Plant Mitochondria From Genome To Function Advances In Ynthesis And Respiration

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Mitochondria in plants, as in other eukaryotes, play an essential role in the cell as the major producers of ATP via oxidative phosphorylation. However, mitochondria also play crucial roles in many other aspects of plant development and performance, and possess an array of unique properties which allow them to interact with the specialized features of plant cell metabolism.

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Plant Mitochondria: From Genome to Function. Usually dispatched within 3 to 5 business days. Usually dispatched within 3 to 5 business days. Mitochondria in plants, as in other eukaryotes, play an essential role in the cell as the major producers of ATP via oxidative phosphorylation. However, mitochondria also play crucial roles in many other aspects of plant development and performance, and possess an array of unique properties which allow them to interact with the specialized features of ...

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All mitochondrial genomes encode the large subunit (23S-like) and small subunit (16S-like) RNA components of the mitochondrial ribosome, but only a few also encode a 5S ribosomal RNA (rRNA), an otherwise ubiquitous constituent of prokaryotic and eukaryotic ribosomes. Ribosomal protein genes are absent or almost absent from animal and fungal mitochondrial

genomes, but are encoded in plant and a number of protist mitochondrial genomes.

Mitochondrial Genome - an overview | ScienceDirect Topics
Plant mitochondria move about 10 times faster than mammalian or yeast mitochondria. One researcher at the University of Tokyo says the plant mitochondrial genome 'has so many enigmas.' Despite the...

Researchers can finally modify plant mitochondrial DNA
plant mitochondria have hundreds to thousands of kb of dna and yet relatively few genes for example arabidopsis has 367 kb but only 57 genes apicomplexans including malaria causing plasmodium have the smallest mitochondrial genomes with five genes and 6 kb perhaps a reflection of their highly obligate relationships as intracellular

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Plant mitochondria have evolved distinct strategies for genome maintenance, genetic decoding, Over the past 20 years, researchers investigating the mitochondria of plants have been astonished by the phenomenal variation these organelles display relative to their mammalian and fungal counterparts.

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Plant mitochondria have evolved distinct strategies for genome maintenance, genetic decoding, gene regulation, and organelle segregation. Their physi- ological and biochemical functions have similarly evolved to meet the specific demands of photosynthetic organisms “rooted” in place.

Higher Plant Mitochondria
Plant Mitochondria: From Genome to Function av David Day, A Harvey Millar, James Whelan. Inbunden Engelska, 2004-08-01. 3909. Köp. Spara som favorit Skickas inom 10-15 vardagar. Fri frakt inom Sverige för privatpersoner. ...

Plant Mitochondria: From Genome to Function - David Day, A ...
The S. conica mitochondrial genome contains a remarkable 4.6 Mb of dispersed repeats, which is more than any other sequenced plant mitochondrial genome in both absolute and percentage (40.8%) terms . The largest repeats are >80 kb in size, but the bulk of the repetitive content consists of an enormous number of small, imperfect, and often partially overlapping repeats (Figures 5 , S2 , and S3).

Rapid Evolution of Enormous, Multichromosomal Genomes in ...
Metazoan, plant, fungal and other mitochondrial and plastid genomes tend to vary greatly in size and gene content with some of the genes required for the energy creating processes being made by the nuclear genome and imported.

Organelle Genome Resources
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The model proposes that plant mitochondria do not distinguish a damaged or mismatched DNA strand from the undamaged strand, they simply cut both strands and perform homology-

based DSB repair. This plant-specific strategy for protecting future generations from mitochondrial DNA damage has the side effect of genome expansions and rearrangements.

Genes and Junk in Plant Mitochondria—Repair Mechanisms and ...

plant mitochondria have hundreds to thousands of kb of dna and yet relatively few genes for example arabidopsis has 367 kb but only 57 genes apicomplexans including malaria causing plasmodium have the smallest mitochondrial genomes with five genes and 6 kb perhaps a reflection of their highly obligate relationships as intracellular Higher Plant Mitochondria Plant Cell the plant mitochondrial genomes investigated all contain an incomplete set of trna genes the balance is nuclear encoded and ...

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Plant Mitochondria From Genome To Function Springerlink however mitochondria also play crucial roles in many other aspects of plant development and performance and possess an array of unique properties which allow them to interact with the specialized

Mitochondria in plants, as in other eukaryotes, play an essential role in the cell as the major producers of ATP via oxidative phosphorylation. However, mitochondria also play crucial roles in many other aspects of plant development and performance, and possess an array of unique properties which allow them to interact with the specialized features of plant cell metabolism. The two main themes running through the book are the interconnection between gene regulation and protein function, and the integration of mitochondria with other components of plant cells. The book begins with an overview of the dynamics of mitochondrial structure, morphology and inheritance. It then discusses the biogenesis of mitochondria, the regulation of gene expression, the mitochondrial genome and its interaction with the nucleus, and the targeting of proteins to the organelle. This is followed by a discussion of the contributions that mutations, involving mitochondrial proteins, have made to our understanding of the way the organelle interacts with the rest of the plant cell, and the new field of proteomics and the discovery of new functions. Also covered are the pathways of electron transport, with special attention to the non-phosphorylating bypasses, metabolite transport, and specialized mitochondrial metabolism. In the end, the impact of oxidative stress on mitochondria and the defense mechanisms, that are employed to allow survival, are discussed. This book is for the use of advanced undergraduates, graduates, postgraduates, and beginning researchers in the areas of molecular and cellular biology, integrative biology, biochemistry, bioenergetics, proteomics and plant and agricultural sciences.

We have taught plant molecular biology and biotechnology at the undergraduate and graduate level for over 20 years. In the past few decades, the field of plant organelle molecular biology and biotechnology has made immense strides. From the green revolution to golden rice, plant organelles have revolutionized agriculture. Given the exponential growth in research, the problem of finding appropriate textbooks for courses in plant biotechnology and molecular biology has become a major challenge. After years of handing out photocopies of various journal articles and reviews scattered through out the print and electronic media, a serendipitous meeting occurred at the 2002 IATPC World Congress held in Orlando, Florida. After my talk and evaluating several posters presented by investigators from my laboratory, Dr. Jacco Flipsen, Publishing Manager of Kluwer Publishers asked me whether I would consider editing a book on Plant Organelles. I accepted this challenge, after months of deliberations, primarily because I was unsuccessful in finding a text book in this area for many years. I

signed the contract with Kluwer in March 2003 with a promise to deliver a camera-ready textbook on July 1, 2004. Given the short deadline and the complexity of the task, I quickly realized this task would need a co-editor. Dr. Christine Chase was the first scientist who came to my mind because of her expertise in plant mitochondria, and she readily agreed to work with me on this book.

This long-awaited second edition covers the major changes that have occurred in the field over the last decade Completely revised with the most up-to-date research and including brand new chapters, Annual Plant Reviews, Volume 50: Plant Mitochondria, 2nd Edition presents the multifaceted roles of mitochondria in plants. The book starts with a short history of plant mitochondrial research; discusses how coevolution shaped plant mitochondrial gene expression; explains control of number, shape, size, and motility of mitochondria; delves into stress responses and roles in stress alleviation in mitochondrial biochemistry; covers the damage repair pathway of the Calvin-Benson cycle; and more. Containing sections written by many of the world's leading researchers in this area, this book brings together and reviews for the first time many recent advances. It offers chapters on: Bioblasts, Cytomikrosomen & Chondriosomes; The Crosstalk Between Genomes; The Dynamic Chondriome; Metal Homeostasis in Plant Mitochondria; RNA Metabolism and Transcript Regulation; Mitochondrial Regulation and Signalling in the Photosynthetic Cell; Mitochondrial Biochemistry; Ecophysiology of Plant Respiration; Photorespiration; and Mitochondria and Cell Death. Annual Plant Reviews, Volume 50: Plant Mitochondria, 2nd Edition is an extremely important and timely book that will be of great use and interest to plant scientists, cell and molecular biologists, and biochemists.

The past decade has witnessed an explosion of our knowledge on the structure, coding capacity and evolution of the genomes of the two DNA-containing cell organelles in plants: chloroplasts (plastids) and mitochondria. Comparative genomics analyses have provided new insights into the origin of organelles by endosymbioses and uncovered an enormous evolutionary dynamics of organellar genomes. In addition, they have greatly helped to clarify phylogenetic relationships, especially in algae and early land plants with limited morphological and anatomical diversity. This book, written by leading experts, summarizes our current knowledge about plastid and mitochondrial genomes in all major groups of algae and land plants. It also includes chapters on endosymbioses, plastid and mitochondrial mutants, gene expression profiling and methods for organelle transformation. The book is designed for students and researchers in plant molecular biology, taxonomy, biotechnology and evolutionary biology.

Advances in Botanical Research publishes in-depth and up-to-date reviews on a wide range of topics in plant sciences. Features a wide range of reviews by recognized experts on all aspects of plant genetics, biochemistry, cell biology, molecular biology, physiology and ecology. This thematic volume features reviews on Mitochondrial genome evolution. Publishes in-depth and up-to-date reviews on a wide range of topics in plant sciences Features a wide range of reviews by recognized experts on all aspects of plant genetics, biochemistry, cell biology, molecular biology, physiology and ecology This thematic volume features reviews on mitochondrial genome evolution

This book is a printed edition of the Special Issue "Plant Mitochondria" that was published in IJMS

The Encyclopedia of Cell Biology offers a broad overview of cell biology, offering reputable, foundational content for researchers and students across the biological and medical sciences. This important work includes 285 articles from domain experts covering every aspect of cell biology, with fully annotated figures, abundant illustrations, videos, and references for further reading. Each entry is built with a layered approach to the content, providing basic information for those new to the area and more detailed material for the more experienced researcher. With authored contributions by experts in the field, the Encyclopedia of Cell Biology provides a fully cross-referenced, one-stop resource for students, researchers, and teaching faculty across the biological and medical sciences. Fully annotated color images and videos for full comprehension of concepts, with layered content for readers from different levels of experience Includes information on cytokinesis, cell biology, cell mechanics, cytoskeleton dynamics, stem cells, prokaryotic cell biology, RNA biology, aging, cell growth, cell Injury, and more In-depth linking to Academic Press/Elsevier content and additional links to outside websites and resources for further reading A one-stop resource for students, researchers, and teaching faculty across the biological and medical sciences

This book provides reviews and primary research articles that discuss the replication, repair, maintenance, and structures of plant organelle genomes. Rearrangements of these genomes are common and provide a way to distinguish closely related plant species. Some articles in the book discuss recent advances in identifying specific proteins and potential mechanisms involved in DNA replication, recombination, and repair in plant mitochondria and chloroplasts.