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Plant Cells and Life Processes **Plant Cells and their Organelles Plant Cell Biology** *Plant Cells* **Introduction to the Fine Structure of Plant Cells** Plant Cell Biology **Molecular Biology of the Cell Mechanical Integration of Plant Cells and Plants The Cytoskeleton** Applications of Plant Cell and Tissue Culture **Plant Cell and Tissue Culture** Plant Cells **Exploring Plant Cells for the Production of Compounds of Interest** *Plant Cell Structure and Metabolism* Protein Trafficking in Plant Cells Plant Cell Culture Protocols **Molecular Activities of Plant Cells** *Plant Cells* **Hydrogen-ion concentration in plant cells and tissues Applied Plant Cell Biology** *Introduction to Plant Cell Development Plant Cells* **Introduction to Plant Physiology** *Plant Cell/cell Interactions Physiology and Biochemistry of Plant Cell Walls* The Physical Biology of Plant Cell Walls *Cells are Life* Atlas of Plant Cell Structure **The Science and Lore of the Plant Cell Wall The Micro World of Animal and Plant Cells** Plant Cell Biology Plant Cell Morphogenesis **Physiology of Metabolism Plant Cell Organelles** *Plant Cell Walls Green Universe Plant Cell Expansion* **Plant and Animal Cells The Plant Cell Wall Methods and Protocols** Flow Cytometry with Plant Cells

Hydrogen-ion concentration in plant cells and tissues Apr 14 2021

Plant and Animal Cells Aug 26 2019

Physiology of Metabolism Jan 30 2020 The Biochemistry of Plants, Volume 12: Physiology of Metabolism focuses on plant biochemistry, with emphasis on the metabolism of plants. This book discusses the organizational resistance to account for changes in the rate of respiration that both cells and organs undertake. Organized into two parts encompassing eight chapters, this volume starts with an overview of the microtubule structure and function in plant cell biology. This book then discusses the presence of microtubular structures in the cytoplasm of eukaryotic cells. Other chapters consider the characteristics of plant cells, which possess the highest degree of subcellular compartmentation of metabolism. This text discusses as well the various transport reactions that are involved in primary metabolic pathways in plants. The final chapter explores the several changes that fruits undergo to reach maturity, including the development of color and aroma, as well as improvements in texture and flavor. This book is a valuable resource for biologists, plant scientists, and agriculturists.

Molecular Biology of the Cell Apr 26 2022

Introduction to Plant Cell Development Feb 10 2021 This textbook is about plant cells and the way in which their behaviour is regulated to suit the function which they fulfil in the plant. The purpose of the book is to emphasise the structural and spatial events which occur during the development of specialised plant cells. It is designed to fill the gap between descriptive anatomy books on the one hand and purely physiological books on the other. Its novelty is in its emphasis on the interaction between the structure of a plant cell and the way in which it performs its role in the plant. It is written in two parts, of four chapters each. The first part concentrates on cells as individuals, and presents a detailed account of their structure in various situations, together with descriptions of how such structures are achieved and function. The second part places these descriptions in the context of tissues, organs and whole plants.

Plant Cell Biology Aug 31 2022 While there are a few plant cell biology books that are currently available, these are expensive, methods-oriented monographs. The present volume is a textbook for "upper" undergraduate and beginning graduate students." This textbook stresses concepts and is inquiry-oriented. To this end, there is extensive use of original research literature. As w

Plant Cell/cell Interactions Nov 09 2020

Atlas of Plant Cell Structure Jul 06 2020 This atlas presents beautiful photographs and 3D-reconstruction images of cellular structures in plants, algae, fungi, and related organisms taken by a variety of microscopes and visualization techniques. Much of the knowledge described here has been gathered only in the past quarter of a century and represents the frontier of research. The book is divided into nine chapters: Nuclei and Chromosomes; Mitochondria; Chloroplasts; The Endoplasmic Reticulum, Golgi Apparatuses, and Endocytic Organelles; Vacuoles and Storage Organelles; Cytoskeletons; Cell Walls; Generative Cells; and Meristems. Each chapter includes several illustrative photographs accompanied by a short text explaining the background and meaning of the image and the method by which it was obtained, with references. Readers can enjoy the visual tour within cells and will obtain new insights into plant cell structure. This atlas is recommended for plant scientists, students, their teachers, and anyone else who is curious about the extraordinary variety of living things.

Flow Cytometry with Plant Cells Jun 24 2019 Targeted at beginners as well as experienced users, this handy reference explains the benefits and uses of flow cytometery in the study of plants and their genomes. Following a brief introduction that highlights general considerations when analyzing plant cells by flow cytometric methods, the book goes on to discuss examples of application in plant genetics, genomic analysis, cell cycle analysis, marine organism analysis and breeding studies. With its list of general reading and a glossary of terms, this first reference on FCM in plants fills a real gap by providing first-hand practical hints for the growing community of plant geneticists.

Molecular Activities of Plant Cells Jun 16 2021 General biochemistry; Energy-generating mechanisms of plants; Assimilatory mechanisms in plants; Synthesis of new cells and cell structures.

The Micro World of Animal and Plant Cells May 04 2020 "A tree and your pet look nothing alike, but they have one thing in common-they are both made up of cells. Cells are really small. You can see them only with a microscope. Young readers will find out about the parts of cells, how they work, and what the differences are between animal and plant cells."--

Plant Cells May 16 2021 From a stalk of corn to a pine tree, every plant is made of plant cells. What material is in these cells? How do they hold together? How do growers use their knowledge of cell growth to create new plants? What's next in plant science? You can see the hidden secrets of cell life in the fascinating photos, diagrams, and text inside.

Plant Cell Biology Apr 02 2020 A selection of the recipes and protocols most commonly used by plant cell biologists, combining standard tricks of the trade for the benefit of newcomers to the field, and new techniques that will interest veterans. Does not cover mitochondria, which has its own volume in the series. Annotation copyright by Book News, Inc., Portland, OR

Plant Cells Jul 30 2022 Plant Cells takes an in depth look at all parts of a plant cell and how they function. Explore cell division and the three types of tissue plant cells are made of: dermal, vascular, and ground.

The Physical Biology of Plant Cell Walls Sep 07 2020 Intra-atomic and intramolecular bonding and molecular models. The chemical components. Structure determination - optical microscopy. X-ray diffraction. Eletron microscopy. General principles of wall architecture. Detailed structure - cellulosic algae. Non-cellulosic algae. Flowering plants; secondary walls. Viscoelastic properties of secondary cell walls. Wall extension and cell growth. Wall biosynthesis.

Plant Cells Jan 12 2021 Describes the structure of plant cells, the function of different kinds of cells, and how plants reproduce.

Plant Cells and their Organelles Oct 01 2022 Plant Cells and Their Organelles provides a comprehensive overview of the structure and function of plant organelles. The text focuses on subcellular organelles while also providing relevant background on plant cells, tissues and organs. Coverage of the latest methods of light and electron microscopy and modern biochemical procedures for the isolation and identification of organelles help to provide a thorough and up-to-date companion text to the field of plant cell and subcellular biology. The book is designed as an advanced text for upper-level undergraduate and graduate students with student-friendly diagrams and clear explanations.

Introduction to Plant Physiology Dec 11 2020 Cells, tissues, and organs: the architecture of plants; The plant cell building blocks: lipids, proteins, and carbohydrates; Lipids are a class of molecules that includes fats, oils, sterols, and pigments; Proteins playa central role in the biochemistry of cells and are responsible for virtually all the properties of life as we know it; Carbohydrates are the most abundant class of biological molecules; Biological membranes; The membrane lipid forms a bilayer, a highly fluid but very stable structure; Membranes contain significantamounts of protein; Cellular organelles; Most mature plant cells contain a large, central vacuole; The nucleus is the information center of the cell; The endoplasmic reticulum and golgi apparatus are centers of membrane biosynthesis and secretory activities; The mitochondrion is the principal site of cellular respiration; Plastids are a family of organelles with a variety of functions; Microbodies are metabolically very active; Cytoskeleton the extracellular matrix; The primary cell wall is a flexible n etwork of cellulose microfibrils and cross-linking glycans; The cellulose-glycan lattice is embedded in a matrix of pectin and protein; Cellulose microfibrils are assembled at the plasma membrane as they are extruded into the cell wall; The secondary cell wall is deposited on the inside of the primary wall in maturing cells; Plasmadesmata are cytoplasmic channels extend through the wall to connect the protoplasts of adjacent cells; Tissues and organs; Tissues are groups of cells that form organized, functional unit; Meristems are regions of perpetually dividing cells; Parenchyma is the most abundant living tissue in plants; Supporting tissues are distributed throughout the primary and secondary plant bodies; Vascular tissues are the principal conducting tissues for water and nutrients ; Epidermis is a superficial

tissue that f orms a continuous layer over the surface of the primary; Plant body; Plant organs; Roots anchor the plant and absorb water and minerais from the soil.

Plant Cell Structure and Metabolism Sep 19 2021 Introduction to cell science; The molecules of cells; Cell membranes; The nucleus; Ribosomes; The soluble phase of the cell; The mitochondrion; The chloroplast; Microbodies; Cell walls; The golgi body; Lysosomes and vacuoles; Protoplasts.

Green Universe Oct 28 2019 Earth is a green planet and its plants are the basis for all life. From the smallest moss to the tallest giant redwood, the swathe of bluebells in a spring woodland to the colours of a New England fall, their diversity, success and ubiquity is plain. Yet few of us are conscious of the microscopic, universal building blocks of this empire, the cells. In Green Universe, eminent botanist Stephen Blackmore takes us on a journey through time and space - from the origin of the first cell more than three billion years ago, through their complex intertwined history, to the myriad forms they now take and the perfectly-adapted organs and organisms they make up. The author deftly interweaves the story of life on earth with our quest to understand the cell through the invention and development of the microscope. He shows how plant cells, besides being beautiful, are also through photosynthesis the powerhouses of life on Earth. Lavishly-illustrated in full colour, Green Universe is an engaging read and a mine of information, celebrating the diversity of cells and the unity of all living things into which they are built. Published in collaboration with the Royal Botanic Garden Edinburgh.

Plant Cells and Life Processes Nov 02 2022 This book explores the features of the plant cell and their life processes.

Plant Cell Culture Protocols Jul 18 2021 Robert Hall and a panel of expert researchers present a comprehensive collection of the most frequently used and broadly applicable techniques for plant cell and tissue culture. Readily reproducible and extensively annotated, the methods cover culture initiation, maintenance, manipulation, application, and long-term storage, with emphasis on techniques for genetic modification and micropropagation. Many of these protocols are currently used in major projects designed to produce improved varieties of important crop plants. Plant Cell Culture Protocols's state-of-the-art techniques are certain to make the book today's reference of choice, an indispensable tool in the development of new transgenic plants and full-scale commercial applications.

Mechanical Integration of Plant Cells and Plants Mar 26 2022 Chemical reactions and interactions between molecules are commonly considered the basis of life, and thus the biochemical nature of cells and organisms is relatively well recognized. Research conducted in recent years, however, increasingly indicates that physical forces profoundly affect the functioning of life at all levels of its organization. To detect and to respond to such forces, plant cells and plants need to be structured mechanically. This volume focuses on mechanical aspects of plant life. It starts with a consideration of the mechanical integration of supracellular structures and mechanical properties of cellular building blocks to show how the structural integrity of plant cells is achieved and maintained during growth and development. The following chapters reveal how the functioning of integrated plant cells contributes to the mechanical integration of plants, and how the latter are able to detect physical stimuli and to reorganize their own cells in response to them. The mechanical aspects of plant responses to stresses are also presented. Finally, all these aspects are placed in an evolutionary context.

Plant Cell Morphogenesis Mar 02 2020 This book collects techniques to continue exploring post-genomic land plant biology though the wisdom and skills accumulated from work on the founding molecular biology models that can now guide research into other species, including crop plants. Beginning with the visualization of plant cell structures, the volume moves on to cover digital image analysis protocols, qualitative and quantitative detection of the organization and dynamics of individual intracellular structures, the manipulation of intracellular structures, as well as techniques for studying model cell types. Written for the highly successful Methods in Molecular Biology series, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and fully updated, Plant Cell Morphogenesis: Methods and Protocols, Second Edition serves as an ideal source of inspiration for further research into the morphogenesis of plant cells, tissues, and organs.

The Plant Cell Wall Methods and Protocols Jul 26 2019

The Cytoskeleton Feb 22 2022 This book focuses on the plant cytoskeleton and its various cross-talks with other cellular components leading to its role in plant growth and development. It not only allows the geometric and signaling dimensions of cells, but is also very important in physiological processes. The book discusses the recent studies showing the role of actin and microtubule cytoskeleton interactions in cell-wall assembly and dynamics. The authors examine the role of both microtubules in the mechanics of plant cells, and actin filaments in the motility of chloroplasts. Based on recent advances in the study of the acto-myosin complex using high-resolution microscopy, they propose a new model for intracellular transport in plants. Exploring an almost-forgotten field of bioelectricity in the context of the cytoskeleton, the book highlights connections between the dynamic actin filaments and the bioelectricity of membranes and demonstrates that the plant cytoskeleton is involved in the distribution of plant hormones. Lastly, it addresses the role of endomembrane -cytoskeleton interactions to show the importance of the cytoskeleton in organelle morphogenesis and cellular functions. Studies in various plant models have shown how the actin filament and microtubules control and coordinate plant cell growth and development. This book summarizes the mechanisms underlying these functions.

Plant Cell Walls Nov 29 2019 Plant cell walls are complex, dynamic cellular structures essential for plant growth, development, physiology and adaptation. Plant Cell Walls provides an in depth and diverse view of the microanatomy, biosynthesis and molecular physiology of these cellular structures, both in the life of the plant and in their use for bioproducts and biofuels. Plant Cell Walls is a textbook for upper-level undergraduates and graduate students, as well as a professional-level reference book. Over 400 drawings, micrographs, and photographs provide visual insight into the latest research, as well as the uses of plant cell walls in everyday life, and their applications in biotechnology. Illustrated panels concisely review research methods and tools; a list of key terms is given at the end of each chapter; and extensive references organized by concept headings provide readers with guidance for entry into plant cell wall literature. Cell wall material is of considerable importance to the biofuel, food, timber, and pulp and paper industries as well as being a major focus of research in plant growth and sustainability that are of central interest in present day agriculture and biotechnology. The production and use of plants for biofuel and bioproducts in a time of need for responsible global carbon use requires a deep understanding of the fundamental biology of plants and their cell walls. Such an understanding will lead to improved plant processes and materials, and help provide a sustainable resource for meeting the future bioenergy and bioproduct needs of humankind.

Exploring Plant Cells for the Production of Compounds of Interest Oct 21 2021 Natural compounds obtained from plants represent a tremendous global market due to their use as food additives, cosmetics, in agriculture and in pharmaceuticals. This book provides up-to-date information on various strategies and methods for producing compounds of interest. Leading researchers discuss the latest advances in environmentally friendly natural compound production from plants, making the book a valuable resource for biotechnologists, pharmacists, food technologists and researchers working in the medical and healthcare industries.

Protein Trafficking in Plant Cells Aug 19 2021 The highly structured eucaryotic cell with its complex division of biochemical labour requires a distinct protein complement in each cellular structure and compartment. Nuclear coded and cytosolically synthesized polypeptides are specifically sorted to every corner of the cell in a post- or co-translational manner. The presence of separate genomes and protein translation machineries in plastids and mitochondria requires further coordination not only on the transcriptional, translational but also most likely on the protein import level. Numerous different protein transport systems have developed and coexist within plant cells to ensure the specific and selective composition of every sub-cellular compartment. This volume summarizes the current knowledge on protein trafficking in plant cells. Aside from the fundamental aspects in cell biology of how specific pre-protein sorting and translocation across biological membranes is achieved, a major focus is on transport, modification and deposition of plant storage proteins. The increasing use of plants as bioreactors to provide custom-designed proteins of different usage requires detailed understanding of these events. This text is directed not only at students and professionals in plant cell and molecular biology but also at those involved in horticulture and plant breeding. It is intended to serve as a text and guide for graduate-level courses on plant cell biology and as a valuable supplement to courses in plant physiology and development. Scientists in other disciplines who wish to learn more about protein translocation in plants will also find this text an up-to-date source of information and reference.

Applied Plant Cell Biology Mar 14 2021 The aim of this volume is to merge classical concepts of plant cell biology with the recent findings of molecular studies and real-world applications in a form attractive not only to specialists in the realm of fundamental research, but also to breeders and plant producers. Four sections deal with the control of development, the control of stress tolerance, the control of metabolic activity, and novel additions to the toolbox of modern plant cell biology in an exemplary and comprehensive manner and are targeted at a broad professional community. It serves as a clear example that a sustainable solution to the problems of food security must be firmly rooted in modern, continuously self re-evaluating cell-biological research. No green biotech without green cell biology. As advances in modern medicine is based on extensive knowledge of animal molecular cell biology, we need to understand the hidden laws of plant cells in order to handle crops, vegetables and forest trees. We need to exploit, not only empirically, their astounding developmental, physiological and metabolic plasticity, which allows plants to cope with environmental challenges and to restore flexible, but robust self-organisation.

Applications of Plant Cell and Tissue Culture Jan 24 2022 This work deals with basic plant physiology and cytology, and addresses the practical exploitation of plants, both as crops and as sources of useful compounds produced as secondary metabolites. Covers problems of commercial exploitation, socio-legal

aspects of genetic engineering of crop plants, and of the difficulties of marketing natural compunds produced by cells under artificial conditions.
Cells are Life Aug 07 2020 All organisms on earth are composed of cells. They come in many shapes and sizes and are involved in a wide range of activities. Cells are the smallest structures that can divide independently (reproduce) and are therefore the smallest structures to be alive. This book considers the structure and function of plant and animal cells, with an emphasis on plant cells. Cells contain many organelles that interact to allow function. For example, plant cells (unlike animal cells) contain chloroplasts that enable them to take energy from the sun to be used for growth and development. They manufacture energy-rich sugars that are sent to the mitochondria, where the energy is removed as ATP that can be used to do work in the cell. Meanwhile, animals depend upon plants for their energy source. Cells are Life provides answers to better understand the plant life all around us. Do plant cells have muscles? Why should children not eat the leaves of the common house plant, Dieffenbachia? Is it true that structures inside plant and animal cells move using tiny motors? Why do animal cells need a skeleton and plant cells don't? Is it true that rubber comes from a specialized plant cell? Arming readers with this deeper understanding, Cells are Life then addresses controversial topics, such as genetic engineering, cloning, and the nature of stem cells.
Plant Cell Organelles Dec 31 2019 Plant Cell Organelles contains the proceedings of the Phytochemical Group Symposium held in London on April 10-12, 1967. Contributors explore most of the ideas concerning the structure, biochemistry, and function of the nuclei, chloroplasts, mitochondria, vacuoles, and other organelles of plant cells. This book is organized into 13 chapters and begins with an overview of the enzymology of plant cell organelles and the localization of enzymes using cytochemical techniques. The text then discusses the structure of the nuclear envelope, chromosomes, and nucleolus, along with chromosome sequestration and replication. The next chapters focus on the structure and function of the mitochondria of higher plant cells, biogenesis in yeast, carbon pathways, and energy transfer function. The book also considers the chloroplast, the endoplasmic reticulum, the Golgi bodies, and the microtubules. The final chapters discuss protein synthesis in cell organelles; polysomes in plant tissues; and lysosomes and spherosomes in plant cells. This book is a valuable source of information for postgraduate workers, although much of the material could be used in undergraduate courses.
Introduction to the Fine Structure of Plant Cells Jun 28 2022 It is appro pi ate to the contents of this book to recall a few highlights in the history of plant cytology from its inception over three centuries ago. Robert Hooke in 1663 presented his observations of what he called « cells" in cork and other plant parts and beautifully illustrated and described these in his classic « Micrographia" published two years later. More detailed exploration of the cell and its contents awaited almost two centuries for Robert Brown's discovery of the nucleus in 1831. Discoveries of other cell organelles followed, particularly in the latter part of the 19th and early part of this century. As is frequently noted each of these achievements was preceeded by advances in the resolution of the microscope. Now history repeats and recent developments in electron microscopy have given the biologist the opportunity to study cell morphology in far greater detail than at any time previously. Indeed, the resolution of the electron microscope is several hundredfold better than that available in the finest light microscopes. These advances in instrumentation plus improvements in the techniques of specimen preparation have made possible the ex amination of plant cells of almost any type. It is the resulting wealth of new information now accessible to the botanical cytologist that has prompted this publication. In this book we have brought together electron micrographs represent ing a number of cell types from higher plants.
Plant Cell Expansion Sep 27 2019 This volume covers broad aspects of cell expansion in three different cell types: root hairs, pollen tubes, and hypocothyl cells. Chapters focus on the cutting-edge methods to study in detail several complex aspects of cell expansion such as secretion, endocytosis and recycling, cellular signaling and trafficking, and protein and polysaccharides cell wall biosynthesis in real time during cell expansion. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and practical, Plant Cell Expansion: Methods and Protocols is an essential reference book for plant scientist, molecular, and cell biologist as well as plant biochemists?.
Plant Cells Nov 21 2021 Plants produce more than 30,000 types of chemicals, including pharmaceuticals, pigments and other fine chemicals, which is four times more than those obtain ed from microbes. Plant cell culture has been receiving great attention as an alternative for the production of valuable plant derived secondary metabolites, since it has many advantages over whole plant cultivation. However, much more research is required to enhance the culture productivity and reduce the pro cessing costs, which is the key to the commercialization of plant cell culture pro cesses. The recent achievements in related biochemical engineering studies are reviewed in Chapter 1. The effect of gaseous compounds on plant cell behavior has been little studied, and Chapter 2 focuses on these gas concentration effects (including oxygen, carbon dioxide, ethylene and others, such as volatile hor mones like methyl jasmonate) on secondary metabolite production by plant cell cultures. Two metabolites of current interest, i. e. , the antimalarial artemisinin (known as "qing hao su" in China) that is produced by Artemisia annua (sweet wormwood) and taxanes used for anticancer therapy that are produced by species of Taxus, are taken as examples. Bioprocess integration is another hot topic in plant cell culture technology. Because most of the plant secondary meta bolites are toxic to the cells at high concentrations during the culture, removal of the product in situ during the culture can lead to the enhanced productivity. Various integrated bioprocessing techniques are discussed in Chapter 3.
The Science and Lore of the Plant Cell Wall Jun 04 2020 Plant cell walls are composed of complex carbohydrates, proteins, phenolic compounds, and inorganic ions, all of which play functional roles. Cellulose (1,4-fO-glucan) and callose (1,3-fO-glucan) are synthesized in the plasma membrane, while other polysaccharides are synthesized in the Golgi. Plant cell growth occurs with the loosening of the walls, which may be caused by several enzymatic actions. Plant development is related to the morphological changes of cells and tissue, which is caused by structural changes of the walls."
Plant Cell Biology May 28 2022 Plant Cell Biology, Second Edition: From Astronomy to Zoology connects the fundamentals of plant anatomy, plant physiology, plant growth and development, plant taxonomy, plant biochemistry, plant molecular biology, and plant cell biology. It covers all aspects of plant cell biology without emphasizing any one plant, organelle, molecule, or technique. Although most examples are biased towards plants, basic similarities between all living eukaryotic cells (animal and plant) are recognized and used to best illustrate cell processes. This is a must-have reference for scientists with a background in plant anatomy, plant physiology, plant growth and development, plant taxonomy, and more. Includes chapter on using mutants and genetic approaches to plant cell biology research and a chapter on -omic technologies Explains the physiological underpinnings of biological processes to bring original insights relating to plants Includes examples throughout from physics, chemistry, geology, and biology to bring understanding on plant cell development, growth, chemistry and diseases Provides the essential tools for students to be able to evaluate and assess the mechanisms involved in cell growth, chromosome motion, membrane trafficking and energy exchange
Plant Cell and Tissue Culture Dec 23 2021 Plant Cell and Tissue Culture continues the high standards of Humana's Methods in Molecular Biology series. Its step-by-step approach (a hallmark of the series) is applied to a wide range of basic laboratory techniques and culture conditions appropriate to plant cells. Because of the diversity of cell types, species, and culture methods, much of this volume is devoted to the culture of particular cell types and to the regeneration of these cells into whole plants. Special attention is also given to the genetic modification of plants, as well as to the economic significance of plant products. Chapters cover a wide range of topics and techniques, including:• tissue culture media and selection • cryopreservation • callus culture techniques • organ culture • embryogenesis • batch culture • large-scale culture • hormonal control • fertilization techniques • gene transfer • cell immobilization • production systems • cell product purification • DNA expression • electrofusion of plant cells • mutant selection • mutagenesis techniques • automation • transfer of nuclei • protoplast culture • media analysis • micropropagation. A detailed appendix lists the formulas for the most commonly employed plant cell media. Comprehensive, easy to follow, and a pleasure to use, Pollard and Walker's Plant Cell and Tissue Culture is an essential tool for everyone--at all levels of proficiency and experience--involved in plant culture.
Physiology and Biochemistry of Plant Cell Walls Oct 09 2020 The plant cell wall plays a vital role in almost every aspect of plant physiology. New techniques in spectroscopy, biophysics and molecular biology have revealed the extraordinary complexity of its molecular architecture and just how important this structure is in the control of plant growth and development. The Second Edition of this accessible and integrated textbook has been revised and updated throughout. As well as focusing on the structure and function of plant cell walls the book also looks at the applications of this research. It discusses how plant cell walls can be exploited by the biotechnology industry and some of the main challenges for future research. Key topics include: architecture and skeletal functions of the wall; cell-wall formation; control of cell growth; role in intracellular transport; interactions with other organisms; cell-wall degradation; biotechnological applications of cell-walls; role in diet and health. This textbook provides a clear, well illustrated introduction to the physiology and biochemistry of plant cell walls which will be invaluable to upper level undergraduate and post graduate students of plant physiology, plant pathology, plant biotechnology and biochemistry.