

## **Probing strigolactone receptors in *Striga hermonthica* with fluorescence**

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Damages caused by the parasitic plant *Striga hermonthica* comprise the largest impediment to securing food for sustaining the explosively growing population in Africa, which leads to the loss of 10 billion US dollars worth of crops from the continent every year<sup>1</sup>. Since the discovery of strigolactone in the 1960's as a host-derived germination stimulant for *Striga*, elucidating the mechanism responsible for perceiving the group of related molecules, strigolactones (SLs), has been the central point of interest to control the *Striga* problem. Nevertheless, the molecular identity of the SL receptor in *Striga* remains unknown, as this obligate parasite is intractable by conventional genetic studies. Here, we describe a chemical genetic approach to investigate SL receptors using a fluorescence turn-on probe, Yoshimulactone Green (YLG), that enables rapid identification, characterization and visualization of SL receptors in *Striga*. Using YLG, we identified highly diverged  $\alpha/\beta$  hydrolase-fold proteins including functional SL receptors in *Striga*. Moreover, the fluorescence turn-on functionality in YLG enabled tracking of the signal perception by SL receptors in vivo. Live-imaging experiments revealed a wave-like propagation of perception that wakes up *Striga* seeds. Overall, these results open an avenue to access SL receptors and regulatory dynamics of SL signal transduction in *Striga*, which will potentially provide a powerful solution to the *Striga* problem.