REVOLUTIONARY DIAGNOSTICS – NONTRADITIONAL APPROACHES FOR DEVELOPING BREAKTHROUGH CAPABILITIES AGAINST EMERGING THREATS

Detection Of Volatile Organic Compounds In Biological Samples Associated With Infection

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The COVID-19 pandemic has served to emphasize the importance of rapid and reliable disease detection strategies. Screening of individuals through detection of disease-specific volatile organic compounds (VOCs) presents an appealing and non-invasive option that meets this need. The work described herein outlines a novel mass spectrometry-based collection and analysis pipeline, which identified VOCs originating from both clinical and in vitro samples associated with infection. A machine learning approach was employed to rapidly categorize samples based on a limited number of samples. We found that this approach was useful for rapid discrimination of samples associated with infection, though its utility varied across clinical sample groups. This methodology has potential to be leveraged in the future to detect, and subsequently characterize, a wide range of biological samples. However, the results also highlight the need for further development and standardization in the nascent field of disease screening through volatile compound detection.