# Auxin reporter: DII

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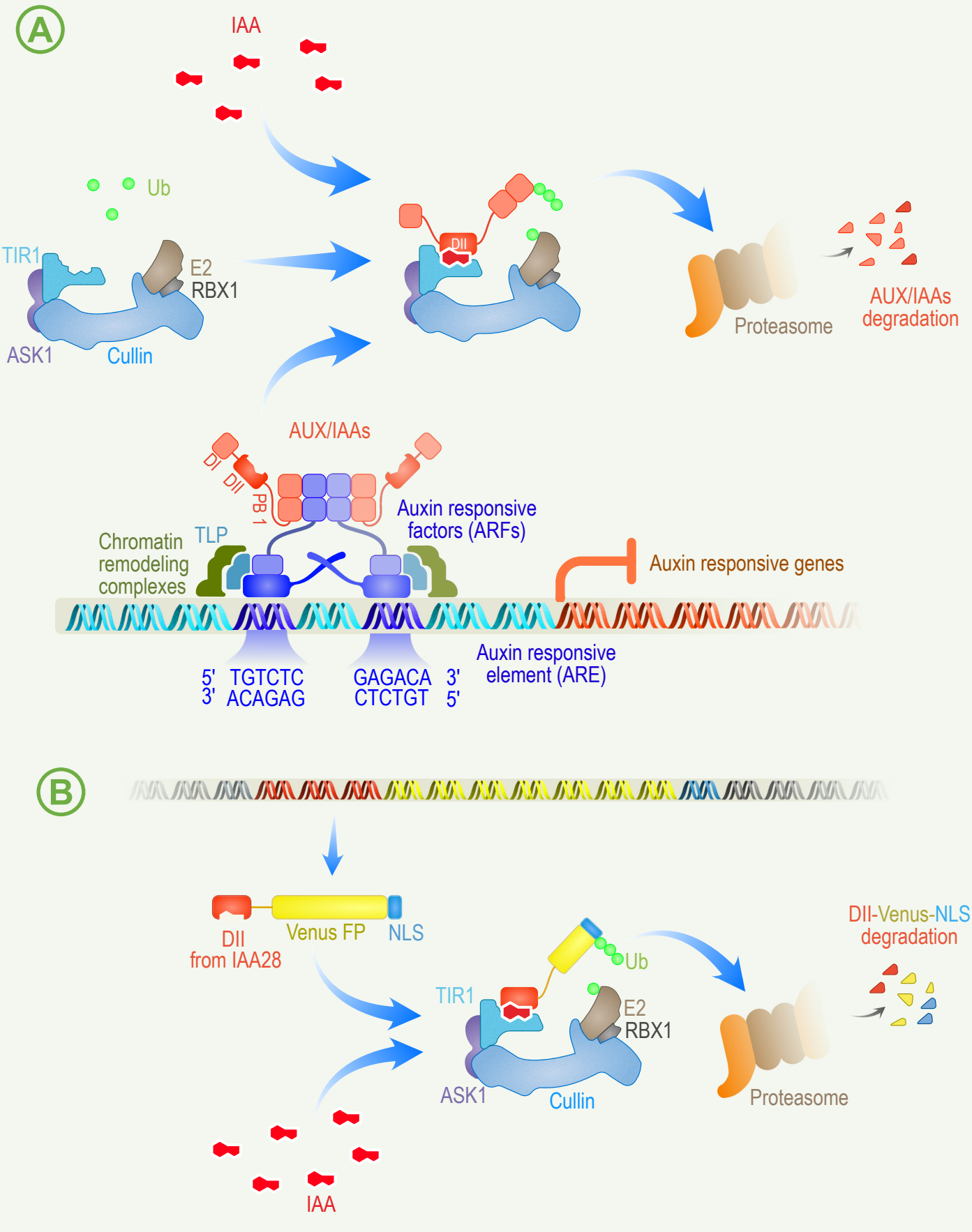

# Auxin reporter: DII

The DII auxin reporter has been developed as a sensor to map the auxin response and distribution (Brunoud et al, 2012). This sensor is based on the characteristics of the auxin signaling pathway (A). The auxin signaling pathway relies on a ubiquitin- and proteasome-dependent degradation of the Aux/IAA repressor proteins, catalyzed by the SCF-type E3 ubiquitin-ligase complexes SCFTIR1/AFB1-5 (TIR1, ASK1, Cullin, RBX1, E2). TIR1, AFB1 to AFB5 are F-box proteins, receptors of the molecule auxin. Auxin (IAA) promotes the interaction between TIR1/AFBs and the Aux/IAA proteins. The Aux/IAA proteins are then targeted for degradation by the proteasome. The Aux/IAA repressors form heterodimers with the Auxin Response Factors (ARFs). After degradation of the Aux/IAA, derepression of the ARFs on the Auxin Response Element (AuxRE) activates the transcription of auxin responsive genes.

The domain II (DII) of the Aux/IAA is the auxin-interaction domain. The DII domain of IAA28 has been fused to a nuclear-targeted Venus (yellow fluorescent protein). Specific promoters drive the expression of this DII chimeric protein (B). In presence of IAA, the DII protein is targeted to degradation by the SCFTIR1/AFB1-5 pathway. Therefore, in presence of auxin no fluorescence is observed. And in absence of IAA in the cell, the nuclear Venus protein is detected. The DII sensor is negatively correlated with the level of IAA in one cell, based on its fluorescent intensity.

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.

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