PERGAMON

Journal of Steroid Biochemistry and Molecular Biology 68 (1999) 171–172

The Journal of Steroid Biochemistry & Molecular Biology

Book Reviews

Gene Quantification **(Advanced Biomedical Technologies series); F. Ferré (Ed.); Birkhäuser Verlag, Basel, 1998, 392 pages, ISBN 3-7643-3945-4, CHF 228,00 (DM 268,00)**

This book provides a comprehensive, complete and up-to-date survey of gene quantification methods and technologies. Gene quantification is proving invaluable in biological research for comparing patterns of gene expression and in medical research for deciphering pathological processes. Such a potential to approach biological problems on a genome-wide scale may revolutionize the life sciences in the same way that the amplification techniques transformed the diagnostics of disease in the late 1980's. Technological developments in gene quantification methodology not only allow for faster and more robust quantification, but also introduce new paradigms, such as a concept of accurate quantification using PCR without a standard. The major challenge addressed by most methods in this book is the quantitation of nucleic acids from a minute amount of material. Hence, the common theme to all gene quantification methods presented is the fact that quantification requires amplification, either controlled gene amplification or signal amplification. Special attention has been given throughout this book to a distinction between relative quantification, usually sufficient for biological applications, and accurate quantification, instrumental for medical/clinical applications. Proper validation of standards, essential for accurate quantification, is also addressed.

The following sections and chapters are included:

Part I: Methods/technology issues.

0.1. Gene quantitation based on PCR amplification.

Present and future detection formats for PCR quantitation of nucleic acids.

Determination of target copy number of quantitative standards used in PCR based diagnostic assays.

Quantification of specific nucleic acids, regulated RNA processing and genomic polymorphisms using reversed-phase HPLC.

Capillary electrophoresis for quantitative genetic analysis.

Quantitative PCR technology.

Statistical estimations of PCR amplification rates.

Fluorescence monitoring of rapid cycle PCR for quantification.

Kinetic Elisa-PCR: a versatile quantitative PCR method.

0.2. Gene quantitation based on other target amplification systems.

Quantitation of RNA by NASBA™. Applications and issues for HIV-1 and aids.

Application of transcription-mediated amplification to quantification of gene sequences.

0.3. Gene quantitation based on signal amplification.

Branched DNA (bDNA) technology for direct quantification of nucleic acids: design and performance.

Hybrid Capture™—a sensitive signal amplified test for the detection and quantitation of human viral and bacterial pathogens.

Part II: Applications

Quantification of gene expression by competitive RT-PCR: the hCGß/LHß gene cluster.

Quantitative detection of mycoplasma DNA using competitive PCR.

The detection and quantification of *bcr-abl* in chronic myeloid leukemia following marrow transplantation.

Competitive RT-PCR analysis of brain gene expression during inflammation and disease.

Development and application of real-time quantitative PCR.

Branched DNA (bDNA) technology for direct quantification of nucleic acids: research and clinical applications.

Quantification of plasmid DNA expression in vivo.

This book will be very useful in any laboratory involved in research in almost every branch of biology or medicine, as well as in pharmaceutical, biotechnological, or clinical applications.

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0960-0760/99/$ - see front matter
PII: S0960-0760(98)00167-8

Cell Biology. A Laboratory Handbook **(4-volume set), 2nd edition, Vol. 1: 564 pages, Vol. 2: 534 pages, Vol. 3: 526 pages, Vol. 4: 674 pages; J.E. Celis (Ed.); Academic Press, San Diego, 1997, ISBN 0-12-164725-0, US$149.95**

The second edition of this highly praised handbook brings together more than 240 new, revised, concisely written and beautifully illustrated chapters in an attractive four-volume set, providing an easy-to-use source of current and classic protocols, presented in a clear format.

Volume 1 (62 chapters, plus 2 appendices)

Part 1) *Cell and tissue culture and associated techniques*:
General techniques. Primary cultures from embryonic and newborn tissues. Culture of specific cell types (Epithelial cells, Mesenchymal cells, Neuroectodermal cells, hemopoietic cells, gonads). Cell separation techniques. Model systems to study differentiation. Cell cycle analysis. Assays of tumorigenicity, invasion, and others. Cytotoxic and cell growth assays. Senescence and apoptosis. Electrophysiological methods. Histocultures and organ cultures. Other cell types and organisms (insect cells, caenorhabditis elegans, protozoa, fungi, plants).

Part 2) *Viruses*.

Volume 2(62 chapters plus 1 appendix)

Part 3) *Organelles and cellular structures*:
Plasma membrane and cytoplasmic organelles. Nucleus and nuclear structures. Proteins. RNA.

Part 4) *Assays*:
Endocytic and exocytic pathways. Mitochondria and chloroplasts. Peroxisomes. Nuclear transport. Motility assays for motor proteins and other motility models.

Part 5) *Antibodies*:
Production of antibodies. Purification of immunoglobulins. Antibody specificity.

Part 6) *Immunocytochemistry*.

Part 7) *Vital staining of cells*.

Volume 3 (53 chapters)

Part 8) *Light microscopy and contrast generation*:
Light microscopy. Video and digital fluorescence microscopy. Confocal microscopy. Digital image processing and display. Histology and histochemistry.

Part 9) *Electron microscopy*.

Part 10) *Intracellular measurements*.

Part 11) *Cytogenetics and in situ hybridization*:
Cytogenetics. Somatic cell hybrids. *In situ* hybridization.

Part 12) *Transgenic and gene knockouts*.

Volume 4 (65 chapters plus 1 appendix, list of suppliers, and Subject Index for Volumes 1–4)

Part 13) *Transfer of macromolecules and small molecules*:
Microinjection using glass capillaries. Syringe loading. Electroporation. Pore-forming toxins and other procedures. Liposomes and lipofection. Microprojectile bombardment. Transformation of plant cells.

Part 14) *Expression systems*:
Cell-free systems. Eukaryotic expression systems. Expression of cDNAs in *E. coli*. Expression systems for cytoskeletal studies.

Part 15) *Differential gene expression*.

Part 16) *Proteins*:
Protein determination and amino acid analysis. Preparation of tagged proteins. Gel electrophoresis. Labeling of cells. Gel staining. Overlay techniques and others. Techniques to reveal interacting proteins. Peptide microsequencing. Mass spectrometry.

This 4-volume laboratory handbook would be useful for laboratories working in biochemistry, molecular biology, biophysics, and microbiology, as well as for advanced students.

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PII: S0960-0760(98)00168-X