SPRING 2022

Biochemistry and Molecular Biology Brown Bag Series

Monica Christian

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"Global Unknown Symptomatic Surveillance (GUSS): Improving Respiratory Pathogen Sequencing Workflow"

Tuesday, February 15, 2022

11:00 AM

Location 135 Oelman Hall

Lab:
USAFSAM/711 HPW Applied Technology and Genomics

Boonshoft School of Medicine
WRIGHT STATE UNIVERSITY

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https://science-math.wright.edu/biochemistry-and-molecular-biology

Abstract

"Global Unknown Symptomatic Surveillance (GUSS): Improving Respiratory Pathogen Sequencing Workflow"

Current surveillance efforts focus on already characterized pathogens such as influenza. However, over 30 new infectious diseases have been discovered since the 1970's with six emerging between 2001-2008. The greatest example of this is obviously the current COVID-19 pandemic with over 77 million cases and untold global economic and social impacts. All of these outbreaks have caused considerable disruption to the mission of the Warfighter.

Retrospective RT-PCR testing of respiratory samples during the 2020 COVID-19 pandemic demonstrated that pathogens can be present in otherwise clinically negative patient samples weeks preceding an outbreak. Sequencing of symptomatic patients with negative respiratory testing results led to the discovery of SARS-CoV2 and the development of diagnostic testing. Therefore, it is reasonable to assume that other pathogens or variations of known pathogens could be discovered and tracked through surveillance of symptomatic negative patient sampling. Rapid discovery and accurate tracking of these data can provide critical information to public health organizations about potential outbreaks as well as identify pathogens with pandemic potential.

The experimental pathway proposed compares three approaches in sample preparation for sequencing and data analysis. Comprehensive evaluation of these processes will allow for further development of a comprehensive surveillance system.