

PYR/PYL/RCAR蛋白介导植物ABA的信号转导

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摘要 脱落酸(ABA)在各个植物生长发育阶段以及植物对生物与非生物胁迫的响应过程中都发挥着重要的作用。最近研究表明,在ABA信号转导途径中有3种核心组份: ABA受体PYR/PYL/RCAR蛋白、负调控因子2C类蛋白磷酸酶(PP2C)和正调控因子SNF1相关的蛋白激酶2(SnRK2),它们共同组成了一个双重负调控系统——PYR/PYL/RCAR—| PP2C—| SnRK2来调控ABA信号转导及其下游反应,且3种核心组份在植物体内的结合方式受时空和生化等因素的影响,通过特定组合形成的ABA信号转导复合体介导特定的ABA信号反应。文章就PYR/PYL/RCAR蛋白介导的植物ABA信号识别与转导途径的分子基础及其调控机制,以及PYR/PYL/RCAR—PP2C—SnRK2参与的ABA信号调控网络等研究进展做一概述,并对该领域今后的研究进行了展望。

关键词: ABA 信号转导 PYR/PYL/RCAR蛋白 PP2C SnRK2

Abstract: Abscisic acid (ABA) is a phytohormone that plays critical roles in numerous developmental stages as well as in adaptive responses to biotic and abiotic stresses. Recent breakthroughs in the field of ABA signaling have indicated that there are three major components, PYR/PYL/RCAR (an ABA receptor), type 2C protein phosphates (PP2C, a negative regulator), and SNF1-related protein kinase 2 (SnRK2, a positive regulator). Further results show that these three proteins construct a double negative regulatory system, PYR/PYL/RCAR—| PP2C—| SnRK2, to regulate ABA signal responses in plant cells. Moreover, the combination patterns of these components *in vivo* are restricted by spatio-temporal and biochemical determinants and the combinational variation in the ABA signalosome is specific to different ABA signal responses. This review summarizes recent advances of study on the molecular basis and regulatory mechanism of PYR/PYL/RCAR-mediated ABA signaling pathway and PYR/PYL/RCAR—PP2C—SnRK2 complex-mediated ABA signal regulation network in plants. The perspectives related to this study are proposed.

Keywords: ABA, signal transduction, PYR/PYL/RCAR, PP2C, SnRK2

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