

# Mahalia Desruisseaux, MD '00: "A Rare Combination"

## Researching Cerebral Malaria

**M**et *Plasmodium falciparum*. This one-celled protozoan parasite is responsible for cerebral malaria (CM), a devastating disease that takes the life of a young child every 30 seconds. Children who survive are likely to face long-term neurocognitive problems, including epilepsy, learning disabilities, and behavioral deficits.

**N**ow meet Mahalia Desruisseaux, MD '00, associate professor of medicine and pathology at Albert Einstein College of Medicine. Dr. Desruisseaux joined the Einstein faculty in 2007, following a clinical fellowship there, in which she studied infectious diseases and developed her interest in CM.

She has pursued that interest with marked success, using a mouse model to elucidate the pathogenesis of the disease. The Desruisseaux lab has focused on inflammation of the endothelium—the cells that line the inside of blood vessels—triggered by infection with the *P. falciparum* parasite. The lab hopes a clear understanding of this process will open the door to pathways in the ner-

vous system that may be targeted for treatment of the neurological sequelae of CM.

Dr. Desruisseaux's studies have led to important discoveries. For example, using the mouse model, her group was the first to describe an increase in endothelin, a peptide that causes constriction of blood vessels and can trigger inflammation.

Investigating the phenotype—or function—of proteins involved in CM, the lab demonstrated abnormal regulation of the tau protein, also thought to be a culprit in the formation of nerve tangles in neurodegenerative diseases such as Alzheimer's disease. "We demonstrated that when we could interrupt the actions that cause abnormalities in this protein, we could prevent mortality and neurological defi-

cits in CM-infected mice," says Dr. Desruisseaux.

A new partnership is helping to advance her research. Several years ago, Tamiwe Tomoka, MD, a pathologist from the University of Malawi College of Medicine, visited Einstein. Dr. Tomoka worked in Dr. Desruisseaux's lab for two months, learning about the pathophysiology of CM, using the mouse model. They discussed the value to the lab of research under way in Malawi—a small nation in southeastern Africa—and then, in 2015, under a grant from the Global Health Center at Einstein, Dr. Desruisseaux traveled to Malawi to work with Dr. Tomoka and other collaborators. A year later, the center funded her return trip to Malawi to continue the collaboration.

### Compassionate Patient Care

**P**atient care remains an important part of Dr. Desruisseaux's work. In addition to pursuing her research at Einstein College of Medicine, she works in the Infectious Disease Service at Montefiore Medical Center's Weiler Hospital. As a hospitalist in the admissions unit, she helps handle the emergency department overflow, care for patients, and teach Infectious Disease

BY KATE O'NEILL



COURTESY OF MAHALIA DESRUISSEAUX, MD '00

Service fellows. “Nothing beats working in the ER,” she says. “As an infectious disease consultant who oftentimes is called in cases of sepsis, I am often one of the first people a patient sees.”

Virginia Gonzalez, MD, a hospitalist who often works in admissions with Dr. Desruisseaux says, “She is an incredible physician. Her knowledge base and warm approach with patients and staff make her a blessing to have around.

“She seems to effortlessly balance her various positions, achieving great success in each aspect of her life. She is a loving mother, highly sought-after physician, and top researcher in the

field of infectious disease. I am fortunate to have her as a colleague.”

In Malawi, Dr. Desruisseaux received permission from the College of Medicine to volunteer in a hypertension clinic. “I fell in love with the country. The people are so lovely and so nice, and it was fulfilling for me; I felt like I made a difference,” she says. “Here, we take our diagnostic tools for granted—like MRIs and nuclear medicine—and forget the art of taking a patient’s history. There, it was back to basics, relying on the clinical skills we first learned in medical school.”

“Patients and staff enjoyed her,” says Dr. Tomoka, “and we were im-

pressed with how she adjusted to the conditions in a low-income setting. Mahalia is a rare combination.”

These were not Dr. Desruisseaux’s first experiences in international health. In January 2010, she learned of the deadly earthquake in Haiti, with estimates of as many as 300,000 or more lives lost and 1.5 million people displaced. Her childhood home, where she spent the first 12 years of her life, was destroyed. An aunt was killed, as well as a cousin and his young son.

Dr. Desruisseaux contacted Airline Ambassadors International, offering her knowledge as a physician fluent in Creole. “I felt so sick and helpless watching the 24/7 news coverage,” she says. “After not having been back to Haiti for 24 years, I felt a strong urge to return and be part of a medical relief effort.”

The following day, she left for Haiti, where she spent a week based at a hospital in Port-au-Prince, treating patients of all ages who were suffering from broken bones, wound infections, or dehydration. After returning to New York, she helped organize medical students to gather medical supplies and nonperishable food for the people of Haiti.

—Continued on page 50