Guiding Innovation
Fostering Partnerships

# Technology Overview

## Built-N-Bioassays – Decoding Chemical Contaminants Using Algae & AI

**OTT1883**

### Applications

Environmental water monitoring, chemical toxicity screening, and agrochemical development testing.

### Target Problems

Monitoring water for harmful chemicals is increasingly critical, but current tools force tradeoffs between cost, speed, and insight. Gold-standard methods are slow and expensive, limiting testing frequency, while lower-cost assays lack biological relevance—especially for unknown or complex mixtures. As a result, contamination can go undetected and decision-makers lack early, actionable insight.

### Solution

UWM researchers have created algae cells that can be used to test water for pollution. This approach enables rapid, biologically informed screening of water samples. Water quality professionals can quickly determine if harmful chemicals are present and gain early insights into how they impact living cells.

### Key Benefits

- Enables detection of toxic effects at the cellular level
- Provides insight into types and mechanisms of toxicity
- Reduces cost per sample from $500 to $10
- Identifies contaminants at ppt level within hours vs weeks


### About this Technology

This technology uses specially engineered algae cells that act like tiny sensors for water quality. The cells have built-in fluorescent markers that light up or change in specific ways when exposed to different chemicals. Because these markers are localized to different parts of the cell, testing labs can quickly observe how specific cellular structures respond to exposure – revealing not just whether a substance is harmful, but where and how it causes damage.

### Stage of Development

A prototype has been developed using modified algal cells with detectable markers. Future development aims to expand the system to include additional markers for broader cellular analysis.

### Partnering Opportunity

The inventors have also launched a startup, Built-N-Bioassays, to further develop and bring this technology to real-world use. They are currently looking for non-dilutive funding to scale up, expand their assay library, and accelerate commercialization. They are actively seeking grant opportunities, strategic partnerships, and collaborative projects.

### Intellectual Property (IP)

Patent pending. Protected and managed by the UWM Research Foundation.

### Lead Inventor


- Rebecca Klaper, UWM Dean & Professor, School of Freshwater Sciences, and Co-founder of Built-N-Bioassays
- Eric D. Ostovich, Postdoctoral Fellow, School of Freshwater Sciences and Co-founder of Built-N-Bioassays