

CLEAR Technology

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CLEAR Technology Latest News

Researchers at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) recently developed a novel imaging platform called Cleavable Light-Erased Antibody Reporter (CLEAR).

About CLEAR Technology

- **Cleavable Light-Erased Antibody Reporter (CLEAR)** is a **novel imaging platform** that could significantly improve the **visualization and mapping of proteins within biological samples**.
- It was **developed** by researchers at the **Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)**.
- **Researchers from the Indian Institute of Science** also collaborated in **demonstrating the technology** in complex biological settings, particularly immune cell systems.
- CLEAR technology enables scientists to **visualize a large number of proteins within the same biological sample using a single fluorescent marker**, overcoming a major challenge in spatial protein mapping.

- The scientists introduced a light-cleavable probe system that allows repeated cycles of protein labelling and imaging within the same spectral window.
- **After imaging a set of proteins**, the **fluorescent signal can be erased** using a gentle pulse of 365 nm LED light, enabling researchers to **label and image a new set of proteins in the same cell**.
- It allows **increasingly detailed protein maps** to be generated across **specimens** ranging **from single cells to complex tissue sections**.
- Unlike existing multiplex imaging methods, CLEAR combines **high multiplexing capability with speed, spatial resolution**, and compatibility with delicate **biological samples, including live cells**.
- The technology has the **potential to improve early disease detection**, particularly in cancers and neurological disorders, while also helping researchers **better understand immune responses and cellular behaviour**.
- **In the long term**, the platform could **contribute to precision medicine** by enabling detailed molecular analysis that can support targeted therapies and personalized treatment approaches.

Source: DDN

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