

Preface

The sequencing of plant genomes has provided a new window of opportunity for the study of plant biology. This information has fuelled the development of the 'omic' technologies and it is timely that these approaches, coupled with forward and reverse genetic strategies, should be applied to phenomena such as cell separation and adhesion. This is the first volume to focus exclusively on these processes and to seek to link improvements in our scientific understanding with methods that may allow us to manipulate cell separation and adhesion to the benefit of the agricultural and horticultural industries. As a consequence, the book contains contemporary material of interest to the experimental scientist in addition to information that should be of value to those who seek to apply such knowledge.

The opening chapter outlines those sites where cell separation and adhesion have been documented to take place. Chapter 2 provides a detailed account of cell wall structure and its biosynthesis and assembly, because in order to dismantle cellular components, it is important to first understand how they may be constructed. The third chapter describes vascular cell differentiation in the xylem and discusses the importance of cell-cell contact for the process to occur, whilst Chapter 4 explores the role of cell adhesion during pollen tube guidance. A variety of cell separation phenomena including: root development, organ abscission, pod dehiscence, and fruit ripening, are then examined in detail. In the final chapter, the role of polymer cross-linking in cell-to-cell adhesion is examined and the importance of the process in product quality is evaluated.

The compilation of this book represents the first monograph ever produced that focuses exclusively on the processes of cell separation and adhesion during plant development. We believe that it provides the reader with a detailed overview of the major advances in our knowledge of these phenomena and the commercial significance of understanding how they may be regulated.

During the final stages of editing this volume Daphne Osborne sadly died. During her scientific career Daphne made an outstanding contribution to our understanding of cell separation processes in plants and, in particular, to our knowledge of abscission. This book is dedicated to her memory.

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