

## PREFACE

Plant hormones play a crucial role in controlling the way in which plants grow and develop. While metabolism provides the power and building blocks for plant life, it is the hormones that regulate the speed of growth of the individual parts and integrate these parts to produce the form that we recognize as a plant. In addition, they play a controlling role in the processes of reproduction. This book is a description of these natural chemicals: how they are synthesized and metabolized; how they work; what we know of the molecular aspects of the transduction of the hormonal signal; a description of some of the roles they play in regulating plant growth and development; their role in stimulating defensive responses; and how we measure them. Emphasis has also been placed on the new findings on plant hormones deriving from the expanding use of molecular biology as a tool to understand these fascinating regulatory molecules. Even at the present time, when the role of genes in regulating all aspects of growth and development is considered of prime importance, it is still clear that the path of development is nonetheless very much under hormonal control, either via changes in hormone levels in response to changes in gene transcription, or with the hormones themselves as regulators of gene transcription.

This is not a conference proceedings, but a selected collection of newly written, integrated, illustrated reviews describing our knowledge of plant hormones, and the experimental work which is the foundation of this knowledge. The aim of this book is to *tell a story* of what is known at the present time about plant hormones. This volume forms the third edition of a book originally published in 1987 under the title *Plant Hormones and Their Role in Plant Growth and Development*, with the second edition, published in 1995, being titled *Plant Hormones: Physiology, Biochemistry and Molecular Biology*. The title has been changed again from the previous editions in order to reflect the changing nature of the field of plant hormones. The changes that have taken place in the nine years since the last edition are particularly striking: genetics and mutations have moved from one chapter to almost all, *Arabidopsis* has gone from a mention to central stage in almost every chapter, signal transduction has changed from one example to a major section, the concept of negative regulators has emerged and the role of signal destruction has become an underlying theme. The new edition bears only a superficial resemblance to its first forebear!

The information in these pages is directed at advanced students and professionals in the plant sciences: molecular biologists, botanists, biochemists, or those in the horticultural, agricultural and forestry sciences. It should also form an invaluable reference to molecular biologists from other disciplines who have become aware of the fact that plants form an exciting class of organisms for the study of development, and who need information on the regulators of development that are exclusive to plants. It is intended that the book should serve as a text and guide to the literature for graduate level courses in the plant hormones, or as a part of courses in plant, comparative, or molecular aspects of development. Scientists in other disciplines who wish to know more about the plant hormones and their role in plants should also find this volume a valuable

resource. It is hoped that anyone with a reasonable scientific background can find valuable information in this book expounded in an understandable fashion.

Gone are the days when one person could write a comprehensive book in an area such as plant hormones. I have thus drawn together a team of fifty one experts who have individually or jointly written about their own area. At my direction they have attempted to tell a story in a way that will be both informative and interesting. Their styles and approaches vary, because they each have a tale to tell from their own perspective. The choice of topics has been my own. Within each topic the coverage and approach has been decided by the authors. While the opinions expressed by the authors are their own, they are, in general, also mine, because I knew their perspective before I invited them to join the project.

Where appropriate the reader will find cross references between chapters. In addition the extensive, sub-divided index at the end of the volume should allow this book to be used as a reference to find individual pieces of information. Sometimes the same information can be found in more than one location, though usually from a different perspective. Rather than edit out such duplication, I have chosen to let it remain so that the complete story on any topic can be obtained without having to excessively transfer between chapters.

A volume such as this cannot be encyclopedic. Nevertheless, we have covered the majority of topics in which active research is taking place. The author of each chapter has provided a set of references that will guide the reader to further information in the area. So as not to disrupt the narrative excessively, and to maintain the book at a reasonable length, the chapter authors were asked to severely limit the number of citations to those papers of greatest or most recent significance, and to also bring to the attention of readers other reviews in which other papers are cited and discussed, so that you, the reader, can find the original information. As such a reference citation at any point within the chapters may be to a later paper in a series, or to a review covering the material, from which the original citation(s) can be obtained if desired; it does not imply that this is the original reference to the work discussed. The authors wish to apologize to their colleagues whose significant work is not directly cited for their lack of inclusion due to the strictures placed on them by the editor.

I would like to thank all the authors who made this volume possible, and produced their chapters not only in timely fashion, but in line with the many restrictions placed on them by this editor. Finally I would like to thank my wife, Linda, who put up with my many hours of absences during which I edited, produced and formatted this book, and to the continuing support and cooperation of Jacco Flipsen and Noeline Gibson from Kluwer Academic Publishers.

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