

Case Western Reserve University Licenses Rapid Malaria, Hemoglobin Disorder Tests



The odds for the successful diagnosis and treatment of two devastating diseases – malaria and sickle cell – will dramatically increase with Hemex Health’s inexpensive, portable, and easy-to-use Gazelle diagnostic device. The device supports testing technologies developed at Case Western Reserve University (CWRU) in Cleveland, OH, and delivers significant advances in performance and cost.

“ *The Technology Transfer Office brought together two separate technologies — one from the School of Medicine and another from the School of Engineering — into one great device for underserved populations worldwide. The resulting technology was licensed to Hemex Health, who now uses it in its Gazelle device.*

The first technology was developed in the lab of Dr. Brian Grimberg, a professor in CWRU’s School of Medicine in the Center for Global Health & Diseases, Department of Pathology. Grimberg’s technique is a rapid magneto-optical detection of malaria that capitalizes on unique magnetic properties of malaria pigment (hemozoin) in the blood, caused by the malaria parasites.

The second technology was invented by Dr. Umut Gurkan and his team in CWRU’s School of Engineering, Department of Mechanical and Aerospace Engineering. Gurkan’s lab uses the principle of electrophoresis in a microfluidics format to measure the characteristics of the protein in blood to simulate the gold standard for lab-based determination of sickled cells. The test quickly identifies patients carrying Sickle Cell Disease.

The technologies have won the USPTO Patents for Humanity Award as a full award and runner up, respectively.

The Gazelle’s Malaria test detects all species and strains of malaria, affordably, delivering an accurate result in about one minute. There are 3.2 billion people still at risk of malaria, with a need for over 1 billion diagnostic tests per year, according to the World Health Organization. Current diagnostics, however, are time-consuming and may miss low-level infections. The Gazelle Malaria test detects very low concentrations of hemozoin, a byproduct of all malaria species and strains. This fast, affordable test is ideal when speed and accuracy are needed, such as border screenings and during epidemics. Results can be stored locally or transmitted to the Cloud for patient and disease tracking.

The Gazelle’s HB Variant test identifies hemoglobin disorders rapidly, easily, and inexpensively.

Over seven percent of the world’s population is at risk of inheriting hemoglobin disorders, including sickle cell disease (SCD) and Thalassemia. Early diagnosis could prevent tens of thousands of SCD child deaths each year. Gazelle Hb Variant is a miniaturized version of the gold standard test known as cellulose acetate electrophoresis. Administration of the test requires minimal training. Results are displayed in eight minutes, including hemoglobin percentages by type.

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