

Measles outbreaks continue in US cities

January 2019 // US

Over the last several months, over 200 cases of measles have been reported on the east and west coasts of the US. Cases have been reported in the states of Washington and New York, and have been attributed to the anti-vaccination movement. Most states allow for exemption from vaccination based on religious beliefs, but 18 states (including Washington), also allow parents to opt out of vaccinating their children based on personal beliefs. The measles virus is highly contagious and kills 1 in every 1000 children, with people between the ages of 5 and 20 at greatest risk.¹

A new mobile app to combat mosquito-borne diseases

February 2018 // Atlanta, US

The Epi Info Vector Surveillance application is a mobile app developed by the Centers for Disease Control and Prevention (CDC) that allows users to track and enter mosquito surveillance data. The data is uploaded to a dashboard that provides users with local trends related to mosquito-borne diseases. The app is currently optimized for surveillance of mosquitoes in the *Aedes* and *Culex* genera, with *Anopheles* surveillance under development. The creators of this app hope to improve the quality of mosquito data and identify popular breeding sites of disease-carrying mosquitoes in real-time.²

Marburg virus found in bats in Sierra Leone

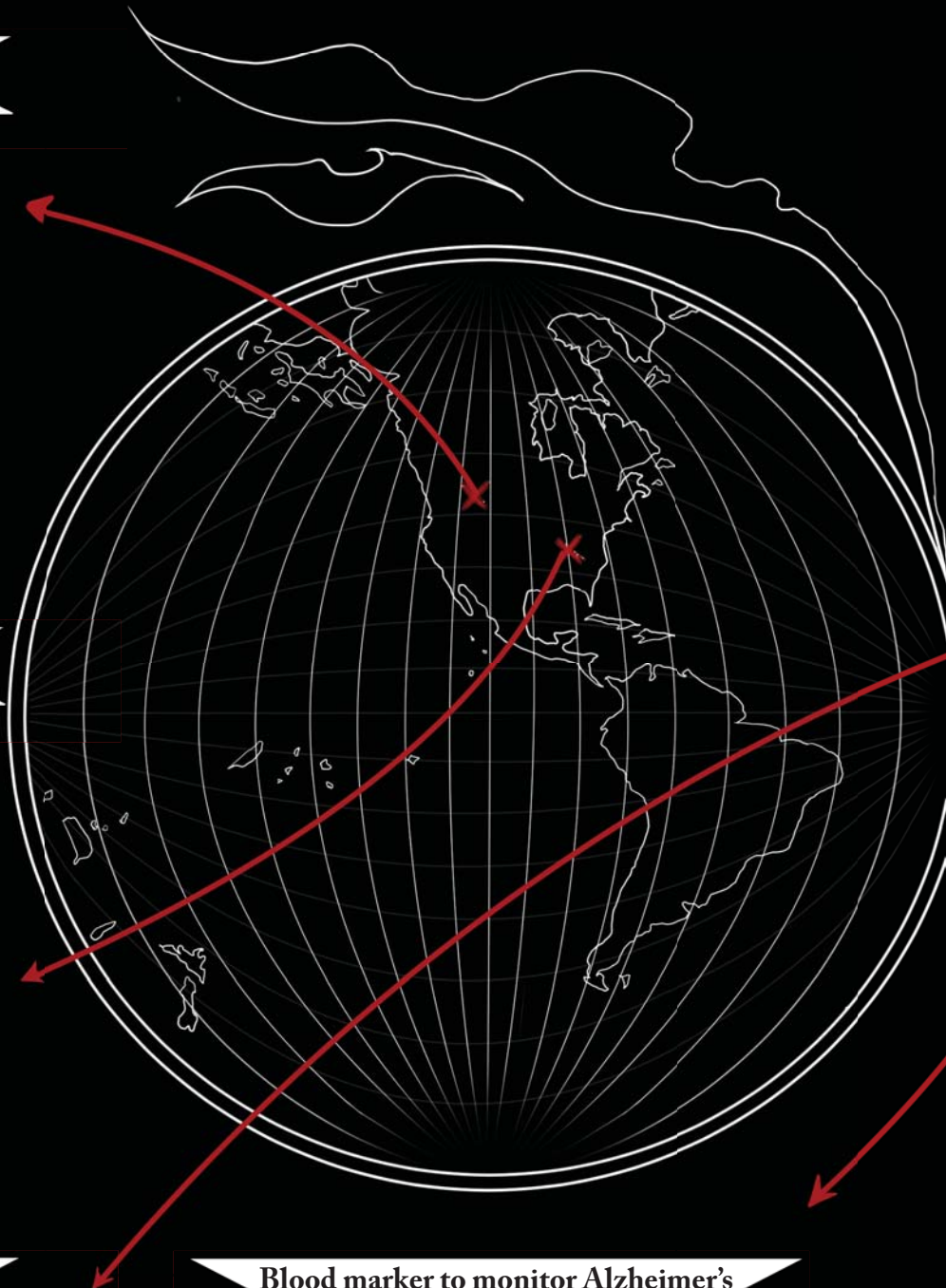
December 2018 // Sierra Leone

The deadly Marburg virus has been found for the first time in bats in West Africa. Marburg virus causes similar symptoms to the Ebola virus, and is often fatal. Although no cases of human infection have been reported in the area, people living near the bats may be at risk. The bats transmit the virus through their saliva, feces, and urine as they feed on fruit. Contaminated fruit and bat bites may then pass the virus on to humans or other animals.³

Blood marker to monitor Alzheimer's disease

January 2019 // Bonn, Germany

Blood tests present a promising diagnostic method for Alzheimer's disease (AD) due to their relatively low cost and ease of access. A group from the German Center for Neurodegenerative Diseases has recently found a potential biomarker for AD, the neurofilament light chain (NfL) protein. The researchers found that elevated NfL levels in the cerebrospinal fluid correlated with high serum NfL levels prior to the onset of AD symptoms. However, NfL levels are only indicative of familial AD, which represents approximately 5% of AD cases.⁴





Cloning monkeys for disease research in China *January 2019 // China*

Primates are the ideal animal model for studying higher brain function and brain disorders. However, a high sample number of monkeys is needed to determine whether or not results are due to genetic variation. Recently, scientists in China have successfully genetically modified and cloned macaques to produce five primates with almost identical genes. As this process becomes more refined, it will hopefully provide a more efficient animal model to study neurological diseases free from influences due to genetic variations.⁸

Immigration to US alters gut microbiome *November 2018 // Southeast Asia*

US immigrant populations were shown to be more susceptible to metabolic diseases post-immigration. This may be due to rapid changes in the gut microbiome. Researchers examined the gut microbiomes of US immigrants from Southeast Asia. They recruited new immigrants from the Hmong and Karen tribes, ethnic minorities originally from China and Myanmar. There was a significant loss of diversity in their gut microbiomes soon after immigration. In addition, overall microbiome diversity continued to decrease the longer participants remained in the US.⁷

Shigella resistance to azithromycin and ciprofloxacin *January 2019 // Victoria, Australia*

Shigellosis is a highly infectious disease caused by *Shigella* bacteria. Infected individuals typically experience diarrhea, stomach cramps, and fever. To test for antimicrobial resistance, *Shigella* isolates were taken from infected patients in Victoria, Australia, between January 2016 and March 2018. Antibiotic resistance rates towards ciprofloxacin and azithromycin were high, at 17.6% and 50.6%, respectively. This is of particular concern because ciprofloxacin is currently the first-line oral treatment for *Shigella*, with azithromycin being the second-line treatment.⁵

Drones deliver vaccines to the remote islands of Vanuatu *December 2018 // Vanuatu*

One of the greatest challenges of living in a remote location is accessibility to modern medicine. Vanuatu, a chain of islands in the South Pacific, is a perfect example: its hot climate, mountainous landscape, and frequent rain make it difficult to deliver vaccines between islands. The use of drones has proven to be an excellent solution. The drones fly from island to island with vaccines kept cool in temperature-monitored styrofoam boxes. This technology provides an important global health solution that can easily be applied in other remote nations.⁶