Preface

The aim of *Plant Virology Protocols* is to provide a source of information to guide the reader through the wide range of methods involved in generating transgenic plants that are resistant to plant viruses. To this end, we have commissioned a wide-ranging list of chapters that will cover the methods required for: plant virus isolation; RNA extraction; cloning coat protein genes; introduction of the coat protein gene into the plant genome; and testing transgenic plants for resistance. The book then moves on to treatments of the mechanisms of resistance, the problems encountered with field testing, and key ethical issues surrounding transgenic technology. Although *Plant Virology Protocols* deals with the cloning and expression of the coat protein gene, the techniques described can be equally applied to other viral genes and nucleotide sequences, many of which have also been shown to afford protection when introduced into plants. The coat protein has, however, been the most widely applied, and as such has been selected to illustrate the techniques involved.

Plant Virology Protocols has been divided into six major sections, containing 55 chapters in total.

Part I provides an introduction to plant virology and the types of crop losses that are caused by plant viruses. It outlines how crossprotection was first discovered and how it has been applied in the past and in present-day agriculture. Following "classical crossprotection," this section then describes the first coat protein-mediated experiments using transgenic plants, and reviews the wide range of viruses and plants that have been tested to date.

Part II covers virus purification and RNA and DNA extraction for some of the major positive-sense RNA and DNA viruses. Each chapter includes a diagram of the viral genomic map, illustrating the location of the coat protein gene.

Part III covers a wide range of techniques required to analyze the quality of RNA, and describes how to generate and identify cDNA clones representing the coat protein gene.

Part IV describes how to introduce the coat protein gene into suitable vectors, and provides transformation techniques for most of the routinely used plants. This section also covers the preliminary analysis of transgenic plants,