

CVD. GLOBAL HEALTH

CENTER FOR VACCINE DEVELOPMENT AND GLOBAL HEALTH



Working Globally to Prevent Disease and Save Lives in the Most Vulnerable Populations

CENTER FOR VACCINE DEVELOPMENT AND GLOBAL HEALTH (CVD)

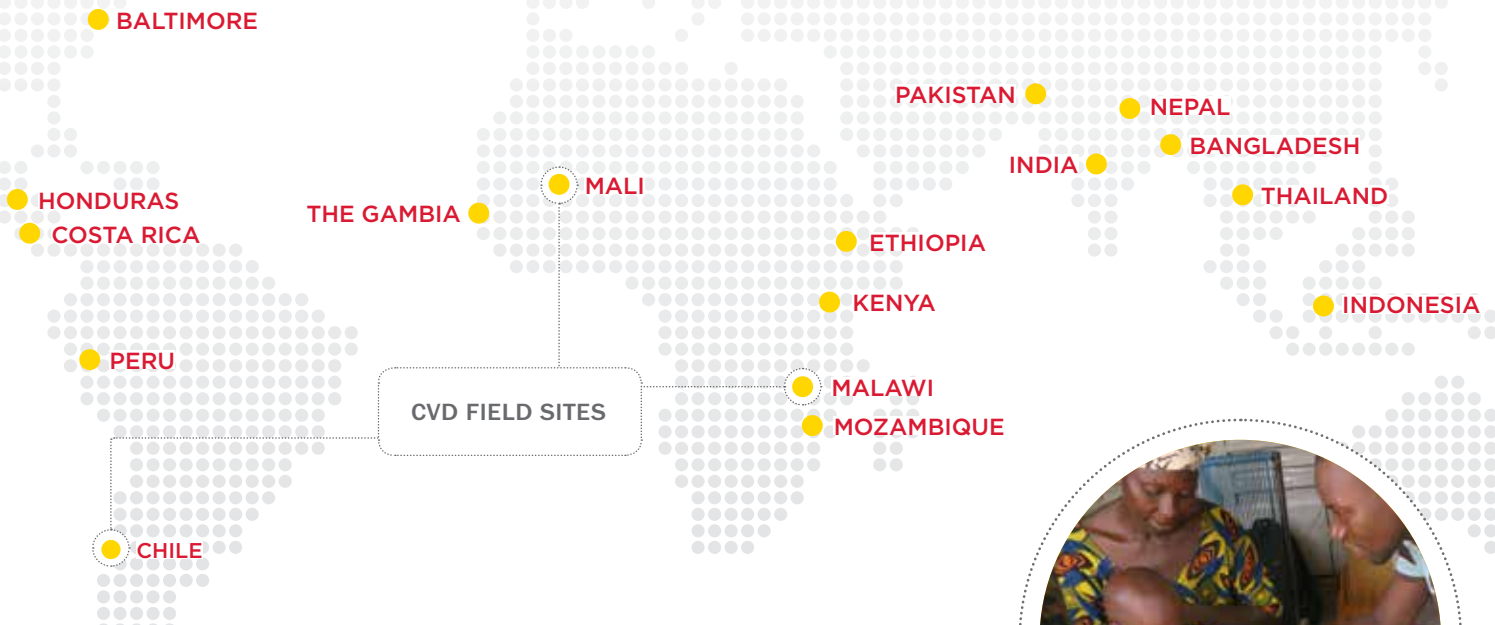
encompasses more than four decades of ground-breaking research and development on vaccines, complemented by extensive domestic and international field work to improve global health. We work to reduce the threat of malaria and antimicrobial resistance, prevent and treat enteric and respiratory diseases and identify, understand and combat other tropical and emerging pathogens in low resource settings. Diseases of interest include malaria, vaccine-preventable infectious diseases such as cholera, typhoid, shigellosis *Escherichia coli* (*E.coli*) diarrhea, influenza and other respiratory infections. We have also conducted research on vaccines for emerging pathogens such as Zika and Ebola viruses.



UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE
CENTER FOR VACCINE DEVELOPMENT
AND GLOBAL HEALTH

OUR GLOBAL FOOTPRINT

CVD's success is built on its experience, expertise, and extensive collaboration that reaches far beyond the University of Maryland School of Medicine campus in Baltimore, MD.



Evidence to Action to Impact

CVD is dedicated to improving global health by conducting innovative and life-saving research in Baltimore and around the world. Researchers are engaged in the full range of infectious disease intervention from basic laboratory research through vaccine development, pre-clinical and clinical evaluation, large-scale pre-licensure field studies and post-licensure assessments.

CVD's established training program for clinicians and researchers includes a National Institutes of Health T32 Training Grant in Vaccinology, a fellowship in pediatric infectious diseases and Fogarty International Center training grants.



HOW WE INNOVATE

- Integrated approach to global health research.
- Seamless transition from laboratory to policy, advocacy, and introduction.
- Development and implementation of new tools to solve old problems.
- More than 100 U.S. patents for vaccines, diagnostics, and drug delivery systems.
- State-of-the-art human control study model.





SAMOA ●

KEY AREAS
OF RESEARCH:

ENTERIC DISEASES,
MALARIA, INFLUENZA
AND RESPIRATORY
DISEASES, EMERGING
PATHOGENS &
ANTIMICROBIAL
RESISTANCE

CVD's unique combination of faculty and research promotes collaboration across the continuum of vaccine research, from antigen discovery, microbial pathogenesis, and immunology to clinical and field research and vaccine delivery. Our faculty physicians and scientists work with other School of Medicine institutes, centers, departments, and programs as well as other schools on campus and research institutions around the world.

GLOBAL ENGAGEMENT

CVD has a long history of working domestically and internationally to develop, test and deploy vaccines to aid the world's underserved populations. Our vaccine trials and malaria research provide data on impact, effectiveness, introduction strategies and cost that fosters decision-making and global policies. Researchers have created and tested vaccines against cholera, typhoid, paratyphoid, non-typhoidal Salmonella, shigellosis, *E. coli* diarrhea, nosocomial pathogens, tularemia, influenza and other infectious diseases.

CVD is one of nine National Institute of Allergy and Infectious Diseases (NIAID)-supported Vaccine and Treatment Evaluation Units (VTEUs). The VTEU conducts interventional trials and clinical studies to evaluate vaccines, biologics, therapeutics, and diagnostics to prevent infectious diseases.

Key Research Areas

Enteric Diseases

More than half a million children under five die each year from diarrheal diseases. CVD led the landmark Global Enteric Multicenter Study (GEMS) to assess the causes and burden of diarrhea in children under five. We are leading the Vaccine Impact on Diarrhea in Africa (VIDA) study to determine the effectiveness and impact of rotavirus vaccines and the Typhoid Vaccine Acceleration Consortium (TyVAC) to accelerate the introduction of new typhoid conjugate vaccines (TCVs) to reduce the burden of typhoid, which impacts nearly 12 million people each year. CVD has developed vaccines against shigella, *Enterotoxigenic E. coli* (ETEC), a single dose cholera vaccine that could rapidly protect people in low-income countries. CVD is researching a wide range of ways to reduce childhood mortality, including the impact of administering azithromycin.

Influenza and Respiratory Diseases

CVD experts have conducted multiple clinical trials of vaccines designed to protect individuals from seasonal and pandemic influenza. Our research has focused on the efficacy and safety of vaccines for different age groups, such as older adults, and efficacy and safety in pregnancy. We have also collaborated on the largest global childhood pneumonia etiology study launched to date.

Malaria

CVD research supports global malaria eradication efforts that include developing and deploying innovative tools for improved malaria treatment, prevention, and surveillance. CVD leads clinical trials of malaria drugs and vaccines and investigates antimalarial drug resistance, molecular and genomic epidemiology, immunoepidemiology, pathogenesis, and interactions between malaria and coinfections, including HIV and schistosomiasis. CVD experts collaborate with researchers around the world to train scientists and clinicians and build research capacity in malaria-endemic countries.

Emerging Pathogens

CVD has a long history of responding to global public health needs, including critical vaccine development for emerging pathogens. CVD researchers evaluated the safety of a new Zika vaccine and its ability to generate an immune response in humans, conducted clinical trials of an Ebola vaccine in Baltimore and Mali and collaborated on efficacy field trials in Guinea, and assessed the safety, immunogenicity, and antibody persistence of a Dengue vaccine.

Antimicrobial Resistance

As antimicrobial resistance becomes an increasing global health challenge, CVD's experts are using innovative approaches to assess treatment of antibiotic-resistant infections. Our work focuses on life-threatening infections such as methicillin-resistant *Staphylococcus aureus* (MRSA), *Klebsiella pneumoniae* and *Pseudomonas*. Our research targets the body's natural immune response to harmful bacteria. Separately, in response to the emergence and spread of resistance to antimalarial drugs in southeast Asia, CVD researchers are using genomic approaches to identify genetic markers associated with resistance.

OUR LEADERSHIP

CVD faculty and staff are experts in global health and vaccinology and are dedicated to improving global health by conducting innovative, world-leading research in Baltimore and around the world. Our key mission is to harness the power of vaccines to prevent disease and save lives in the most vulnerable populations.



Kathleen Neuzil, MD, MPH

**DIRECTOR, CENTER FOR VACCINE
DEVELOPMENT AND GLOBAL HEALTH**

Professor of Medicine and Pediatrics

Dr. Neuzil is a globally recognized research scientist and advocate in vaccine science, policy, and introduction. She has led large multidisciplinary teams to design and implement pivotal clinical and epidemiologic studies on vaccine-preventable diseases including influenza, rotavirus, and typhoid. Her work has been instrumental in domestic and international partnerships and policy, access and delivery of vaccines in the world's poorest countries.



Miriam Laufer, MD, MPH

**ASSOCIATE DIRECTOR FOR
MALARIA RESEARCH**

Professor of Pediatrics

Dr. Laufer is a pediatric infectious disease specialist with research interest in malaria and global child health. Her work focuses on epidemiology and translating scientific discovery into clinically relevant strategies to improve health in malaria-endemic countries. Her current research focuses on malaria during pregnancy, maternal immunization and its impact on infants.



Karen Kotloff, MD

**ASSOCIATE DIRECTOR FOR CLINICAL
RESEARCH AND HEAD OF THE PEDIATRIC
INFECTIOUS DISEASES AND TROPICAL
MEDICINE DIVISION**

Professor of Pediatrics

Dr. Kotloff is a pediatric infectious disease specialist and an international expert on the epidemiology and prevention of infectious diseases among children living in developing countries, with a focus on diarrheal diseases and pneumonia. She is Principal Investigator of the NIAID-funded Vaccine Treatment and Evaluation Unit (VTEU) at the University of Maryland and has over three decades of experience conducting clinical vaccine trials.



Marcelo Sztein, MD

**ASSOCIATE DIRECTOR FOR BASIC AND
TRANSLATIONAL RESEARCH**

*Professor of Pediatrics and Associate Director
for Immunologic Studies*

Dr. Sztein is an accomplished investigator in immunology of infectious diseases and cytokine immunobiology, bringing vaccine development and usage from bench to bedside. He is an international authority on human host systemic and mucosal immune responses to vaccination and identification of immunological mechanisms of protection from infection in human and animal models, particularly infectious enteric diseases.

