal receptacle formed by a distal dilatation of the bursal stalk (except in P. atlanticus **comb. nov.**, where an independent seminal receptacle opens to the oviduct).*



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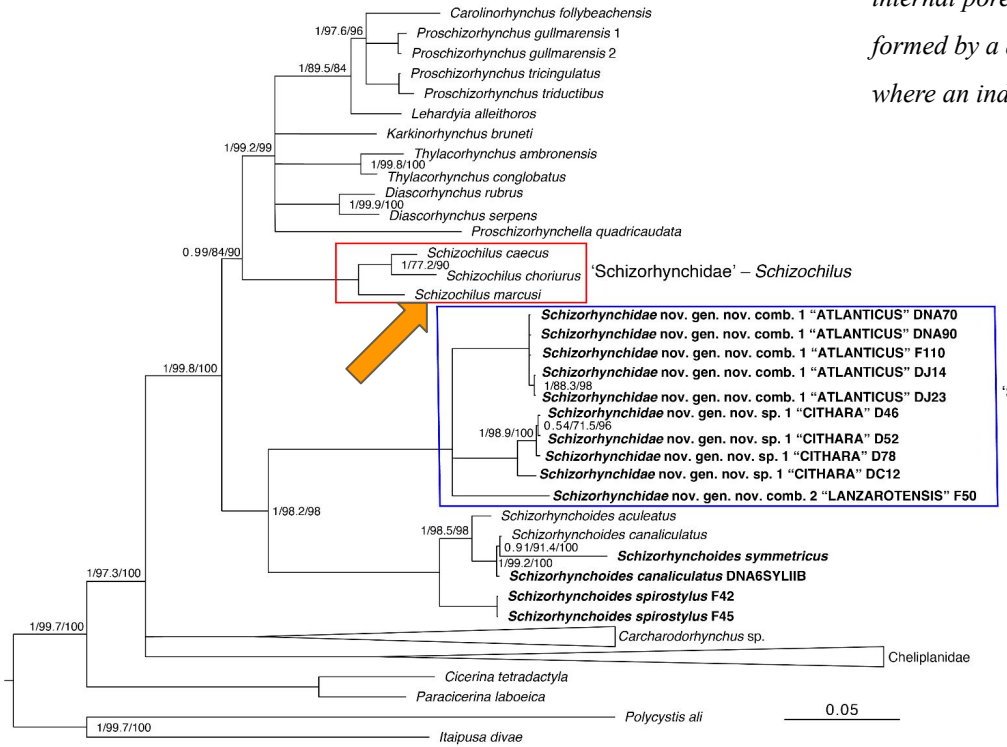

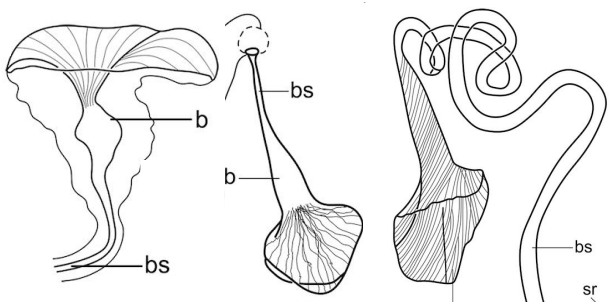

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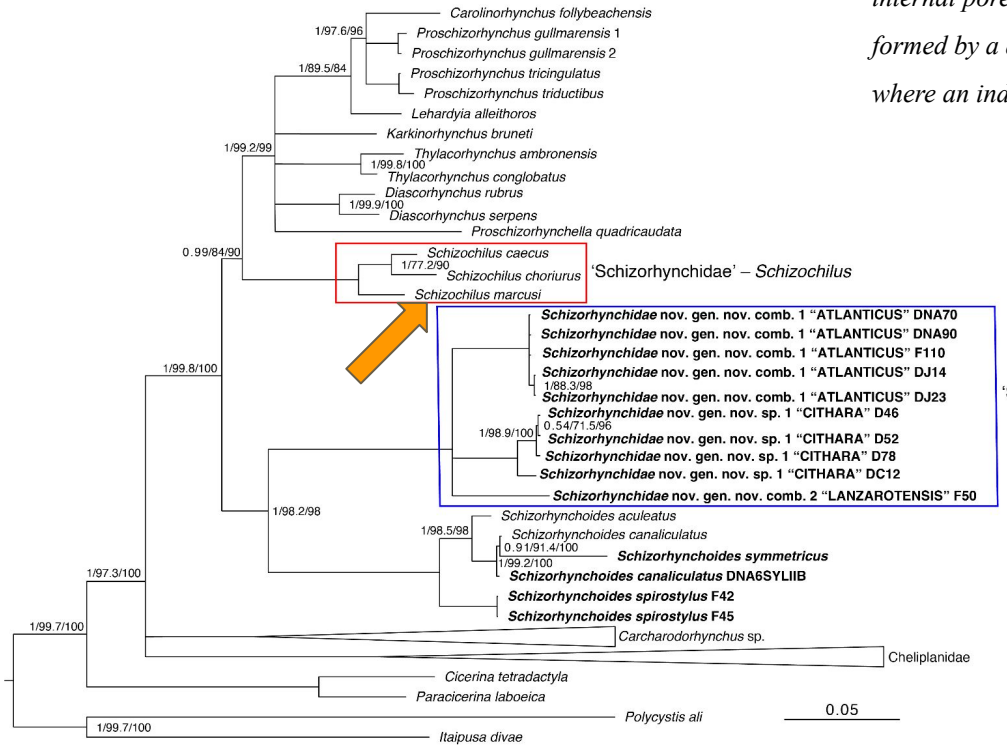

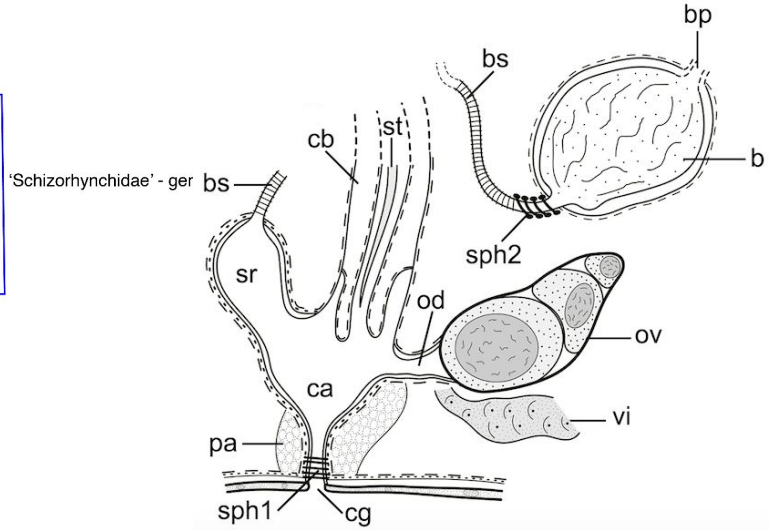

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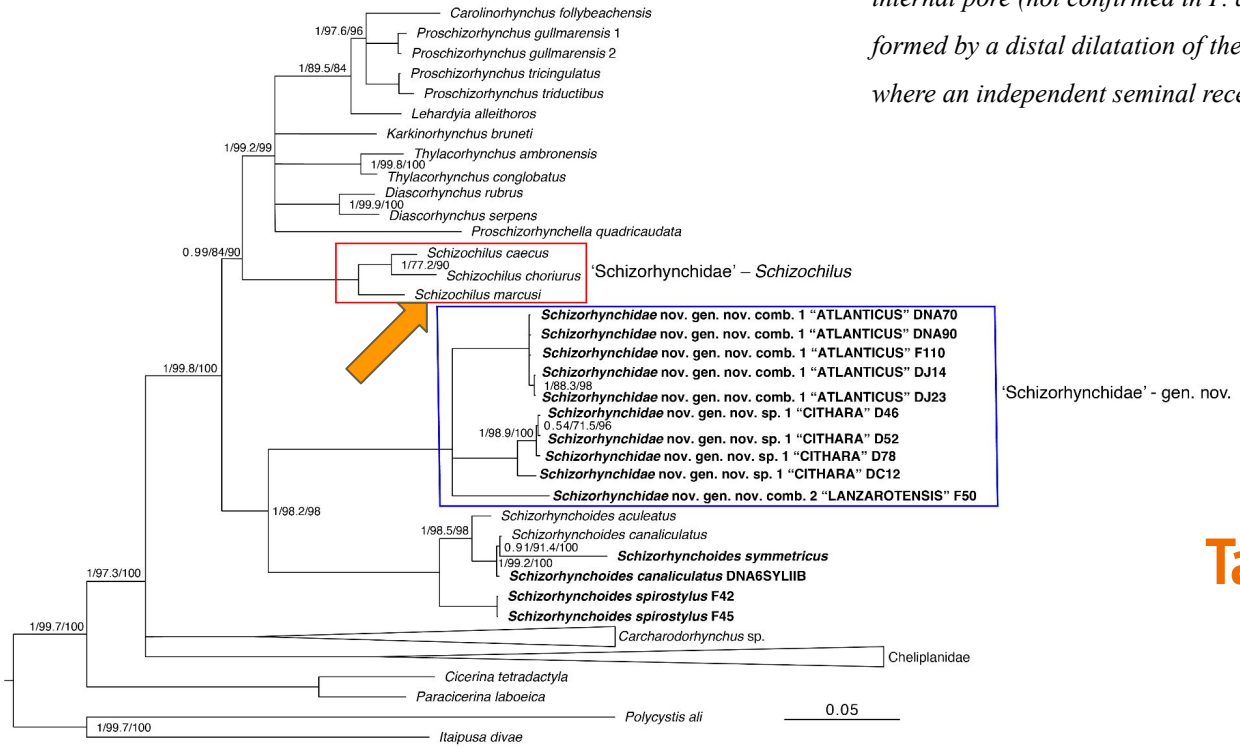

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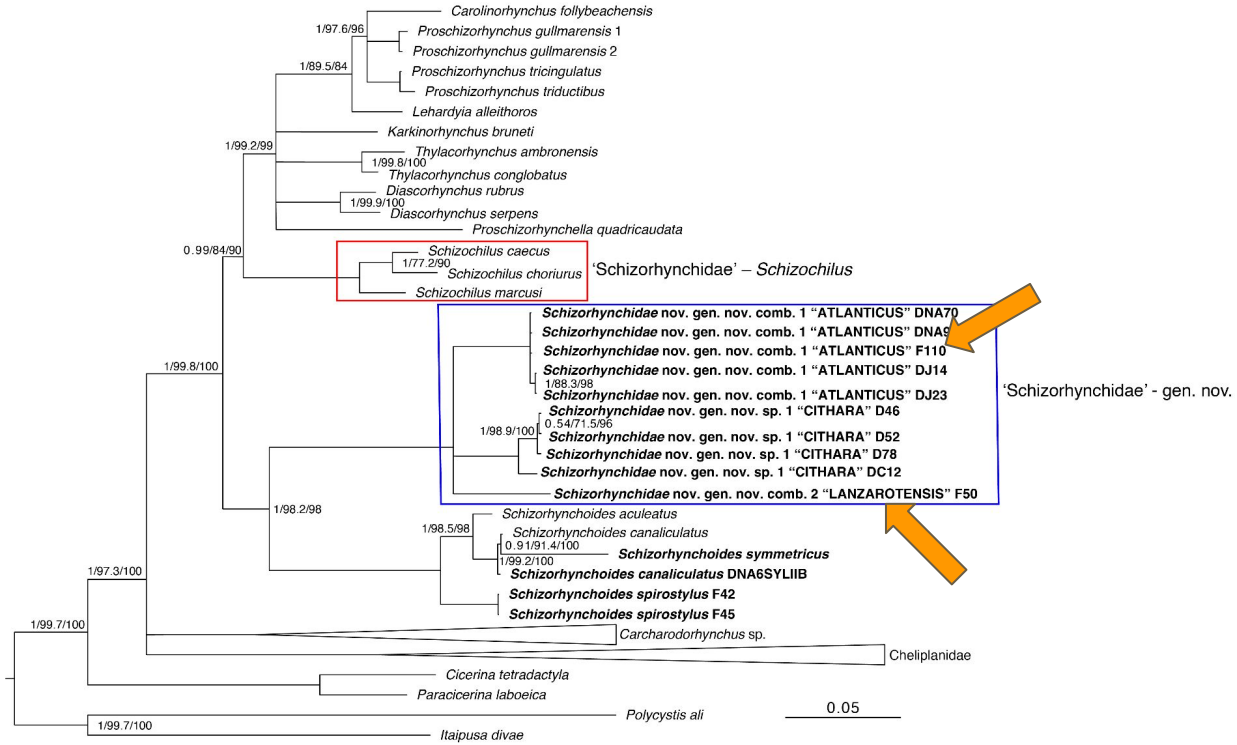
Taxonomic importance of female system

Schizorhynchidae nov. gen. nov. comb. 1 “ATLANTICUS”

Syn. *Schizochilus atlanticus* Diez, Reygel & Artois, 2019; *Schizochilus* sp. 3 in Diez et al. (2023)

Schizorhynchidae nov. gen. nov. comb. 2 “LANZAROTENSIS”

Syn. *Schizochilus lanzarotensis* Gobert, Reygel & Artois, 2019

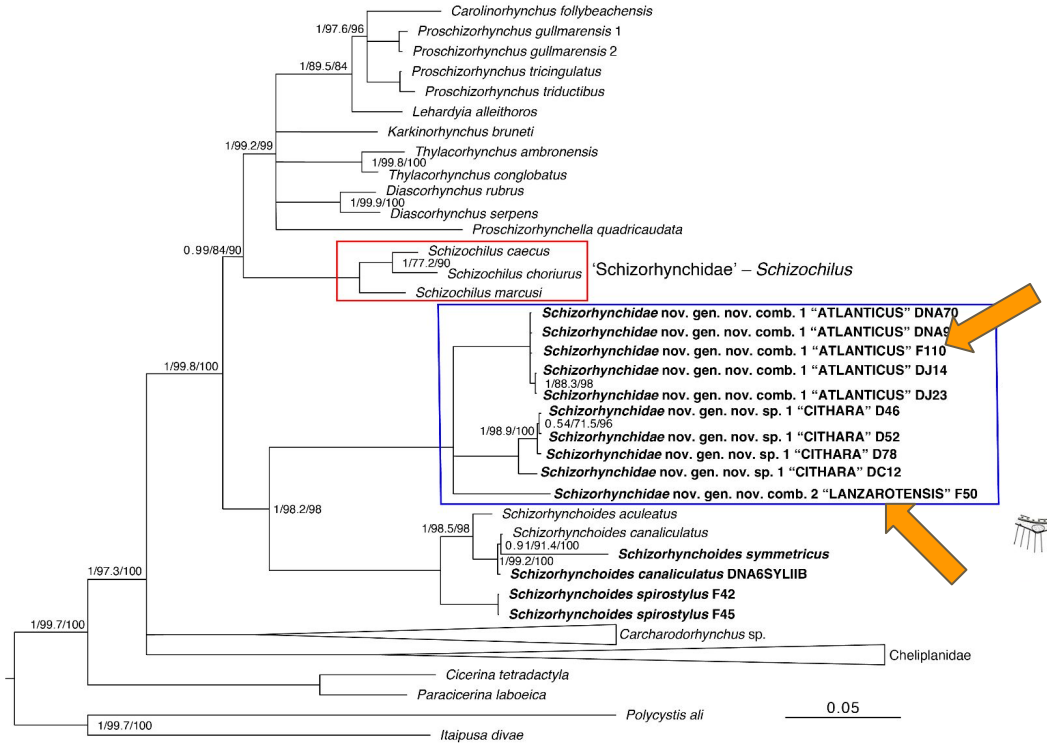


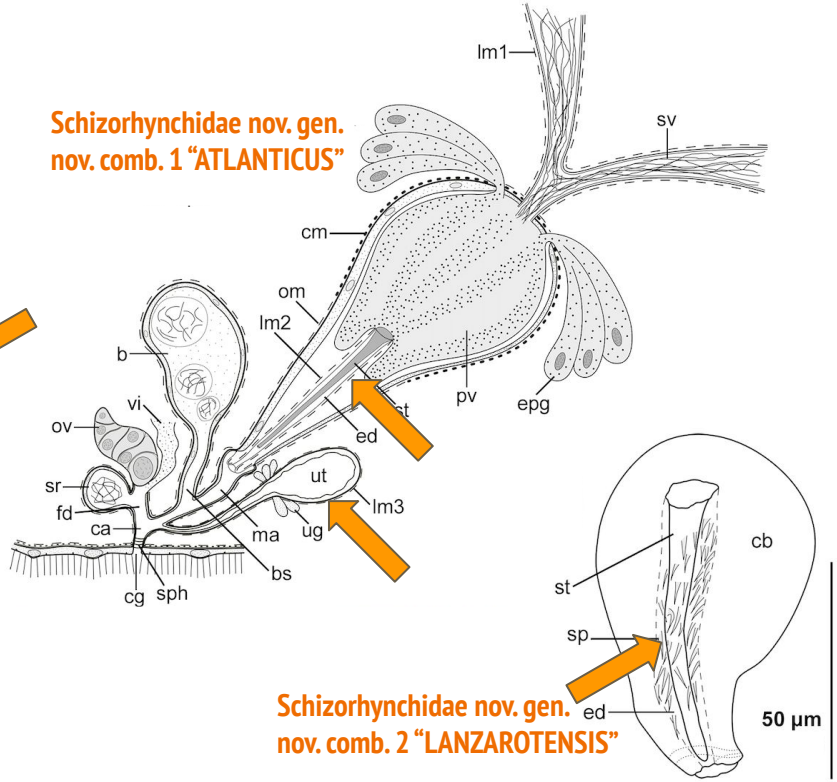
Schizorhynchidae nov. gen. nov. comb. 1 “ATLANTICUS”

Syn. *Schizochilus atlanticus* Diez, Reygel & Artois, 2019; *Schizochilus* sp. 3 in Diez et al. (2023)

Schizorhynchidae nov. gen. nov. comb. 2 “LANZAROTENSIS”

Syn. *Schizochilus lanzarotensis* Gobert, Reygel & Artois, 2019





Conclusions

We identified a well-supported clade distinct from *Schizochilus*.

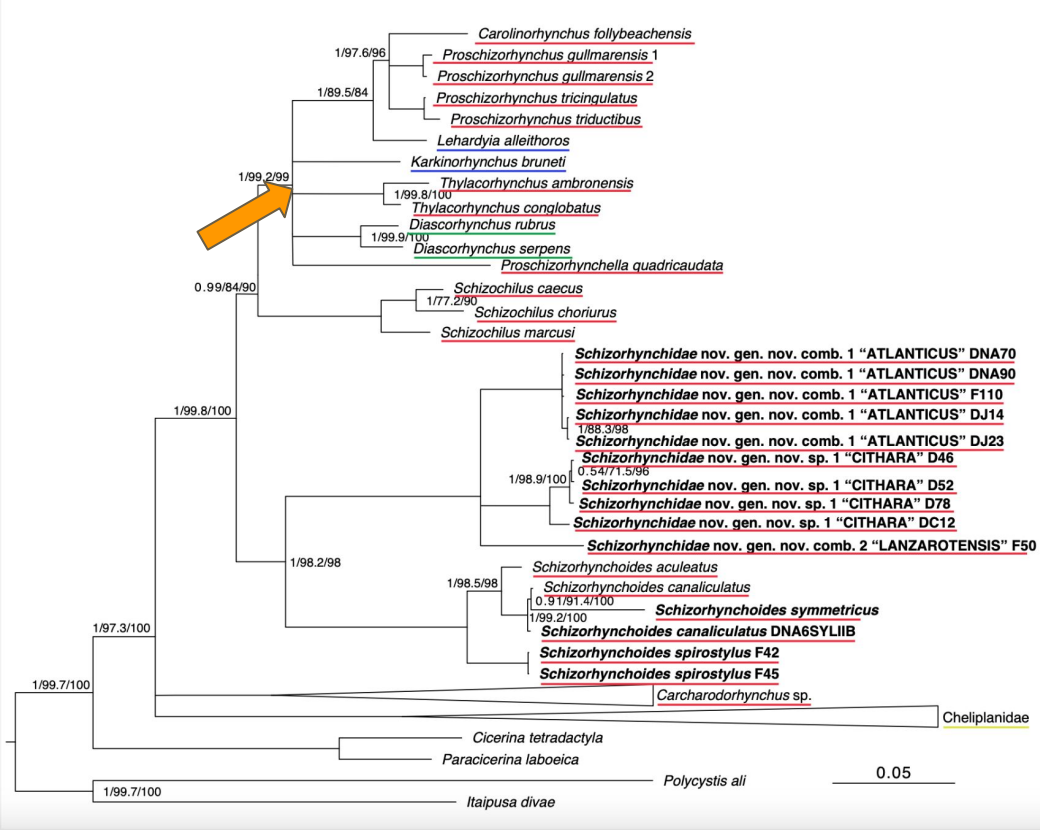
Morphological and molecular data together justify the establishment of a new genus for this clade.

Three new species are described, differing mainly in stylet morphology and bursa/bursal stalk structure.

Two previously described species are transferred to the new genus.

Female reproductive structures proved essential for resolving genus-level taxonomy.

Future perspectives



Phylogeny unesolved

Schizorhynch families are in need of reclassfication

'Schizorhynchidae' → non-monophyletic

Karkinorhynchidae → non-monophyletic, undersampled

Diascorhynchidae, undersampled

Nematorhynchidae, not included

Thank you!

UHASSELT
KNOWLEDGE IN ACTION

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