

*Plant Infectious Agents*. By HUGH D. ROBERTSON, STEPHEN H. HOWELL, MILTON ZAITLIN and RUSSEL L. MALMBERG. Cold Spring Harbor Laboratory, P.O. Box 100, Cold Spring Harbor, New York 11724. 200 pp. (approx.). Paperback \$23 (\$27.60 outside U.S.) ISBN 0 87969 159 X.

This is a collection of short papers from a Cold Spring Harbor Laboratory meeting on plant viruses, viroids and satellites, held in 1983. Plant virology offers a variety of different, sometimes novel or unusual molecular structures and strategies for replication and gene expression. The book provides a quick and simple means to get almost up to date with a rapidly progressing area. There is a useful introduction with only minor inaccuracies or omissions, owing, no doubt, to condensing information to summarize plant virology from its beginnings to current research. This is followed by 32 papers, a summary, and an appendix of selected complete nucleotide sequences.

The first 6 of the 32 papers concern cauliflower mosaic virus (CaMV). Together they well summarize the current state of knowledge of the molecular biology of this dsDNA virus. There is a lot of repetition, not only in the written accounts, but actually in the research. Guilley *et al.*, Hull and Covey, and Hohn *et al.* all emphasize the new model for replication of CaMV by reverse transcription and various evidences in its favour. Apart from a mention of the concept in one published paper, this had not been described in detail before this meeting. Guilfoyle and Olszewski, Howell and Walden, and Ménéssier *et al.* cover other aspects of replication, particularly minichromosomes. Guilfoyle and Olsewski also give a good account of transcription and some of the problems its study entails, while Howell and Walden describe a vector-helper system which is very interesting, but the recombination events could be disadvantageous for developing a gene vector.

The next three papers concern geminiviruses which have double particles (geminates) with circular single-stranded DNA. Goodman *et al.* and Buck *et al.* mention other DNA forms found *in vivo* which include concatamers suggesting rolling circle replication – but there is little evidence. Indeed, little is known about gemini viruses. A substantial contribution is the cassava latent virus (CLV) sequence and its implications, given not as a paper, but included in the appendix. Clearly there are two circular molecules comprising the genome of the CLV, BGMV and TGMV whitefly-transmitted geminiviruses. The Australian chloris striate virus (CSV) described by Marriott and Symons in the next contribution is transmitted by leafhoppers, and might have only one circular molecule per genome.

The rest of the book is devoted to RNA genome 'agents'.

Goelet *et al.* present the complete sequence of TMV, a milestone in plant virology, and, judging by the approach taken and some difficulties implied, it was a millstone too. Despite this splendid work, little is known about functions of the sequence. *In vivo* protein functions are hardly known for plant RNA viruses. Zaitlin *et al.* describe some TMV subgenomic RNAs and their replication, which is probably by synthesis rather than precursor processing. Of nine such RNAs, one is the messenger for coat protein, and another for the 30 K product (involved with cell-to-cell spread?) but the remainder could well be artifacts. (Unfortunately the literature does not always distinguish between subgenomic RNA and subgenomic mRNA.) Siegel and Rochon deal with the encapsidation of TMV subgenomic RNAs, pointing out that host RNA is included in particles, which may have biological significance; an interesting speculation for which further development is awaited. Morris describes double-stranded cellular plant viral RNAs (dsRNA) of single-stranded RNA viruses, which may have significance in the replication process (but no distinction is made between replicative forms and replicative intermediates) and Dawson's title suggests a paper also on viral RNA replication, yet its content also covers mRNA function and is more related to the Goelet *et al.* and Zaitlin's earlier papers. The excellent report by Casper and Stubbs on molecular interactions in

TMV is also a little out of place, being the only virus particle structure contribution; presumably all TMV papers were grouped together.

Several papers concern multicomponent virus. Jackson *et al.* provide a fine description of barley stripe mosaic virus (BSMV), a virus that promises more in the future than it has yielded so far. Surprisingly, however, its candidacy as a potential gene vector for monocotyledons is not mentioned. The bipartite CPMV (Goldbach *et al.*) is one of the best all-round understood plant RNA viruses apart from TMV. Its resemblance to picornaviruses is remarkable, and the embryonic results on 'resistance' in protoplasts (Kiefer *et al.*) look promising. CPMV features again in the papers on replicases (Darssers *et al.*) as does brome mosaic virus (BMV) described by Hall *et al.* Together these two articles summarize almost all that is known on the controversial subject of RNA-RNA replication in plants, but surprisingly without reference to Fraenkel-Conrat.

The curious involvement of plant viruses with maize mutations and transposing elements is dealt with by Mottinger and Dellaporta and Dellaporta *et al.* This could be a fascinating subject for further study, or a red herring. Virus infections cause a type of stress that could account for some of the interesting phenomena – I would doubt if the virus is analogous to an activator, but it is an interesting thought.

There is one contribution, by Nuss, on a plant reovirus, wound tumour virus, which has a double-stranded RNA genome, with a virion-associated transcriptase. Emphasis is on transcription and translation, again involving subgenomic RNAs. Cloning and manipulation of DNA copies is not yet achieved, but clearly the next step. The remaining short papers deal with viroids (small infectious unencapsidated circular RNA molecules) and virusoids (viroid-like RNAs with some characteristics of satellites of plant viruses). I am surprised there is not yet such an entity as a 'satelloid'! These nine papers provide an up-to-date picture of the state of the art. There is a slight tendency for researchers not to cross-reference each other's work, perhaps a sign of the competitive spirit in a fascinating area of research which is clearly now making rapid progress – except that the functions and pathogenesis mechanism of viroids, despite the excellent structural work, is still far from understood.

The papers are generally of a high standard and the organizers and editors are to be congratulated. £18.67 or \$26.70 is on the expensive side for a paperback, but CSH publications are usually worth it.

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*Intercellular Communication in Leukocyte Function.* Edited by J. W. PARKER and R. L. O'BRIEN. Chichester: John Wiley. £21.50. ISBN 0 47190 161 X.

This is a nicely produced book of a type that is almost completely useless. More than that, it is an active, though minor, nuisance. Immunology is a rapidly advancing field well served by numerous journals. In this context, one can identify two kinds of conference-derived book that may be valuable. (1) Records of small, usually specialized, meetings attended by well-chosen participants; they reproduce not only papers, but also the more fruitful parts of what should be extensive discussions; they aim to provide an up-to-date survey of a limited field, and provided they are published expeditiously, often do so. The symposium series of the Ciba and Benzon foundations, for example, conform to this pattern. (2) Carefully selected review papers based on the plenary or semi-plenary sessions of large congresses. Each of these will be written (with reasonable luck and good judgement on the part of the editors) by someone who knows what he or she is talking about; cumulatively, they cover a broad field and provide a work of reference that is valuable for two or three years. The Progress in Immunology series, derived from the triennial international immunology congresses, belong to this category.