

ACANTHAMOEBA

Biology and Pathogenesis (2nd edition)

By: Naveed Ahmed Khan Aga Khan University, Karachi, Pakistan

344 pp, January 2015

Hardback: ISBN 978-1-908230-50-8 £159, \$319. **Ebook:** ISBN 978-1-908230-51-5 £159, \$319

A fully comprehensive and up-to-date edition covering all aspects of *Acanthamoeba* biology. Following the success of the first edition of this book, the author has extensively revised and expanded the text to produce a new volume that includes all the latest research and information on every aspect of this organism. There is a particular emphasis on the *Acanthamoeba* genome sequence and the novel insights gained from the application of molecular methods to *Acanthamoeba* developmental and cellular biology in terms of metabolism and morphogenesis, classification, ecology and role in the ecosystem, host-pathogen interactions, virulence factors and immunological basis of pathogenesis, clinical manifestation, diagnosis, treatment, new target development and drug resistance and its interactions with other microbes in the environment.

This new edition is an essential reference text for parasitologists, microbiologists, immunologists, and physicians in the field of basic and medical microbiology, as well as an invaluable reference for new and experienced researchers who wish to understand this organism better. This book is the definitive guide to current research on this increasingly important organism.



Section A

Biology and Phylogeny

1. Introduction
2. Discovery of *Acanthamoeba* spp.
3. Speciation and genotyping
4. Cell biology
5. Nuclear genome
6. Mitochondrial genome
7. The complete *A. castellanii* genome (By Professor Brendan Loftus)
8. Motility
9. Molecular basis of motility
10. *Acanthamoeba* actin
11. *Acanthamoeba* myosin

Section B

Life cycle and ecological significance

1. Ecology
2. Ecosystem
3. Life cycle
4. Stress management in cyst-forming pathogenic free-living protists
5. Regulators of the life cycle
6. What stimulates encystation?
7. Feeding
8. Metabolism
9. *Acanthamoeba* is a heterotroph (chemo-organotroph)
10. Hydrogenosomal-type anaerobic ATP generation pathway in *A. castellanii*
11. Isolation of *Acanthamoeba* from the environmental samples
12. Storage
13. Testing viability of trophozoites and cysts

Section C

Acanthamoeba infections

1. *Acanthamoeba* keratitis
2. Granulomatous amoebic encephalitis due to *Acanthamoeba*
3. Cutaneous Acanthamebiasis
4. Multiple sclerosis and *Acanthamoeba*

Section D

Pathogenesis

1. *Acanthamoeba* keratitis
2. Granulomatous amoebic encephalitis due to *Acanthamoeba*
3. Loss and gain of virulence
4. *Acanthamoeba*: An opportunistic pathogen
5. Crossing of the biological barriers
6. Direct virulence factors
7. Contact-dependent mechanisms
8. Contact-independent mechanisms
9. Indirect virulence factors

Section E

Acanthamoeba and the immune system

1. Non-specific immune system
2. Specific immune system
3. What are the basic types of parasite immune evasion strategies?
4. *Acanthamoeba* and immune response
5. Effect of immune suppressive component in marijuana, cannabinoid delta-9-tetrahydrocannabinol on *Acanthamoeba* encephalitis
6. *Acanthamoeba* and the central nervous system autoimmunity

Section F

Chemotherapeutic strategies against *Acanthamoeba* infections

1. Chemotherapeutic agents and *Acanthamoeba*
2. Membrane-acting agents
3. Inhibitors of DNA synthesis and polyamine metabolism
4. RNA synthesis inhibition
5. Protein synthesis inhibition
6. Tricyclic neuroleptic agents (calmodulin inhibition)
7. Artesunate
8. Antimicrobial compounds from natural products (in addition to the aforementioned antibiotics)
9. Drug targets in *Acanthamoeba*
10. Drug resistance in *Acanthamoeba*
11. Disinfectants and *Acanthamoeba*
12. Future prospects for treatment

Section G

War of the microbial worlds: who is the beneficiary in *Acanthamoeba* interactions with other microbes

1. A host for viruses
2. A host for yeast
3. A host for protists
4. *Acanthamoeba* and bacteria interactions
5. Is *Acanthamoeba* an evolutionary ancestor of macrophages?
6. *Acanthamoeba* as evolutionary precursor of pathogenicity
7. Who is the beneficiary in bacteria-*Acanthamoeba* interactions?
8. How to implement anti-*Acanthamoeba* strategies to prevent superbugs attack?
9. *Acanthamoeba*-microbe interactions offer a potential source of novel antimicrobial molecules

Section H

Conclusions and Future Studies

1. A model organism with the pathogenic potential
2. New approaches in the study of *Acanthamoeba*
3. Future Research
4. Treatment

PARASITOLOGY



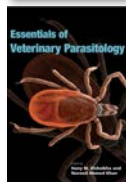
Leishmania

Current Biology and Control
Edited by: S Adak, R Datta
c. 250 pp, January 2015
Hardback: ISBN 978-1-908230-52-2 £159/\$319
Ebook: ISBN 978-1-908230-53-9 £159/\$319
Current research highlighting the most discoveries in the field. Topics range from modulation of host miRNA to vaccine biology and mechanism of drug resistance. Essential reading!



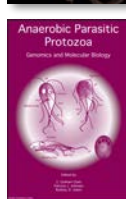
Malaria Parasites

Comparative Genomics, Evolution and Molecular Biology
Edited by: JM Carlton, SL Perkins, KW Deitsch
x + 280 pp, February 2013
Hardback: ISBN 978-1-908230-07-2 £159/\$319
Ebook: ISBN 978-1-908230-76-8 £159/\$319
"an essential and eminently accessible resource" (Parasites & Vectors)



Essentials of Veterinary Parasitology

Edited by: HM Elsheikha, NA Khan
x + 222 pp, May 2011
Hardback: ISBN 978-1-904455-80-6 £99/\$169
Paperback: ISBN 978-1-904455-79-0 £59/\$99
"excellent, accurate and up to date ... an essential tool" (Aus. Vet. J.); "an indispensable acquisition" (Acta Parasitologica) "it is worth buying" (Vet. Para.); "Students will love this book" VIN



Anaerobic Parasitic Protozoa

Genomics and Molecular Biology
Edited by: CG Clark, PJ Johnson, RD Adam
x + 222 pp, March 2010
Hardback: ISBN 978-1-904455-61-5 £159/\$319
"very well written and edited ... easy to read" (Parasites and Vectors); "highly useful to experts and active researchers" (Quarterly Rev. Biol.); "well written, well referenced and very up to date" (Aus. J. Med. Sci.)

MICROBIOLOGY



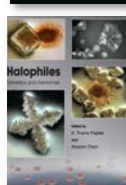
Pathogenic Neisseria

Genomics, Molecular Biology and Disease Intervention
Edited by: JK Davies, CM Kahler
x + 260 pp, July 2014
Hardback: ISBN 978-1-908230-47-8 £159/\$319
Ebook: ISBN 978-1-908230-61-4 £159/\$319
Reviews the most important research on pathogenic *Neisseria* including: vaccine development; antibiotic resistance; transcriptomics of regulatory networks; etc.



Human Pathogenic Fungi

Molecular Biology and Pathogenic Mechanisms
Edited by: DJ Sullivan, GP Moran
x + 342 pp, June 2014
Hardback: ISBN 978-1-908230-44-7 £180/\$360
Ebook: ISBN 978-1-908230-66-9 £180/\$360
An essential reference for students, researchers and clinicians with an interest in fungal pathogenesis!



Halophiles

Genetics and Genomes
Edited by: RT Papke, A Oren
xii + 196 pp, May 2014
Hardback: ISBN 978-1-908230-42-3 £159/\$319
Ebook: ISBN 978-1-908230-65-2 £159/\$319
This book highlights current genetics and genomics research on halophilic Archaea and Bacteria and their viruses to provide a timely overview.



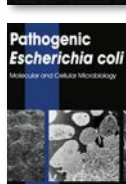
Molecular Diagnostics

Current Research and Applications
Edited by: J Huggett, J O'Grady
xii + 248 pp, May 2014
Hardback: ISBN 978-1-908230-41-6 £159/\$319
Ebook: ISBN 978-1-908230-64-5 £159/\$319
I would highly recommend this book (Doodys)



Bioinformatics and Data Analysis in Microbiology

Edited by: Ö Tastan Bishop
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Molecular and Cellular Microbiology
Edited by: S Morabito
x + 304 pp, April 2014
Hardback: ISBN 978-1-908230-37-9 £159/\$319
Ebook: ISBN 978-1-908230-99-7 £159/\$319
The most recent molecular and cellular biology research on *E. coli*. The wider perspective, including considerations on public health and the impact on animal productions, is also discussed.

GENOMICS & MOLECULAR BIOLOGY



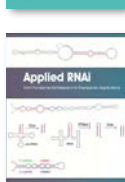
Microarrays

Current Technology, Innovations and Applications
Edited by: Z He
x + 246 pp, August 2014
Hardback: ISBN 978-1-908230-49-2 £159/\$319
Ebook: ISBN 978-1-908230-59-1 £159/\$319
Focused on current microarray technologies and their applications in environmental microbiology.



Proteomics

Targeted Technology, Innovations and Applications
Edited by: M Fuentes, J LaBaer
x + 186 pp, September 2014
Hardback: ISBN 978-1-908230-46-1 £159/\$319
Ebook: ISBN 978-1-908230-62-1 £159/\$319
An overview of targeted proteomics in biomedical science.



Applied RNAi

From Fundamental Research to Therapeutic Applications
Edited by: P Arbutnot, MS Weinberg
x + 252 pp, June 2014
Hardback: ISBN 978-1-908230-43-0 £159/\$319
Ebook: ISBN 978-1-908230-67-6 £159/\$319
RNAi experts critically review the most interesting advances in basic applied RNAi research, highlight the applications in RNAi-based therapies and discuss the technical hurdles that remain.



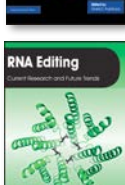
Next-generation Sequencing

Current Technologies and Applications
Edited by: J Xu
xii + 160 pp, March 2014
Hardback: ISBN 978-1-908230-33-1 £120/\$240
Ebook: ISBN 978-1-908230-95-9 £120/\$240
The most recent advances in NGS instrumentation and data analysis, current NGS platforms, sequencing chemistries, instrument specifications, general workflows and procedures.



Genome Analysis

Current Procedures and Applications
Edited by: MS Poptsova
xiv + 374 pp, January 2014
Hardback: ISBN 978-1-908230-29-4 £159/\$319
Ebook: ISBN 978-1-908230-68-3 £159/\$319
An up-to-date and comprehensive overview of next-generation sequencing data analysis, highlighting problems and limitations, applications and developing trends in various fields of genome research.



RNA Editing

Current Research and Future Trends
Edited by: S Maas
viii + 240 pp, June 2013
Hardback: ISBN 978-1-908230-23-2 £159/\$319
Ebook: ISBN 978-1-908230-88-1 £159/\$319
"an essential book" (Doodys)



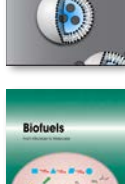
Real-Time PCR

Advanced Technologies and Applications
Edited by: NA Saunders, MA Lee
viii + 284 pp, July 2013
Hardback: ISBN 978-1-908230-22-5 £159/\$319
Ebook: ISBN 978-1-908230-87-4 £159/\$319
"an invaluable reference" (Doodys); "wide range of real time PCR technologies" (Food Sci Technol Abs)



Bionanotechnology

Biological Self-assembly and its Applications
Edited by: BHA Rehm
x + 310 pp, February 2013
Hardback: ISBN 978-1-908230-16-4 £159/\$319
Ebook: ISBN 978-1-908230-81-2 £159/\$319
"the most striking and successful approaches" Book News



Biofuels

From Microbes to Molecules
Edited by: X Lu
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Ebook: ISBN 978-1-908230-63-8 £159/\$319
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Non-coding RNAs and Epigenetic Regulation of Gene Expression

Drivers of Natural Selection
Edited by: KV Morris
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