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# Immunoproteasome-Mediated Release of Substances into Diseased Cells

**A highly selective fluorescent probe has been developed for monitoring immunoproteasome expression in live cells, enabling targeted drug development for autoimmune diseases and cancer.**

Researchers at Purdue University have developed a fluorescent probe, TBZ, which selectively targets the core particle of the immunoproteasome (iCP) and can be used to monitor its expression in live cells. In an important cellular process that occurs within human and animal cells, proteins are degraded by the proteasome. As part of the molecular machinery of immune cells that have encountered inflammatory signals, a type of proteasome, the immunoproteasome, is a target of interest for autoimmune disease and cancer drug development. Current probes are not selective for iCP; they do not distinguish between this and other forms of the proteasome core particle. This new probe that fluoresces upon cleavage by iCP is efficient, selective, and can be used in live cells. Within 15 minutes of incubating the cell with 31 micromolar TBZ, iCP was detected in Ramos, SK-MEL-2, and A549 cell lines. At 31 micromolar, TBZ retains 3:1 selectivity for iCP versus the standard core particle.

**Advantages**:

-Selective towards iCP

-Can be used in live cells

-Higher fluorescence signal than commercial probe

Potential Applications:

-Intracellular iCP pathway monitoring

-Investigative protein expression

Tags: Chemistry and Chemical Analysis, Pharmaceuticals, Fluorescent Dyes, Reagents, Research Tools, Proteasome, Immune, Drug Discovery

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**Intellectual Property:**

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