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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Part I Structure -- 1 Fine Structure of Amylopectin (Eric Bertoft) -- 2 Fine Structure of Amylose (Isao Hanashiro) -- 3 Crystalline Structure in Starch (Denis Lourdin, Jean-Luc Putaux, Gabrielle Potocki-Véronèse, Chloé Chevigny, Agnès Rolland-Sabaté, and Alain Buléon) -- Part II Evolution -- 4 The Transition from Glycogen and Starch Metabolism in Cyanobacteria and Eukaryotes (Steven Ball, Christophe Colleoni, and Maria-Cecilia Arias) -- Part III Metabolism -- 5 Biosynthesis of Reserve Starch (Yasunori Nakamura) -- 6 Starch Biosynthesis in Leaves and Its

Regulation (Christophe D'Hulst, Fabrice Wattebled, and Nicolas Szydlowski) -- 7 Starch Degradation (Julia Smirnova, Alisdair R. Fernie, and Martin Steup) -- 8 Protein-Protein Interactions during Starch Biosynthesis (Ian Tetlow, Fushan Liu, and Michael J. Emes) -- 9 Initiation Process of Starch Biosynthesis (Yasunori Nakamura) -- Part IV Biotechnology -- 10 Manipulation of Rice Starch Properties for Application (Naoko Fujita) -- 11 Increase of Grain Yields by Manipulating Starch Biosynthesis (Bilal Cakir, Aytug Tuncel, Seon-Kap Hwang and Thomas W. Okita) -- Part V Modification and Morphology -- 12 Phosphorylation of the Starch Granule (Andreas Blennow) -- 13 Morphological Variations of Starch Grains (Ryo Matsushima) -- BM Index.

Sommario/riassunto

This book provides a detailed overview of the current understanding of the metabolic system of starch biosynthesis and degradation in plants. The focus is on new topics regarding the functional interaction between multiple enzymes and the initiation process of starch biosynthesis, which are essential for further understanding of related metabolic features. The book also explains and discusses the distinct structures of amylopectin and amylose and the crystalline structure of starch granules. At the same time, readers will be made aware of areas where further research remains to be done, such as the regulation of starch metabolism, the fine structure of starch molecules, and the manipulation of the structure and functional properties of starch by genetic and molecular technology. Also described are aspects of the biosynthetic machinery of starch, the structure and metabolism of which have developed and been refined during the process of plant evolution. In addition, recent approaches to producing novel starches with distinct physicochemical and functional properties in gene-modified mutants and transgenic plants for industrial applications are introduced. Finally, the book elaborates on the unresolved topics, necessary approaches, and future prospects to achieve a complete understanding of the regulation of starch metabolism. This volume is of great value for general scientists, students, and anyone wishing to understand the specific and complicated events of starch metabolism and biotechnology. It will be especially useful for food scientists and engineers in academia and industry.
