An evidence-based approach to detecting, predicting, and containing emerging infectious disease



As the COVID-19 pandemic demonstrated, disease transmission from animals to humans poses a serious threat to human safety and security. Unfortunately, epidemics are becoming more frequent and diverse worldwide. They are also likely to continue into the foreseeable future.



In response to this threat, researchers at the University of Notre Dame have developed REDI-NET. Created with support from the U.S. Department of Defense, REDI-NET stands for Remote Emerging Disease Intelligence NETwork. REDI-NET assembles an international group of partners who work together to detect, predict, and contain emerging zoonotic diseases.

Building on Notre Dame's longstanding strengths in vectorborne disease research, REDI-NET provides governments and organizations the data they need to act early and decisively to contain zoonotic spillovers, break the chain of transmission, and prevent public health emergencies.

Learn More

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The REDI-NET Approach

Comprehensive. Existing surveillance efforts are often narrow in scope. Most target specific biological samples and test for known pathogens. REDI-NET, however, leverages a broad set of partnerships across academia, government, non-governmental organizations, industry, and the Department of Defense. REDI-NET researchers capture data through field surveillance in a wide array of ecologies such as temperate zones, tropical forests, and tropical grasslands. The data includes environmental, invertebrate, and vertebrate samples for a comprehensive look at emerging and known pathogens that affect human and/or animal health.

Timely. A lack of capacity at the source of surveillance sampling can cause delays in processing, testing, and output generation, leading to delays in risk mitigation. REDI-NET aims to provide health decision-makers with a one-stop-shop interactive dashboard with search functions and visualization features of detected pathogens, along with learning materials for enhanced knowledge transfer.

Accurate. REDI-NET's trained research partners have developed, use, and continually optimize a common set of standard operating procedures for all aspects of the program — from field collection, sample storage, and laboratory testing. They also utilize a custom-developed mobile app for standardized, field data entry at remote sampling sources, and a custom-designed web app for tracking sample processing and outputs.

Integrated. The REDI-NET e-MERGE system provides a new flexible, scalable, and expandable computing substrate—a "system of systems"—founded on Next-Generation Sequencing (NGS). REDI-NET links metagenomic results with confirmed microorganism outputs for each sample. It also leverages, coordinates, and integrates pre-existing and novel, real-time domestic and international disease surveillance efforts.

With its enhancements to the accuracy, comprehensiveness, and timeliness of the "data-to decision" pipeline, REDI-NET is a leader in the detection, prediction, mitigation, and containment of infectious disease threats.







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