

Luna Innovations is developing a rapid and portable water analysis technology for use by US Armed Forces, water treatment and environmental testing facilities, and in resource deficient areas.

E.coREADi™: A Rapid Enumeration Assay and Disinfection Indicator

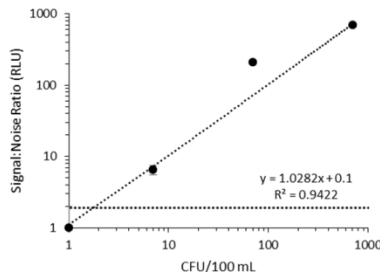
Water is essential to life. Accordingly, there is a critical and global need to ensure water safety prior to reintroducing treated waters to ground sources or prior to consumption. Methods of identifying contaminated waters rely on the detection of abundant and easily identifiable organisms, such as coliforms and *Escherichia coli* (*E. coli*), as “indicator organisms” for the presence of pathogens or health risks. Currently, gold-standard detection methods to enumerate these organisms require technical expertise, laboratory equipment, and a minimal time requirement of 18-24 hours prior to results.

Luna Innovations is developing a next-generation coliform and E. coli analysis platform technology, known as the E.coREADi™ assay, enabling detection of less than 3 viable bacteria in a 100 mL water sample in less than 5-6 hours.



The E.coREADi™ assay utilizes a filter-based reaction chamber to capture, selectively enrich (grow), and detect bacteria using metabolic enzymes and luminescent substrates. Originally developed for hands-on use following wastewater treatment on-board US Naval vessels, the E.coREADi™ assay is currently being transitioned to an automated microfluidic format for handheld analysis and integration into total water analysis systems at Luna.

Sensitive- The current limit-of-detection is 2-3 bacteria per 100 mL sample with a 6 hour assay time.



Specific- Proprietary enrichment reagents selectively grow target organisms, with detection of enzymes unique to coliforms or *E. coli* providing additional specificity.

Shelf-stable-Reagent formulations are freeze-dried for long-term ambient storage and field use.

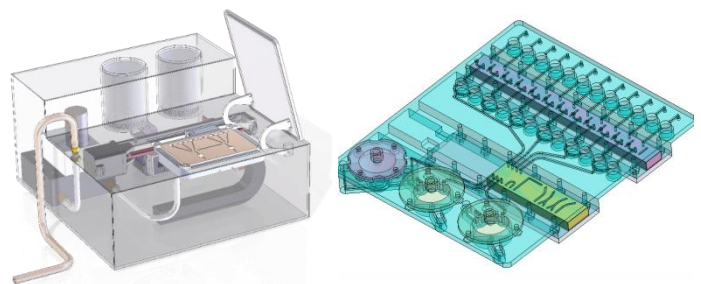
Self-contained- Capture, enrichment, and detection occur in a self-contained filter cartridge to maintain sterility.



E.coREADi™ reagents are freeze-dried in LyoTips® for shelf-stability and 1-step reconstitution and transfer to reaction chambers. Arrow: freeze-dried reagent.



Luna’s field-ready assay kit requires 10-15 minutes hands-on time and uses simple color-coded syringes and graphical protocols. A portable incubator and luminometer have been integrated into a Pelican case for field use.



Luna’s AWQuA-MD™ water analysis suite (left) will feature the E.coREADi™ assay in an automated microfluidic format (right). Development of a stand-alone handheld analysis system for coliforms and *E. coli* is anticipated to begin May 2017.

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