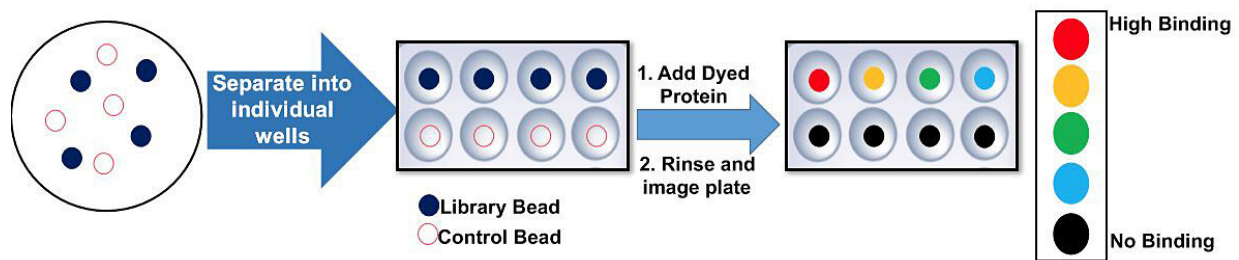


New method to detect cancer cells faster, potentially improving outcomes

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A Purdue University team developed a method to screen one-bead-one-compound libraries against biological targets such as proteins or antibodies.
Credit: Purdue University

The days—or even weeks—spent waiting for the results of a cancer-screening test can feel like an eternity. Especially when early diagnosis and quick action are tied to better outcomes.

Now, a [new technique](#) to analyze proteins expressed on [cancer](#) cells shows promise in more rapidly detecting these [cell types](#).

"Pathogen or cancer cell identification often relies on culturing a sample, which can take several days," said Darci Trader, an assistant professor of medicinal chemistry and molecular pharmacology in Purdue University's College of Pharmacy, who led the research team. "We have recently developed a method to screen one-bead-one-compound libraries against

biological targets such as proteins or antibodies."

Trader believes the Purdue screening method could be developed into a rapid, [sensitive technique](#) to identify cancer cells in patient blood samples. This could expedite [cancer diagnosis](#) and lead to better patient outcomes.

The novel screening technique is featured in the Jan. 24 edition of *ACS Combinatorial Science*.

"We are invested in this technology because of our passion to develop better screening techniques for a wide variety of diseases," Trader said. "Cancer, in particular, has touched the lives of many of our friends and families, so being able to contribute to better detection methods is very special to us."

Trader said the Purdue technique provides an alternative to current methods, which require very specialized equipment and complex analysis to measure the proteins binding small molecules. They also typically only detect if there is binding, but not the extent of that binding. These protein and binding measurements provide key information for diagnosing cancer and other illnesses.

Based on results obtained by screening known interactions between proteins and small molecules, the Purdue team believes their screening method will be sensitive enough to detect forms of cancer in very early stages.

The activity of the biological target being tested also does not need to be known or monitored with the Purdue technique, which increases the types of proteins that can be screened.

Development of this new test will involve mixing a biological sample,

such as cancer cells or blood plasma, with a near-infrared range emitting fluorophore.

The protein is allowed to interact with [small molecules](#) and then doctors and scientists can measure the intensity of the light produced by the protein binding the small molecule. Certain intensity rates can indicate the presence of [cancer cells](#) or other pathogens in the body.

Trader and her team have worked with the Purdue Office of Technology Commercialization to patent their technologies.

Trader also works with the Purdue University Center for Cancer Research to advance her discoveries.

More information: Marianne E. Maresh et al, Development of a Method To Prioritize Protein–Ligand Pairs on Beads Using Protein Conjugated to a Near-IR Dye, *ACS Combinatorial Science* (2019). [DOI: 10.1021/acscombsci.8b00165](https://doi.org/10.1021/acscombsci.8b00165)

Provided by Purdue University

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