

about

Malaria and TB

INTRODUCTION

Malaria and tuberculosis (TB) remain among the leading infectious diseases, causing morbidity and mortality worldwide. About one-quarter of the world's population is infected with TB

- Malaria has a complex life cycle. The protozoan Plasmodium parasites are transmitted to humans through bites of infected female Anopheles mosquitoes. The injected sporozoites move to the liver
- In contrast, human TB is an airborne disease, caused by Mycobacterium TB. It spreads through respiratory droplets

MICROSCOPY IN TB SCREENING

LED Fluorescence

The use of LED fluorescence microscopy for TB diagnosis is well-established and recommended by the World Health Organization (WHO). The method involves staining sputum smears with fluorescent, which binds specifically to Mycobacterium tuberculosis. When viewed under a LED fluorescence microscope, the bacilli emit a bright yellow-green glow against a dark background, making detection faster and more efficient

Advantages include:

- Increased sensitivity compared to ZN* brightfield microscopy
- Faster slide scanning, for high-throughput screening
- Rapid, reliable diagnosis especially for low-resource settings
- Durable, energy-efficient and long-lasting LED light sources

*Ziehl-Neelsen (ZN) brightfield microscopy

The ZN staining technique has been the cornerstone of TB diagnosis for over a century. ZN-stained Acid-Fast Bacilli (AFB) are typically easier to identify than those visualized with fluorescence microscopy. It is a cost-effective and accessible method for detecting Mycobacterium TB in sputum samples. A single AFB observed in a properly prepared smear is sufficient to confirm a positive diagnosis

MICROSCOPY FOR MALARIA DIAGNOSIS

Brightfield microscopy remains the gold standard for malaria diagnosis, offering precise detection and identification of all



five major malaria parasites: **Plasmodium falciparum**, **P. vivax**, **P. malariae**, **P. ovale** and **P. knowlesi**. This method enables visualization of different parasite stages - including gametocytes - and supports accurate quantification of parasite density, which is essential for monitoring treatment response and assessing therapeutic efficacy

Giemsa stain is the recommended reagent for malaria microscopy and accurate diagnosis relies on the examination of both thick and thin blood films from the same patient. Light microscopy is particularly valuable in investigating suspected treatment failures, providing detailed insights not available through rapid diagnostic tests alone. High-quality optical performance and consistent illumination are critical for reliable parasite detection. Our microscopes are designed to meet these demanding diagnostic requirements, supporting laboratories in both routine screening and advanced case analysis

● Auramine fluorescence filter curve

