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## CUL3 E3 ligases in plant development and environmental response

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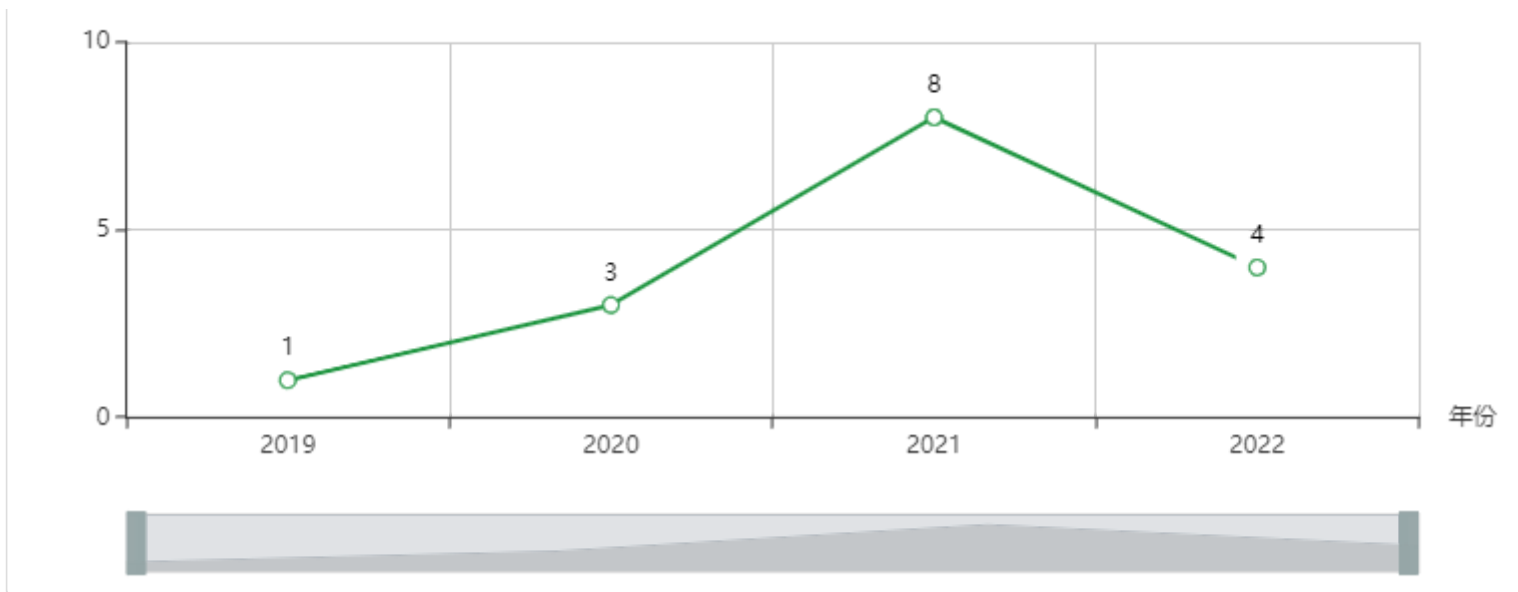
**摘要** Thirty years of research have revealed the fundamental role of the ubiquitin–proteasome system in diverse aspects of cellular regulation in eukaryotes. The ubiquitin–protein ligases or E3s are central to the ubiquitin–proteasome system since they determine the specificity of ubiquitylation. The cullin–RING ligases (CRLs) constitute one large class of E3s that can be subdivided based on the cullin isoform and the substrate adapter. SCF complexes, composed of CUL1 and the SKP1/F-box protein substrate adapter, are perhaps the best characterized in plants. More recently, accumulating evidence has demonstrated the essential roles of CRL3 E3s, consisting of a CUL3 protein and a BTB/POZ substrate adaptor. In this Review, we describe the variety of CRL3s functioning in plants and the wide range of processes that they regulate. Furthermore, we illustrate how different classes of E3s may cooperate to regulate specific pathways or processes.

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