

Product information: SPY555-BG (SC204)

SPY555-benzylguanine derivative for self-labelling tag staining

Introduction

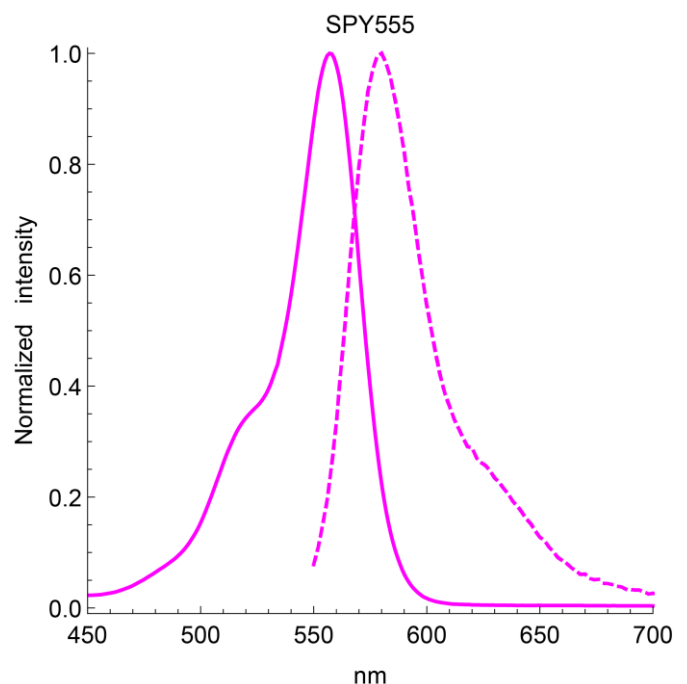
Benzylguanine (BG) is the substrate of the self-labeling tag SNAP-tag™*. Upon reaction with a BG derivative, SNAP-tag™* forms a covalent bond with the substrate and releases guanine. It allows to permanently attach a fluorescent label to any protein of interest (POI) expressed as SNAP-tag™* fusion.

SPY555-BG is the benzylguanine derivative of our SPY555 fluorophore. It emits light in the orange part of the spectrum, it is fluorogenic and well suited for STED and SIM superresolution imaging. SPY555-BG can be imaged with standard TMR or Cy3 filtersets. It can be used for widefield, confocal, SIM or STED imaging in living or fixed cells and tissue. SPY555-BG is an alternative to SNAP-Cell® TMR-Star, it has faster labeling kinetics. Contains 1 vial of SPY555-BG (35 nmol, lyophilized).

SPY™

Properties

Absorbance maximum λ_{abs}	555 nm
Fluorescence maximum λ_{fl}	580 nm
Works on fixed cells?	yes
Quantity	35 nmol
Fluorescence lifetime	2.4 ns
STED depletion wavelength	666 or 775 nm
Shipping	room temperature
Storage	-20°C



Storage & Handling

Store the BG-substrate at -20°C or below upon receipt. The lyophilized BG-substrate is stable for >1 week at room temperature and for at least 6 months at -20°C. Reconstitute SPY555-BG using anhydrous DMSO. We recommend to use newly or freshly opened and anhydrous DMSO to prepare the stock solution. In contact with air and moisture, DMSO produces decay products which can strongly reduce the shelf life of the BG-substrate in solution, even at -20°C. Keep the stock solution of the BG-substrate below -20°C after use. Vials should be allowed to warm to room temperature before opening. When reconstituted and stored properly, the stock solution is stable for up to 3 months. Note: DMSO solutions should be handled with particular caution as DMSO is known to facilitate the entry of organic molecules into tissues. Dispose of these reagents in compliance with all pertaining local regulations.

Labelling Protocol

Note: Recommendations in this protocol should be used as a starting point, and optimal labeling conditions for each cell type should be determined empirically.

1. Prepare DMSO stock solution. Add 35 μ L of anhydrous DMSO to the BG-substrate vial to prepare a 1 mM stock solution. We recommend to use newly or freshly opened and anhydrous DMSO to prepare the DMSO stock solution. In contact with air and moisture, DMSO produces decay products which can strongly reduce the shelf life of the BG-substrate in solution, even at -20°C . At this stage, the solution can be colored or not, this has no influence on the performance of the BG-substrate. After use, this solution should be stored at -20°C or below. Do not divide the DMSO stock solution into small aliquots, they will decay faster and the BG-substrate is not altered by multiple freeze-thaw cycles. When stored properly, this stock solution is stable for 3 months.

2. Prepare the staining solution. Dilute the BG-substrate DMSO stock solution 1:500 (final concentration 2 μM) in your usual cell culture medium (e.g. DMEM + 10% fetal bovine serum) and vortex briefly. For best performance serum or 0.5% BSA should be present in the cell culture medium. Proceed quickly to step 3. If the dilution is not performed in a single step, please use DMSO to prepare the intermediate dilution as using aqueous buffers to prepare the intermediate dilution will lead to the formation of BG-substrate aggregates. Since staining efficiency can depend on the cell line, it is recommended to stain cells with 1:500 dilution at the first attempt and then optimize the dilution factor in further experiments until an optimal staining is achieved. The usual range of BG-substrate concentration for live cell labelling is 1-10 μM . Use only freshly made staining solution, and do not use it multiple times.

3. Cell preparation and staining. Grow cells transiently transfected or stably expressing a SNAP-tag^{TM*} fusion-protein on coverslips, glass bottom dish or glass bottom multi-well plates as usual. When cells have reached the desired density or expression level of the SNAP-tag^{TM*} fusion-protein, replace the culture medium by the **staining solution** freshly prepared under step 2 ensuring that all the cells are covered with the solution. Place the cells in the incubator at 37°C in a humidified atmosphere containing 5% CO_2 for 30 minutes to 1h.

Note: Before imaging, SPY555-BG stained cells can be fixed by any fixation method after the labelling step is completed. Additional immunolabeling or probe labeling can be performed after the fixation step using standard protocols.

4. Cell imaging. Imaging of SPY555-BG labeled cells is best performed using standard TMR or Cy3 settings. After labelling, the live cells can be immediately imaged without the need for washing steps. Optionally, a simple washing step consisting of replacing once the labelling solution by fresh culture medium which does not contain the BG-substrate may improve the signal to noise ratio. If the live cells were washed before imaging, the staining will last depending on your SNAP-tag^{TM*} fusion protein turnover rate.

*SNAP-tagTM and SNAP-Cell[®] are registered trademarks of New England Biolabs, Inc.

Spirochrome products are high-quality reagents and materials intended for research purposes only. These products must be used by, or directly under the supervision of a technically qualified individual experienced in handling potentially hazardous chemicals. Please read the Material Safety Data Sheet provided for each product; other regulatory considerations may apply. Spirochrome products and product applications are covered by patents and patents pending. SPY is a registered trademark

Limited Use Label License: For research use only. Not intended for any animal or human therapeutic or diagnostic use. The purchase of this product conveys to the buyer the non-transferable right to use the purchased amount of the product and components of the product in research conducted by the buyer (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes. The buyer may transfer information or materials made through the use of this product to a scientific collaborator, provided that such transfer is not for any Commercial Purpose, and that such collaborator agrees in writing (a) to not transfer such materials to any third party, and (b) to use such transferred materials and/or information solely for research and not for Commercial Purposes. Commercial Purposes means any activity by a party for consideration and may include, but is not limited to: (1) use of the product or its components in manufacturing; (2) use of the product or its components to provide a service, information, or data; (3) use of the product or its components for therapeutic, diagnostic or prophylactic purposes; or (4) resale of the product or its components, whether or not such product or its components are resold for use in research. Spirochrome will not assert a claim against the buyer of infringement of the above patents based upon the manufacture, use or sale of a therapeutic, clinical diagnostic, vaccine or prophylactic product developed in research by the buyer in which this product or its components was employed, provided that neither this product nor any of its components was used in the manufacture of such product. If the purchaser is not willing to accept the limitations of this limited use statement, Spirochrome is willing to accept return of the unused product with a full refund. For information on purchasing a license to this product for purposes other than research, contact Spirochrome: Spirochrome AG, Postfach 213, 8620 Stein am Rhein, Switzerland, Email: info@spirochrome.com