

Photolabile Protecting Groups for "Caged" Bioactive Molecules

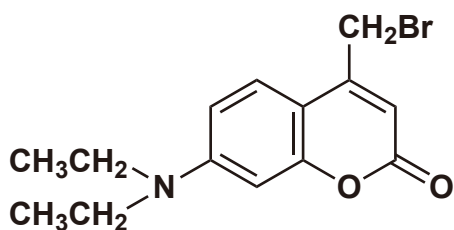
In the context of protecting groups, "caged" compounds refer to protecting groups bonded to bioactive molecules that can be readily removed in an orthogonal manner. The "caging" of bioactive molecule with photolabile protecting groups in particular have proven to be a particularly useful tool in biochemical research. Caged compounds in which bioactive substances are inactivated with photolabile protecting groups¹⁾ and can be activated by UV or visible light photoirradiation. Research towards controlling the topical expression of biomolecule activity using caged compounds has been recently reported and continues to be heavily investigated. To date, several classes of caged biomolecule have been synthesized and reported, including: nucleotides,¹⁾ amino acids,²⁾ biotin,³⁾ and sugars.⁴⁾

1) J. H. Kaplan, B. Forbush III, J. F. Hoffman, *Biochemistry* **1978**, *17*, 1929.

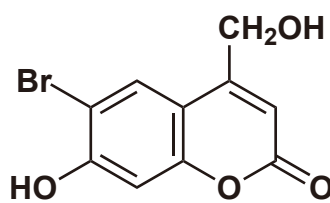
2) R. Wieboldt, K. R. Gee, L. Niu, D. Ramesh, B. K. Carpenter, G. P. Hess, *P. Natl. Acad. Sci. USA* **1994**, *91*, 8752.

3) T. Terai, E. Maki, S. Sugiyama, Y. Takahashi, H. Matsumura, Y. Mori, T. Nagano, *Chem. Biol.* **2011**, *18*, 1261.

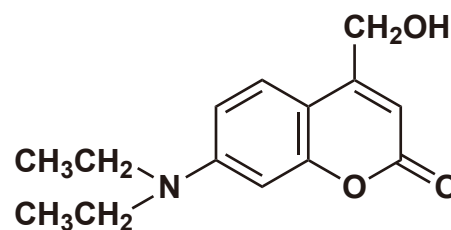
4) C. Bier, D. Binder, D. Drobiez, A. Loeschcke, T. Drepper, K.-E. Jaeger, J. Pietruszka, *Synthesis* **2017**, *49*, 42.



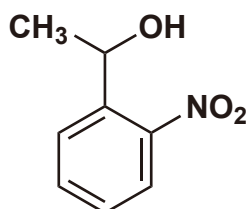
**4-(Bromomethyl)-
7-(diethylamino)coumarin**
200mg
[B5008]



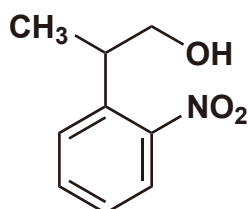
**6-Bromo-7-hydroxy-
4-(hydroxymethyl)coumarin**
250mg / 1g
[B5738]



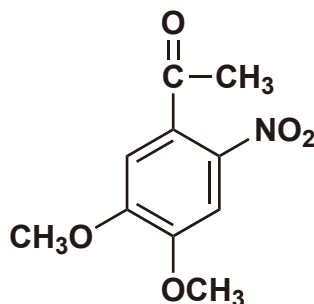
**7-(Diethylamino)-
4-(hydroxymethyl)coumarin**
200mg
[D4970]



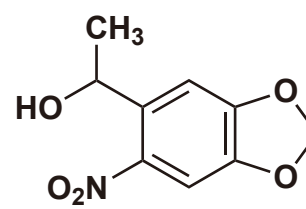
1-(2-Nitrophenyl)ethanol
1g / 5g
[N1132]



**2-(2-Nitrophenyl)-
propan-1-ol**
1g / 5g
New [N1133]



**4',5'-Dimethoxy-
2'-nitroacetophenone**
1g / 5g
[D5477]

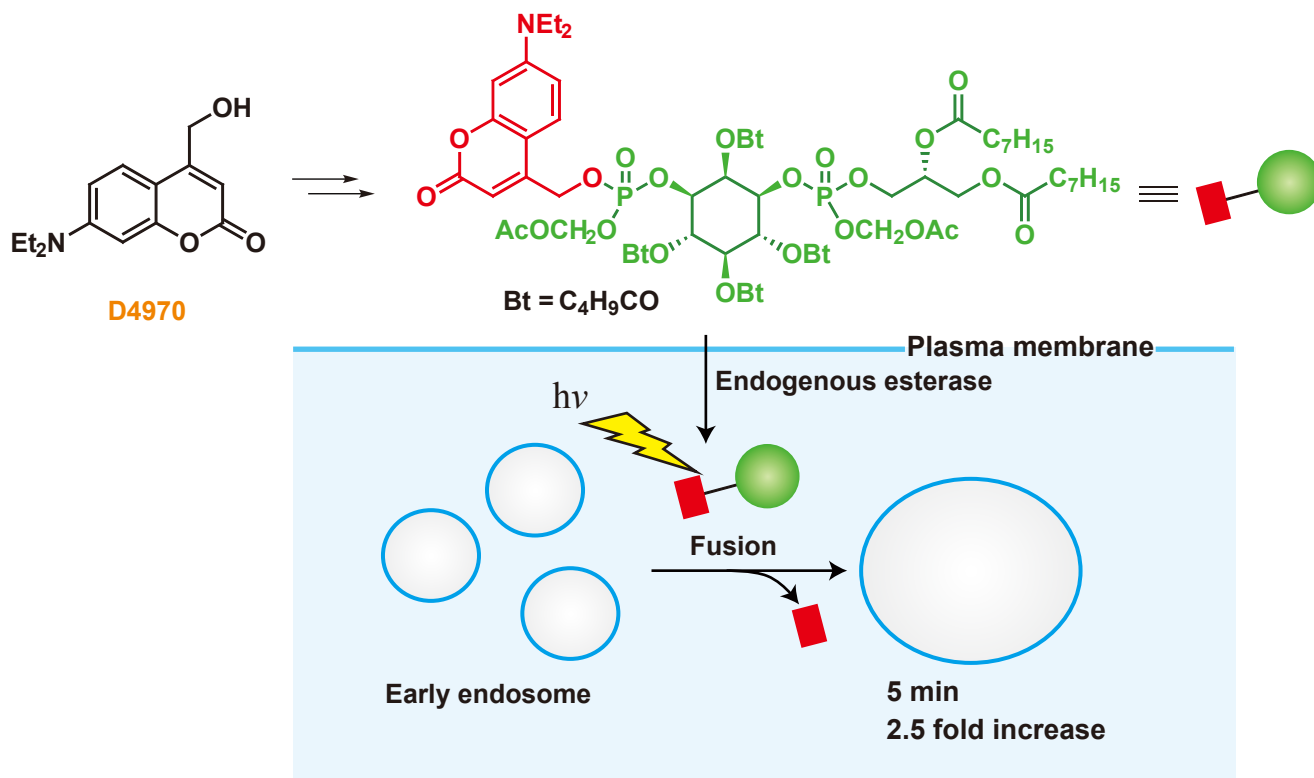


**1-(6-Nitro-1,3-benzodioxol-
5-yl)ethanol**
1g / 5g
[N1069]

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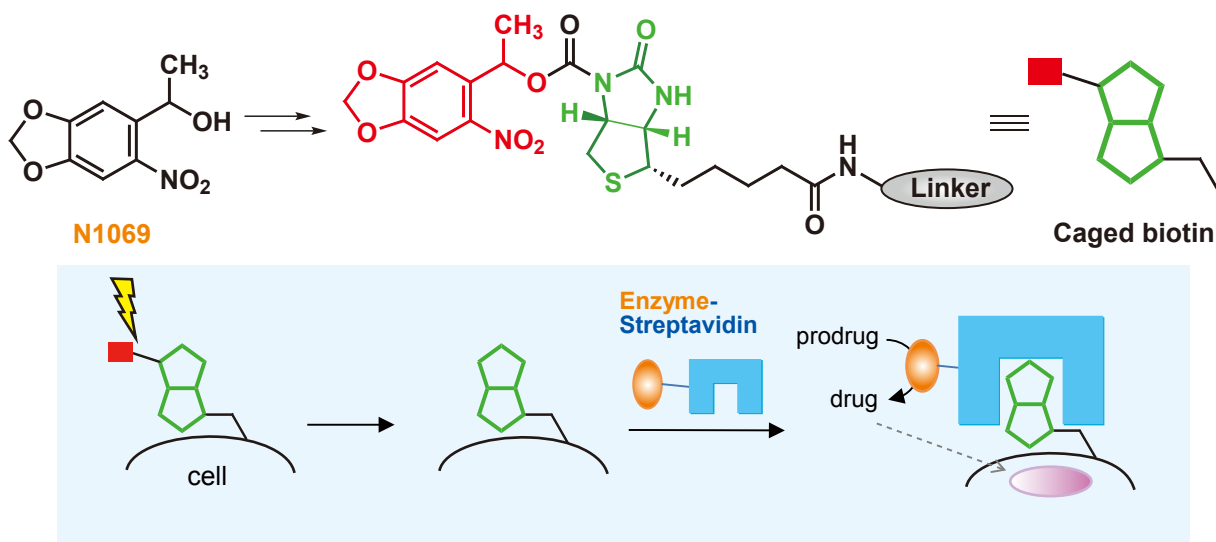
Applications

Photoinducing Endosomal Fusion by a Caged Phosphatidylinositol 3-Phosphate



D. Subramanian, V. Laketa, R. Müller, C. Tischer, S. Zarbakhsh, R. Pepperkok, C. Schultz, *Nat. Chem. Biol.* **2010**, *6*, 324.

Application toward cells Using a Caged Biotin-conjugate



T. Terai, E. Maki, S. Sugiyama, Y. Takahashi, H. Matsumura, Y. Mori, T. Nagano, *Chem. Biol.* **2011**, *18*, 1261.

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photolabile

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