

Abstract Submitted
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Quantitative Detection of Pathogen Load via a Rapid, Small Fluid Volume Diagnostic (SFVD) Device, using 0.03 – 0.3mL of Fluids, vs Colony Forming Units (CFU) counting: InnovaBug VISHESH AMIN, U. Southern California/SiO2 Innovates, VIRAJ AMIN, RILEY RANE, KARISHMA SIVAKUMAR, TANVI SATHISH, VIDYA DESAI, ERIC CULBERTSON, SiO2 Innovates, ROBERT CULBERTSON, Arizona State U., NICOLE HERBOTS, SiO2 Innovates — 30% of Blood Cultures for Pathogen detection (BCP) yield false positives, leading the US to spend more than 6 billions dollars per year on non-existent infections. On top, BCP uses large blood volumes, 10-30 mL and BCP causes a 74% rate of Hospital-Acquired Anemia with daylong waits for results. InnovaBug is a new Small Fluid Volume Diagnostic (SFVD) device for rapid accurate, portable, low-cost pathogen detection in minutes. InnovaBug uses only 0.03– 0.3 mL of fluid spread on a macroscopic region of a slide coated with a benign *hyper-hydrophilic* film, called FluoFilm. FluoFilm contains a safe fluorescent nucleic acid dye, so that RNA/DNA from pathogens fluoresce at a macroscopic scale. The ratio R of RNA and DNA macroscopic fluorescence over the excitation intensity is measured via Color analysis on inexpensive SmartPhone images, and yields a rapid pathogen count comparable to Colony Forming Units (CFUs) counts in blood cultures. CFUs computed via R are tested quantitatively using UVC sterilization of calibrated pathogens such as LactoB and E.Coli. R decreases by 60-80% after UVC sterilization and correlates well with CFUs from cultures

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