Tomoyoshi Nozaki · Alok Bhattacharya Editors

Amebiasis

Biology and Pathogenesis of Entamoeba



「著作権保護コンテンツ」

Editors Tomoyoshi Nozaki Department of Parasitology National Institute of Infectious Diseases Shinjuku-ku, Tokyo, Japan

Alok Bhattacharya Jawaharlal Nehru University New Delhi, India

ISBN 978-4-431-55199-7 ISBN 978-4-431-55200-0 (eBook) DOI 10.1007/978-4-431-55200-0 Springer Tokyo Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014956867

© Springer Japan 2015

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

「著作権保護コンテンツ」

「著作権保護コンテンツ」

Contents

1	Introduction Tomoyoshi Nozaki and Alok Bhattacharya	1
Par	t I Genetics and Genomics	
2	The Continuously Expanding Universe of Entamoeba	9
3	The Genomics of <i>Entamoebae</i> : Insights and Challenges	27
4	Multilocus Sequence Typing System (MLST): Genetic Diversity and Genetic Components to Virulence Carol A. Gilchrist	49
5	The tRNA Gene-Linked STRs and Other Genetic Typing Methods Ibne Karim M. Ali	61
6	Genetic Manipulation Techniques	75
Par	t II Regulation of Gene Expression	
7	Surveying Entamoeba histolytica Transcriptome Using Massively Parallel cDNA Sequencing Chung-Chau Hon, Christian Weber, Mikael Koutero, Marc Deloger, Jean-Yves Coppee, and Nancy Guillen	99
8	Ribosomal RNA Genes and Their Regulation in Entamoeba histolytica	119

「著作権保護コンテンツ」

Contents		ix	
22	Archetypical and Specialized DNA Replication Proteins in Entamoeba histolytica	393	
Part V Pathogenesis and Immunity			
23	Pathology, Pathogenesis, and Experimental Amebiasis Mineko Shibayama, José de Jesús Serrano-Luna, Jesús Aguirre-García, and Víctor Tsutsumi	411	
24	Innate Host Defenses in the Gut Leanne Mortimer and Kris Chadee	433	
25	Cysteine Peptidases in Pathogenesis Iris Bruchhaus and Jenny Matthiesen	447	
26	Host Immunity and Tissue Destruction During Liver Abscess Formation	459	
27	The Effect of Entamoeba histolytica on Muc2 Mucin and Intestinal Permeability V. Kissoon-Singh, E. Trusevych, and K. Chadee	471	
28	Human Genetic Susceptibility to Amebiasis	487	
29	Immune Response in Human Amebiasis: A Protective Response?	497	
Part VI Drug Resistance and Drug Discovery			
30	Metronidazole and the Redox Biochemistry of Entamoeba histolytica	523	
31	Thioredoxin Reductase and Its Role as a New Drug Target	543	
32	Drug Development: Old Drugs and New Lead	553	
33	Heterocyclic Lead Compounds Against Amebiasis	565	