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Amino-Si-Rhodamines: a New Class of Two-Photon Fluorescent Dyes with Intrinsic Targeting Ability for Lysosomes

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ABSTRACT Noninvasive and specific visualization of lysosomes by fluorescence technology is critical for studying lysosomal trafficking in health and disease and for evaluating new cancer therapeutics that target tumor cell lysosomes. To date, there are two basic types of lysosomal probes whose lysosomal localization correlates with lysosomal acidity and endocytosis pathway, respectively. However, the former may suffer from pH-sensitive lysosomal localization and alkalization-induced lysosomal enzyme inactivation, and the latter need long incubation time to penetrate cell membrane due to the energy-dependency of endocytosis process. In this work, a new class of two-photon fluorescent dyes, termed amino-Si-rhodamines (**ASiRs**), were developed, which possess the intrinsic lysosome-targeted ability that is independent of lysosomal acidity and endocytosis pathway. As a result, **ASiRs** show not only the stable

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