

Using Lumit™ Immunoassay Cellular Systems for Screening Novel Compounds in a Drug Discovery Process

Case Study:

The Cardiff China Medical Research Collaborative at Cardiff University is an international partnership bringing together Cardiff University and some of China's leading cancer organisations to undertake collaborative cancer research.

Background

Cancer is a leading cause of human mortality worldwide. The majority of cancer deaths are due to the metastatic spread of cancer cells from the primary tumour, through the blood or lymph system, to other organs or tissues of the body. Cancer metastasis is a complex process involving multiple factors and is therefore a focus area for many scientists researching treatments for cancer. Dr Tracey Martin is a Senior Lecturer in Cell and Tumour Biology at the Cardiff China Medical Research Collaborative at Cardiff University. The collaboration undertakes cancer research to benefit the diagnosis, prevention and treatment of cancer. Dr Martin's work specifically focuses on cancer metastasis with an emphasis on the process that enables cancer cells to cross the blood-brain barrier and form secondary tumours in the brain.

N-WASP

Dr Martin is currently working on a project to investigate a motility protein called N-WASP. N-WASP is thought to be important during the metastatic cascade and has to be expressed at the correct level, neither too high nor too low. The project involves screening 150 novel compounds to assess their effects on N-WASP expression and phosphorylation status. Multiple concentrations of each compound are tested in different cells types, generating a large number of samples. Originally the team were using Western blotting to look at N-WASP levels, however this was found to be too expensive and both labour and time-intensive.



"The Lumit assay provides advantages in high-throughput and consistency."
- Dr Tracey Martin

Lumit™ Immunoassay Cellular Systems

Dr Martin replaced the labour-intensive Western blots with Lumit™ Immunoassay Cellular Systems kit, increasing speed and improving both the reliability and consistency of data generated. The Lumit™ Immunoassay Cellular Systems kit is a no-wash bioluminescent immunoassay that measures target analytes directly in cell lysates. The assay can be used to detect both total protein and phosphoprotein levels and is performed in 96 well plates, giving it the flexibility needed for use in a high-throughput environment.





“The Lumit system offers a faster and more reproducible technique.” - Dr Tracey Martin

Next Steps

A number of the compounds tested have been shown to be effective at regulating the expression of N-WASP. These will be narrowed down to five and taken forward for further research. The team then need to look at how these five are able to control the cellular processes of breast cancer cells and whether they are effective against the propensity for migration and metastasis, the ultimate aim being to produce a new anti-metastasis therapeutic against cancers that have already spread across the blood brain-barrier.

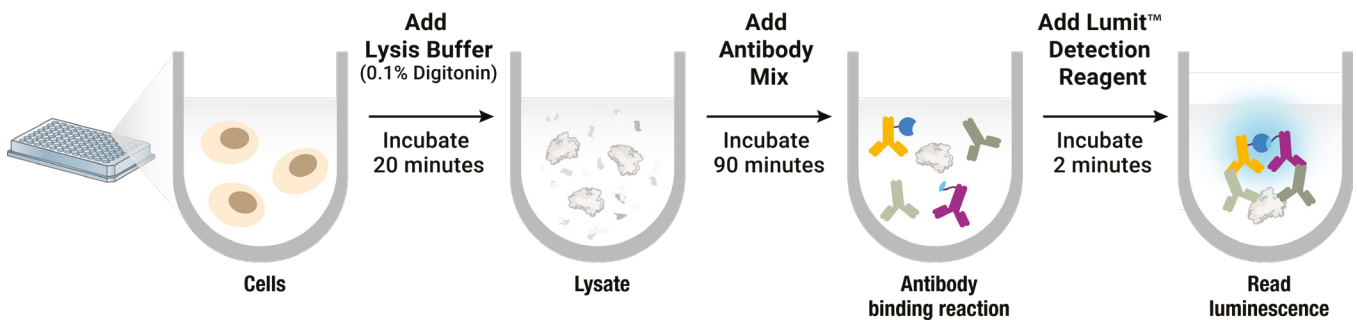


Figure 1: The Lumit™ Immunoassay Cellular System a simple one-plate protocol with no wash steps.

The Lumit™ Immunoassay Cellular System does not require media removal or lysate transfer. The protocol simply involves addition of the labelled antibodies to the sample, addition of the detection reagent and reading of the luminescent signal - all in a single plate.



| Product | Size | Cat. No. |
|--|---|-------------------------|
| Starter Kit | 200 assays | W1220 |
| Lumit™ Immunoassay Cellular Systems: Set 1 | 100 assays 1,000 assays 10,000 assays | W1201 W1202 W1203 |
| Lumit™ Immunoassay Cellular Systems: Set 2 | 100 assays 1,000 assays 10,000 assays | W1331 W1332 W1333 |

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<https://www.promega.co.uk/resources/technologies/lumit-bioluminescence-immunodetection/>

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