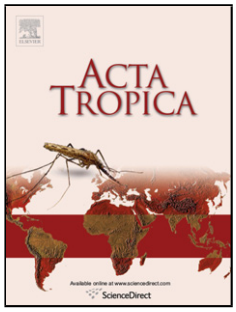

Title: Recent advances in the genomic and molecular biology of *Giardia*

Authors: M.Guadalupe Ortega-Pierres, Aaron R. Jex, Brendan R.E Ansell, Staffan G. Svärd

PII: S0001-706X(17)30857-4
DOI: http://dx.doi.org/10.1016/j.actatropica.2017.09.004
Reference: ACTROP 4432

To appear in: *Acta Tropica*

Received date: 18-7-2017
Accepted date: 5-9-2017

Please cite this article as: Ortega-Pierres, M.Guadalupe, Jex, Aaron R., Ansell, Brendan R.E, Svärd, Staffan G., Recent advances in the genomic and molecular biology of Giardia.Acta Tropica http://dx.doi.org/10.1016/j.actatropica.2017.09.004

Recent advances in the genomic and molecular biology of *Giardia*.

M. Guadalupe Ortega-Pierres*[1], Aaron R. Jex*[2,3], Brendan R. E, Ansell*[3], Staffan G. Svärd*[4].
*All authors contributed equally
1. Department of Genetics and Molecular Biology. Centro de Investigación y de Estudios Avanzados IPN México City, Mexico.
2. Population Health and Immunity Division, The Walter and Eliza Hall Institute for Medical Research, Parkville, Vic, Australia
3. Faculty of Veterinary and Agricultural Sciences, The University of Melbourne, Parkville, Vic, Australia
4. Department of Cell Department of Cell and Molecular Biology, Microbiology Uppsala University Sweden

Abstract.

Giardia duodenalis is the most common gastrointestinal protozoan parasite of humans and a significant contributor to the global burden of both diarrheal disease and post-infectious chronic disorders. Robust tools for analyzing gene function in this parasite have been developed and a range of genetic tools are now available. These together with public databases have provided insights on the function of different genes in *Giardia*. In this review we provide a current perspective on different molecular aspects of *Giardia* related to genomics, regulation of encystation, trophozoite transcriptional responses to physiological and xenobiotic (drug-induced) stress, and mechanisms of drug resistance. We also examine recent insights that have contributed to gain knowledge in the study of VSPs, antigenic variation, epigenetics, DNA repair and in the direct manipulation of gene function in *Giardia*, with a particular focus on the inducible Cre/loxP system.