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*Atlas of Mycobacterium Tuberculosis* reveals in-depth information about mycobacterium tuberculosis which has never before been reported. Using atomic force microscopy (AFM), the in-depth phenotypic interaction that occurs in different stages of the tuberculosis lifecycle is illustrated, including resting, exponential, and dormant states.
Coverage also includes the macroscopic and microscopic anatomy of mycobacterium, including pigmentation, morphology of colonies, size and shape, and the phenotypic changes from susceptible to resistant, all shown with images from electronic and atomic force microscopes. View more >

Key Features
- Identifies the different stages and morphological aspects of mycobacterium tuberculosis with the use of new microscopy techniques
- Includes never-before-seen photographs from the personal collection and scientific achievement of the authors
- Outlines the nature of the lifecycle of mycobacterium tuberculosis in relation to adaptation in humans

Readership
Researchers of Tuberculosis (TB) including MDs, PhDs and postdoctoral fellows

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- Chapter 4. Cell Division in Mycobacterium tuberculosis
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Edited by
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Preface

There has been a recent dramatic interest in the incidence of pulmonary non-tuberculous Mycobacteria (NTM). Twenty years ago, NTM were regarded as nonvirulent bacteria that were not appreciated widely as human pathogens. Today, they are considered to be in every environmental factor, that is, soil, water, and air. Recently, it was shown that NTM can cause diseases from various environmental conditions rather than from person-to-person "in very rare exceptional cases." Ernest Runyon (1959) put these human disease-associated Mycobacteria into four main groups. The number of identified and cataloged NTM species has been increasing rapidly, from about 50 in 1997 to over 160 by January, 2016. The surge is mainly due to improved isolation and identification techniques. However, even with these new techniques, the Runyon classification is still sometimes used to organize the Mycobacteria into categories. The most common clinical manifestation of NTM disease is lung disease, but lymphatic, skin/soft tissue, and disseminated diseases are also important. Pulmonary disease caused by NTM is most often seen in postmenopausal women and patients with underlying lung disease such as cystic fibrosis (CF), bronchiectasis, and prior tuberculosis. It is not uncommon for alpha 1-antitrypsin deficiency, Marfan syndrome, or primary ciliary dyskinesia patients to have pulmonary NTM colonization and/or infection. Pulmonary NTM can also be found in individuals with AIDS and malignant disease. It can be caused by many NTM species which depends on region, but most frequently MAC and M. kansasii. Clinical symptoms vary in scope and intensity, but commonly include chronic cough, often with purulent sputum. Hemoptysis may also be present. Systemic symptoms include malaise, fatigue, and weight loss in advanced stages of disease. The diagnosis of NTM pulmonary infection requires the presence of symptoms, radiologic abnormalities, and microbiologic cultures. In this book, we give an overview of the taxonomy and identification of NTM. Then, the susceptibility of these species are discussed. Additionally to clinical symptoms and radiological patterns, the geographical distribution of NTM are presented. The authors hope that by going through the chapters of this book, clinicians and researchers will give more attention to NTM.
xiv Preface

Although one should keep in mind that NTM study needs intellectual trends, funds, and governmental support for high tech-laboratories to detect and report NTM infection within suspected cases.

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