

# Anaerobic Parasitic Protozoa

## Genomics and Molecular Biology



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Anaerobic parasitic protozoa cause medically and economically important diseases such as dysentery, sexually transmitted infections, and gastroenteritis that affect millions of people worldwide annually. Recently the genomes of the three key anaerobic protozoa, *Trichomonas*, *Giardia* and *Entamoeba*, have been determined. The availability of these genomic data and the use of post-genomic analyses have provided fascinating new insights into the biology of these important parasites. They will be important for the design of novel anti-protozoan drugs and the development of effective vaccines.

In this book internationally acclaimed researchers critically review the most important aspects of research on anaerobic parasitic protozoa, providing the first coherent picture of their genomics and molecular biology since the publication of the genomes. Chapters are written from a molecular and genomic perspective and contain speculative models upon which future research efforts can be based. Topics include: the genomes of *Entamoeba histolytica*, *Trichomonas vaginalis*, *Giardia* and other diplomonads; the cytoskeletons of *Entamoeba histolytica*, *Giardia lamblia* and *Trichomonas vaginalis*; genomic analyses and manipulation of gene expression in *Entamoeba histolytica*; nuclear and chromosomal structure and replication in *Giardia*; and the mitochondrion-like organelles of a fourth anaerobe, *Blastocystis*.

Essential reading for all researchers working with these protozoa and related organisms and with eukaryotic model organisms. Recommended text for all parasitology laboratories.

**Chapter 1.** *Entamoeba histolytica*: Genome Status and Web Resources. *Elisabet Caler and Hernan Lorenzi*

**Chapter 2.** The Genome of *Giardia* and Other Diplomonads. *Jan O. Andersson, Jon Jerlström-Hultqvist and Staffan G. Svärd*

**Chapter 3.** The Genome of *Trichomonas vaginalis*. *Jane M. Carlton, Shehre-Banoo Malik, Steven A. Sullivan, Thomas Sicheritz-Ponten, Petrus Tang and Robert P. Hirt*

**Chapter 4.** Dissecting the Actin Cytoskeleton of *Entamoeba histolytica* from a Genomic Perspective. *Chung Chau Hon, Kumiko Nakada-Tsukui, Tomoyoshi Nozaki and Nancy Guillén*

**Chapter 5.** New Insights into the Composition and Function of the Cytoskeleton in *Giardia lamblia* and *Trichomonas vaginalis*. *Heidi G. Elmendorf, Richard D. Hayes, Shweta Srivastava and Patricia Johnson*

**Chapter 6.** *Entamoeba histolytica* Genomic Analyses. *Upinder Singh and Gretchen M. Ehrenkauffer*

**Chapter 7.** Manipulation of Gene Expression in *Entamoeba histolytica*. *Rivka Bracha, Nancy Guillén and David Mirelman*

**Chapter 8.** *Giardia*: Nuclear and Chromosomal Structure and Replication. *Rodney D. Adam and Staffan G. Svärd*

**Chapter 9.** The *Blastocystis* Mitochondrion-like Organelles. *Anastasios D. Tsaousis, Alexandra Stechmann, Karleigh A. Hamblin, Mark van der Giezen, Vicente Pérez-Brocal and C. Graham Clark*

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