

The Spirit of Notre Dame

FALL 2007

INSIDE THIS ISSUE

With funding priorities articulated for nearly every facet of the University, Spirit of Notre Dame is our most sweeping campaign ever. This issue of the campaign newsletter devotes its centerfold to examining those priorities that will have the most widespread impact on the campus community.

Also of note: our cover story on the University's efforts to combat malaria; the results of the Sorin Society member survey; and a closer look at a new IRS ruling.

Faculty Research Equals Opportunity for Notre Dame Student

While many computer engineering majors were taking entry-level positions at software companies, Rob Bruggner ('03) was creating a new computer resource of significant utility for those working to combat infectious disease and bioterrorism.

In 2003, Bruggner was a senior at Notre Dame, contemplating his next move, when a member of the CGHD advised for an assistant who could put his technical skills to work for research in the biological sciences. Bruggner soon found himself building VectorBase, a website that houses all known information on the genomes of insects that transmit human pathogens (vectors)—similar to the way the new Gates-funded project will create a database on malaria transmission and control.

After three years online, VectorBase has made Notre Dame the place to which scientists from around the world turn for information on the subject. "And Rob was really the principal architect of the site," says Collins.

It is an experience he could not have gotten anywhere else, adds Bruggner: "With this project, instead of taking an entry-level position, I got to apply my skills immediately and build a fully functional site from scratch. I feel fortunate to have been given the opportunity, right out of the door, to work on a real problem, to build something truly useful."

Now, having just completed a master's degree in biology at Notre Dame, Bruggner will continue his work at the intersection of biology and computer engineering by pursuing a doctorate in bioinformatics.



Left to right:
Frank Collins,
Rob Bruggner,
and Greg Madey.

ND PROFESSOR FIGHTS MALARIA

Every 30 seconds, a child dies of malaria. Every year, malaria claims more than a million lives. Most of the victims are infants, young children, and pregnant women, and most are in Africa.

For the past four decades, the University of Notre Dame, through the Center for Global Health and Infectious Diseases (CGHD), has been a major player in the fight against illnesses, like malaria, that strike hardest in less-developed regions of the world.

Among its most important contributions: CGHD scientists were responsible for mapping the genetic blueprint of the mosquitoes that transmit malaria and yellow and dengue fevers—a critical move that is helping scientists develop more potent insecticides and engineer new varieties of mosquitoes incapable of transmitting human disease.

The University's disease-fighting work received an unprecedented boost this fall, when the Bill and Melinda Gates Foundation announced that it had awarded a \$20 million grant to fund an expansive, international research project, led by Frank Collins, director of the CGHD and the George and Winifred Clark Chair in Biological Sciences at Notre Dame.

One of the largest external research grants ever awarded to a Notre Dame faculty member, the Gates grant will provide funding for a five-year, multi-site project aimed at evaluating malaria control efforts in Africa and Asia. Despite the disease's devastating footprint, the effectiveness of control methods has never been carefully tested.

"There are three basic interventions against malaria," explains Collins. "Bed nets impregnated with insecticide,

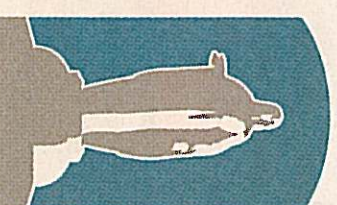
spraying houses with insecticides, and targeted drug delivery to pregnant women and infants. All of these techniques are ancient, and none of them has been evaluated very well across the diverse range of environments in which malaria occurs."

Collins and his team, including Notre Dame graduate and undergraduate students, aim to change that by gathering information about patterns of malaria transmission and intervention in a variety of field sites—in Indonesia, Tanzania, Kenya, Uganda, and Zambia—with partners from the Swiss Tropical Institute, the U.S. Centers for Disease Control and Prevention, the London School of Hygiene and Tropical Medicine, and Durham University.

Critical to the project will be the expertise of computer engineers at Notre Dame. "Biology is, on the whole, an increasingly data-driven field," says Greg Madey, a professor in the Department of Computer Science and Engineering. "Frank's teams will be out in the field, transmitting enormous amounts of data back to us on campus. Our job will be to build a giant database capable of maintaining the integrity of that data, and then creating the software and tools that will let other scientists access, search, and analyze the information."

"Ultimately, the data we generate," says Collins, "will inform the design of new, and better, malaria control programs. We are working with people and communities of very limited economic means, and so our goal will be to help them make better and more effective use of their public healthcare dollars."

The Gates grant generously supports the malaria control project. It is not intended to provide formal funding for University faculty, curricula, financial aid, or research facilities. To learn how you can help to advance the sciences at Notre Dame, please visit supporting.nd.edu/spirit.



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