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Detection of Intracellular Syk Kinase Activation Using a Novel Peptide Substrate

Highly selective peptide-based biosensors monitor dose- and time-dependent kinase activity changes in live cells without costly, complex techniques.

Kinases are enzymes present in a variety of tissues within the human body. Kinases are very interesting as therapeutic targets because they have been associated as factors in rheumatologic disorders, B-cell leukemia, and breast cancer, among others. Currently, measuring the levels of kinase activity without first lysing the cell is a major technical challenge. Lysing the cell destroys the cellular environment and disrupts enzyme-protein interactions. Other tests for studying kinases use phosphorylation sites that can be activated by the targeted molecules, but these sites are not always specific to that molecule.

Researchers at Purdue University have developed a novel algorithm to design peptide-based biosensors that are capable of detecting and monitoring kinase activity. The sensor is composed of a peptide substrate with several functional modules, making it adaptable and highly selective for targeted kinases. In addition, it can detect dose- and time-dependent changes in kinase activity in live cells, which currently cannot be done without using costly and technically challenging techniques. Improved monitoring will lead to a better understanding of the role of kinases in the body and with the disorders it affects

Advantages:

-Capable of detecting dose- and time-dependent changes

-Adaptable and highly selective for targeted kinases

TRL: 4

Intellectual Property:

Technology ID

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Category

Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics

Artificial Intelligence & Machine Learning/AI Model Optimization & Acceleration Tools

Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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