

# SRfluor™ Dyes

## What are they?

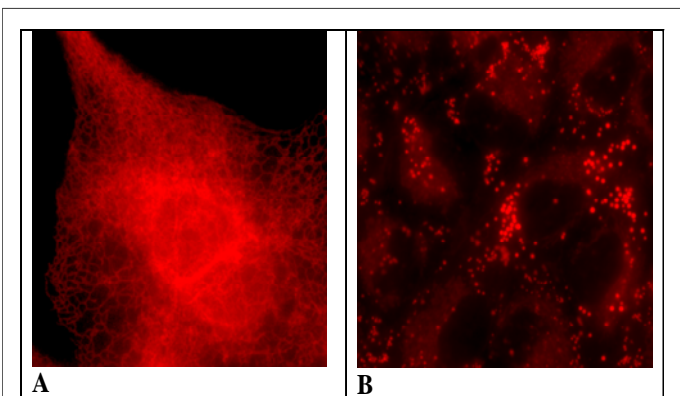
SRfluor™ dyes belong to the family of squaraine rotaxane dyes which exhibit absorption and emission properties in the far-red region of the spectrum.

## What do SRfluor™ dyes offer?

- 5-20 × brighter compared to Cy5, Alexa® and Atto dyes
- More photostable compared to Cy5, Alexa® and Atto dyes
- Sharp absorption and fluorescence emission profiles
- Available with a range of functionalities to allow conjugation with biomolecules for *in vitro* and *in vivo* imaging
- Other analogs with ability to label the intracellular lipid regions of cells or bind to metal ions also available

## Selected Applications

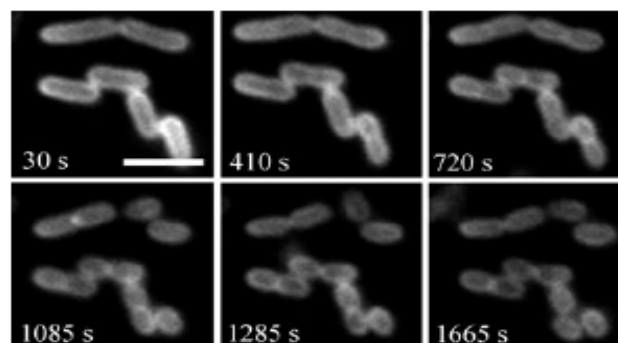
**a) SRfluor™ 680 Phenyl:** This lipophilic SRfluor™ dye rapidly accumulates in lipid regions inside living cells. For example, probe localization with Chinese Hamster Ovarian (CHO) cells is primarily in the ER (Figure 1A) whereas in human lung carcinoma (A549) cells uptake is mainly in the lipid droplets (Figure 1B).



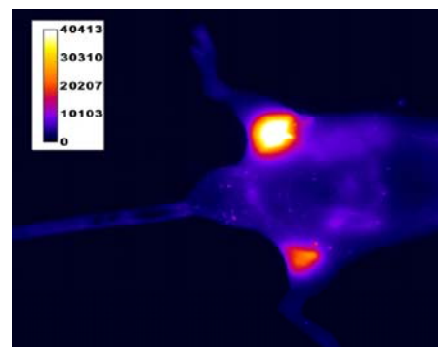
**Figure 1:** Fluorescence microscopy images of live mammalian cells treated with SRfluor™ 680 Phenyl. (A) Endoplasmic-Reticulum staining of a single CHO cell. (B) Lipid droplet staining in A549 cells.

**b) SRfluor™ 680 Carboxylate:** This dye readily undergoes conjugation to various biomolecules via free amino groups. For example, Prof. Bradley Smith and coworkers at the University of Notre Dame have shown that by conjugating a carboxyl functionalized SRfluor dye with a bacteria targeting Zn-dipicolyl amine ligand, they could perform fluorescence imaging experiments that were previously impossible with the corresponding cyanine dye based probes. Figure 2 shows a montage of images at various time points from a 30

minute movie monitoring binary fission of *E. coli* cells stained with a SRfluor™ probe.



**Figure 2:** Binary fission of *E. coli* cells stained with SRfluor™ probe. The cells were imaged every 5 s for 30 min by fluorescence microscopy. The times stated in each panel correspond to the movie time point and the scale bar represents 2 μm.



**Figure 3:** Optical image of a live mouse with subcutaneous injections of *S. aureus* and *E. coli* that were prelabeled with SRfluor™ probe. The entire animal was irradiated with filtered light at  $\lambda = 625 \pm 40$  nm and an image with emission intensity at  $\lambda = 670 \pm 20$  nm was collected by a CCD camera during a 5 s acquisition period.

*Image courtesy of Professor Bradley Smith, University of Notre Dame, Indiana, USA.*

**c)** Researchers at the University of Notre Dame have also demonstrated the imaging properties of SRfluor™ dyes in a live mouse. They labeled *E. coli* and *S. aureus* bacteria with SRfluor™ dyes and injected them subcutaneously near the posterior thigh muscles of a living nude mouse. Fluorescence image of the entire animal was subsequently acquired using a Kodak 4000MM fluorescence-imaging station. As illustrated in Figure 3 both sites of bacterial inoculation were very apparent, because fluorescence emission intensities are about 100 times greater than the background signal from other anatomical parts of the mouse.

## SRFLUOR™ PRODUCT LIST

Catalog Number	Name	Description	Size	Price
SR-1001	SRfluor™ 680 Phenyl Crystalline Powder	Lipophilic squaraine rotaxane analog that emits in the far-red region of the spectrum and is known to accumulate at lipophilic sites inside living cells. Spectral properties: abs max = 650 nm and emission max = 678 nm in DMSO.	1 mg	
SR-1002	SRfluor™ 680 Carboxyl Crystalline Powder	Carboxyl functionalized squaraine rotaxane analog that emits in the far-red region of the spectrum. Spectral properties: abs max = 650 nm and emission max = 678 nm in DMSO. This compound can be readily coupled to amino functionalities of biomolecules to provide fluorescent conjugates for use in multiple applications.	1 mg	
SR-1004	SRfluor™ 680 maleimide Crystalline Powder	Squaraine rotaxane analog that emits in the far-red region of the spectrum and is functionalized with a maleimide group that can readily undergo conjugation with thiol groups. Spectral properties: abs max = 641 nm and emission max = 664 nm in ethanol.	1 mg	
SR-1005	SRfluor™ 680 NHS ester Crystalline Powder	Squaraine rotaxane analog that emits in the far-red region of the spectrum and is functionalized with a hydroxysuccinimide ester group that can readily undergo conjugation with amino groups of biomolecules to provide fluorescent conjugates for use in multiple applications. Spectral properties: abs max = 650 nm and emission max = 678 nm in DMSO.	1 mg	

SRfluor™ is a trademark of MTTI and Alexa® is a trademark of Molecular Probes, a subsidiary of Invitrogen

### COMPANY PROFILE

Dundee Cell Products (DCP) is a supplier of high quality products and innovative tools for biochemistry and molecular and cell biology research. We also offer Quantitative Proteomics (SILAQ™) based on stable isotope labeling of amino acids in culture (SILAC) and Drug Discovery services to the academic and biotech/pharma sectors in the areas of our core technologies and expertise.

### CORPORATE HEADQUARTERS

Dundee Cell Products Ltd  
James Lindsay Place  
Dundee Technopole  
Dundee, UK, DD1 5JJ  
Phone: +44 (0) 1382 220 749  
Fax: +44 (0) 7003 451083  
E-mail: [customerservices@dundeecellproducts.com](mailto:customerservices@dundeecellproducts.com)

