

# Contents

<i>List of Contributors</i>	ix
-----------------------------	----

<i>Preface</i>	xi
----------------	----

## 1

### Introduction

JOHN P. HELGESON

I. Development of Tissue Culture Research	1
II. Terminology	2
III. Tissue Cultures and Plant Pathology	3
IV. Coverage	4
V. Concluding Statement	6
References	6

## 2

### Studies of Host-Pathogen Interactions *in vitro*

JOHN P. HELGESON

I. Introduction	9
II. The Rationale for Using Tissue Cultures	10
III. Resistance and Susceptibility of Tissue Cultures	13
IV. Tobacco Tissue Cultures and <i>Phytophthora parasitica</i> var. <i>nicotianae</i> : A Case History	22
V. Concluding Remarks: Problems with Tissue Cultures	33
References	35

### 3

#### The Use of Tissue Cultures in the Study of Crown Gall and Other Bacterial Diseases

ANN G. MATTHYSSE

- I. Introduction
- II. Studies of Interactions of *Pseudomonas*, *Xanthomonas* and *Erwinia* with Tissue Culture Cells
- III. Studies of the Interaction of *Agrobacterium* with Tissue Culture Cells
- IV. Studies of the Interactions of Bacteria with Tissue Slices
- V. Studies of Ti Plasmid-mediated Oncogenic Transformation in Tissue Culture
- VI. Conclusions
- References

### 4

#### The Use of Protoplasts in Plant Virus Research

B. D. HARRISON AND M. A. MAYO

- I. Introduction
- II. Methods
- III. Contributions to Plant Virus Biology
- IV. Concluding Comments
- References

### 5

#### Genetic Variation from Tissue Culture

W. R. SCOWCROFT, P. J. LARKIN AND R. I. S. BRETTELL

- I. Introduction
- II. Somaclonal Variants Are Heritable
- III. Tissue Culture Variation and Disease Resistance
- IV. Somaclonal Variation and Interspecific Gene Transfer
- V. The Nature of Somaclonal Variation
- VI. Concluding Remarks
- References

# 6

## Prospects and Challenges for the Future

DAVID S. INGRAM

I. Introduction	163
II. Progress in Perspective	163
III. Progress in the Future	169
IV. Conclusions	184
References	185

<i>Index</i>	189
--------------	-----