

Paper-origami device for rapid diagnosis and testing sewage for early warning of pandemic

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Pathogen detection is of significant importance for both biomedical diagnostics (e.g. infectious disease) and environmental analysis, e.g. pathogen contamination in drinking water), SARS-CoV-2 in wastewater for early warning of pandemic. Here we present a low-cost, deployable paper-based biosensor device for rapid analysis of pathogens for a wide range of application. We will show you the capability of paper-origami device for field-testing for veterinary diagnosis in India, and for malaria testing in a local primary school in Uganda in Africa. We will present this device for the rapid analysis of pathogen in water and wastewater in low resource setting. This device is currently developing to trace the source of SARS-CoV-2 for wastewater-based epidemiology for early warning of pandemic, within a UK national wastewater epidemiology surveillance programme (N-WESP) for COVID-19.

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FIGURES

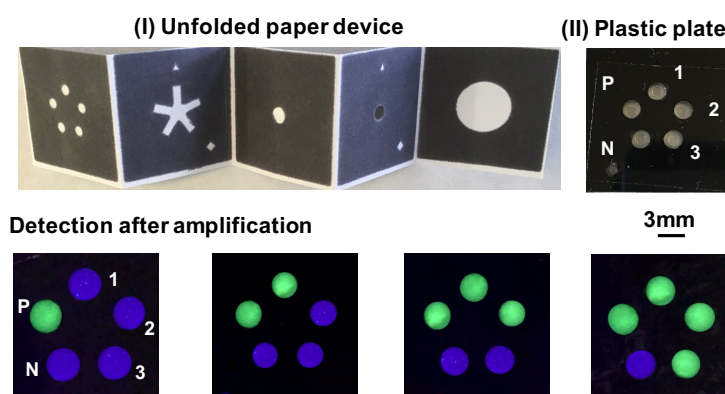


Figure 1 paper-origami device for the DNA extraction and multiplexed visual detection of three target pathogens (I) folding paper device: dark areas are printed with hydrophobic wax, consisted of five panels folding onto each (II) plastic device for isothermal amplification.