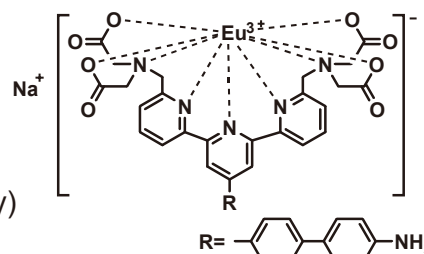


Fluorescent Labeling Dyes

Europium Chelate Complex

A2083 is easily labeled to an amino group of protein etc. after conversion to DTBTA-Eu³⁺ by cyanuric chloride.

- **Red fluorescence** derived from Europium (Eu³⁺)
($\lambda_{\text{ex, max}} = 335 \text{ nm}$, $\lambda_{\text{em, max}} = 616 \text{ nm}$)
- Long fluorescent life time (suitable for time-resolved fluorometry)
- Stable fluorescence in various aqueous buffers
- No cross talk of excitation light



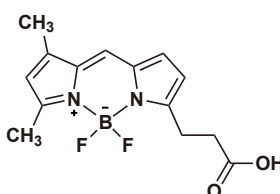
ATBTA-Eu³⁺

10mg **[A2083]**

Reference T. Nishioka, J. Yuan, Y. Yamamoto, K. Sumitomo, Z. Wang, K. Hashino, C. Hosoya, K. Ikawa, G. Wang, K. Matsumoto, *Inorg. Chem.* **2006**, 45, 4088.

Boron Dipyrromethenes

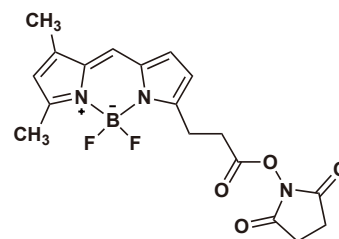
D5554 and **D5555** emitting **green fluorescence** ($\lambda_{\text{ex}} = 490 \text{ nm}$ ($\lambda_{\text{ex, max}} = 505 \text{ nm}$), $\lambda_{\text{em, max}} = 513 \text{ nm}$) can be labeled to amino groups.



BDP FL

5mg / 25mg

[D5554]



BDP FL NHS Ester

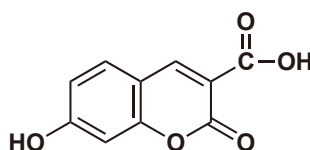
5mg / 25mg

[D5555]

Reference K. Kitamura, H. Itoh, K. Sakurai, S. Dan, M. Inoue, *J. Am. Chem. Soc.* **2018**, 140, 12189.

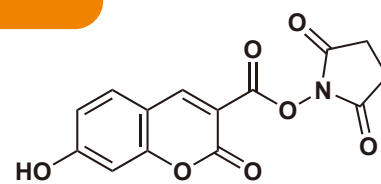
Coumarins

H1352 and **S0866** which produce **blue fluorescence** ($\lambda_{\text{ex, max}} = 342 \text{ nm}$, $\lambda_{\text{em, max}} = 447 \text{ nm}$, in pH4 buffer) can be labeled to amino groups. Fluorescent spectra depend on pH.



7-Hydroxycoumarin-3-carboxylic Acid

200mg / 1g **[H1352]**

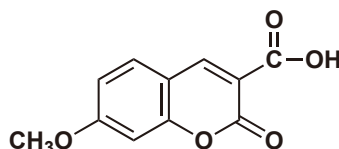


7-Hydroxycoumarin-3-carboxylic Acid N-Succinimidyl Ester

200mg / 1g **[S0866]**

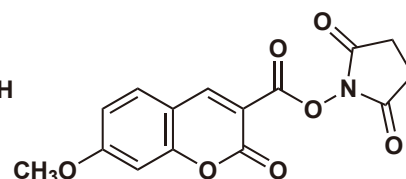
References O. S. Wolfbeis, E. Koller, P. Hoghmuth, *Bull. Chem. Soc. Jpn.* **1985**, 58, 731.
Y. C. Lee *et al.*, *J. Biol. Chem.* **2000**, 35, 26772.

M2233 and **S0867** which produce **blue fluorescence** ($\lambda_{\text{ex, max}} = 360 \text{ nm}$, $\lambda_{\text{em, max}} = 410 \text{ nm}$, in pH7 buffer) can be labeled to amino groups. Fluorescent spectra do not depend on pH.



7-Methoxycoumarin-3-carboxylic Acid

100mg / 1g **[M2233]**



7-Methoxycoumarin-3-carboxylic Acid N-Succinimidyl Ester

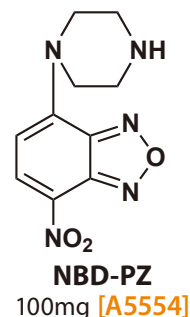
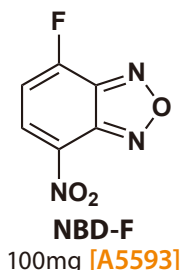
100mg / 1g **[S0867]**

Reference M. Kitamatsu, M. Futami, M. Sisido, *Chem. Commun.* **2010**, 46, 761.

Benzofrazans

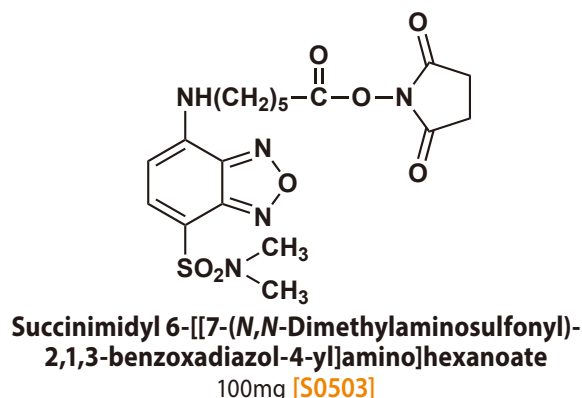
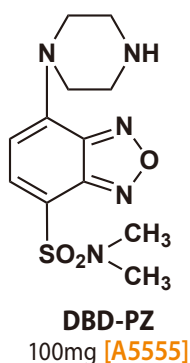
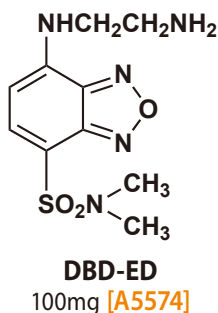
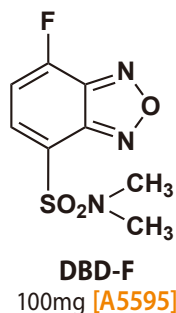
A5593, **A5592** and **A5554** emit **green-yellow fluorescence** ($\lambda_{\text{ex, max}} = \text{ca. } 470 \text{ nm}$, $\lambda_{\text{em, max}} = \text{ca. } 530 \text{ nm}$) due to nitrobenzoxadiazole (NBD) core.

- **A5592** and **A5593** can be labeled to amino groups or thiol groups.
- **A5554** can be labeled to carboxyl groups by amide bond formation using a coupling agent.



A5595, **A5574**, **A5555** and **S0503** emit **yellow fluorescence** ($\lambda_{\text{ex, max}} = \text{ca. } 380 \text{ nm}$, $\lambda_{\text{em, max}} = \text{ca. } 510 \text{ nm}$) due to dimethylaminosulfonylbenzoxadiazole (DBD) core.

- **A5595** can be labeled to amino groups or thiol groups.
- **A5574** and **A5555** can be labeled to carboxyl groups by amide bond formation using a coupling agent.
- **S0503** can be labeled to amino groups due to the active *N*-hydroxysuccinimide group.

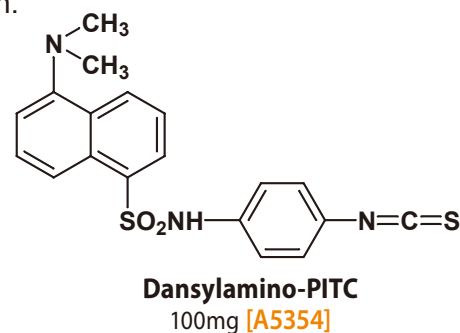
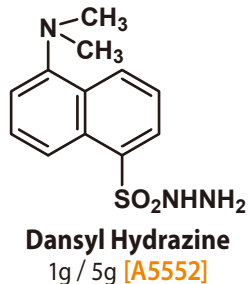
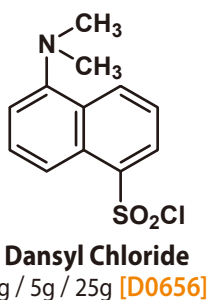


References K. Imai, *Yakugaku Zasshi (J. Pharm. Soc. Jpn.)* **2003**, 123, 901.
S. Uchiyama, T. Santa, N. Okiyama, T. Fukushima, K. Imai, *Biomed. Chromatogr.* **2001**, 15, 295.
T. Kurihara et al., *J. Biol. Chem.* **2012**, 287, 24113
B. Xu et al., *Langmuir* **2013**, 29, 15191

Dansyls

D0656, **A5552** and **A5354** emit **green-yellow fluorescence** ($\lambda_{\text{ex, max}} = \text{ca. } 335 \text{ nm}$, $\lambda_{\text{em, max}} = \text{ca. } 460 \text{ nm}$, dependent on the environment) due to dimethylaminonaphthalene sulfonyl (DANSYL) core.

- **D0656** can be labeled to amino groups by sulfonamide bond formation.
- **A5552** can be labeled to carbonyl groups by hydrazone bond formation.
- **A5354** can be labeled to amino groups by thiourea bond formation.

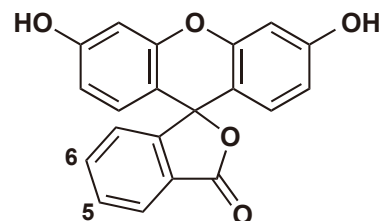


References T. Hiratsuka, *Tanpakushitsu Kakusan Koso (Protein, Nucleic Acid and Enzyme)* **1997**, 42, 1069.
B. K.-K. Fung, L. Stryer, *Biochemistry* **1978**, 17, 5241.
V. R. N. Munasinghe, J. E. T. Corrie, G. Kelly, S. R. Martin, *Bioconjugate Chem.* **2007**, 18, 231.
S. Siricilla, K. Mitachi, K. Skorupinska-Tudek, E. Swiezewska, M. Kurosu, *Anal. Biochem.* **2014**, 461, 36.

Fluoresceins

Fluoresceins emit **green fluorescence** ($\lambda_{\text{ex, max}} = 494 \text{ nm}$, $\lambda_{\text{em, max}} = 521 \text{ nm}$).

- **F0026**, **F0783** and **F0784** can be labeled to amino groups or thiol groups.¹⁾
- **C2477** and **C2478** can be labeled to amino groups by amide bond formation using a coupling agent.²⁾
- **C2479** can be labeled to amino groups without a coupling agent due to the active *N*-hydroxysuccinimide group.³⁾
- **F0810** can be labeled to thiol groups due to the maleimide group.⁴⁾
- **A0306** and **A0864** can be labeled to carboxyl groups by amide bond formation using a coupling agent.⁵⁾
- **F1222** can be labeled to azido groups via click reaction.⁶⁾



5 = -NCS	Fluorescein 5-Isothiocyanate (isomer I) (=5-FITC)	100mg / 1g	[F0026]
6 = -NCS	Fluorescein 6-Isothiocyanate (isomer II) (=6-FITC)	100mg	[F0783]
5or6 = -NCS	Fluorescein Isothiocyanate (mixture of 5- and 6- isomers)	100mg / 1g	[F0784]
5 = -COOH	5-Carboxyfluorescein Hydrate (=5-FAM)	100mg	[C2477]
6 = -COOH	6-Carboxyfluorescein Hydrate (=6-FAM)	100mg	[C2478]
5 = -CO-NHS	5-Carboxyfluorescein <i>N</i>-Succinimidyl Ester	20mg / 100mg	[C2479]
5 = -maleimide	Fluorescein-5-maleimide	25mg	[F0810]
5 = -NH₂	5-Aminofluorescein (isomer I)	1g / 5g	[A0306]
6 = -NH₂	6-Aminofluorescein (isomer II)	1g 24,100円 / 5g	[A0864]
5 = -CONH-Alkyne	5-FAM-Alkyne	5mg / 25mg	[F1222]

References 1) H. Rinderknecht, *Nature* **1962**, 193, 167.

2) S. Onoue, B. Liu, Y. Nemoto, M. Hirose, T. Yajima, *Anal. Sci.* **2006**, 22, 1531.

3) P. Breeuwer, J. Drocourt, F. M. Rombouts, T. Abe, *Appl. Environ. Microbiol.* **1996**, 62, 178.

4) T. Cihlar, E. S. Ho, *Anal. Biochem.* **2000**, 283, 49.

5) W. B. Dandliker, A. N. Hicks, S. A. Levison, R. J. Brawn, *Biochem. Biophys. Res. Commun.* **1977**, 74, 538.

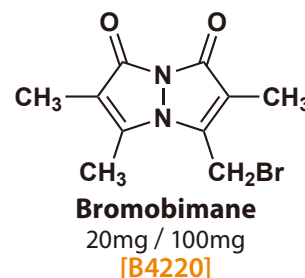
6) W. M. Rink, F. Thomas, *Org. Lett.* **2018**, 20, 7493.

Bimane

B4220 emits **blue fluorescence** ($\lambda_{\text{ex, max}} = 390 \text{ nm}$, $\lambda_{\text{em, max}} = 480 \text{ nm}$, only when bonding to a thiol group).

B4220 can be specifically labeled to thiol groups.

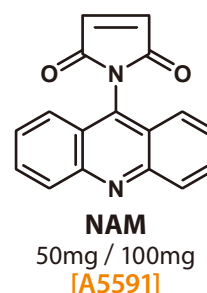
References N. S. Kosower, E. M. Kosower, G. L. Newton, H. M. Ranney, *Proc. Natl. Acad. Sci. USA* **1979**, 76, 3382.
H. Yano, S. Kuroda, B. B. Buchanan, *Proteomics* **2002**, 2, 1090.



Acridine

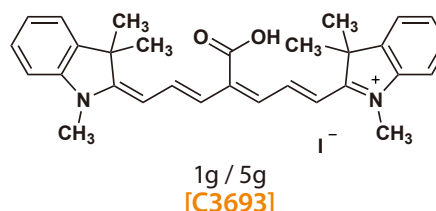
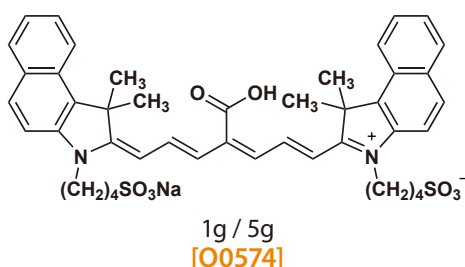
A5591 can be labeled to thiol groups and emits **blue fluorescence** ($\lambda_{\text{ex, max}} = 365 \text{ nm}$, $\lambda_{\text{em, max}} = 440 \text{ nm}$).

References T. Konno, T. Kamata, H. Ohnishi, H. Meguro, *Anal. Sci.* **1993**, 9, 871.
M. Hashida et al., *J. Pharm. Sci.* **2012**, 101, 3398.



Cyanines

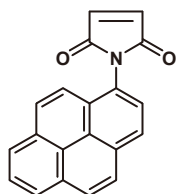
O0574 emits **near-infrared fluorescence** ($\lambda_{\text{ex, max}} = 790 \text{ nm}$, $\lambda_{\text{em, max}} = 820 \text{ nm}$) similar to Indocyanine Green (ICG).
C3693 emits **near-infrared fluorescence** ($\lambda_{\text{ex, max}} = 748 \text{ nm}$, $\lambda_{\text{em, max}} = 779 \text{ nm}$).



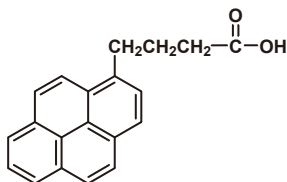
Pyrenes

Pyrenes emit **blue fluorescence** ($\lambda_{\text{ex, max}} = 342 \text{ nm}$, $\lambda_{\text{em, max}} = 386 \text{ nm}$).

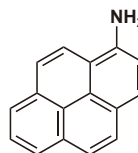
- **P1214** can be labeled to thiol groups.¹⁾
- **P1213** can be labeled to amino groups by amide bond formation using a coupling agent.²⁾
- **A1632** can be labeled to carboxyl groups by amide bond formation using a coupling agent.³⁾
- **E0939** and **P2226** can be labeled to azido groups via click reaction.⁴⁾
- **A2791** can be labeled to terminal alkynes or cyclooctynes via click reaction.⁵⁾



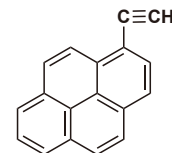
N-(1-Pyrenyl)-maleimide
250mg
[P1214]



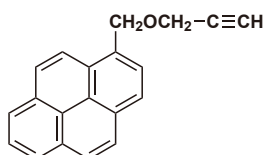
1-Pyrenebutyric Acid
1g / 5g
[P1213]



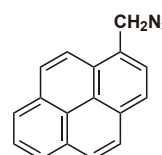
1-Aminopyrene
1g / 5g / 25g
[A0632]



1-Ethynylpyrene
200mg / 1g
[E0939]



1-[(2-Propynyloxy)methyl]pyrene
200mg / 1g
[P2226]

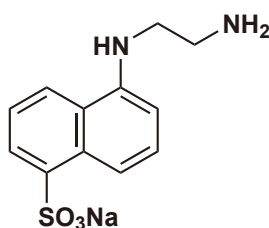


1-(Azidomethyl)pyrene
200mg / 1g
[A2791]

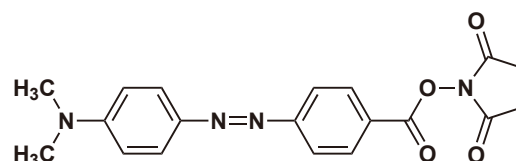
References 1) C. Wu, L. R. Yarbrough, F. Y. H. Wu, *Biochemistry* **1976**, 15, 2863. 4) P. Wessig, P. Müller, et al., *Biochim. Biophys. Acta* **2011**, 1808, 2781.
2) K. Yamana, M. Nakamura, et al., *Bioconjugate Chem.* **2002**, 13, 1266. 5) Y. Xia, L. Peng, et al., *J. Med. Chem.* **2012**, 55, 5642.
3) M. Kumar et al., *Dalton Trans.* **2012**, 41, 408.

Others

- **S0891** can be labeled to carboxyl groups by amide bond formation using a coupling agent, and emits **blue fluorescence** ($\lambda_{\text{ex, max}} = 336 \text{ nm}$, $\lambda_{\text{em, max}} = 490 \text{ nm}$).
- **S0857** can bind chemically to amino groups by amide bond formation, and has been applied to the synthesis of FRET probes because working as a dark quencher for **S0891**.¹⁾



1,5-EDANS Hydrate
100mg
[S0891]



DABCYL N-Succinimidyl Ester
200mg / 1g
[S0857]

References 1) G. T. Wang, E. Matayoshi, H. J. Huffaker, G. A. Krafft, *Tetrahedron Lett.* **1990**, 31, 6493.
2) A. Pessi et al., *Anal. Biochem.* **1996**, 240, 60.

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