

FAQs

What is the EasyScan_GO?

The EasyScan_GO is a breakthrough AI-powered microscope to fight the spread of drug resistant strains of malaria and assist in case management. Using custom image recognition software, EasyScan_GO is capable of identifying and counting malaria parasites in a blood smear in the same time-range as an expert microscopist.

Why is it needed?

Half the world is at risk of getting malaria and the disease is a significant burden to growing economies and health organizations responsible for monitoring and treating the disease. Microscopy is one of the primary methods used to diagnose malaria. Because it is dependent on a human microscopist, results can be highly variable. The EasyScan_GO eliminates this variability by automating the labor-intensive step of identifying the parasite.

How does it work?

The EasyScan_GO uses digital slide scanning in combination with a diagnostic software module based on convolutional neural networking (CNNs)—a branch of machine learning well-suited for image classification tasks—to recognize and count the most common types of malaria parasites in a blood slide in the same time range as an expert microscopist. By simplifying workflows and assisting in identifying parasites, the EasyScan_GO enables lab technicians to work more efficiently and improve the accuracy of their diagnoses.

How did you train it using AI?

The research team and their partners gathered thousands of malaria blood slides annotated by expert microscopists and processed the images through a machine learning algorithm. The resulting software is capable of making diagnoses with a lab technician's buyoff and review.

Who does malaria affect?

Malaria parasites infect 200 million people and kill 400,000 every year. The disease is typically found in tropical and sub-tropical countries in Asia, sub-Saharan Africa, and the Americas. Even in Europe and North America, thousands of cases are diagnosed from infected travelers returning home.

Why is it important to monitor drug resistance?

Drug resistance has been detected in Southeast Asia. Early detection of drug resistance in a region enables a concentrated effort to combat malaria in that region and prevent the spread of drug resistance. Furthermore, selecting the right antimalarial medicine depends on the efficacy of the medicine against the malaria parasite in a given area. Monitoring the therapeutic efficacy of antimalarial medicine is therefore fundamental to effective treatment.

Why is microscopy needed?

The majority of malaria cases are diagnosed using rapid diagnostic tests (RDTs)—a diagnostic device similar to a home pregnancy test. RDTs are quick and easy to use, and the best malaria RDTs perform sufficiently well in diagnosing patients for case management. However, most RDTs do not differentiate between three of the four malaria species that infect people and they do not provide a parasite count. The latter is critical for monitoring drug effectiveness, and microscopy is the only feasible tool for this at present. Microscopy is also widely used in case management, with roughly 200 million suspected malaria cases examined each year.

Why is microscopy challenging?

Malaria is one of the hardest diseases to identify on a microscope slide. There are very few highly skilled malaria microscopists in the world who can do it accurately.

At very low infection levels, a microscopist must be able to find a single parasite in 100,000 red blood cells, the equivalent of finding marbles in a standard football pitch, in 20 minutes. Fatigue combined with large numbers of slides and unfamiliarity with the parasite results in misdiagnoses and limits researchers' ability to compare results across geographies.

How and by whom is the EasyScan_GO meant to be used?

Antimalarial drug-efficacy monitoring: Putting the EasyScan_GO in the hands of research collaborators working on antimalarial drug-resistance tracking will provide researchers the standardized data they need to track the spread of drug resistance.

Malaria surveillance: More precise and consistent data from health facilities using the EasyScan_GO will help to improve national and global surveillance systems. Effective surveillance is essential for targeting resources to communities most in need and alerting ministries of health to epidemics.

Assisted primary diagnosis of malaria: EasyScan_GO can be used to assist primary diagnosis at any laboratory with consistent access to power and existing microscopy capabilities.

Assisted quality control of malaria: It can also be used at district, national and regional laboratories to assist in cross-checking the accuracy of diagnoses.

Will buyers need to subscribe to a software bundle on top of just buying the device?

EasyScan_GO's analytical software module is integrated into the system and into its price. No additional subscription is needed.

Will the EasyScan_GO replace lab technicians?

The EasyScan_GO is intended to assist lab technicians with diagnoses by shouldering the labor-intensive step of identifying the parasite. Its purpose is to enhance the throughput and the quality of diagnoses, not to replace technicians. The technician must still prepare the microscope slide.

Will there be a specialized training that comes with the device? How long can a lab tech get up to speed on using these?

No training beyond basic microscopy, expertise in handling human blood samples and preparing blood films for microscopy is necessary to operate the EasyScan_GO. It is intuitive and easy-to-use.

What power requirements and ongoing maintenance will this device need?

The EasyScan_GO runs worldwide on every state power grid. It requires normal device attention but no frequent calibration.

What type of measurement capabilities does it have?

EasyScan_GO is part of a modular-based product family and therefore offers various different functions and capabilities. EasyScan devices can be used for Pathology, Cytology, Histology, and many more applications. They come with large slide loading systems as well as with small one-slide solutions.

Does it have applications in countries that don't have malaria? Is this only for philanthropies and NGOs? What else can it or will it be able to be used for?

Our goal is to expand EasyScan_GO's application to assist with the diagnosis of other major diseases through a simple upgrade of its system software. Success with the most difficult-to-identify disease—malaria, paves the way for EasyScan_GO to excel at almost any bright field microscopy task, including other parasites and traits commonly found on a blood film (Chagas disease, microfilaria and sickle cell), as well as other sample types, such as sputum and feces.

How much does it cost and how many should the average lab purchase?

EasyScan_GO has a modular pricing scheme as well as a special price policy for low- and middle-income countries. [Contact us](#) to know more about the price.

How accurate is it?

Pending further testing. However, field tests of an early prototype of the microscope showed that the machine learning algorithm developed by Global Good is as sensitive and specific as an expert microscopist.

Can it give false positive/negative results?

Any diagnostic test is prone to false positives and false negatives, including the EasyScan_GO. The EasyScan_GO software aims to reduce and mitigate the effect of misdiagnoses. First, the software will alert the user when it detects that the sample is

unsuitable or unreliable for diagnosis (for example if too little blood is present or the stain quality is highly abnormal). After analysing the sample, the software reports a diagnosis as well as thumbnails of the objects present in the sample that most resemble parasites. This allows the lab technician to confirm the diagnosis without a need to examine the entire microscope slide.

What consumables are needed to work with EasyScan_GO?

The EasyScan_GO requires the same consumables as standard light microscopy.

How can data be stored and is storage secure?

Motic EasyScan offers various data storage options, customizable to the user's needs and applied hardware solution. It can save data directly onto the user's computer, directly upload to a cloud solution, or utilize data center technologies.

How can results be shared among health workers?

The software produces a report for each blood sample, which can be shared with other doctors or summarized in a lab registry.

Do the results of the system need confirmation by specialized medical personnel?

While the EasyScan_GO is designed to provide expert-level diagnosis, the institution will decide on the level of human confirmation that is required depending on the circumstances.