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**ILLUMINATING OXIDATIVE STRESS – FAST, PRECISE, AND POWERFUL DETECTION IN REAL-TIME**

Mason's innovative hydrazine-based fluorescent probe, 2-Hydrazine-5-nitrophenol (2Hzin5NP) is designed to revolutionize real-time imaging of oxidative stress in live cells. Unlike conventional probes, which are slow and often unsuitable for dynamic cellular studies, the small-molecule sensor reacts rapidly with carbonyl groups, providing high sensitivity, fast response times, and superior fluorescence intensity. Its applications span from cancer diagnostics and therapeutic monitoring to environmental pollutant detection, making it a versatile tool for researchers and industry leaders.

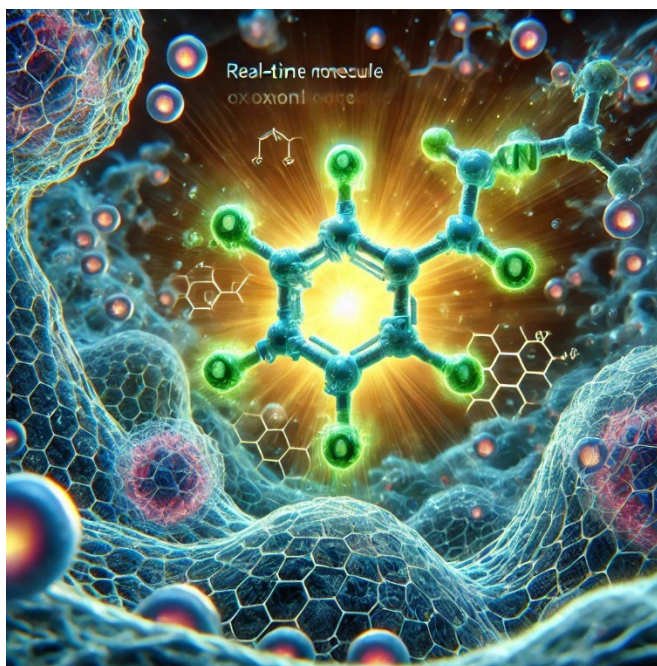
- ☑ **Rapid Reaction Kinetics** – Detects carbonyl groups in  $\leq 2$  hours, unlike slower hydrazide-based probes.
- ☑ **Enhanced Fluorescence Sensitivity** – Provides **high quantum yield** for precise, real-time imaging.
- ☑ **Small Molecular Size** – Improves **cellular permeability** and minimizes biological interference.
- ☑ **Bioorthogonal Click Chemistry** – Ensures **selective, reliable labeling** in complex biological systems.

**Applications**

 **Cancer Diagnostics & Therapeutic Monitoring** – Differentiates oxidative stress response in cancer cells vs. healthy cells.

 **Environmental & Industrial Utilization** – Detects aldehyde pollutants in industrial waste, air pollution, and beverages.

 **User-Friendly Synthesis** – Simple, one-step synthesis process without extensive purification.



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