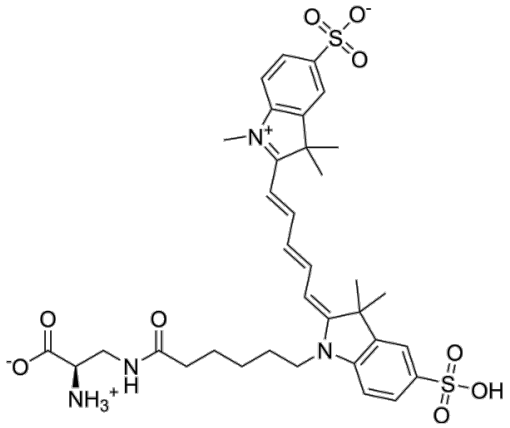
Product Data Sheet

Product Name: sCy5DA
Cat. No.: GC79854

Chemical Properties

Cas. No.			
Formula	$C_{35}H_{44}N_4O_9S_2$	M.Wt	728.88
Solubility		Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Background

sCy5DA is a is a fluorescent D-amino acid. sCy5DA incorporates into bacterial peptidoglycan layers and cross-links via transpeptidase action, replacing peptidoglycan stem peptide D-amino acids. sCy5DA labels live bacterial cell walls, nascent peptidoglycan biosynthesis sites, and diverse bacterial species including Gram-negative, Gram-positive, and mycobacteria (Ex/Em = 646/665 nm) [1] [2] [3].

In Vitro, sCy5DA (0.2 mM; 45 min) is incorporated into peptidoglycan in a growth-dependent manner by live P. gingivalis W83, with negligible incorporation in heat-killed cells and reduced incorporation in

bacteriostatic conditions[1]. sCy5DA (0.2 mM; 45 min labelling, 4 h post-labelling) labelled P. gingivalis W83 retains strong fluorescence for at least 4 h under anaerobic conditions, with slight intensity decreases linked to bacterial growth-related peptidoglycan synthesis[1]. sCy5DA (100 μM; ~2 h (continuous labeling); ~15 min (pulse labeling)) effectively labels the cell walls of Streptococcus pneumoniae D39V cells during both continuous and pulse incubation, supporting super-resolution SMLM imaging[2]. sCy5DA (0.5 mM; 20 min) efficiently incorporates into the cell wall of Bacillus subtilis cells, enabling clear visualization of cell outlines and septa via widefield microscopy during midexponential growth[3]. sCy5DA (0.5 mM; 5 min) efficiently labels nascent peptidoglycan in Caulobacter crescentus cells during a pulse, enabling visualization of cell cycle-specific PG growth patterns with nanoscale resolution via SMLM[3]. sCy5DA (0.1-1 mM; 1-2 cell cycles) efficiently incorporates into the cell walls of diverse bacterial species during long-pulse incubations, enabling visualization of cell wall structures via widefield and SMLM imaging[3].

References:

[1]. Lewis B, et al. Labelling of a live obligate anaerobe using fluorescent D-amino acids. Anaerobe. 2025;91:102939.
[2]. Juliette Griffié, et al. An unsupervised deep learning framework encodes super-resolved image features to decode bacterial cell cycle. Biorxiv. March 14, 2024.
[3]. Zhang C, et al. Fluorescent d-Amino Acids for Super-resolution Microscopy of the Bacterial Cell Wall. ACS Chem Biol. 2022 Sep 16;17(9):2418-2424.