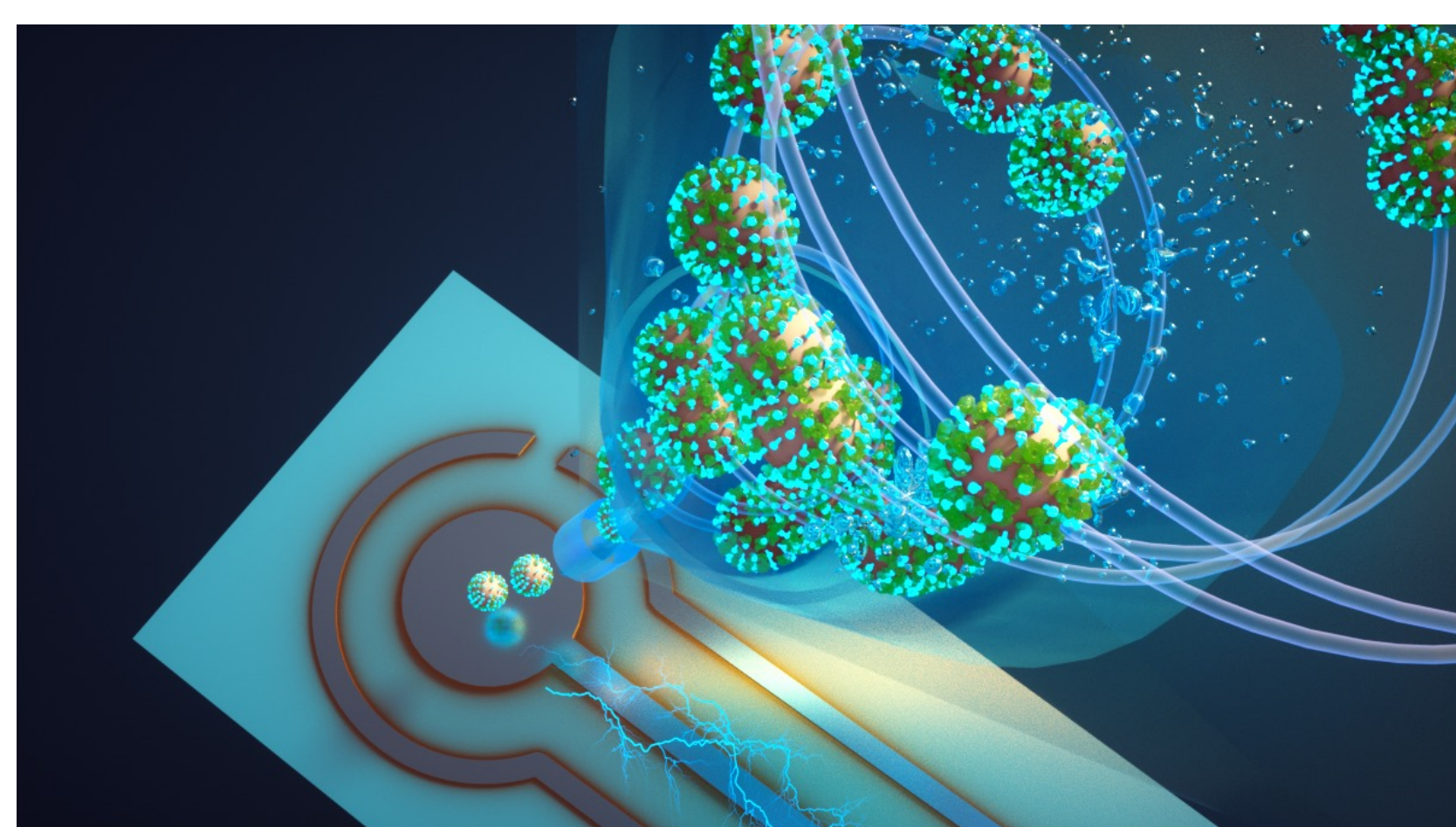
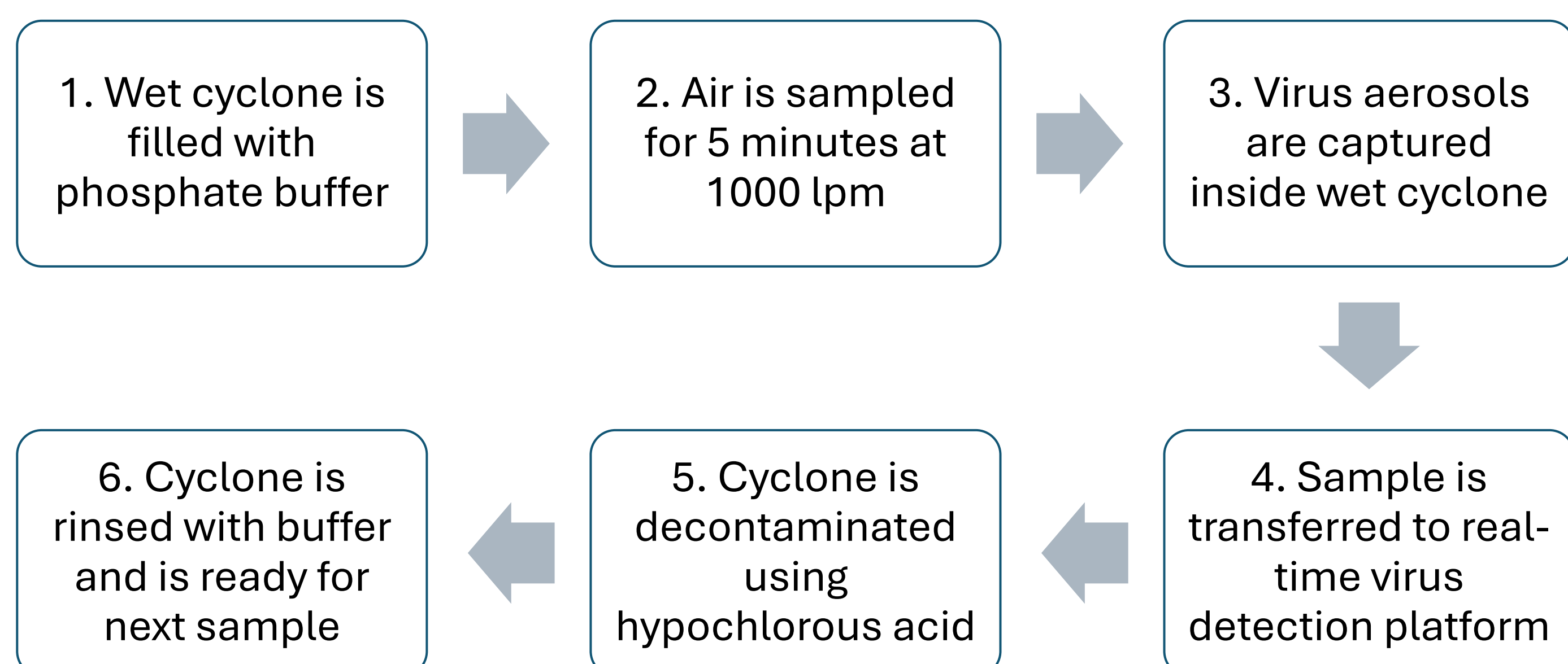




Airborne Pathogen Sampling Technology

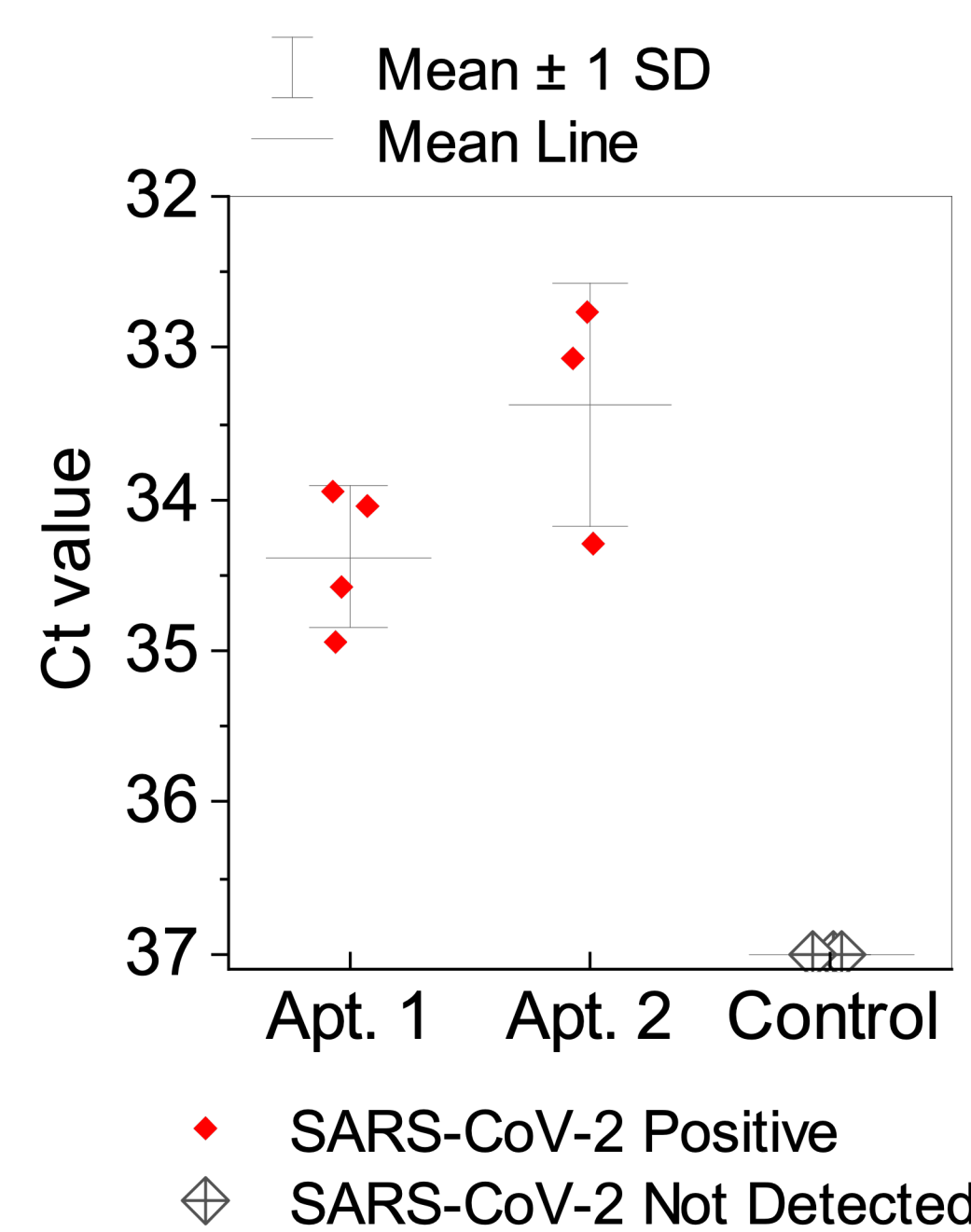
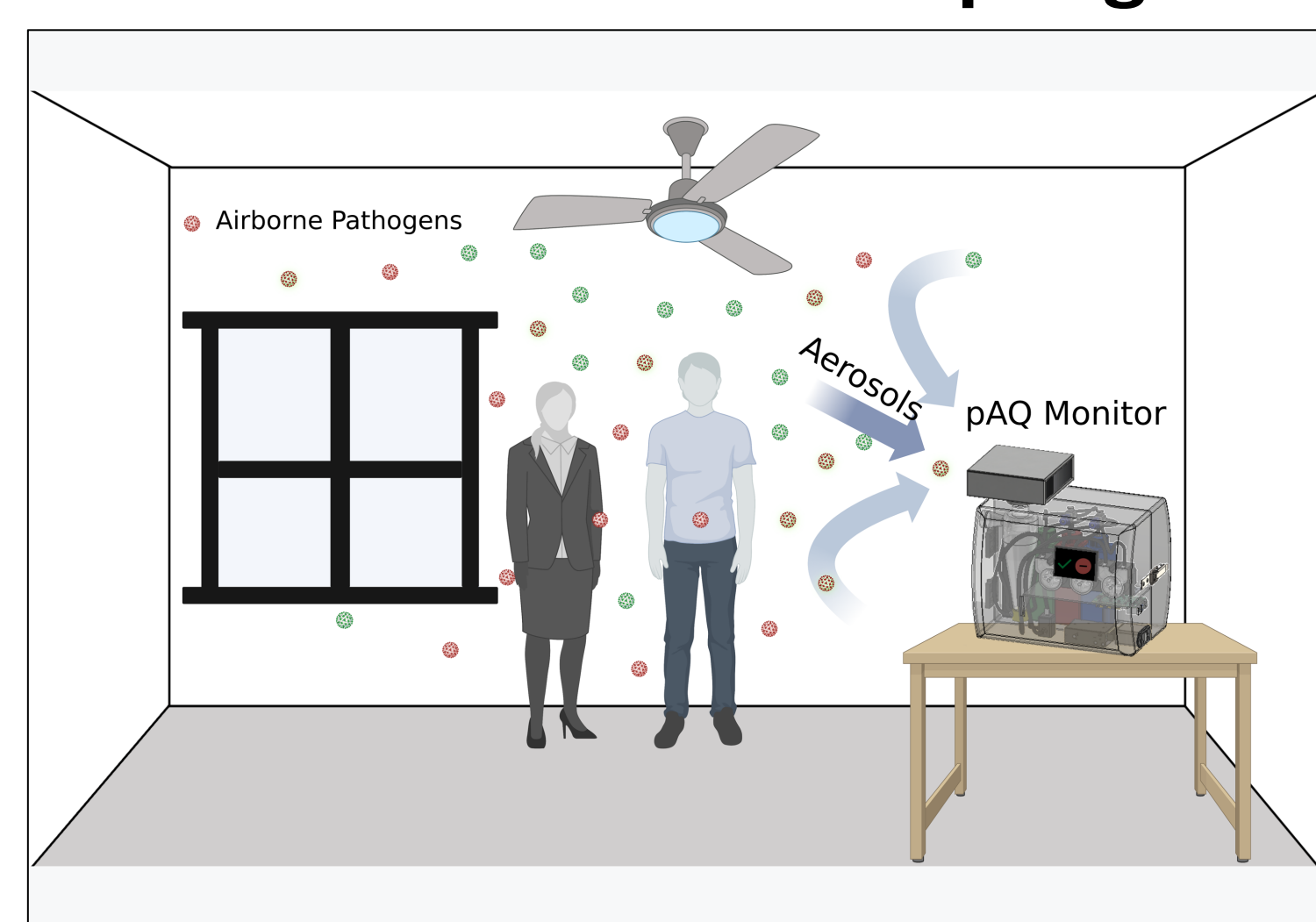


- Airborne transmission is the dominant pathway for the spread of several pathogens.
- Real-time surveillance of these airborne pathogens will mitigate outbreaks.
- We have developed a customizable environmental **pathogen Air Quality (pAQ)** monitor comprising a wet cyclone particle into liquid collector and a liquid handling unit integrated with a multiple-pathogen detection platform.

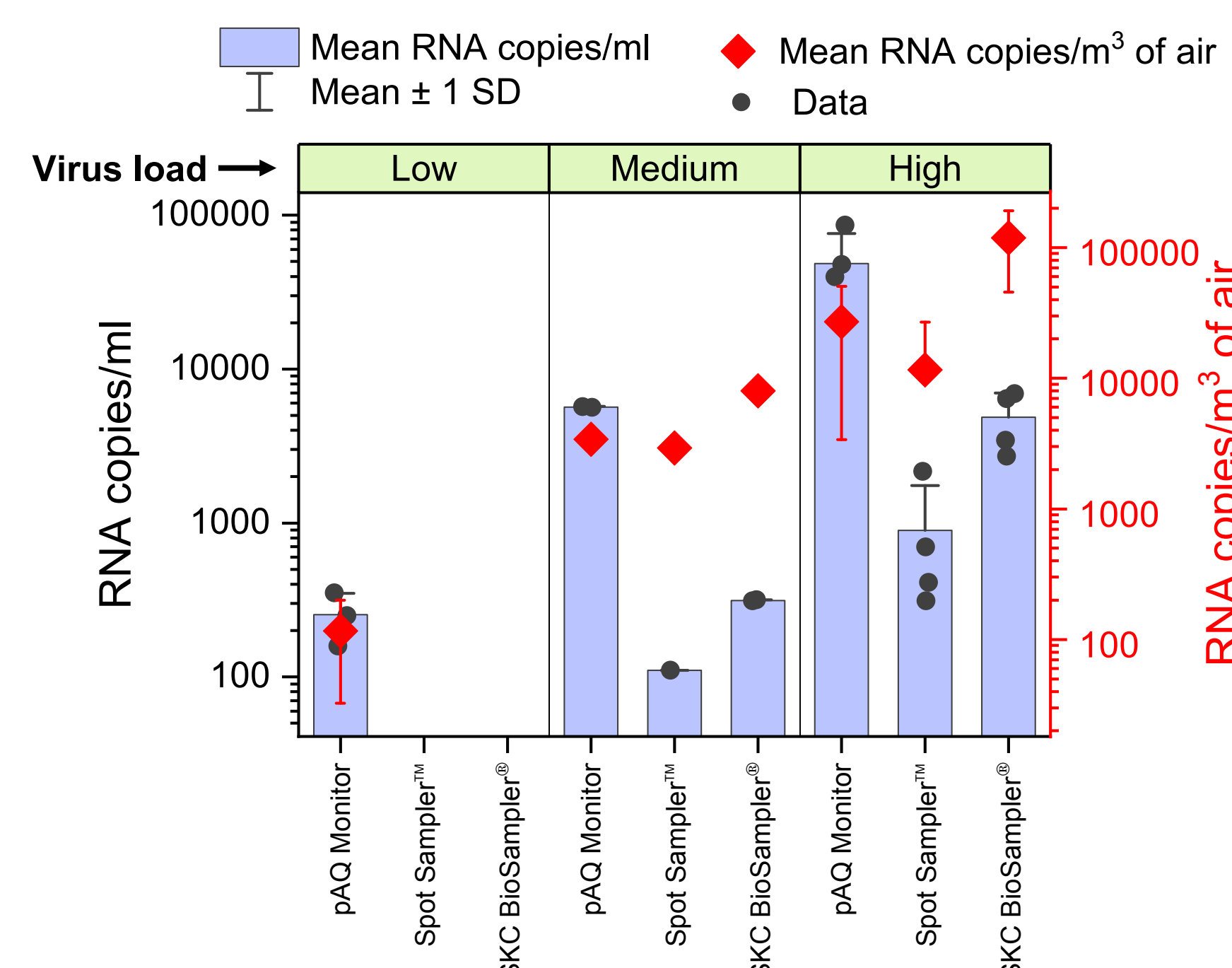


pAQ monitor operation workflow

Residential Air Sampling

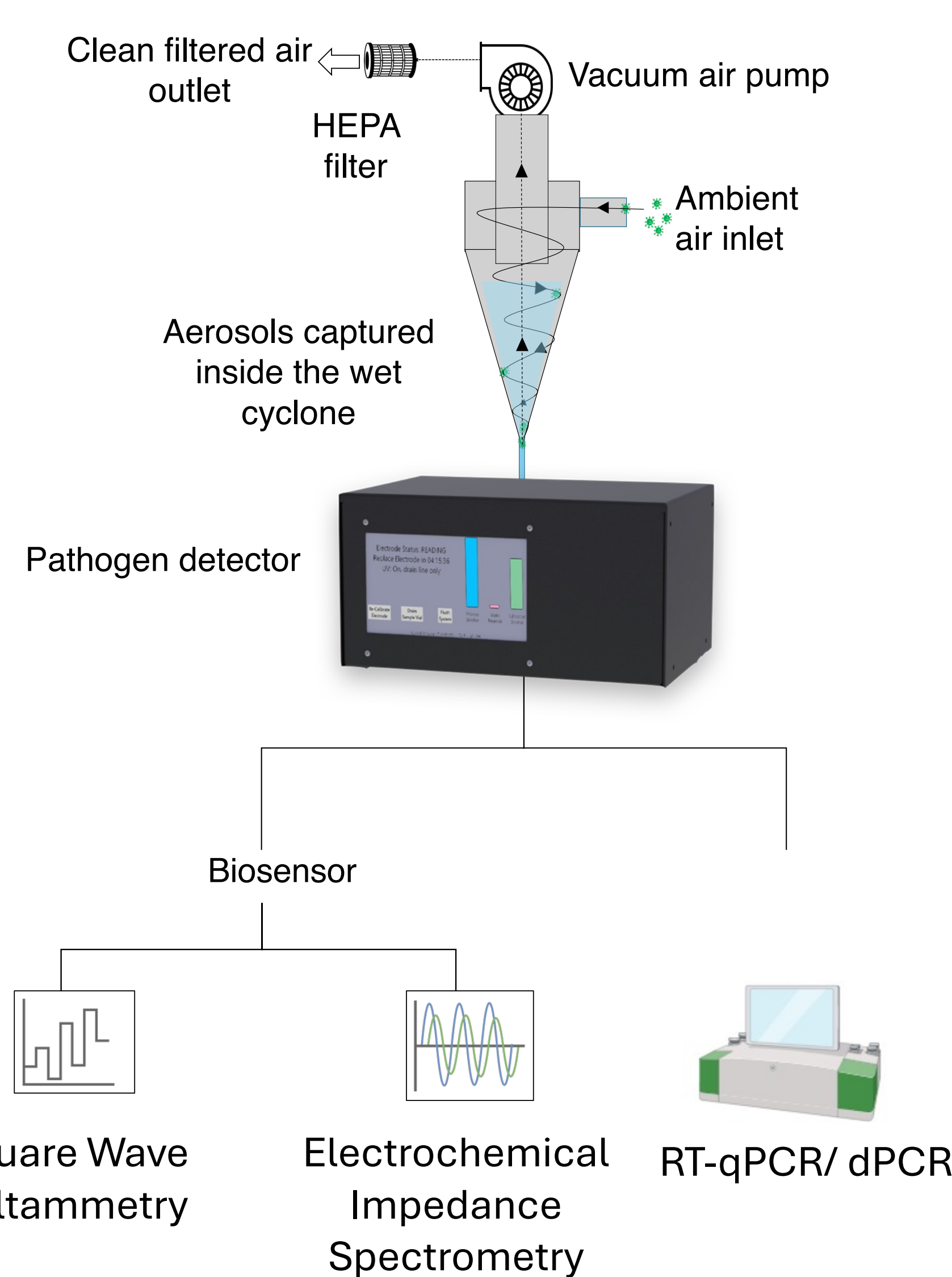


Laboratory Testing

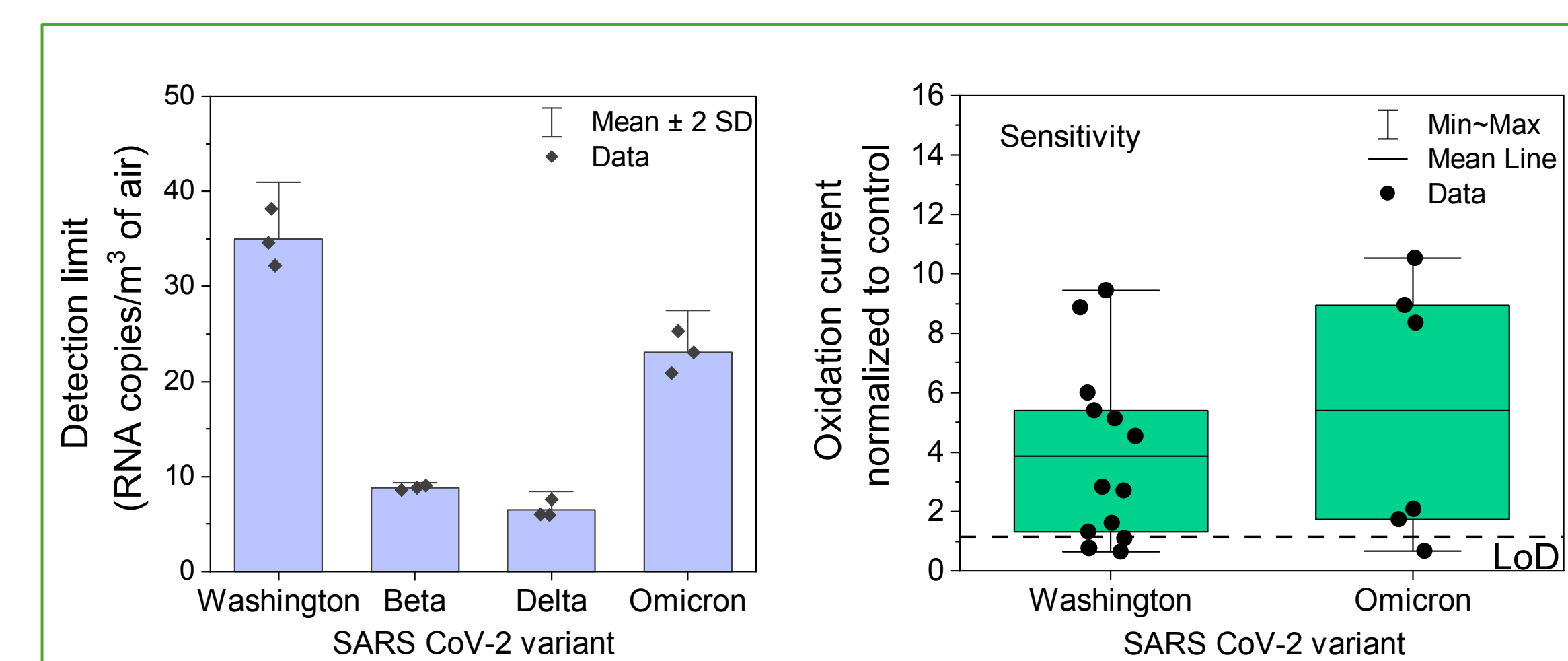


The pAQ monitor detects airborne viruses at low concentrations in laboratory chamber testing and residential air sampling.

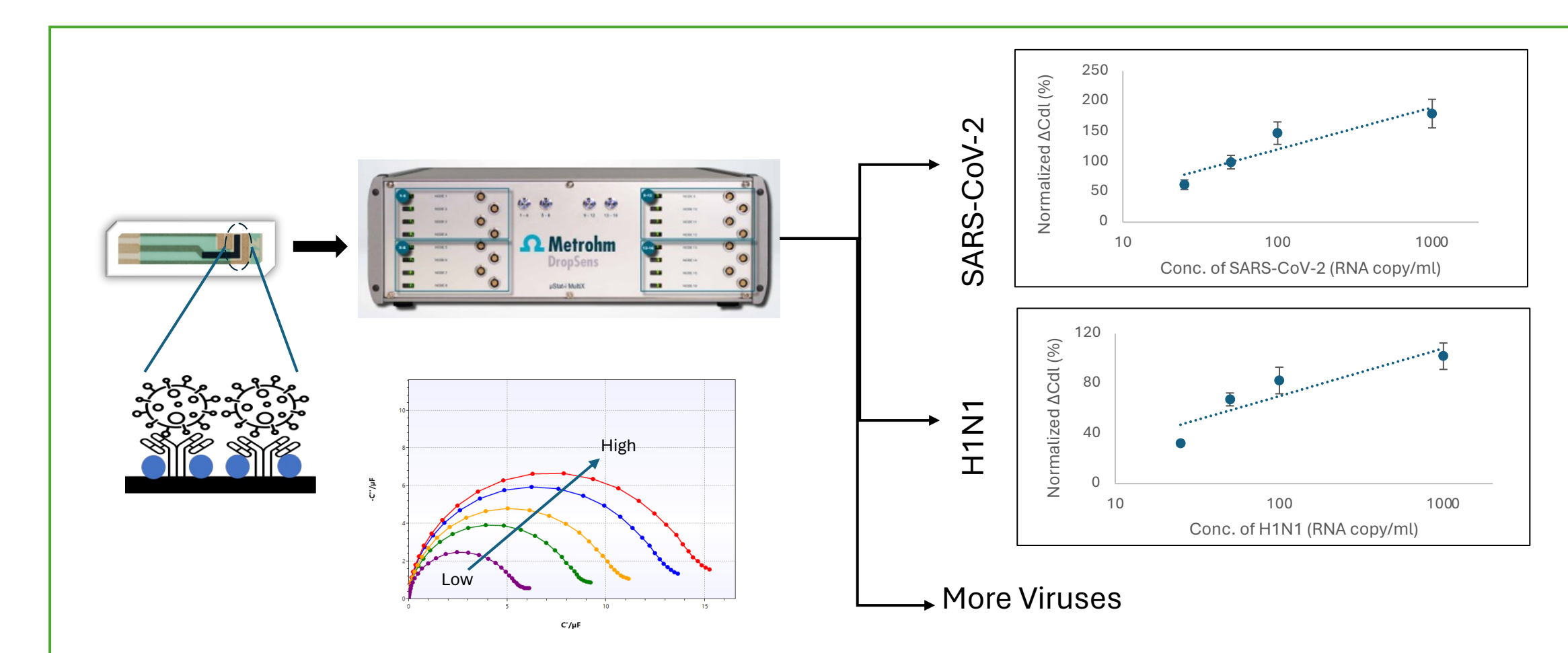
Multiplexed Pathogen Detection using pAQ Monitor



Square Wave Voltammetry (SWV)



Electrochemical Impedance Spectroscopy (EIS)



- The pAQ monitor platform can be easily integrated into various automated pathogen detection techniques for multiplexed detection of viruses, bacteria, and fungi in one platform.
- **SWV:** The pAQ monitor integrated with a custom designed SWV based microimmuno electrode biosensor showed high sensitivity and specificity in laboratory and field measurements
- **EIS:** Laboratory testing using a custom-designed EIS-based biosensor demonstrated that capacitance-based detection provides ultra-sensitive measurements, even at trace contaminant levels.
- **PCR:** The pAQ monitor samples can be analyzed offline or online with any commercial RT-qPCR or dPCR.
- pAQ monitoring platform is easily adaptable for detecting various targets with low cost and easy scalability.

Related Publications

pAQ monitor: Puthussery et al. (2023). Real-time environmental surveillance of SARS-CoV-2 aerosols. *Nature Communications*, 14(1), 3692.

SWV: Ghumra, et al. (2023). Rapid direct detection of SARS-CoV-2 aerosols in exhaled breath at the point of care. *ACS Sensors*, 8(8), 3023-3031.

Yuede et al. (2016). Rapid in vivo measurement of β -amyloid reveals biphasic clearance kinetics in an Alzheimer's mouse model. *Journal of Experimental Medicine*, 213(5), 677-685.

EIS: Xu, M., & Yadavalli, V. K. (2019). Flexible biosensors for the impedimetric detection of protein targets using silk-conductive polymer biocomposites. *ACS Sensors*, 4(4), 1040-1047.

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Y2X Life Sciences has an exclusive option to license the device technology and consulted during design stages of the device to facilitate commercialization.