Scanning electron microscopy reveals novel ultrastructural features in *Clinostomum cutaneum* infecting Nile tilapia in Kenya

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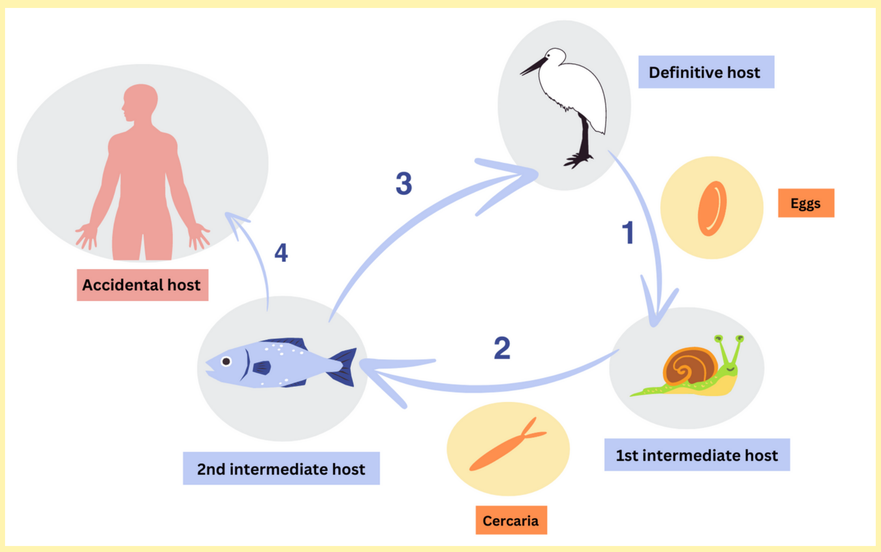
INTRODUCTION

- *Clinostomum* Leidy, 1856 is the most diverse genera within the family Clinostomidae Lühe, 1901
- The diversity of *Clinostomum* has been assessed using a combination of morphological and molecular methods
- Our present study provides new insights in phenotypic identification of flukes that may be pathogenic to fishes and humans, and therefore of scientific and practical importance

BASIC LIFE CYCLE OF CLINOSTOMINES



MATERIALS AND METHODS

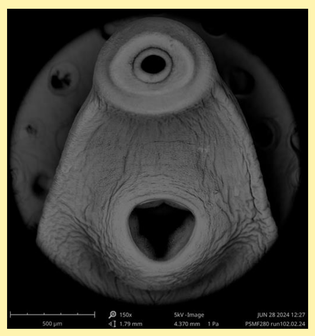
- Nile tilapia samples were collected from fish farms in the Upper Tana River region
- Clinostomid metacercariae were isolated from the skin, gills and buccal cavity of infected hosts
- The metacercariae were fixed in 70% ethanol for further morphological analysis in the laboratory
- For SEM, ten worms were post-fixed in osmium tetroxide before dehydration in increasing ethanol series
- They were then dried using hexamethyldisilazane, mounted on aluminium stubs and sputtered with gold under JEOL JFC-1300 (30mA)
- The samples were visualized under Phenom XL G2 Desktop Scanning Electron Microscope (ThermoFisher Scientific) operated at an acceleration of 5kV.

CONCLUSION

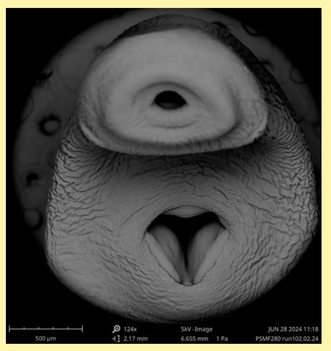
Scanning electron microscopy is a valuable complementary tool for more precise parasite identification and species differentiation

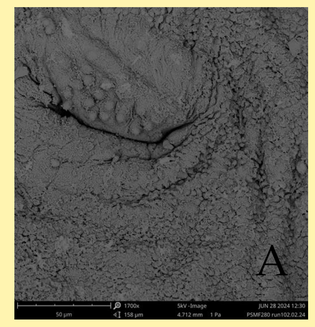
RESULTS

- From the parasitological survey, 17.2% of the Nile tilapia screened were infected with clinostomid metacercariae

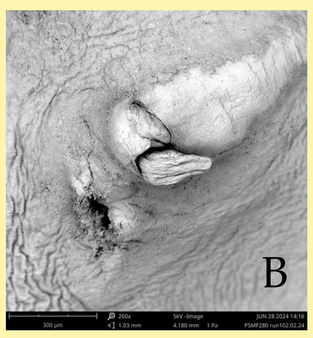


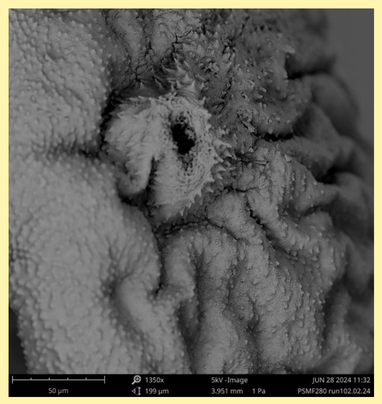
Oral and ventral suckers



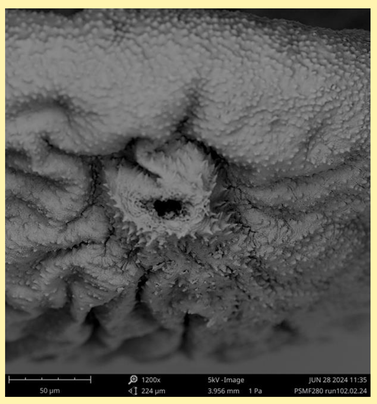


Genital pore surrounded by dome-shaped papillae (A); everted cirrus (B)





Excretory pores



DISCUSSION

- SEM revealed some new ultrastructural features specific to *C. cutaneum*
- The excretory pore is surrounded by minute, spiny papillae, a feature not reported in previous studies
- We also observed an everted cirrus in the metacercariae. However, this cirrus lacked basal papillae in our samples, showing morphological variation between the adult and metacercarial stages
- The tegumental area around the genital pore was surrounded by dome-shaped papillae

REFERENCES

Gustinelli et al. (2010) Syst. Parasitol 76:39–51

ACKNOWLEDGEMENTS

This research was funded by the Special Research Fund of Hasselt University, grant number BOF22DOCLI04