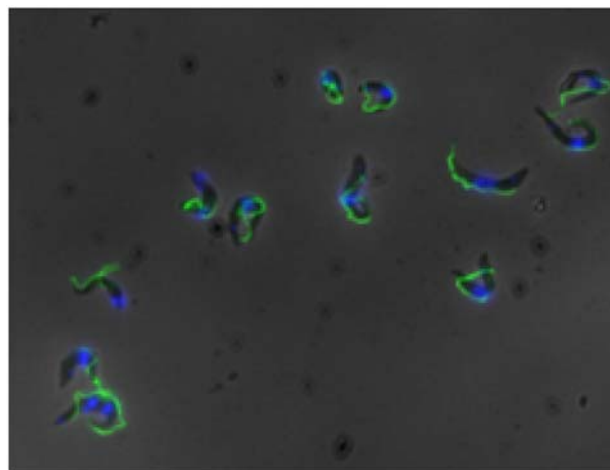


Monday, 08 July 2013 14:22

Under a Microscope in Ghana: The Fifth West African Regional Workshop

Written by [Christina Szalinski](#)

Under a microscope in Ghana, deadly pathogens look beautiful. Little squiggles of green and blue highlight the cell nuclei of trypanosomes, the protozoa responsible for African sleeping sickness. For the past two weeks, 26 West African students learned skills and techniques that will help them conduct research on these and other infectious pathogens. The courses took place June 17- June 29, 2013, at the University of Ghana, a few miles outside Accra. The research labs were modern like those he was used to back at Oxford University, said Richard Wheeler, a course instructor who is a postdoctoral researcher at the Sir William Dunn School of Pathology. The biggest differences that caught Wheeler's eye were outside, where Oxford's manicured courtyards and lawns were replaced on the University of Ghana campus by gardens where professors tended to vegetables and raised chickens.



Trypanosomes stained to detect nuclei (blue) and flagella (green).

Photo credit: Richard Wheeler

The students were enrolled in the Fifth West African Regional Workshop on the Cell Biology of Infectious Pathogens. Sponsored by the Howard Hughes Medical Institute and the Keith R. Porter Endowment of the Philadelphia Foundation, the Ghana workshop was organized by the ASCB, according to Kirk Deitsch, an ASCB member at Cornell. Along with Wheeler, others who volunteered to organize lectures and run lab sessions for the workshop included Gordon Awandare, University of Ghana; Joy Power, University of Colorado; Tim Stearns, Stanford University; Martha Cyert, Stanford University; and Theresa Manful, University of Ghana.

The workshop was focused on leishmaniasis and trypanosomiasis, the protozoan-caused diseases that affect about 20 million people worldwide, according to the World Health Organization. The goals of the course were to teach students the latest concepts in cell biology, techniques for conducting cell research, and how to teach others about cells. Deitsch said the workshop was conducted in grueling 14-hour days, packed with lectures, workshops, and hands-on laboratory exercises, such as conducting lab techniques to distinguish different species of trypanosomes, to teach students cell biology. In their rare intervals of free time, students had the instructors sample regional treats like miracle berries, which have a protein called miraculin that binds to sweet receptors on the tongue and causes sour foods like lemons to be perceived as sweet, according to Wheeler.

The rigorous schedule, the emphasis on the real threat of trypanosomiasis in West Africa, and the enthusiasm of the visiting instructors paid off. "Science has been demystified in just two weeks," said Bright Azumah, a graduate student at the University of Ghana. Azumah said the course, "encouraged students to think outside the box, guiding students to reason independently to arrive at the same conclusions." The instructors, Azumah said, "taught us the need for trained observation, supporting claims with well-founded evidence, analyzing data to come to the right conclusions, and training our minds to think."



At the ASCB-organized West African Regional Workshop students learned basic lab techniques to work with infectious pathogens.

Photo credit: Richard Wheeler.

require for our laboratory exercises, etc." But, Dietsch continued, "Recent workshops have been held in a relatively modern laboratory at the University of Ghana that has solved many of the problems of previous years."

Wheeler was impressed by the infrastructure of Ghana with its good roads, modern amenities, and the well-equipped University of Ghana. He valued his first time in Ghana as a course instructor. "It is always a concern that cell biology research can become disconnected from the realities of the disease, its surveillance and its treatment. Experiences like this are so valuable for preventing this." Wheeler said. He shared his experiences on Twitter ([@Zephyris](#)), posting pictures and movies of students engaged in research. He also posted microscopy images generated by the students, including the fluorescent trypanosomes flagella that students at the workshop stained.

Azumah said the workshop made him reconsider a future in research. "Before this workshop I had little inclination towards research. The experience I got from this workshop has given me hope. Research is not

Deitsch has been involved in the ASCB's West African program since the first regional workshop in 2009. "All of the instructors universally express satisfaction in working with highly motivated, inspired young African scientists," Deitsch said. "The thirst for knowledge that students 'exude' is refreshing and never fails to make us feel good about why we are here and what we are doing while we're here."

But conducting research in Ghana has its challenges, Azumah noted. Deitsch agreed. The shortage of resources, infrastructure problems, and difficulties in financing projects can be frustrating, said Deitsch. "Of course, there are always technical issues inherent to working in a developing country. In the past we have had occasional power outages, loss of internet conductivity, problems with equipment that we

a job; it is an honorable quest to search for the truth of nature and our environment. This the instructors taught me."

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