



# Advancing Global Health



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*Are the drugs being formulated for patients in the developing world effective and safe? Typically, they were tested primarily on Western populations.*

In the new era of customized medicine, researchers can develop treatments that account for our unique genetic profiles, physiological traits or environment. The traditional model where research is undertaken in Western countries, then “granted” to developing countries may not always work.

Given that African populations are genetically highly diverse and live in environments that greatly differ from the West, it is critical that research is conducted for these specific populations and in their own environment if the goal is to get the right medicine to the right patient.

As lifestyles change and life expectancies increase, developing nations are beginning to see many of the same health care issues plaguing richer countries with one key difference – their health care systems are ill prepared to manage growing numbers of patients with these conditions. This concern is amplified since many non-communicable diseases have yet to be recognized despite significant morbidity and mortality associated with them. By building scientific and medical capabilities in the developing world, our scientists and physicians can work with their counterparts in developing countries to effectively address the health problems of those populations.

### **Novartis Research on Neglected Disease**

With a global presence, research at Novartis is focused on discovering and developing innovative new medicines to treat disease and improve human health. Our “science without borders” approach to research recognizes and embraces the needs of increasingly global and diverse patient populations. Our goal is to change the practice of medicine for patients around the world, including previously underserved populations in developing regions. To do this our scientists are working on a broad range of diseases, including many that primarily affect patients living in the developing world.



## Building Capabilities

Developing countries currently do not have the capability or the capacity to carry out biomedical research and development activities. Basic infrastructure such as laboratory equipment, computers, and laboratory spaces are sorely lacking and proper training for scientists and physicians is often inadequate. Building this infrastructure is essential to enable the discovery and development of new medicines for the people in the environment where they will be used.

## Equipment Transfer

Equipment donation is not the most effective way of building capacity unless it is coupled with a transfer of knowledge and technical skills in biomedical research. For example, a collaboration between Novartis researchers and Kenyan scientists/educators has led to a successful program supplying teaching labs with computer equipment and technical advice. Through this program, new educational curricula and research tools are being developed for chemists using computer aided drug design in Kenya.



## Health Systems

Building research infrastructure is not just about stocking labs with instruments and computers. It should also create an organizational framework for conducting experimental research or reproducible clinical studies that meet international standards and regulatory review; build and structure databases to track patients, their diseases and analyze genomic data; and create an open network of collaboration among laboratories, nations and continents.

## Collaborations

Building connections between scientists in the industrial and developing worlds is critical to solving the most pressing medical challenges. Several Novartis research and clinical collaborations are focused on tackling major health problems that impact millions of people in the developing world. These include:

- Eliminating Rheumatic Heart Disease amongst Children in Zambia: A Registry Study with the Lusaka University Teaching Hospital and the Ministry of Health, Pan-African Cardiology Society, DiMagi (an open-source IT start-up company) and the Massachusetts General Hospital
- The Drug Discovery and Development Center (H3D), the first drug discovery Center on the African continent focused on TB and malaria; H3D is associated with the University of Cape Town in South Africa
- Identifying Genetic Alterations in Breast Cancer Samples from Nigerian Women with the University of Chicago, the Broad Institute and two teaching hospitals in Nigeria, Lagos State University Teaching Hospital (LASUTH) and the University College Hospital (UCH) of the University of Ibadan

National and international disease registries are an essential component of clinical infrastructure, and are particularly important in regions that have historically lacked clinical capabilities. The Novartis Foundation has funded a clinical epidemiology and training program in asthma at the University Teaching Hospital in Lusaka, Zambia. As a result of these studies, the Ministry of Health in Zambia has revised the standard for treatment of asthma to include two asthma inhalers in the essential drug list. A similar effort is underway for rheumatic heart disease (RHD), which includes the establishment of an electronic RHD registry to determine prevalence of RHD in the community and monitor effectiveness of penicillin prophylaxis.

## Ongoing Education

Research and education programs are aimed at developing sustainable partnerships with select scientific institutions in emerging countries. Through fellowships and internships, undergraduate students, graduate students and faculty of research, medicine, nursing or pharmacy who have an interest in biomedical research in developing nations can participate in



programs sponsored by Novartis. The goal is to share valuable and practical knowledge in experimental research related to the discovery and development of new therapeutic drugs, and the delivery of medical care.

Novartis also conducts educational workshops for scientists/educators from developing countries who are interested in the fundamental principles of drug discovery, preclinical research and clinical trial design. In 2012, such workshops were held in Kenya, Ghana and Zimbabwe, and in 2013 will be offered in Nigeria and Ethiopia. In addition, Novartis offers workshops in clinical areas, for example cardiovascular trainings for physicians in Zambia. These workshops provide an opportunity to build networks and collaboration across borders and continents and help get students excited about working in clinical or scientific areas. Perhaps most importantly, the workshops are geared toward “training the trainer” – so local educators can continue to teach the principles learned in the workshops to their own students.

NIBR is working with scientists in the developing world to build scientific capability and expand clinical research capacity.

To learn more about our programs and partners or to get involved, visit:

[www.healthy-nations.com](http://www.healthy-nations.com)



