Myxosporean binucleate stages within freshwater oligochaetes

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Background:

Freshwater myxosporeans have a two host life cycle: a fish and an oligochaete. It is proposed that schizogonic stages may not represent the main proliferative phase within the oligochaete host (see poster 84). To further examine this, I conducted an ultrastructural study on four different myxosporean spp. to identify potential proliferative stages.

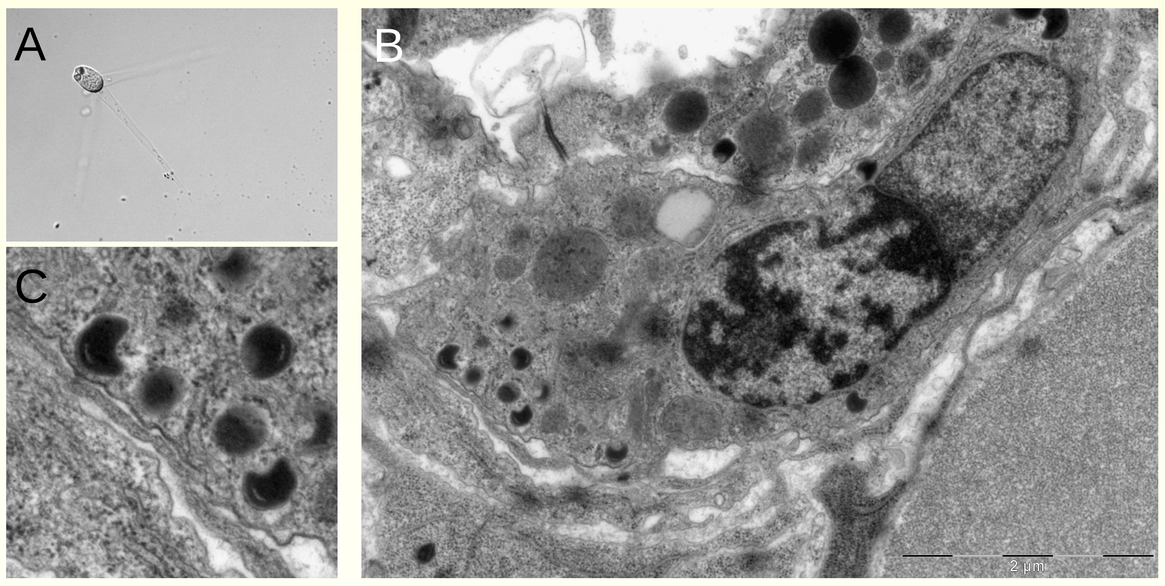
Materials and Methods:

Oligochaetes were collected from river/ pond sediments in Scotland. They were examined for myxosporean infection, as for poster 84, and prepared for TEM. Sequential sections were cut at 10 µm intervals and examined. Attention focused on pre-pansporocyst stages of development i.e. those stages associated with the proliferative cycle.

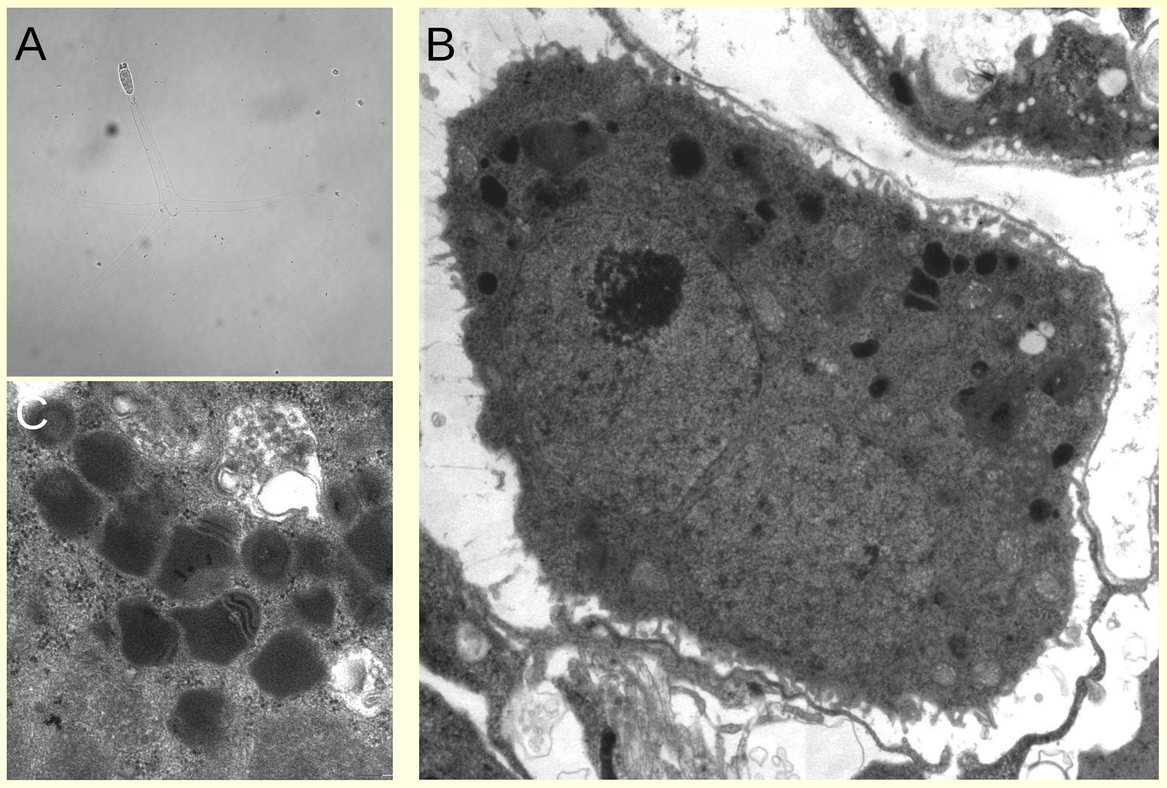
Results:

Four different myxosporeans spp. were identified. Two Triactinomyxon-types, one Raabeia-type and an Aurantiactinomyxon-type. The only pre-pansporocyst stages present were binucleate cells. Evidence for mitotic division of these cells was noted. Schizogonic stages were not observed.

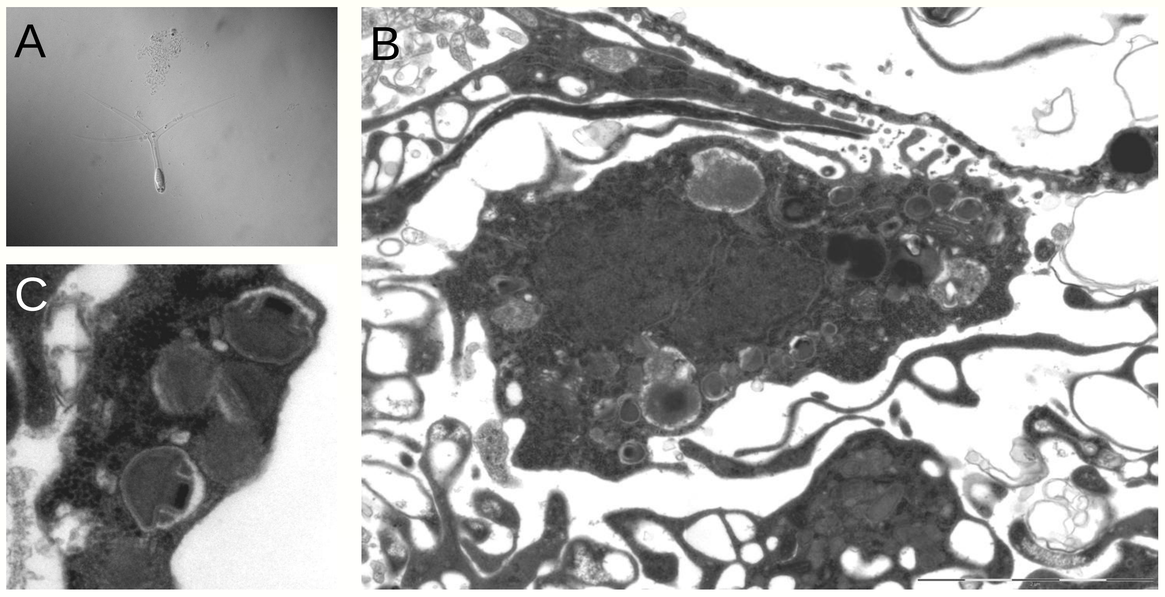
1- Raabeia- type myxosporean



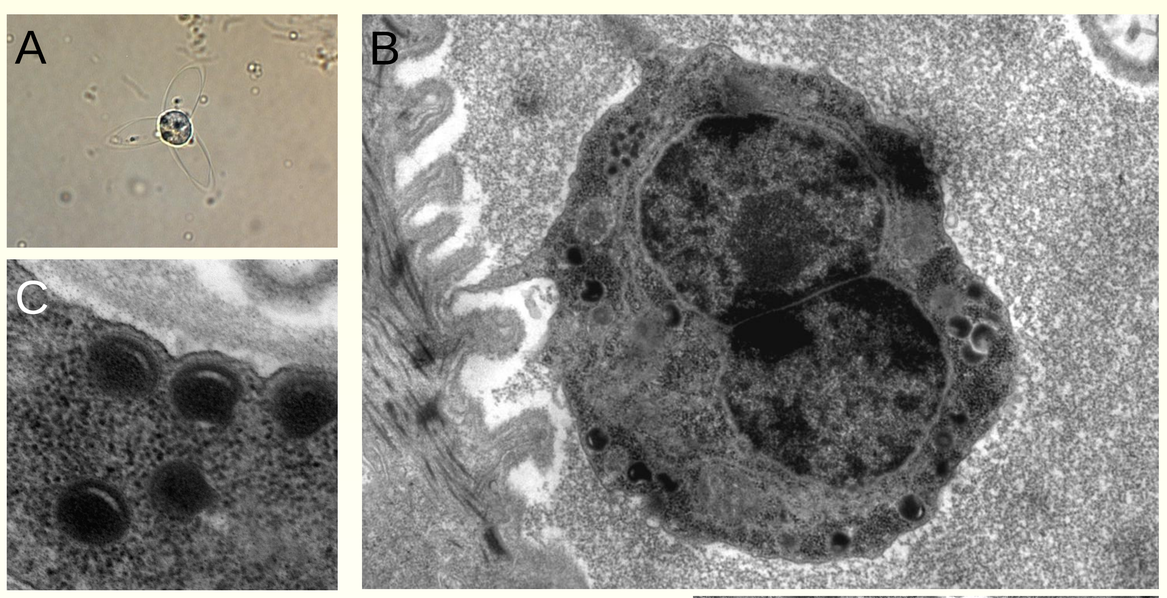
3- Second Triactinomyxon-type myxosporean



4- First Triactinomyxon-type myxosporean



4- Aurantiactinomyxon-type myxosporean



Legend to figures

A- actinospore
B- binucleate stage
C- sporoplasmosomes
D- mitosis of binucleate stage

Conclusions:

As I found no evidence for schizogony I conclude that the main cell type associated with proliferation is likely to be the binucleate stage. These stages are associated with the intestine and supra-intestinal vessel. Sporoplasmosomes are a notable feature of binucleate cells and can be simple or complex depending on myxosporean species. Some sporoplasmosomes align to plasma membrane, reminiscent of those observed in the myxozoan class Malacosporea. Their function is unknown.

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