Styrylbenzothiazoles – A New Class of Photoswitches

**Synthesis of SBTub3:**

\[
\text{aldol condensation} \quad \text{NaOMe} \quad \text{DMSO, 12 h, r.t.} \quad 89\% \text{ yield}
\]

**Photoswitching of SBTub3:**

\[
360 \text{ nm} \quad 260 \text{ nm}, 420 \text{ nm} \quad \text{or kBT} \quad (E)-\text{SBTub3} \quad \text{active}
\]

\[
(Z)-\text{SBTub3} \quad \text{inactive}
\]

**Significance:** The field of photopharmacology has provided an elegant way to control biological systems in precise spatiotemporal manners. Expanding the toolbox of optically controlled chemical reagents, the authors introduce a new photoswitchable scaffold, styrylbenzothiazoles (SBT). The key advantages over commonly used azobenzene photoswitches are an increased metabolic stability and their orthogonality to GFP- or YFP-imaging.

**Comment:** The styrylbenzothiazoles are synthetically accessible via aldol condensation of 3-methylbenzothiazoles with corresponding benzaldehydes. Lead compound SBTub3 is a photoswitchable analogue of the tubulin depolymerizing agent combretastatin A4 and can be switched from an inactive trans form to its active cis isomer by irradiation with 360 nm light, allowing for a precise optical control of microtubule dynamics.