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2.5 Functioning of complex photosynthetic organisms which lack plasmodesmata2.5.1 Introduction; 2.5.2 Multicellular algae lacking plasmodesmata or analogues of plasmodesmata; 2.5.3 Rhodophyta and pit plugs: (trans)mission impossible?; 2.5.4 Morphologically complex acellular macroalgae; 2.5.5 Symbioses of (mainly) unicellular algae with fungi and metazoan; 2.6 Conclusions; Note; References; 3 Plasmodesmata: protein transport signals and receptors; 3.1 Introduction; 3.2 Components of the PD transport pathway; 3.2.1 Principles of signal-mediated protein transport
3.2.2 Putative PD pathway components3.2.3 NCAPP1 - the initial PD receptor; 3.2.4 Potential role of the cytoskeleton in the PD transport pathway; 3.2.5 HSP70-related proteins and the PD transport pathway; 3.2.6 Potential role of ISE1 - a mutant plant with impaired PD function; 3.2.7 A PD pathway model; 3.3 Identifying PD transport signal(s); 3.3.1 Definition of a targeting signal; 3.3.2 KNOTTED1 - existence of a PD-targeting and SEL increase signal; 3.3.3 Phloem Thioredoxin h - charged amino acids as PD motifs; 3.3.4 Proteolytic processing facilitates transport of CmPP36
3.3.5 A short PD-targeting motif in phloem HSC703.3.6 The elusive nature of PD-targeting signals; 3.4 Conclusions and future prospects; Acknowledgements; References; 4 Comparative structures of specialised monocotyledonous leaf blade plasmodesmata; 4.1 Introduction; 4.2 Maturity-related changes in plasmodesmatal structure; 4.3 The plasmodesmatal cell wall interfaces in monocot leaves; 4.4 Plasmodesmata crossing the suberin lamella - constrictions and asymmetry; 4.5 Regulation at the neck - structural considerations 4.6 Changes in wall structure and plasmodesmatal form - secondary modification

Sommario/riassunto

Since their discovery over 100 years ago, plasmodesmata have been the focus of intense investigation. Plasmodesmata are unique to plants and form an intercellular continuum for the transport of solutes, signals and ribonucleoprotein complexes. It is now clear that plasmodesmata formation and regulation are central to a diverse range of plant functions that include developmental programming, host-pathogen interactions and systemic RNA signaling. This book provides a state-of-the-art overview of the diverse forms and functions of plasmodesmata. It covers the structure and evolution