

Book review

Cellular and Molecular Aspects of Plant-Nematode Interactions. Edited by C. Fenoll, F.M.W. Grundler and S.A. Ohi. Kluwer Academic Publishers, 1997. ISBN 0-7923-4637-8.

The explosion of information in the area of nematode host-parasite relationships makes timely, comprehensive reviews a necessity for scientists and teachers who need to keep abreast of the latest findings. 'Cellular and Molecular Aspects of Plant-Nematode Interactions' fills such a need. Its editors, C. Fenoll, F.M.W. Grundler and S.A. Ohi have selected contributors with broad backgrounds and active research programs in the areas of their assigned chapters and this is reflected in the book's contents. The volume has its origin in a European Union Concerted Action Program, funded by the European Commission. The purpose of the grant was to stimulate European collaboration and coordinate research on plant parasitic nematodes, especially investigations dealing with genetic engineering of nematode-resistant crops. The authors of this book were drawn primarily from that group of collaborators.

An introductory chapter provides an overview of plant parasitic nematode feeding behaviour, including host cell responses. The rest of the book is divided into three broad subjects: A, Cellular and Molecular Aspects of the Interaction; B, Natural Resistance; and C, Engineered Resistance. Section A includes chapters on Root Anatomy and Development, Plant Signals in Nematode Hatching and Attraction, Invasion and Migration Behaviour of Sedentary Nematodes, The Biology of Giant Cells, The Structure of Syncytia, Nematode Secretions, Physiology of Nematode Feeding and Feeding Sites, Cell Cycle Regulation in Nematode Feeding Sites, and Regulation of Gene Expression in Feeding Sites. Section B contains chapters on the Assessment of Variation in Virulence in Biological and Molecular Terms, Genetic and Molecular Strategies for the Cloning of (A)Virulence Genes

in Sedentary Plant-Parasitic Nematodes, Breeding for Nematode Resistance in Sugarbeet: a Molecular Approach, Resistance to Root-knot Nematodes in Tomato, and Biochemistry of Plant Defence Responses to Nematode Infection. Section C deals with engineered resistance, including: Engineering Resistance against Plant Parasitic Nematodes Using Anti-Nematode Genes, Engineering Plant Nematode Resistance by Antifeedants, Antifeeding Structure Approaches to Nematode Resistance, and Plantibody-Mediated Resistance Against Nematodes.

With 20 chapters and 65 authors, it would be difficult, in a review such as this one, to provide a detailed analysis of each chapter. While the chapters tend to be short – the average is 13 pages including references – the subject matter is adequately reviewed and the references cited cover the most recent and pertinent literature. Each chapter begins with an abstract that enables the reader to gain quick insight to the chapter's contents. A brief 'Conclusions' section points to unanswered questions and directions for future research. Figures, when used, are of high quality and illustrate important concepts. There are three full-color plates.

My only complaint regards the index which I found to be inadequate. Granted that the book contains only 286 pages, an index of less than three pages detracts from the value of the text as a reference source. For example, despite the fact that an entire chapter is devoted to root-knot nematode resistance in tomato, and reference is made therein to heat-stable genes, the index has no entry for heat-stable genes nor even, for that matter, tomato.

Despite the deficiency of the index, the book fulfills its mission and will make a valuable addition to the library of anyone interested in the fascinating world of plant parasitic nematodes.

Michael A. McClure
University of Arizona