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3.2.2 Purification and properties of the ACC synthase protein3.3 Analysis of ACC synthase at the transcriptional level; 3.3.1 Molecular cloning of ACC synthase genes; 3.3.2 Transcriptional regulation of the ACC synthase gene family; 3.4 Post-transcriptional regulation of ACS; 3.4.1 Identification and characterization of interactions with ETO1; 3.4.2 Regulation of ACS degradation; 3.5 Does ACC act as a signal?; 3.6 Biosynthesis and physiology of polyamines; 3.6.1 SAM is a substrate for polyamines; 3.6.2 Physiology of polyamine effects in vitro and in vivo 3.6.3 Concurrent biosynthesis of ethylene and polyamines3.6.4 Do plant cells invoke a homeostatic regulation of SAM levels?; Acknowledgements; References; 4 The Fate of ACC in Higher Plants; 4.1 Introduction; 4.2 History of the discovery of ACC oxidase as the ethylene-forming enzyme; 4.2.1 Early characterization of ACC oxidase; 4.2.2 Cloning of the ethylene-forming enzyme as an indicator of enzyme activity; 4.2.3 Initial biochemical demonstration of ethylene-forming enzyme activity in vitro; 4.3 Mechanism of the ACC oxidase-catalyzed reaction; 4.3.1 Investigation of the ACO reaction mechanism 4.3.2 Metabolism of HCN4.3.3 Evidence of the conjugation of ACC; 4.4 Transcriptional regulation of ACC oxidase; 4.4.1 ACO multi-gene families; 4.4.2 Differential expression of members of ACO multi-gene families in response to developmental and environmental stimuli; 4.4.3 Transcriptional regulation of ACO gene expression; 4.4.4 Crosstalk between ethylene signalling elements and ACO gene expression; 4.5 Translational regulation of ACC oxidase; 4.6 Evidence that ACC oxidase acts as a control point in ethylene biosynthesis; 4.6.1 Cell-specific expression of ACC oxidase
4.6.2 Differential expression of ACS and ACO genes

Sommario/riassunto

The plant hormone ethylene is one of the most important, being one of the first chemicals to be determined as a naturally-occurring growth regulator and influencer of plant development. It was also the first hormone for which significant evidence was found for the presence of receptors. This important new volume in Annual Plant Reviews is broadly divided into three parts. The first part covers the biosynthesis of ethylene and includes chapters on S-adenosylmethionine and the formation and fate of ACC in plant cells. The second part of the volume covers ethylene signaling, including th