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Eliminating the Fogarty International Center would be Bad for the Health of Americans

Paul K. Drain, M.D., M.P.H.,

Department of Global Health, Medicine, and Epidemiology, University of Washington, Seattle, USA

Ramnath Subbaraman, M.D., M.Sc., and

Department of Division of Infectious Diseases, Brigham and Women's Hospital and Harvard Medical School, Boston, USA

Douglas C. Heimbürger, M.D., M.S.

Department of Vanderbilt Institute for Global Health, Vanderbilt University Medical Center, Nashville, TN, USA

Eliminating the Fogarty International Center (FIC) at the National Institutes of Health (NIH), as was suggested in President Donald Trump's proposed budget to Congress, would diminish international scientific research collaborations and significantly retract our progress on combating global diseases that impact the health of Americans. Although NIH received increased funding in the FY 2017 budget signed on May 5, the fate of the FIC—a leader of U.S. global health research efforts for the past 50 years—may be vulnerable in upcoming negotiations over the 2018 budget. Dr. Francis Collins, Director of the NIH, has signaled that while he awaits guidance from Congress, he is evaluating whether he can justify continuing the FIC if NIH faces budget cuts down the line.¹ In our view, FIC is an extremely valuable and effective scientific and diplomatic investment, and the small reduction in the federal budget that would result from its elimination would be far outweighed by the attendant losses.

The mission of the FIC is three-fold—to advance the NIH's mission by supporting global health research conducted by U.S. and international investigators, to build partnerships between research institutions in the U.S. and abroad, and to train the next generation of scientists to address global health needs. The FIC's efforts have produced medical innovations that transcend borders. Elimination of the FIC would not only be detrimental for global health, its closure would also impact the health of the American people and impede training of American scientists.

The FIC fosters research collaborations between U.S. and overseas institutions to develop treatments that reduce disability and save lives. Although FIC has the smallest budget among NIH's 27 institutes and centers (\$70.4 million in fiscal year 2016), FIC grantees have been among the most productive in publishing peer-reviewed manuscripts, as indexed in PubMed

(Figure 1). In 2015, researchers supported by FIC published more than 20 manuscripts per \$1 million annual budget. Applications for FIC grants are also highly competitive. In fiscal year 2016, FIC's K01 career development award had a 22.7% success rate, as compared to a 32.1% success rate for the K01 award across all NIH institutes.

The FIC has either funded or co-funded research that produced medical findings relevant to major health issues in the U.S. Researchers supported by FIC are working to improve prevention of strokes, treat multidrug-resistant tuberculosis (MDR TB), and evaluate HIV vaccine candidates. FIC-funded efforts are tackling the pandemic of fake medications manufactured abroad that kill millions and are unknowingly being purchased by Americans, identifying new cancer drugs in the waters off the coast of Panama, and finding ways to address the number one killer of young American travelers, road traffic accidents.

About one-third of FIC's grants focus on scientific discovery, and two-thirds support research training. FIC's training programs have been a model of sustained mission-driven efforts to equip U.S. and low- and middle-income country (LMIC) scientists to collaboratively tackle the world's health challenges. For example, since 2003, Fogarty's Global Health Fellows and Scholars Program has provided year-long research training experiences for doctoral and postdoctoral scientists in U.S.-funded LMIC research sites. Anchored with leadership and funding from FIC, the program's success has been fueled by support leveraged from many additional NIH institutes and centers.

Systematic evaluations of 558 trainees supported by this program at 61 sites in 27 countries through 2012 showed that they had sustained engagement in research (67% success rate with subsequent grant applications), and grantees considered the FIC funding as pivotal in establishing their careers and developing skills to mentor other research trainees.² Topics investigated by FIC trainees showed substantial relevance to U.S. health conditions, including both infectious (especially HIV/AIDS) and non-communicable diseases as well as basic science, health systems, and health behavior.² The majority of fellows are of U.S. origin, so the program represents a unique and successful investment in American research capacity as well as diplomacy, yielding substantial research productivity, providing future research leaders with unique training experiences not available in the U.S., and fostering supportive international relationships.

FIC has also supported training for LMIC scientists through additional programs including the AIDS International Training and Research Program, now called the HIV Research Training Program. This program has increased research capacity at both U.S. and LMIC institutions, as the U.S. institutional recipients of these grants have established or expanded their global health units and attracted U.S. and LMIC students for scientific training. Trainees from LMIC institutions bring an added dimension to U.S. classroom discussions with their first-hand knowledge of conditions, cultures, and health requirements. Some of these FIC-supported LMIC trainees are now in leadership positions in international organizations such as the Pan American Health Organization, the Indian Council of Medical Research, and the Network of AIDS Researchers in Eastern and Southern Africa, thereby enhancing possibilities for global collaboration to address emerging disease threats that transcend borders.

These capacity building investments in LMIC researchers have also provided foundations for groundbreaking studies implemented by other NIH institutes and U.S. and multi-national organizations. A prime example is the HIV Prevention Trials Network (HPTN) 052 study, a randomized trial led by the National Institute of Allergy and Infectious Diseases that proved that effective antiretroviral therapy stops the sexual transmission of HIV.³ The trial, which could only have been successful by including LMIC sites, employed a network of 13 FIC-supported research sites in nine countries in Africa, Asia, Latin America, and North America and at least 13 key investigators who had received FIC-funded research training. The journal *Science* ranked the study's results as the leading scientific breakthrough of 2011, and it provided a critical tool for breaking the back of the global HIV pandemic and transformed U.S. HIV treatment guidelines. Similarly, the PROMISE trial, which was conducted at 14 sites in seven countries with multiple key investigators who had received FIC-funded training, has informed strategies to prevent mother-to-child transmission of HIV in the U.S.

FIC's capacity building investments are also facilitating groundbreaking research in non-communicable diseases. Colombia has a region with one of the highest rates of early-onset Alzheimer's disease in the world. FIC and the National Institute on Aging supported the development of a U.S.-Colombian collaboration investigating this unique cohort, which laid the foundation for the first clinical trial of a U.S.-manufactured anti-amyloid therapy to prevent Alzheimer's disease.⁴

FIC's investments in studying diseases that primarily affect LMICs also have considerable benefits for the U.S. population. The public health questions raised due to airplane travel by an American with MDR TB in 2007; the infection of two American nurses in Texas with the Ebola virus in 2014; and cases of local transmission of Zika virus in Florida in 2017 all highlight the security relevance of addressing diseases of global importance. For this reason, FIC's support of studies elucidating transmission patterns of MDR TB in China⁵ and facilitating the elimination of pork tapeworm, which causes neurocysticercosis, in a region of Peru⁶ have strong potential long-term benefits for the U.S.

The FIC has been instrumental in creating a world in which the frontiers of health research extend across the globe and advances in science are implemented to reduce the burden of disease, promote health, and extend longevity for all people. By facilitating unique training experiences for U.S. scientists in LMICs, FIC has created a cadre of productive researchers with the capacity to find solutions to global diseases such as Zika and Ebola that will continue to threaten the health of the U.S. population. FIC funding of training experiences for LMIC researchers has undergirded the NIH's capacity to conduct multinational studies, yielding insights that have transformed the care of U.S. patients. For these reasons, the U.S. Congress, the President, and NIH should ensure ongoing funding of the FIC. Continuation of its globally oriented mission represents a critical investment in the health of the American people.

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Figure 1. Annual scientific publications indexed in PubMed from Fogarty International Center (FIC) grantees and grantees from the top 5 highest funded National Institutes of Health (NIH) institutes.*

* The 5 NIH institutes with the largest budgets are the National Cancer Institute, the National Institute for Allergy and Infectious Diseases, the National Heart Lung, and Blood Institute, the National Institute of General Medical Sciences, and the National Institute of Diabetes and Digestive and Kidney Diseases. Source: National Institutes of Health. Research Portfolio Online Reporting Tools (RePORT): Success Rates, 2017. Data obtained 1 April 2017. Publication numbers were obtained by PubMed searches based on the two and three letter grant codes for each NIH institute and center.