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Review of Dictionary of Plant Tissue Culture

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Dictionary of Plant Tissue Culture. Cassells, A. C. and P. B. Gahan. 2006. ISBN 13: 978-1-56022-919-3 (paper US\$29.95) 265 pp. Food Products Press, an imprint of The Haworth Press, Inc. 10 Alice Street, Binghamton, NY 13904.

To begin this review, Alan Cassells and Peter Gahan should be commended for compiling and creating a very valuable reference book for the ever-widening field of Plant Tissue Culture (PTC). This book should be a staple in every laboratory involved in basic or applied research on the culture of plant cells, tissues, and/or organs *in vitro*.

As a graduate student in the early to mid-eighties, I observed the expansion of PTC techniques, set into play three decades earlier, to have applications to a broad array of botanical areas of study, including plant physiology, morphology, anatomy, biochemistry, pathology, breeding, cell biology, molecular biology, development, propagation, germplasm preservation, and genetic manipulation. As such, PTC had become more than a collection of several techniques; it had become a *technology* in its own right. All of these sub-disciplines are represented in a balanced fashion in the authors' compilation. Thus, researchers involved in any of these fields would benefit from this reference.

As PTC technologies have progressed, like other disciplines within biology, their terminology increases. In many instances, terms used in other disciplines are redefined in their new context. "Cloning" is but one example of a term that has several different meanings depending on the context in which it is used. In *Dictionary of Plant Tissue Culture*, the authors define "clone" as a population of cells or plants with identical genotypes and "cloning" as a multiplication of clones. They note further, however, that "In micropropagation genetic stability may be dependent on the *in vitro* cloning strategy used" and provide three citations for further information and also refer the reader to "see somaclonal variation". Another example of a term with different definitions depending on its context is "callus". In other reference books, I have seen this term incorrectly defined as an undifferentiated mass of cells. Cassells and Gahan define it as "a growth of nonspecialized plant cells". The cells, however, may well be differentiated at the cell or tissue level, but have not organized themselves into a functioning organ, such as a root or shoot axis. Perhaps a more accurate description would be "a growth of unorganized cells".

Over four hundred references to primary research studies or compilations of PTC techniques are included in the bibliography, but also cited under individual terms in this dictionary, making it

especially valuable to researchers who may be investigating a technique or topic which is new to them, but also to students or lab technicians who are interested in assembling their own library of PTC publications. Although almost one in seven of the references are by one of the two authors, it represents a considerable number of researchers and research laboratories.

The terms are frequently cross-listed to aid the reader. In addition, three dozen figures or tables are included to illustrate, or provide additional details about, a number of techniques or topics, such as sterile filtration, culture medium components, plant growth regulators, explant sources, bioreactor designs, and pathogen indexing procedures. I would encourage the authors to increase the number of illustrations in the next edition of their dictionary, even to the degree of making it an "encyclopedic" dictionary. The authors could even provide contact information (with an email address) in their second edition to request suggestions for additional terms, tables, illustrations, and references from other PTC scientists.

In summary, I will be referring to this text in my Plant Tissue Culture graduate course syllabus and lecture outlines and, as such, it is a very valuable addition to my "laboratory reference library". I would encourage all PTC labs to include it in their reference collections as well.

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Plant Hormone Signaling (Annual Plant Reviews), Volume 24. Peter Hedden and Stephen Thomas (eds). Blackwell Publishing Ltd., Oxford, United Kingdom. 2006.

A number of seminal advances have been made in field of plant hormone biology in recent years. These advances have included the identification and characterization of a number of plant hormone receptors. This timely, highly relevant book reviews recent progress in our understanding of hormone synthesis, perception and action in plants. Hormones covered range from the classical plant hormones abscisic acid, auxin, cytokinin, ethylene and gibberellin to more recently discovered compounds that exhibit hormonal functions in plants including brassinolides, jasmonates and salicylic acid. In addition to exploring the biosynthesis and molecular actions of plant hormones, the book includes chapters that cover the developmental processes regulated by hormones in plants. In this regard, the text provides a comprehensive overview