



Using Liquid Crystals to Detect Post-Translationally Modified Peptides

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing devices and methods that use liquid crystals to detect post-translationally modified peptides.

Overview

Post-translational modification of proteins provides a significant means of regulating biological processes. In particular, phosphorylation is a key factor in many aspects of cell signaling, cell cycle regulation and response to stress. Because compounds that modulate phosphorylation and other post-translational modifications may be useful in the treatment of diseases and conditions such as cancer, immunosuppression, retinopathy, rheumatoid arthritis and neurodegeneration, various methods for detecting post-translational modifications have been developed; however, simple and rapid methods that do not require complex instrumentation, radioactive labeling or other manipulation are still needed.

The Invention

UW-Madison researchers have developed devices and methods that use liquid crystals to distinguish between post-translationally modified peptides and unmodified peptides. A sample containing a post-translationally modified peptide, an unmodified peptide, or a mixture of both is bound to a substrate surface. The surface then is contacted with a recognition agent, such as an antibody, that specifically binds to or forms a complex with the post-translationally modified protein in the sample. A liquid crystal is contacted with the surface, and its orientation is observed. Disruptions in the uniform anchoring of the liquid crystal indicate the presence of post-translationally modified protein.

Applications

- Drug screening
- Detecting post-translational modifications, including phosphorylation

Key Benefits

- Provides a simple method of monitoring the phosphorylation status of proteins and peptides
- Does not require radioactive labeling
- Amenable to high throughput screening
- Applicable to drug-screening and activity assays

Tech Fields

- [Analytical Instrumentation, Methods & Materials : Sensors](#)
- [Research Tools : Detection](#)

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854