BACTERIAL SPECIAL PATHOGENS BRANCH

Division of High Consequence Pathogens and Pathology

Fighting Bacterial Diseases

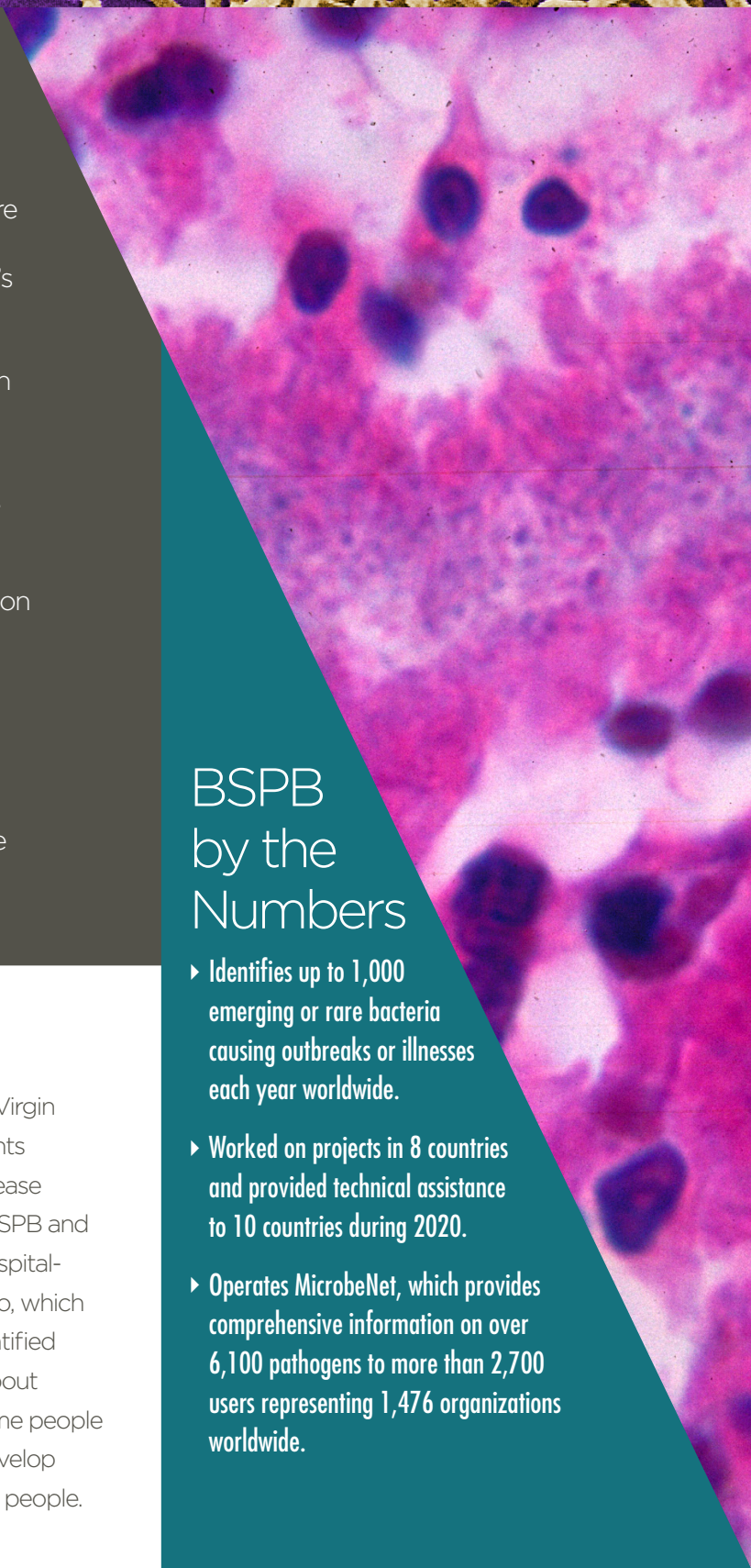
CDC's **Bacterial Special Pathogens Branch (BSPB)** works to investigate, monitor, and prevent the spread of over 400 types of dangerous bacteria. Some of the diseases BSPB studies—like anthrax and melioidosis—are caused by naturally occurring bacteria found in soil or water but could also be used in bioterror attacks. BSPB's experts are critical for preparedness and emergency response, quickly identifying the biological makeup of bacteria used in such an event and helping to contain an outbreak at its source.

BSPB laboratories offer expert reference, diagnostic, and testing services for hundreds of species of bacteria. BSPB scientists operate the oldest bacterial diagnostic lab at CDC with key historical collections of bacterial specimens spanning nearly 70 years. Using a combination of traditional microbiological methods and cutting-edge molecular tests, CDC experts can help doctors and local labs identify what type of bacteria is causing an infection, test for antibiotic resistance to determine which treatments may be effective, and discover new bacterial pathogens. They also created MicrobeNet—a unique, scientifically innovative online microbe reference laboratory that allows labs worldwide to identify what germ is making someone sick with just a few clicks.

From the Field to the Lab

Responding to Hurricane Related Diseases

After Hurricanes Irma and Maria hit Puerto Rico and the U.S. Virgin Islands (USVI) in 2017, BSPB helped the territories' departments of health respond to increases in cases of leptospirosis, a disease people get from infected animals and contaminated water. BSPB and partners are conducting multiple projects including active hospital-based leptospirosis and melioidosis surveillance in Puerto Rico, which opened three active sites with over 250 participants and identified five leptospirosis cases within the first year. Learning more about leptospirosis and melioidosis will help determine whether some people and areas are more at risk for the diseases and will help to develop ways to prevent and/or quickly identify potential infections in people.



BSPB by the Numbers

- Identifies up to 1,000 emerging or rare bacteria causing outbreaks or illnesses each year worldwide.
- Worked on projects in 8 countries and provided technical assistance to 10 countries during 2020.
- Operates MicrobeNet, which provides comprehensive information on over 6,100 pathogens to more than 2,700 users representing 1,476 organizations worldwide.

Operating an Online Pathogen Library

BSPB created and operates MicrobeNet, a free online database that lets laboratorians and doctors quickly and easily identify some of the most difficult pathogens to grow and detect. MicrobeNet provides extensive information on emerging infectious bacteria and fungi, potentially cutting time to get results from a week to just a few hours. The system provides users all over the globe with direct access to BSPB experts and the latest information to diagnose and treat their patients.

Preventing Anthrax Outbreaks

In Ethiopia, about 80% of households have farm animals that provide food and income for families. But livestock can also spread diseases to people, including dangerous pathogens like anthrax. To prevent anthrax outbreaks and cases, BSPB and their international partners supported the Ethiopian government in developing an Anthrax National Strategic Plan. To help enact the plan, BSPB has provided supplies for field investigations, performed a cold chain assessment for livestock vaccine, coordinated with the Ethiopian government to support large-scale outbreak responses, built extensive lab capacity, and provided in-person training and technical support.

Identifying Existing Diseases in New Places

Melioidosis is a rare and often fatal disease that people get from contaminated soil and water. Most U.S. cases are among international travelers who have returned from tropical areas. However, BSPB and state and local partners identified a case in Texas with no travel history outside the U.S. The case sparked increased concerns that the bacteria that causes melioidosis may be present in some areas of the Southwest. To help keep people safe, CDC has encouraged clinicians to consider melioidosis as a diagnosis even in patients with no international travel history and urged laboratorians to take appropriate precautions with this Tier 1 select agent.