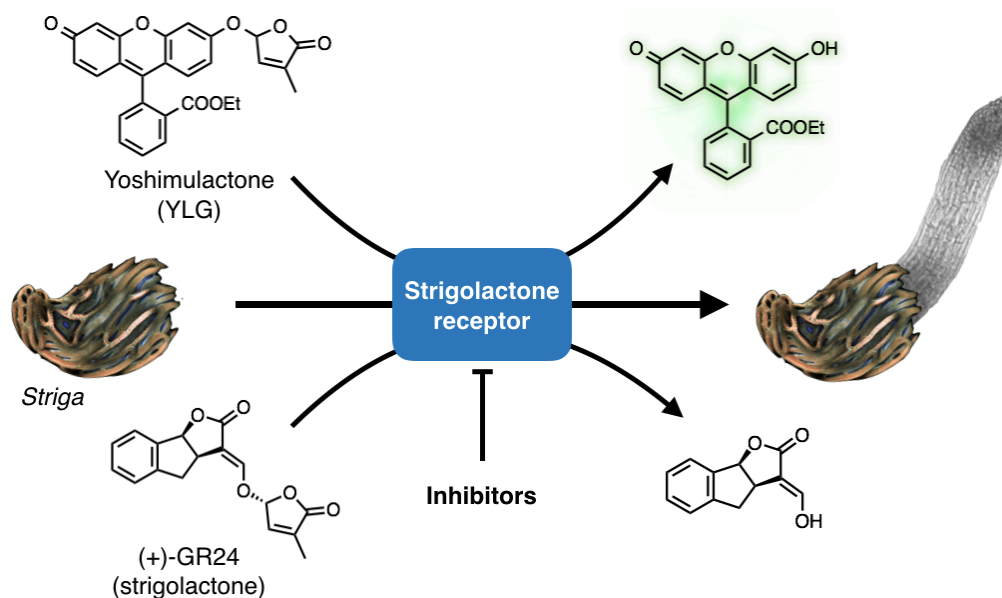


## Chemical biology of strigolactone receptors

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*Striga hermonthica* is a noxious parasitic weed depriving the nutrients and water of host crops. Since *Striga* spoils economically important crops such as corn, sorghum and rice, agricultural damage caused by *Striga* is a serious problem in Africa. Since the first identification of strigolactone as a host-derived germination stimulant in 1960s, elucidating the signalling mechanism of strigolactones has been the centre of attention to control the devastating problem caused by *Striga*. However, the strigolactone receptors in *Striga* and their molecular mechanism have still remained elusive, because genetic and biological techniques are not applicable to *Striga*. To overcome the genetic intractability of this parasite, we developed a fluorogenic probe, Yoshimulactone Green (YLG), which activates strigolactone signalling and illuminates signal perception by strigolactone receptors.<sup>1</sup> Herein, we describe the identification of receptor proteins in *Striga*, ShHTLs, and visualization of “wake-up signal” during the strigolactone-dependent seed germination. Moreover, we established the high-throughput screening system of ligands for strigolactone receptors using YLG, and discovered a novel germination inhibitor SGI-3, which can bind to strigolactone receptor in a covalent manner.<sup>2,3</sup> SGI-3 can be used as a molecular tool for understanding the mechanism of seed germination, but also as a potent agrochemical for solving the *Striga* problem.



[1] Y. Tsuchiya<sup>†</sup>, M. Yoshimura<sup>†</sup>; *et al. Science* **2015**, *349*, 864.

[2] M. Yoshimura; *et al. ACS Cent. Sci.* **2018**, *4*, 230.

[3] M. Yoshimura; *et al. unpublished results*