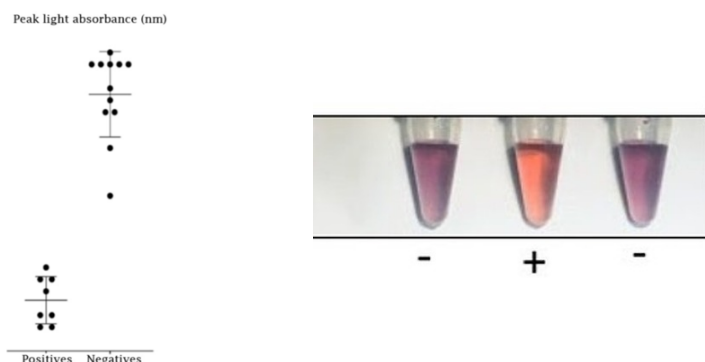




## Assay for detecting misfolded proteins

A simple, onsite diagnostic assay for detecting misfolded proteins using nanoparticles.



### Technology ID

2021-138

### Category

Engineering & Physical Sciences/Instrumentation, Sensors & Controls  
Engineering & Physical Sciences/Nanotechnology  
Life Sciences/Biologics  
Life Sciences/Biochemicals & Small Molecules  
Life Sciences/Diagnostics & Imaging  
Life Sciences/Research Tools

**IP Status:** Provisional Patent Application Filed; **Application #:** 63/176,114

### Applications

- Diagnostic kit - misfolded proteins (prions, amyloid, etc.)

### Key Benefits & Differentiators

- Affordable and rapid testing
- Onsite testing
- Simple color change test; can be performed with basic laboratory training

### Overview

Misfolded peptides and proteins have been known to cause severe diseases in animals and humans. For instance, Chronic Wasting Disease (CWD) is a severe contagious disease that fatally affects animals in the cervid family (deer, elk, caribou, reindeer and moose). In CWD, misfolded proteins cause brain degeneration in infected animals resulting in death. Protein misfolding is believed to be the primary cause of Alzheimer's disease, Parkinson's disease, Huntington's disease, and other debilitating diseases. Current immunohistochemistry-based diagnostic methods, including protein misfolding cyclic amplification (PMCA) and real-time quaking-induced conversion (RT-QuIC), require expensive equipment and various reagents along with trained technicians to properly use them.

Researchers at the Minnesota Center for Prion Research and Outreach (MNPRO) have developed an affordable and rapid assay named MN-QuICTM to detect misfolded proteins and peptides utilizing nanoparticles. This colorimetric assay utilizes the optical properties and chemical tunability of nanoparticles to detect changes in protein structure against a healthy protein. Without the need for expensive lab equipment and extensive training, presence of misfolded proteins such as prions can be quickly detected by this simple color change assay.

### Learn more



MN-QulCTM assay can be performed on site with basic laboratory equipment, a thermomixing device, recombinant protein substrate, and nanoparticles, simplifying detection of misfolded proteins while reducing cost and time. Additionally, light absorbance of samples can provide quantitative differences between samples with misfolded proteins and those without.

## **Phase of Development**

### **TRL: 4**

Experimental characterization in an emulated environment. Researchers have demonstrated detection of misfolded proteins (prions) that cause CWD.

## **Desired Partnerships**

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact our office to share your business' needs and learn more.

## **Researchers**

- [Peter Larsen, Ph.D.](#), Assistant Professor, Department of Veterinary and Biomedical Sciences
- [Sang-Hyun Oh, Ph.D.](#), Professor, Electrical and Computer Engineering