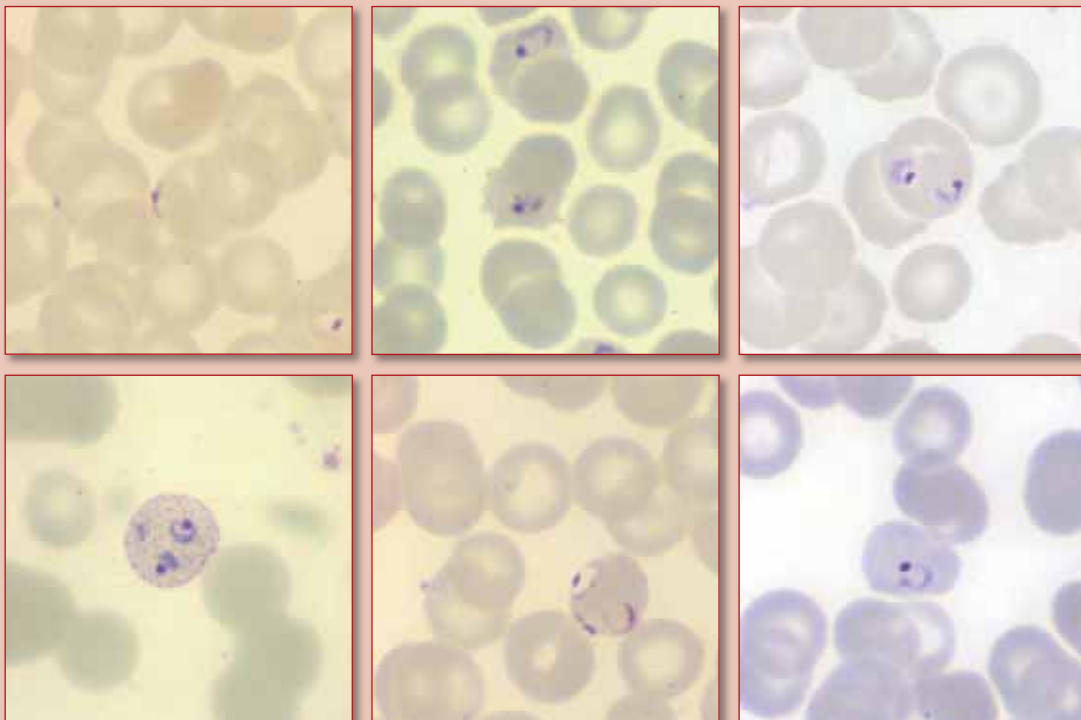


Basic MALARIA MICROSCOPY

Part I. Learner's guide



Second edition



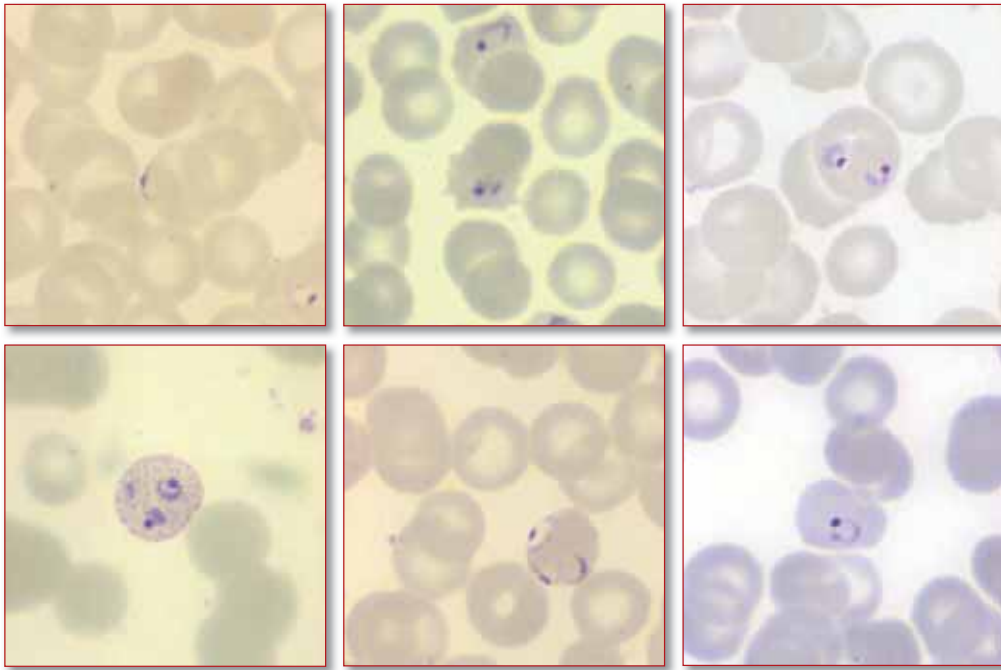
**World Health
Organization**

This second edition of the *Basic Malaria Microscopy* package is a stand-alone product, providing all that is needed to conduct a complete training course. It has been compiled by John Storey on the basis of the feedback received from a wide range of professionals and experts who have been using the first Edition of the *Basic Malaria Microscopy*, published by WHO in 1991. It still contains the beautiful and accurate water-colour illustrations prepared for the first edition of the manual by the late *Yap Loy Fong*. Experience has shown that colour drawings are best in training new recruits to recognize parasite stages and species, because single plane pictures help students to extrapolate from what they see under the microscope, focussed at a number of focal planes, to a complete view of the parasite. Later, they can move from drawings and use microphotographs, which will have an additional, positive impact. The training course is further strengthened if copies of the WHO *Bench aids for malaria microscopy* are also made available to trainees.

Front cover, inserts: photomicrographs of Giemsa stained thin films showing clockwise from top left: early trophozoites (ring stages) of 1) *Plasmodium falciparum*, 2) *Plasmodium vivax*, 3) *Plasmodium malariae* and 4) *Plasmodium ovale*; and mature trophozoites of 5) *Plasmodium falciparum* and 6) *Plasmodium vivax*.

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Preface to the second edition

An informal WHO consultation on quality assurance for malaria microscopy, held in Kuala Lumpur, Malaysia, in 2004 recommended that the 1991 edition of WHO's *Basic malaria microscopy*¹ be revised. This second edition is the result of that recommendation.

Few real changes in the microscopy of malaria parasites have occurred since 1991, but much has changed in the way malaria is diagnosed and treated. There is better understanding in remote communities that malaria is a medical emergency and requires rapid diagnosis and treatment. As part of efforts in many countries to expand access to treatment, microscopy services are being renewed and upgraded. Parasitological confirmation of a diagnosis of malaria will strengthen the surveillance of malaria and improve control of the disease.

Microscopists are vital to malaria programmes, and their diagnostic and technical skills are relied on in both curative services and disease surveillance. Thus, training in malaria microscopy must be sound and must reach today's high standards. When microscopists are trained and able to make quality-assured diagnoses of malaria, communities at risk have greater confidence in their services, and both patients and prescribers benefit.

The training package presented here has been adjusted to meet the changed conditions. The training manual is divided in two parts: a learner's guide (Part I) and a tutor's guide (Part II). The package includes a CD-ROM, prepared by the United States Centers for Disease Control and Prevention, which contains microphotographs of the different malaria parasite species and technical information in PowerPoint format, which can be shown during training sessions and referred to by the participants. Emphasis is placed on teaching and learning, including monitoring and evaluating individuals and the group during training.

The Basic Malaria Microscopy programme continues to use the 'competence-based' concept of achieving set targets of competence. Attempts have been made to indicate the appropriate standards that will qualify a participant for graduation and for progress between learning units. The levels of competence to be attained at the end of this training course are the minimum levels defined in the WHO *Malaria microscopy quality assurance manual*². For example, "Reaching 80% accuracy in diagnosing malaria parasites" (assessed against a standard set of microscopy slides) is considered achievable by every participant. It is recognized, however, that some programmes may not yet be able to reach such standards and initially must set their own. The course organizers should indicate the standards they expect train-

1 WHO. *Basic malaria microscopy: Part I Learner's guide; Part II Tutor's guide*. Geneva, World Health Organization, 1991

2 WHO. *Malaria microscopy quality assurance manual*. Manila, Western Pacific Regional Office, 2009.

ees to reach. As the trainees, once they have graduated, will be making decisions that determine the management of a potentially fatal disease, a high standard of competence must be ensured.

This second edition of the Basic Malaria Microscopy package is a 'stand-alone product', providing all that is needed to conduct a complete training course. It still contains the beautiful and accurate water-colour illustrations prepared for the first edition of the manual by the late Yap Loy Fong. Experience has shown that colour drawings are best in training new recruits to recognize parasite stages and species, because 'single plane' pictures help students to extrapolate from what they see under the microscope, focussed at a number of focal planes, to a 'complete view' of the parasite. Later, they can move from drawings and use microphotographs, which will have an additional, positive impact. Thus, the training course is further strengthened if copies of the of the Bench aids for malaria microscopy ¹ are also made available to trainees.

The text for this edition was extensively revised by John Storey, on the basis of reviews by Professor Ahmed A. Abdel-Hameed Adeel, Dr Hoda Atta, Dr A. Beljaev, Dr David Bell, Dr Andrea Bosman, Ms Leigh Dini, Dr John Freat, Dr M.A. Khalifa, Dr D. Klarkowski, Dr Ken Lilley, Dr Earl Long, Dr Majed Al Zedjali and Dr R. Velayudhan. In addition, Donato Esparar, Ronald Espina, Sherwin Galit, Zenaida Grad, Felisa Guballa, John Fiel Porto and Arlene Leah Santiago tested and made valuable comments on the new keys to thick and thin films in the Learner's guide.

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