Auxin reporter: R2D2

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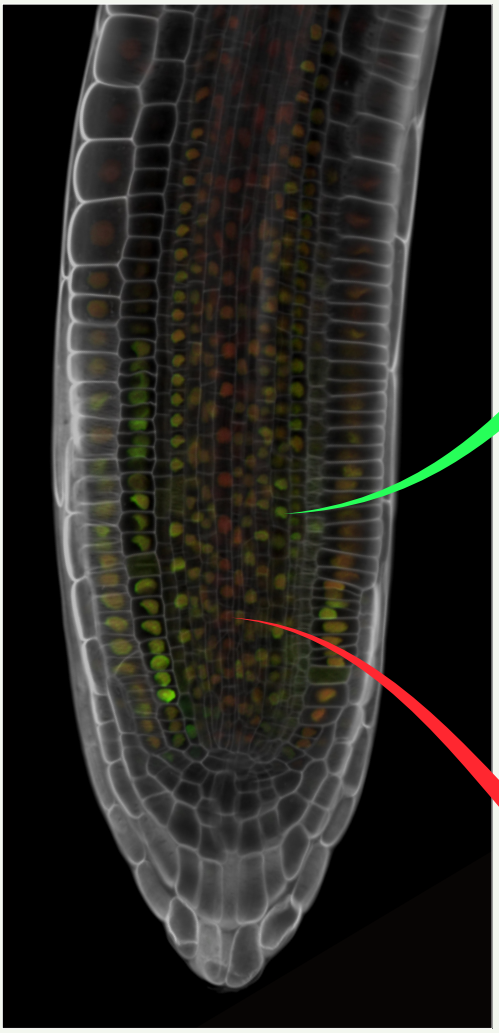
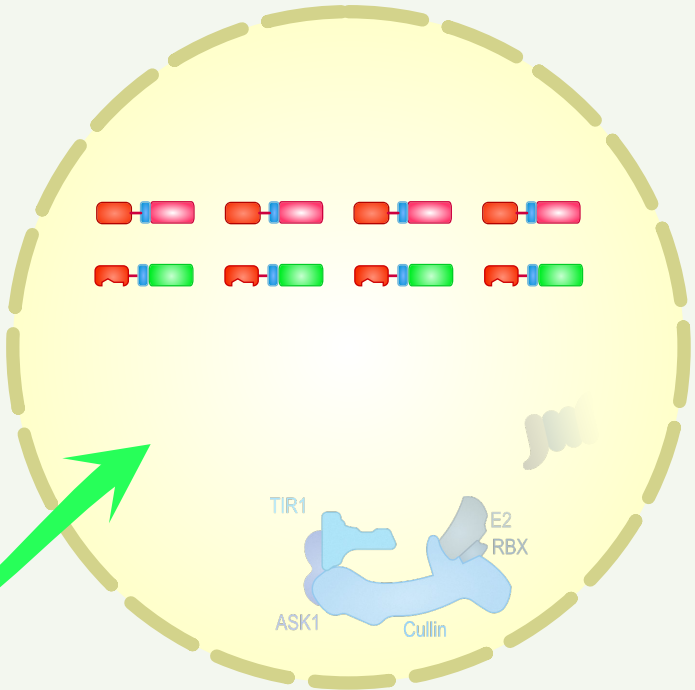
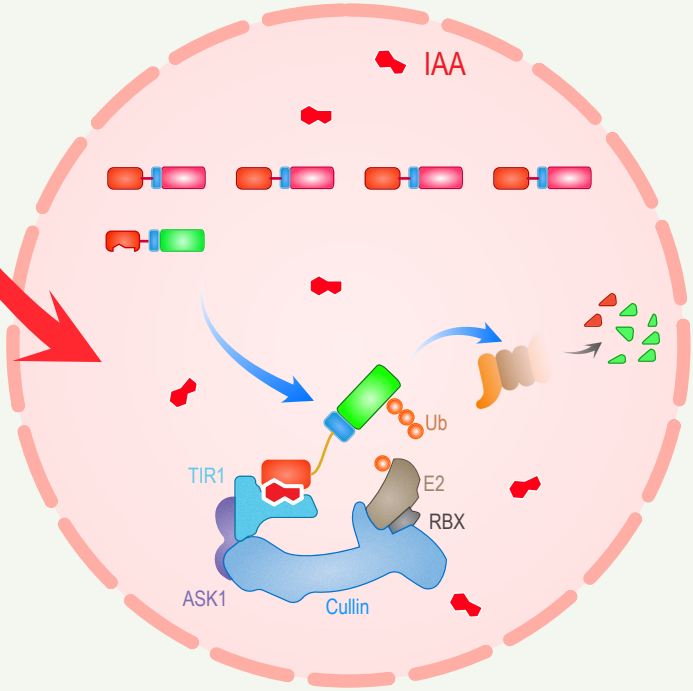
A

B







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The R2D2 auxin reporter system has been developed from the DII reporter (see the handout sheet “Auxin reporter: DII”) (Brunoud et al., 2012). The DII-Venus reporter is a chimeric protein composed of the fusion of the domain II of IAA28 to a nuclear targeted Venus fluorescent protein. The absence of the fluorescence, due to the targeted degradation of DII by auxin, marks the accumulation of auxin in the cell. As to implement semiquantitative measurements of the auxin input independently of the promoter activity, a radiometric version of the auxin reporter was designed and named R2D2 (Liao et al., 2015). One transgene carries both auxin-sensitive (DII) and auxin-insensitive (mDII) domains fused to fluorescent proteins of different colors: DII-nls3xVenus / mDII-ntdTomato (A). R2D2 measures auxin accumulation in one cell as a reduction of the Venus (yellow) signal relative to the Tomato (red) signal (B), whose level is stable. The expression pattern of the fusion proteins also depends on the promoter used. Here it is the RPS5A promoter.

Brunoud, G. et al., 2012. A novel sensor to map auxin response and distribution at high spatio-temporal resolution. Nature, 482(7383), pp.103–106.

Liao, C.-Y. et al., 2015. Reporters for sensitive and quantitative measurement of auxin response. Nature methods, 12(3), pp.207–210.