Blue-Fluorescent Probes for Lipid Droplets Based on Dihydrochromeno-Fused Pyrazolo- and Pyrrolopyridines

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 Lipid droplets (LDs) have been recognized as highly dynamic cellular organelles involved in important biological functions for the survival of organisms such as supplying food or energy. Nevertheless, lipid storage must be tightly controlled, because both its excess and the inability to store lipids can be detrimental to the organism, resulting in metabolic diseases or multifaceted systemic problems. Visualization and the monitoring of the concentration of LDs is essential to understanding these processes. Commercially available LD dyes, such as Nile Red and boron-dipyrromethene (BODIPY), offer several advantageous characteristics, but can be limiting in multicolor imaging because most ready-made fluorescent reporter constructs fluoresce in the green-to-red region of the visible spectrum. Nile Red emits between green and red, and BODIPY can be photoconverted from green to red fluorescence, limiting its ability to be utilized for time-la