

**AUTODOT™ Visualization Dye**  
**Monodansylpentane (MDH) Lipid Droplet Staining Tool**  
Catalog # SM1000a**Specification**

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**AUTODOT™ Visualization Dye - Product Information****Description**

AUTODOT™ preferentially segregates into the neutral lipid cores of LDs and emits blue fluorescence, compatible with concurrent use of green and red fluorescent reporters in live-cell imaging. It can be used for visualizing LDs in cell cultures and fixed tissues, making it a versatile marker for LDs in fluorescence microscopy. Major lipid-based pathways such as autophagy, lipolysis, fatty acid oxidation, ketogenesis, and cholesterol synthesis are amenable to tracking by AUTODOT™.

Concentration **0.1M**

**Target/Specificity**

AUTODOT™ is a fluorophore that displays selective labeling of lipid droplets (LDs).

**Format**

0.1M MDH supplied in DMSO.

**Storage**

Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

**Precautions**

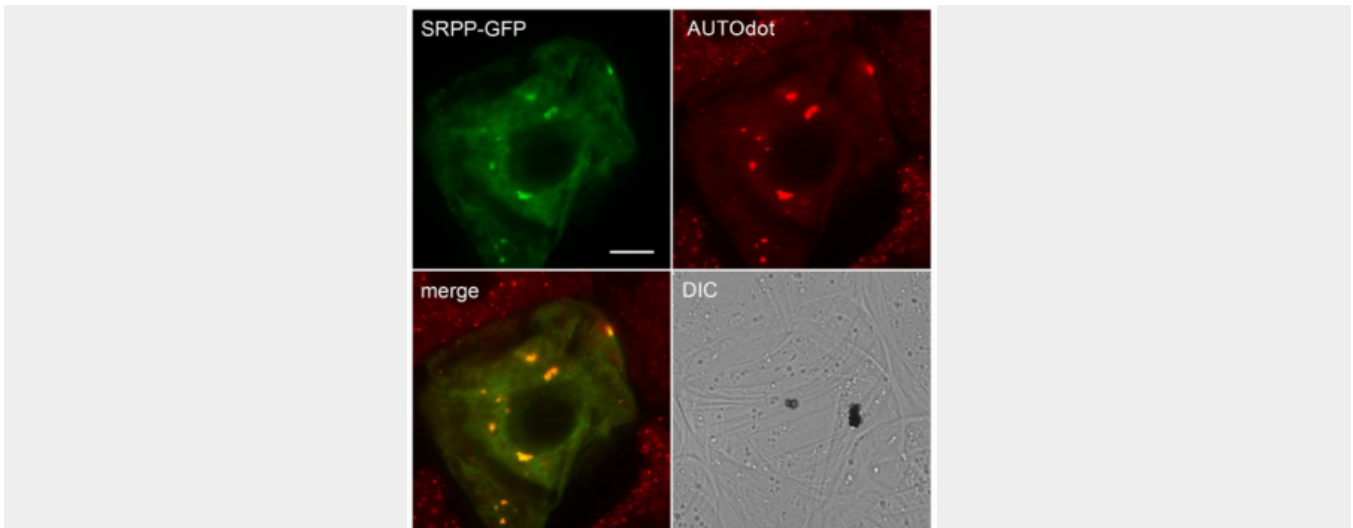
AUTODOT™ Visualization Dye is for research use only and not for use in diagnostic or therapeutic procedures.

**AUTODOT™ Visualization Dye - Protocols**

Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

**AUTODOT™ Visualization Dye - Images**  

Localization of guayule Small Rubber Particle Protein (SRPP-GFP) to lipid droplets (LD) in a tobacco cell. Shown are representative epifluorescence micrographs of tobacco (*Nicotiana tabacum*) Bright Yellow-2 (BY-2) cells, which serve as a well-characterized system for studying protein localization in plant cells. BY-2 cells have been transiently transformed via biolistic bombardment with plasmid DNA-encoding full-length guayule SRPP12 C-terminally fused to the N-terminus of the Green Fluorescent Protein (SRPP-GFP). Following bombardment, cells have been incubated in linoleic acid, which induces an increase in the number and size of LD in these cells, and then incubated with AUTODOT™, which is a blue-fluorescing marker dye for LD in living cells. The fluorescence attributable to the AUTODOT™ stained LD is false colorized red. The yellow color in the merged images represents obvious co-localizations between SRPP-GFP and AUTODOT™ -stained LD, most of which have coalesced, due to the ectopic overexpression of the fusion protein. These larger coalesced structures are not observed in the neighboring non-transformed cells wherein LD are usually dispersed throughout the cytosol. Similar coalescence of LD has been observed in BY-2 cells transiently overexpressing Arabidopsis LDAP, as well as in various other cells types in which other LD proteins, such as Perilipin-1 and the Ancient Ubiquitous Protein-1, are ectopically overexpressed. Shown also is the corresponding differential interference contrast image. Bar = 10 µm. *Plant Signaling & Behavior* 8, e27141; 2013

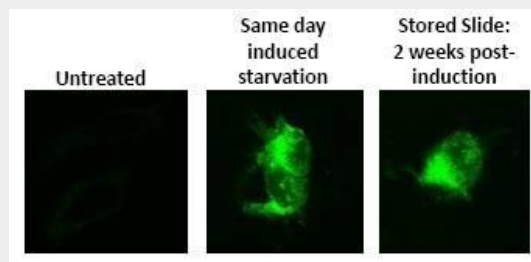


Image of untreated and autophagy induced mouse cerebral cells analyzed by fluorescence microscopy using an inverted microscope equipped with a filter system (excitation filter: 380-420 nm, barrier filter: 450 nm).

### **AUTODOT™ Visualization Dye - Background**

Lipid droplets (LDs) are dynamic cellular organelles that store neutral lipids, acting at the interface of lipids and energy metabolism. Abnormal lipid droplet dynamics are associated with the pathophysiology of prevalent metabolic diseases, such as obesity, diabetes, atherosclerosis, fatty liver, and cancer. Research tools such as AUTODOT™ have been essential to emerging research that has identified the biologically relevant protein and lipid compositions of LDs in different cell types and physiological states, and revealed key interactions between LDs and other organelles [e.g. peroxisomes, endosomes, endoplasmic reticulum (ER), plasma membrane and mitochondria].

**AUTODOT™ Visualization Dye - Citations**

- [Partitioning into ER membrane microdomains impacts autophagic protein turnover during cellular aging](#)
- [Fluorescent Probe as Dual-Organelle Localizer Through Differential Proton Gradients Between Lipid Droplets and Mitochondria](#)
- [Development of a whole-cell biosensor for ethylene oxide and ethylene](#)
- [Spatial mapping of hepatic ER and mitochondria architecture reveals zoned remodeling in fasting and obesity](#)
- [Giant organelle vesicles to uncover intracellular membrane mechanics and plasticity](#)
- [A metabolically controlled contact site between vacuoles and lipid droplets in yeast](#)
- [Lipid droplets in leaves contain myosin-binding proteins and enzymes associated with furan-containing fatty acid biosynthesis](#)
- [E and M SARS-CoV-2 membrane protein expression and enrichment with plant lipid droplets](#)
- [Binding of perilipin 3 to membranes containing diacylglycerol is mediated by conserved residues within its PAT domain](#)
- [ARL8B mediates lipid droplet contact and delivery to lysosomes for lipid remobilization](#)
- [A dynamic actin cytoskeleton is required to prevent constitutive VDAC-dependent MAPK signalling and aberrant lipid homeostasis](#)
- [Loss of RREB1 in pancreatic beta cells reduces cellular insulin content and affects endocrine cell gene expression](#)
- [Fatty Acyl Coenzyme A Synthetase Fat1p Regulates Vacuolar Structure and Stationary-Phase Lipophagy in Saccharomyces cerevisiae](#)
- [Triglyceride lipolysis triggers liquid crystalline phases in lipid droplets and alters the LD proteome](#)
- [Interaction between VPS13A and the XK scramblase is important for VPS13A function in humans](#)
- [Intravital Subcellular Microscopy of the Mammary Gland](#)
- [The Antidepressant Sertraline Induces the Formation of Supersized Lipid Droplets in the Human Pathogen](#)
- [Regulated targeting of the monotopic hairpin membrane protein Erg1 requires the GET pathway](#)
- [Mechanism of transcription regulation by Acinetobacter baumannii HpaR in the catabolism of p-hydroxyphenylacetate](#)
- [SEED LIPID DROPLET PROTEIN1, SEED LIPID DROPLET PROTEIN2, and LIPID DROPLET PLASMA MEMBRANE ADAPTOR mediate lipid droplet-plasma membrane tethering](#)
- [Recruitment of Peroxin 14 to lipid droplets affects lipid storage in Drosophila](#)
- [Sterol Metabolism Differentially Contributes to Maintenance and Exit of Quiescence](#)
- [Cue5 Piggybacks on Lipid Droplets for Its Vacuolar Degradation during Stationary Phase Lipophagy](#)
- [Visualizing Cytoskeleton-Dependent Trafficking of Lipid-Containing Organelles in Drosophila Embryos](#)
- [Identification of novel lipid droplet factors that regulate lipophagy and cholesterol efflux in macrophage foam cells](#)
- [SNX19 restricts endolysosome motility through contacts with the endoplasmic reticulum](#)
- [An in vivo reporter for tracking lipid droplet dynamics in transparent zebrafish](#)
- [Kinship of conditionally immortalized cells derived from fetal bone to human bone-derived mesenchymal stroma cells](#)
- [EARLY RESPONSIVE TO DEHYDRATION 7 Localizes to Lipid Droplets via Its Senescence Domain](#)
- [Lipid Droplets Are a Physiological Nucleoporin Reservoir](#)
- [Decoration of myocellular lipid droplets with perilipins as a marker for in vivo lipid droplet dynamics: A super-resolution microscopy study in trained athletes and insulin resistant individuals](#)
- [Seipin traps triacylglycerols to facilitate their nanoscale clustering in the endoplasmic reticulum membrane](#)

- [Nitrogen Starvation and Stationary Phase Lipophagy Have Distinct Molecular Mechanisms](#)
- [XK is a partner for VPS13A: a molecular link between Chorea-Acanthocytosis and McLeod Syndrome](#)
- [The ATGL lipase cooperates with ABHD5 to mobilize lipids for hepatitis C virus assembly](#)
- [Functional interrelationships between carbohydrate and lipid storage, and mitochondrial activity during sporulation in \*Saccharomyces cerevisiae\*](#)
- [The CoO oxidoreductase FSP1 acts parallel to GPX4 to inhibit ferroptosis](#)
- [PNPLA3, CGI-58, and Inhibition of Hepatic Triglyceride Hydrolysis in Mice](#)
- [Mdm1 Maintains Endoplasmic Reticulum Homeostasis by Spatially Regulating Lipid Droplet Biogenesis](#)
- [Cerebellar Ataxia Disease-Associated Snx14 Promotes Lipid Droplet Growth at ER-droplet Contacts](#)
- [Inhibition of Lipid Droplet Formation by Ser/Thr Protein Phosphatase PPM1D Inhibitor, SL-176](#)
- [An alternative membrane topology permits lipid droplet localization of peroxisomal fatty acyl-CoA reductase 1](#)
- [Combined N-terminal androgen receptor and autophagy inhibition increases the antitumor effect in enzalutamide sensitive and enzalutamide resistant prostate cancer cells](#)
- [Super-resolution microscopy localizes perilipin 5 at lipid droplet-mitochondria interaction sites and at lipid droplets juxtaposing to perilipin 2](#)
- [PUX10 Is a Lipid Droplet-Localized Scaffold Protein That Interacts With CELL DIVISION CYCLE48 and Is Involved in the Degradation of Lipid Droplet Proteins](#)
- [PNPLA3 variant M148 causes resistance to starvation-mediated lipid droplet autophagy in human hepatocytes](#)
- [PCYT1A Regulates Phosphatidylcholine Homeostasis from the Inner Nuclear Membrane in Response to Membrane Stored Curvature Elastic Stress](#)
- [SNX14 mutations affect endoplasmic reticulum associated neutral lipid metabolism in autosomal recessive spinocerebellar ataxia 20](#)
- [Rab18 Promotes Lipid Droplet \(LD\) Growth by Tethering the ER to LDs Through SNARE and NRZ Interactions](#)
- [Long-Chain Polyprenols Promote Spore Wall Formation in](#)
- [Adhesion-induced eosinophil cytolysis requires the receptor-interacting protein kinase 3 \(RIPK3\)-mixed lineage kinase-like \(MLKL\) signaling pathway, which is counterregulated by autophagy](#)
- [Identification of seipin-linked factors that act as determinants of a lipid droplet subpopulation](#)
- [Aurora A kinase phosphorylates Hec1 to regulate metaphase kinetochore-microtubule dynamics](#)
- [Regulation of lipid droplets by metabolically controlled Ldo isoforms](#)
- [A Novel Assay Reveals a Maturation Process during Ascospore Wall Formation](#)
- [Pet10p Is a Yeast Perilipin That Stabilizes Lipid Droplets and Promotes Their Assembly](#)
- [SNAP-tagged Chikungunya Virus Replicons Improve Visualisation of Non-Structural Protein 3 by Fluorescence Microscopy](#)
- [\$\beta\$ -adrenergic induction of lipolysis in hepatocytes is inhibited by ethanol exposure](#)
- [Novel replicons and trans-encapsidation systems for Hepatitis C Virus proteins live imaging and virus-host interaction proteomics](#)
- [Staining of Lipid Droplets with Monodansylpentane](#)
- [Mouse fat storage-inducing transmembrane protein 2 \(FIT2\) promotes lipid droplet accumulation in plants](#)
- [Spatial control of lipid droplet proteins by the ERAD ubiquitin ligase Doa10](#)
- [Lipid Droplet-Associated Proteins \(LDAPs\) Are Required for the Dynamic Regulation of Neutral Lipid Compartmentation in Plant Cells](#)
- [Role for Lipid Droplet Biogenesis and Microlipophagy in Adaptation to Lipid Imbalance in Yeast](#)
- [The seipin complex Fld1/Ldb16 stabilizes ER-lipid droplet contact sites](#)

- [Lipid partitioning at the nuclear envelope controls membrane biogenesis.](#)
- [Hdac3-Deficiency Increases Marrow Adiposity and Induces Lipid Storage and Glucocorticoid Metabolism in Osteo-Chondroprogenitor Cells.](#)
- [The Generation of Neutrophils in the Bone Marrow Is Controlled by Autophagy](#)
- [Chronic Enrichment of Hepatic Endoplasmic Reticulum-Mitochondria Contact Leads to Mitochondrial Dysfunction in Obesity](#)
- [High confidence proteomic analysis of yeast LDs identifies additional droplet proteins and reveals connections to dolichol synthesis and sterol acetylation.](#)
- [Lipid Droplet-Associated Proteins \(LDAPs\) Are Involved in the Compartmentalization of Lipophilic Compounds in Plant Cells](#)
- [The Emergence of Lipid Droplets in Yeast: Current Status and Experimental Approaches](#)
- [Monodansylpentane as a Blue-Fluorescent Lipid-Droplet Marker for Multi-Color Live-Cell Imaging](#)