

Book Review

Molecular Farming; R. Fischer and S. Schillberg, eds., Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2004. Hardback (315 pages), ISBN: 3-527-30786-9

Recent reports in the literature discuss shrinking pipelines in the pharmaceutical industry and challenges to increase the number of potential new therapeutic compounds for research and development. The anticipated growth in drug discovery associated with advances in proteomics and genomics has not been fully realized, partly due to low yields and inconsistent product quality. To overcome some of these difficulties, plants are being used as bioreactors to produce potential therapeutics agents. Agricultural production has the potential to produce large quantities of proteins at relatively low costs. The text *Molecular Farming* discusses the use of plants to produce various therapeutic compounds, including antibodies, vaccines, and growth factors. The editors have compiled an international group of scientists to present the most recent advances in plant-made pharmaceuticals.

The first few chapters of the text cover technology-based aspects of plant protein production. Chapter One discusses the intrinsic qualities of alfalfa that make it a suitable platform for recombinant protein production. The next chapter covers plant tissue culture and its potential to improve product recovery, reduce contamination, and enhance product quality. Novel sprouting technology, monocot expression,

transgenic crops, and plant viral expression vectors are discussed in subsequent chapters.

Specific pharmaceutical and technical protein production is the focus of the next chapters of the text. Topics presented include chloroplast derived antibodies, plant-derived vaccines, production of secretory IgA, spider silk proteins, and transgenic pea seeds. The remaining chapters are geared towards the issues of biosafety, production quantity, and yields, as well as quality control and regulatory concerns. Processing and extraction methods, chromatographic purification, transgene spread, and unintended exposure are discussed. One chapter of particular interest provides a pharmaceutical industry perspective on current and future potential for molecular farming. The final chapter reviews the use of genetically modified crops and issues of globalization and then focuses on the precautionary approach and environmental law.

Molecular Farming covers a large amount of highly detailed material in a clear and concise manner. Figures and tables are clearly labeled and easy to read. The text is targeted to a specific audience with interest in plant-made pharmaceuticals and the reader should have a solid background in plant biology and genetics to fully appreciate the information provided.

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