Cell

Publishing Science in the Time of Zika

On February 1, 2016, the World Health Organization declared that the spread of the Zika virus (ZIKV) was an international emergency of public health concern. The virus, identified in the late '40s, was introduced into Brazil from the Pacific Islands and spread quickly through the Americas in the short span of 1 year. Beyond the damaging effect of the infection in healthy adults, ZIKV infection has become the first major infectious disease to be associated with birth defects in over 50 years, creating a concern that the burden of the current outbreak may extend to the next generation. The emergency alert has triggered funding into basic research of the nature of the disease, vector control, and efforts to stop pregnant women from becoming infected with ZIKV.

The international scientific community rapidly embraced the challenge. Thanks to the collaborative work of scientists across the globe, we are beginning to understand the molecular epidemiology and genetic of the ZIKV outbreak, as well as the particular features of the virus structure. Epidemiological and experimental evidence for a causal relationship between infection during pregnancy and birth defects, in particular microcephaly, has become overwhelming and increasingly hard to refute. In this issue, *Cell* publishes three studies that, we hope, will contribute to address the immediate challenges posed by the ongoing outbreak.

The first two studies, from the laboratories of Hongjun Song and Guo-Li Ming, and Michael Diamond, respectively, provide key data on the causality between ZIKV infection, neuronal death, and retarded intrauterine growth. The Song and Li study, employing "mini-brain" organoids, also provides a platform for drug testing and for further understanding the biology of ZIKV infection in human cells. Diamond's study, reporting the effect of in utero ZIKV infection in a mouse model, may help scientists to discover ways to interrupt maternal transmission of the virus. The third paper, from James Collins and colleagues, takes a different tack, addressing the urgent need to develop diagnostic tests for ZIKV infection. The authors couple an engineered sensor for viral genomic RNA with a cell-free, paper-based detection system to produce a precise, cheap, and portable test that can detect the virus in the serum of infected monkeys and that can be rapidly adapted for other pathogens. As with earlier Cell Press papers on ZIKV, all three papers are being made freely available through the Cell Press Zika Virus Portal, in accordance with the Cell Press Statement of Data Sharing in Public Health Emergencies.

The spread of Zika virus and its alarming pathology exemplify the types of challenges that may become all too common in our globalized world where goods and people travel farther and more frequently than ever before. Coordinated and multipronged responses are needed to understand our vulnerabilities to infectious diseases, to develop the best ways to diagnose new infections before they reach epidemic scales, and ultimately to protect ourselves and future generations. In the face of this future, now is the time to push for even more collaborative efforts linking labs and clinics across the globe and to ensure that we tailor responses to the communities that are most in peril. As a part of this response, we are committed to help researchers communicate their findings in a timely and visible manner, while providing readers with data that have been vetted and evaluated with the highest scientific standards. While we hope that what is learned in the current galvanized response to ZIKV on both the basic and clinical fronts leaves us better prepared for minimizing pathogen-centered emergencies in the future, the need to communicate new research will not diminish, and we are eager to facilitate it.

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