Over the years, animal cells have become established as production vehicles for vaccines and therapeutic proteins. In contrast, plant cell culture remains mostly confined to research laboratories, except perhaps for crop improvement and plant propagation in agriculture. Slow growth and low productivities are the main limitations of cell cultures but there are no other options for making certain products that cell cultures can provide.

This 2-volume encyclopedia is focused on animal and plant cell technologies. About equal coverage is given to both animal and plant cell systems, even though the latter contribute little to commercial production of metabolites, at least at present. The compilation contains about 100 articles that have been contributed by more than 140 authors. Topic entries are arranged alphabetically from ‘Acclimatization’ to ‘Virus removal from plants.’ Depending on the subject, the length of treatment varies from a few to more than a dozen pages. Most articles are supported with extensive reference citations, but essential information such as the year of publication is missing from some of the listings. A short list of other related entries occurs at the end of each article and this allows for easy cross referencing. As in any multiauthor work, entries are not of a uniformly high quality. Some articles are exceptionally thorough, others are summaries of bare essentials.

The articles may be broadly grouped into five areas: cell biology and biochemistry; isolation, characterization and preservation of cells; growth, culture environment, media, and propagation technologies; regulatory and quality control issues; and miscellaneous other considerations. Here is a random selection of some of the topics featured: anatomy of plant cells; animal cell culture media; aseptic technology in cell culture; bioreactor culture of plant organs; bioreactors, perfusion; cell cycle synchronization; cell detachment; cell products—antibodies; contamination detection in animal cell culture; cryopreservation of plant cells, tissues and organs; enrichment and isolation techniques for animal cell types; flow cytometry of plant cells; genetic engineering: animal cell technology; hairy roots, bioreactor growth; measurement of cell viability; product development, quality and regulatory issues; protein processing, processing in the endoplasmic reticulum and golgi network; sterilization and decontamination; and viral vaccine production in cell culture. The articles are generally good, but the ones on bioreactors lack an engineering perspective. Also, cell and product recovery technologies are weakly represented. A reader interested in these areas is strongly ad-
vised to also consult the complementary and much larger *Encyclopedia of Bioprocess Technology, Fermentation, Biocatalysis, and Bioseparation* (edited by M.C. Flickinger and S.W. Drew) produced by the same publisher. [See review in this journal, vol. 17, pp. 689–690, 1999.]

Overall, the encyclopedia is fairly comprehensive and up-to-date. Good quality artwork, tables, and photographs support the text. A 14-page index to the two volumes is provided in volume 2; the index is good but a little short for a compilation such as this. The encyclopedia should prove a good single-source reference for anyone commencing work on plant and animal cells. Established practitioners will find new perspectives in this book and many opportunities for learning about subjects that border on their own expertise. The encyclopedia is a highly recommended acquisition for any library that serves cell culturists and biochemical engineers. The volumes are hardbound and produced to excellent quality. The price is reasonable (GBP 465.00).

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