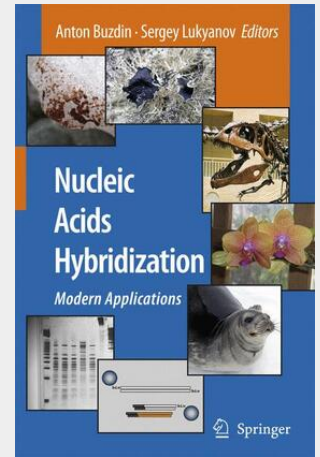


Nucleic Acids Hybridization

Modern Applications

Several approaches, such as microarray hybridization, have become extremely popular tools for specialists in biochemistry and biomedicine, while the potential of many other advantageous techniques seems to be underestimated. Written by an international team of authors, this book details the current state-of-art in hybridization techniques. Coverage includes experimental protocols along with comprehensive and detailed method descriptions.

Watson–Crick hybridization of complementary sequences in nucleic acids is one of the most important fundamental processes necessary for molecular recognition in vivo, as well as for nucleic acid identification and isolation in vitro. This book is devoted to a large family of in vitro DNA hybridization-based experimental techniques. A wide spectrum of experimental tasks covered by these approaches includes finding differential sequences in both genomic DNAs and mRNAs, genome walking, multiplex PCR, cDNA library construction starting from minute amount of total RNA, rapid amplification of cDNA 5'- and - ends, effective smoothing of the concentrations of rare and abundant transcripts in cDNA libraries, recovery of promoter active repeats and differentially methylated genomic DNA, identification of common sequences in genomic or cDNA sources, new gene mapping, finding evolutionary conserved DNA and both single-nucleotide and extended mutation discovery, or large-scale monitoring. Several approaches, such as microarray hybridization, have become extremely popular tools for specialists in biochemistry and biomedicine, whereas the potential of many other advantageous techniques seems to be underestimated now. Analysis of differential gene expression requires application of global approaches that represent a leading tool in postgenomic studies and include transcriptome and proteome analysis, as well as methods allowing population-wide sequence and functional polymorphism analysis. Central to these new technologies are DNA chips designed for quantitative and qualitative uses.



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