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Development of Kinase Targeted Peptide Probes for Time-Resolved Lanthanide Luminescence Detection of Kinase Activity

A novel kinase specific substrate and associated bioinformatics tool enable enhanced detection and quantification of spleen tyrosine kinase activity for inhibitor response measurement.

Having the ability to detect the activation of spleen tyrosine kinase in cells allows scientists to measure the response of inhibitors and other stimuli on the cell's regulatory pathways.

Purdue University researchers have developed a novel kinase specific substrate for the detection of kinase activity using time-resolved lanthanide luminescence. This novel sequence is phosphorylated by spleen tyrosine kinase (SYK) and is capable of sensitizing terbium with an improved signal to noise ratio as compared to traditional fluorescent detection methods. The detection of SYK activity can be quantified based on the area under the peaks of spectra or by changes in luminescent half-life. This led to the development of a hypothesis-driven bioinformatics tool for classifying and sorting potential sequences to test empirically. This tool can be used to identify sequences that are not only kinase specific, but can also bind and sensitize lanthanides when phosphorylated.

Advantages:

-Process allows for prediction of sequences that will provide lanthanide sensitization

-The signal to noise ratio for luminescent detection is larger for better distinction

-A novel strategy for quantifying the degree of substrate phosphorylation

TRL: 2

Intellectual Property:

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Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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