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domains, chromophores and structure; 2.3.1 Domain structure of the cryptochromes; 2.3.2 Cryptochrome chromophores; 2.3.3 Photolyase and cryptochrome structure; 2.3.3.1 Photolyase structure and reaction mechanism; 2.3.3.2 Cryptochrome structure
2.4 Cryptochrome biochemistry and spectroscopy2.4.1 Phosphorylation; 2.4.2 Nucleotide-binding and kinase activity; 2.4.3 DNA-binding activity; 2.4.4 Electron transfer; 2.5 Expression and biological activity of cryptochromes; 2.5.1 Expression and light regulation of cryptochromes in planta; 2.5.2 Cellular localization; 2.5.3 Growth responses controlled by cryptochromes; 2.5.4 Regulation of gene expression through cryptochromes; 2.6 Cryptochrome signalling; 2.6.1 Dimerization and output domains; 2.6.2 Cryptochrome partners; 2.6.2.1 Interaction with COP1
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3.4.2 LOV-domain structure3.4.3 Functional roles of LOV1 and LOV2; 3.4.4 Light-induced protein movements; 3.5 Phototropin signaling; 3.5.1 Phototropin-interacting proteins; 3.5.2 Downstream signaling targets; 3.6 Other LOV-containing proteins; 3.6.1 LOV-containing proteins in Arabidopsis; 3.6.2 LOV-containing proteins in fungi; 3.6.3 LOV-containing proteins in bacteria; 3.7 Conclusions and future perspectives; Acknowledgements; References; Part II Photoreceptor signal transduction; 4 Phytochrome-interacting factors; 4.1 Introduction; 4.2 Methodology; 4.2.1 Initial identification of PIFs
4.2.2 Subsequent assay and characterization of the interaction

Sommario/riassunto

Living organisms are subject to fluctuating environmental conditions. Whereas most animals are able to move away from unfavourable conditions, plants are sessile and so must cope with whatever comes their way. Of all the environmental cues that challenge the developing plant, light can probably be considered to be the most important. In addition to its key role in plant metabolism, and hence almost all life on Earth, where it drives the process of photosynthesis, light energy also acts to regulate plant growth and development. Light quantity, quality, direction and diurnal and seasonal duratio