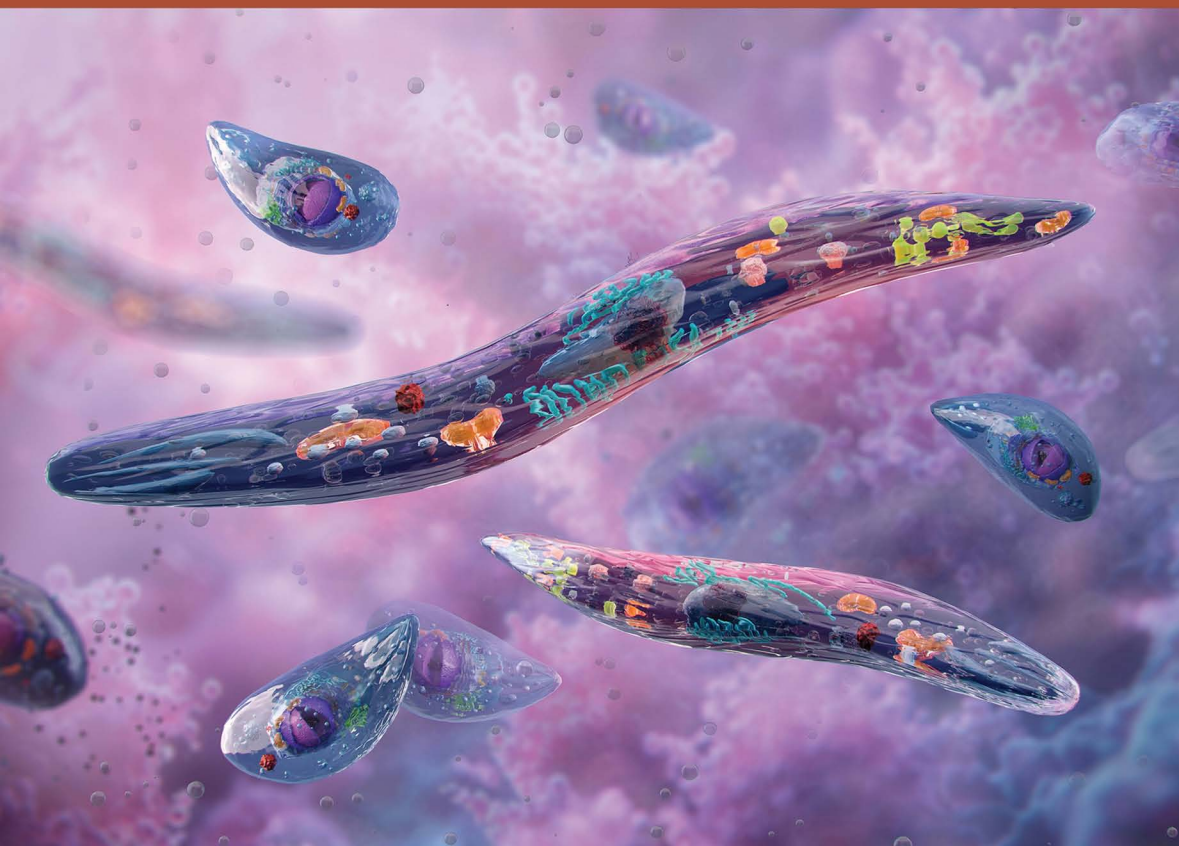


BLOOD-INFECTING PROTOZOAL DISEASES

Disease Mechanism, Therapy, and
Drug Resistance



EDITED BY TABISH QIDWAI



CRC Press
Taylor & Francis Group

Blood-Infecting Protozoal Diseases

The present book describes the common human diseases caused by the blood-infecting protozoans, and their diagnosis and treatment. This book compiles the latest literature on the genetic diversity, therapeutics, and drug resistance in protozoan parasites, with a focus on malaria parasites: *Plasmodium falciparum* and *Plasmodium vivax*. It explores the association of parasite genetic makeup with drug resistance. The book covers the mechanisms of drug resistance, its spread, and factors affecting drug resistance. The book facilitates research, design, and development of therapeutics against malarial parasites. The book is meant for post-graduate students of microbiology, parasitology, and medicine, as well as healthcare workers, medical practitioners, public health staff, and policymakers.

Key Features:

- Describes the recent updates on how the different protozoan parasites cause human diseases
- Includes the genomics and epidemiology of important protozoan parasites such as Plasmodium, Trypanosoma, Leishmania, and Toxoplasma, and covers the role of nanotechnology in the diagnosis and treatment of the diseases
- Covers the detection of drug resistance and its spread in blood-infecting protozoan parasites
- Discusses the molecular basis of antimalarial drug resistance in *Plasmodium vivax*
- Reviews the factors contributing to the spread of resistance in malaria parasites



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Contents

<i>About the Editor</i>	vii
1 Unraveling the Etiology of Human Protozoan Infections: Recent Advances	1
TEJAL SHREEYA, TABISH QIDWAI, AND BHARTENDU NATH MISHRA	
2 Understanding the Genomics and Epidemiology of Common Protozoan Diseases	10
SONAM YADAV, SHAILENDRA S. MAURYA, SANA ISLAHI, SABIHA FATIMA, AND TABISH QIDWAI	
3 Diagnosis and Treatment of Protozoan Diseases: An Update	31
JAHANARAH KHATOON, NAMIRA SANA, SWATI SAXENA, AND SNOBER S. MIR	
4 Nanotechnology in the Diagnosis and Treatment of Protozoan Diseases	47
KHUSHBU WADHWA, NEELAM YADAV, AND NEHA KAPOOR	
5 The Emergence and Spread of Drug Resistance in Blood-Infecting Protozoans: A Major Threat to Human Health	76
MAMTA GANGWAR, VINEETA SINGH, AJAY KUMAR VERMA, SATISH KUMAR, AND TABISH QIDWAI	
6 Mechanism of Drug Resistance and Treatment Failure in Leishmaniasis, Trypanosomiasis, <i>Toxoplasma Gondii</i>, and <i>Babesia</i>	93
DR. SATISH KUMAR, DR. ARPITA SINGH, AND DR. SHIVAM VERMA	

7 Investigation of Sesquiterpene Lactone Endoperoxides and Associated Genetic Markers for Drug Resistance in <i>P. falciparum</i>	106
KAVITA VERMA, ROHIT RAJ YADAV, NEHA KAPOOR, AND NEELAM YADAV	
8 Drug Resistance Marker for Amino-Alcohols, Aminoquinolines, and Antifolates in <i>P. falciparum</i>	133
KAVITA VERMA AND NEELAM YADAV	
9 Molecular Basis of Anti-Malarial Drug Resistance in <i>Plasmodium</i> sp., Current Challenges, and Future Perspectives	156
MANISH KR DWIVEDI, MANISH CHANDRA SRIVASTAVA, AND PRASHANT KUMAR SINGH	
10 Unmasking Influential Factors in Malaria Drug Resistance Transmission	182
NEETA GADE, ANKIT KUMAR, MARYAM IMAM, SHIVAM VERMA, NEHA KAPOOR, SONAM YADAV, AND TABISH QIDWAI	
11 Detection of Resistance: Assessing In Vivo and In Vitro Drug Resistance in Malaria Parasite	192
DR. SHIVAM VERMA, PROF. NARSINGH VERMA, DR. ARPITA SINGH, AND DR. SATISH KUMAR	
12 Monitoring <i>Plasmodium</i> Genetic Diversity to Support Malaria Elimination in Resource-Limited Endemic Regions	203
SHREETAMA BHATTACHARJEE AND ADITI SINGH	
<i>Index</i>	215

Chapter 3

Diagnosis and Treatment of Protozoan Diseases

An Update

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3.1 INTRODUCTION

Protozoan parasites are single-celled microorganisms belonging to the Protista kingdom. These are diverse unicellular eukaryotic microscopic creatures having structures resembling those found in animals. Protozoa belonging to the genera Plasmodium, Trypanosoma, and Leishmania cause the most significant infections in humans. Pathologically important protozoan groups include those causing intestinal infections, such as Toxoplasma gondii and Trichomonas vaginalis [1]. Protozoan diseases affect both the tropical and subtropical areas, as well as the temperate regions such as North America and the Asia Pacific region. Despite this broad geographical distribution, there is no licensed vaccine available for diseases caused by protozoan parasites. In addition to this, the lack of effective vaccines has contributed to the significant burden of protozoan infections in human populations globally [2]. Additionally, we will thoroughly analyze key protozoan parasitic diseases that have a global impact on human health. Every disorder is associated with a specific causative protozoan, its mode of transmission, common symptoms, recommended treatment, and commonly affected geographical regions. It is worth mentioning that the prevalence and distribution of these diseases can vary within regions and change over time (Table 3.1).

The study of protozoan biology has gained popularity, not only because these organisms are interesting but also due to the urgent need for tools and strategies to reduce the substantial social and economic burden they