

SYNTHETIC DNA DELIVERY SYSTEMS

Synthetic DNA Delivery Systems, D. Luo & W.M. Saltzman (eds.), Kluwer Academic / Plenum Publishers, New York, 2003, 135 pp., hardcover, ISBN 0-306-47701-7, \$138.00

This excellently produced and well illustrated work is the seventh volume in the series called Biotechnology Intelligence Unit. The book deals with novel nonviral approaches of the introduction of exogenous DNA into living cells. Indeed, the research of transfection is a very active and rapidly growing field with numerous applications in clinical biomedicine.

The book represents an assembly of nine various reviews and perspectives on the current status and future prospects of DNA delivery. The first four chapters focus on the effects of delivery systems on major barriers along DNA delivery pathway. Chapter 1 is the review of physicochemical properties of self-assembled delivery systems on the basis of cationic lipids and polymers. Chapter 2 deals with modifications of surface properties of synthetic gene delivery vectors. The next chapter summarizes the use of histidine-rich peptides and polypeptides as DNA delivery vectors. Chapter 4 describes gene delivery systems that target intracellular sites such as the cytoskeleton or mitochondria. The next three chapters are aimed at targeted DNA delivery, including dendritic cell-targeted gene delivery, electro-gene-transfer-mediated transfection of muscle cells, and tumor-targeted DNA delivery. Chapter 8 describes a photochemical transfection technology utilizing light to direct DNA delivery to human cells.

The last chapter reviews the use of sound waves as the signaling mechanisms. A general index completes the book. The text is very well illustrated and the illustrations are used to effectively elucidate the theory and practical applications.

Undoubtedly, the present rapid developments in efficient gene delivery technologies to targeted cells will soon have a major impact on practical implications. The list of human diseases that are amenable to gene therapy will only increase. Expectations of promising applications, beginning with the inborn errors of metabolism and ending with cancer therapy are being high.

On the whole this is a book valuable mainly for scientists working on gene delivery systems to mammalian and human cells. Plant genetic engineers may benefit from few chapters only, perhaps targeting DNA to mitochondria seems the promising subject. For students of biomedical sciences, a strong background in molecular biology, biochemistry and genetic engineering is required. The chapters in this book, as well as the chapters of all Intelligence Unit series, are available at www.Eurekah.com website.

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