

The N-glycosylation profile of proteins excreted-secreted by *Fasciola hepatica* newly excysted juveniles (NEJs)

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Fasciola hepatica newly excysted juveniles (NEJs) excrete-secrete (ES) a complex mixture of ~100 different proteins, which come into direct contact with their host's tissues and cells and aid the parasite to infect and survive within the host. Despite the fact that glycosylation is one of the most common posttranslational modifications associated with secreted proteins, there is a significant dearth of knowledge regarding the glycosylation of those proteins found in the NEJs ES.

Aim
To characterize the N-glycosylation profile of individual proteins excreted-secreted by NEJs.

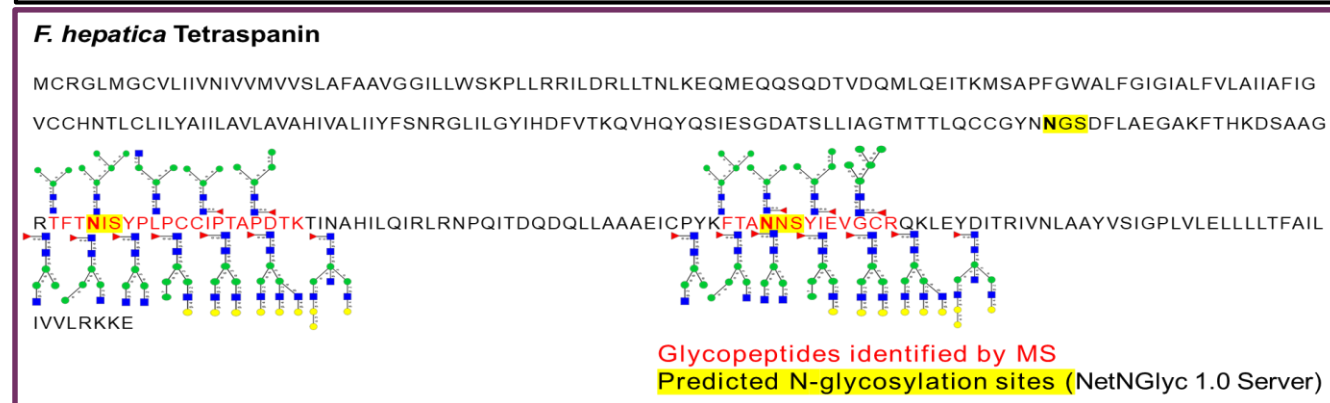
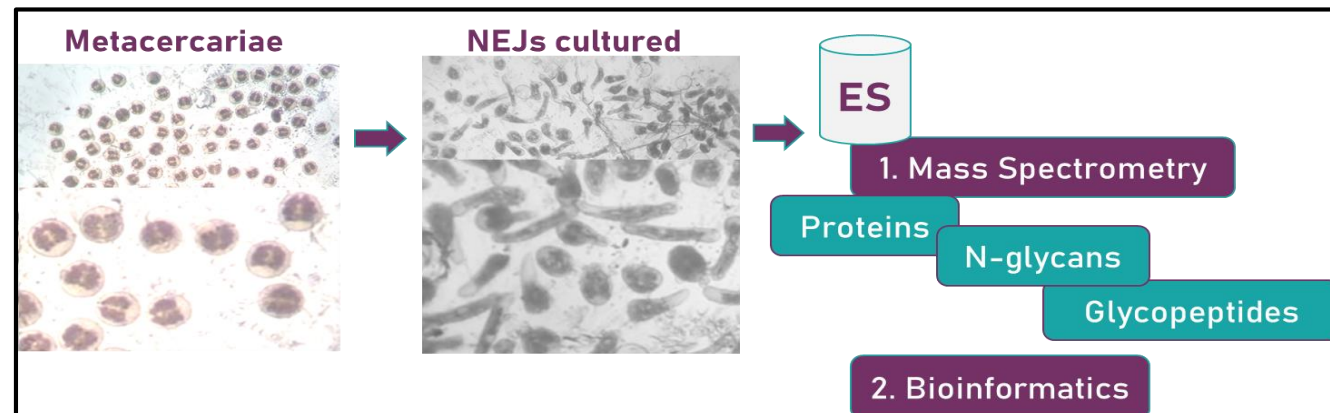


Fig 1. Heterogeneity of N-glycosylation sites in *F. hepatica* glycoproteins.

NEJs ES				
N-glycoproteins	MW (kDa)	Signal peptide	N-glycosylation sites predicted	Occupancy (%)
31	17 to 206	17	01 - 22	4.5 to 100
Cubilin	35.1	Yes	6	83
Cathepsin L4 (FhCL4_2)	30.0	No	1	100
Cathepsin B3 (FhCB3)	62.7	Yes	6	75
Cathepsin B like	29.3	Yes	2	100
Cathepsin B11 (FhCB11)	24.4	No	1	100
Cathepsin B2 (FhCB2)	52.6	Yes	2	100
Cathepsin L-like	40.6	Yes	1	100
Lysosomal alpha-glucosidase	70.0	No	5	60
Tetraspanin-CD63 receptor	33.3	No	3	67
Peptidase inhibitor 16	23.9	Yes	1	100
Peptidylglycine alpha-hydroxylating monooxygenase	32.0	No	2	50

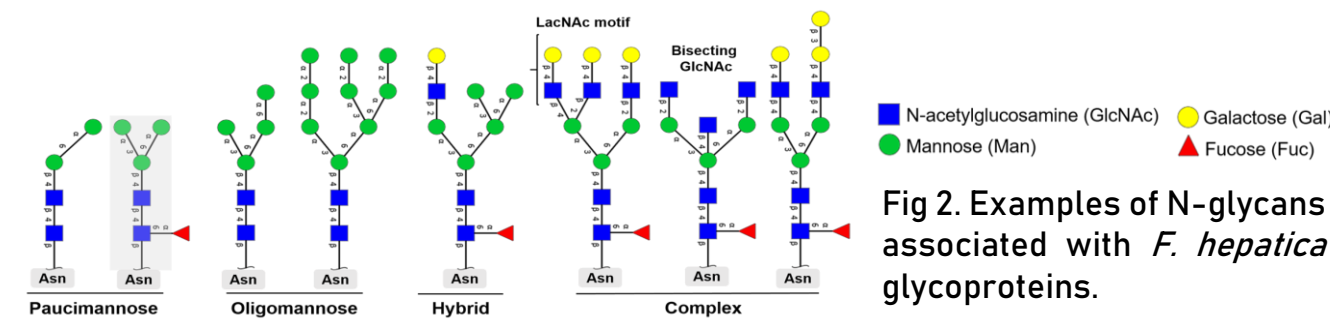


Fig 2. Examples of N-glycans associated with *F. hepatica* glycoproteins.

Conclusions

- The liver flukes synthesize and secrete proteins with variable glycosylation patterns.
- The composition of the ES is highly heterogeneous and much more complex than initially anticipated.
- Our data provide the foundation for the discovery of biomarkers for diagnostics and vaccine candidates to control fasciolosis.