PRODUCT HIGHLIGHT

Streptavidin conjugates of R-phycoerythrin—detection workhorses

R-phycoerythrin (R-PE), a fluorescent protein derived from eukaryotic algae, contains covalently linked tetrapyrrole groups that collect light and, through fluorescence resonance energy transfer (FRET), convey it to a pair of chlorophyll molecules located in the photosynthetic reaction center.[1] Because of its role in light collection, R-PE has evolved to maximize both absorption and fluorescence emission and to minimize the quenching caused either by internal energy transfer or by external factors such as changes in pH or ionic composition.[2] R-PE has several advantages over organically synthesized fluorophores such as fluorescein, including a very high extinction coefficient (1,960,000 $cm^{-1}M^{-1}$) and an excellent quantum yield. The result is a molecule with fluorescence equivalent to at least 30 unquenched fluorescein or 100 rhodamine molecules at comparable wavelengths.

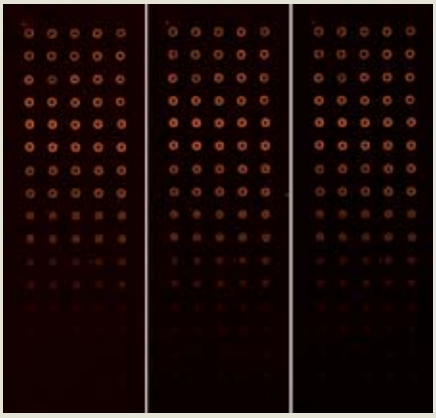
Streptavidin conjugates of R-PE have become the trusted workhorses of flow cytometry, microarray, and Luminex® technology–based applications. While conjugation of R-PE to streptavidin does reduce the molecule's fluorescence somewhat, in practical applications the sensitivity of an R-PE conjugate is typically 5–10 times that of the corresponding fluorescein conjugate.[3] As an added advantage, streptavidin R-PE conjugates can be efficiently excited and detected using a number of standard excitation source and emission filter combinations (see figure below).

Molecular Probes was the first company to offer R-PE–conjugated products, and as part of Invitrogen we have continued to optimize the production process. Molecular Probes® streptavidin R-PE conjugates are purified by HPLC to remove most aggregates and free R-phycoerythrin, minimizing background and improving the overall signal-to-noise ratio. Our HPLC methods also allow us to achieve high levels of lot-to-lot consistency, which means highly reproducible results for your experiments. Our streptavidin R-PE conjugates also come highly recommended—Affymetrix recommends Molecular Probes® streptavidin R-PE for their GeneChip® protocols.

Molecular Probes® streptavidin R-PE conjugates are available from Invitrogen in standard (S866) and premium (S21388) grades. The standard grade product is suitable for most flow cytometry and microarray applications; the premium grade product represents a further fractionation of the conjugates and is designed for applications that require extremely low background levels, such as the detection of very low abundance targets. For additional technical details, including spectra, please see Section 6.4 of *The Handbook* at **probes.invitrogen.com/handbook**.

References

1. MacColl. R.J. (1991) *J Fluoresc* 1:135–140.
2. Glazer, A.N. (1989) *J Biol Chem* 264:1–4.
3. Kronick, M.N. and Grossman, P.D. (1983) *Clin Chem* 29:1582–1586.



Streptavidin R-PE used to detect biotinylated DNA on a microarray. The fluorescence signal was detected using three different detection configurations: 488 nm excitation (argon-ion laser)/570 nm emission filter (left); 543.5 nm excitation (He–Ne laser)/570 nm emission filter (center); 543 nm excitation (He–Ne laser)/592 nm emission filter (right).

Product	Quantity	Cat. no.
streptavidin, R-phycoerythrin conjugate (SAPE) *1 mg/ml*	1 ml	S866
streptavidin, R-phycoerythrin conjugate (SAPE) *premium grade* *1 mg/ml*	1 ml	S21388