

Short Note

Clustering of *Schistosoma mansoni* Eggs Produced in *In vitro* Culture

Cecilia Thors¹ and Ewert Linder^{2*}¹Public Health Agency of Sweden, Sweden²Microbiology, Karolinska Institutet, Sweden

SHORT NOTE

Schistosoma mansoni worms kept in *in vitro* culture [1] maintain the capacity to produce eggs for several days [2]. In such a culture, adherence of several eggs to each other was observed (Figure 1). In this research note we consider the possible significance of this serendipitous observation with respect to mechanisms for egg transport from the intravascular worm into the excretions (see accompanying paper [3]).

The process of egg transit through tissues into the excretions is a complex phenomenon, apparently influenced by factors, which are yet to be identified. For successful transit, *S. mansoni ovi* position needs to take place in the vessels of the intestinal wall where extravasation may be achieved by active pushing of the egg through the vessel wall [3]. The eggs then move through the periovally degraded tissues into the intestinal lumen. Clusters of eggs can be seen especially in the center of large granulomas replacing the tissues of the intestinal wall of *S. mansoni* infected mice [4]. (See web microscope at <http://demo.webmicroscope.net/research/parasitology>). Clustering could potentiate the cytotoxic effects of substances responsible for perioval tissue damage. As the result, a channel through tissues may be formed for egg transit from the intravascular to the intraluminal space.

The observed binding of eggs to each other at the tips of the protruding spines suggests that this part of the egg differs from the rest of the surface. This difference can be explained by the events leading to egg shell formation. The egg shell is formed

*Corresponding author

Ewert Linder, Department of Microbiology, Tumor and Cell Biology, Karolinska Institutet, SE-17177, Stockholm, Sweden, Email: ewertlinder@gmaiol.com

Submitted: 05 December 2016

Accepted: 12 December 2016

Published: 15 December 2016

ISSN: 2373-9282

Copyright

© 2016 Linder et al.

OPEN ACCESS

through the interaction of vitelline granules with the products of the Mehlis gland and the shape of the egg shell is determined by the ootype, which serves as a mold [5]. The tip of the spine is the region where the cross-linked protective eggshell material is continuous with its precursor material, the vitelline granules, which enter the ootype via the vitelline duct. Thus the observed *in vitro* clustering of eggs could reflect a potential for self-association of eggshell precursor material. It is conceivable, that clustering of eggs serves to enhance perioval tissue damage and channel formation necessary for egg excretion.

REFERENCES

1. Linder E, Varjo S, Thors C. "Mobile Diagnostics Based on Motion? A Close Look at Motility Patterns in the Schistosome Life Cycle." *Diagnostics* (Basel). 2016; 6.
2. Barth LR, Fernandes AP, Rodrigues V. "Oviposition by *Schistosoma mansoni* during in Vitro Cultivation." *Rev Inst Med Trop Sao Paulo*. 1996; 38: 423-426.
3. Linder E. "The Schistosome Egg in Transit." *Journal of Clinical Pathology*. 2016.
4. E Linder, M Lundin, C Thors, M Lebbad, J Winiecka-Krusnell, et al. "Web-Based Virtual Microscopy for Parasitology: A Novel Tool for Education and Quality Assurance." *PLoS Negl Trop Dis*. 2008; 2: e315.
5. Smyth JD, Clegg JA. "Egg-Shell Formation in Trematodes and Cestodes." *Parasitological review*. 1959; 8: 286-323.



Figure 1 Clustering of eggs produced by *Schistosoma mansoni* worm pairs *in vitro*. Frame from video recording [1].

Cite this article

Thors C, Linder E (2016) Clustering of *Schistosoma mansoni* Eggs Produced in In Vitro Culture. *Ann Clin Pathol* 4(8): 1099.