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Titolo	Genetic analysis [[electronic resource] ] : principles, scope, and objectives // John R.S. Fincham
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	GENETIC ANALYSIS; CONTENTS; PREFACE; INTRODUCTION: THE EXPANDING SCOPE OF GENETICS; 1: DISSECTING THE GENOME USING NATURAL GENETIC SYSTEMS; The eukaryotic system; Eukaryotes distinguished from prokaryotes; Mitosis and chromosome structure; Alternation of haploid and diploid phases in the sexual cycle; Meiosis and the rules of classical genetics; Meiosis; Single-factor genetic ratios and their explanation; Independent assortment of different allele-pairs; Testing data for fit to theoretical ratios; Linkage groups and the nature of crossovers; Map units and map distance Placing Linked genes in sequence Distinguishing between independent assortment and distant linkage; Mapping centromeres using tetrads; Sex linkage; Segregation and linkage in human genetics; Assigning linkage groups to chromosomes; Genetic analysis of bacteria and bacteriophage; Three modes of gene transfer in bacteria; Time-of-entry mapping in E. coli; Analogy with sexual recombination and segregation; Stable partial diploids - F' plasmids; Bacteriophage lambda - a virus in the chromosome; Bacteriophage T4 - a model recombinational system; Eukaryotic organelle genetics

Exceptions to the rule of equal results from reciprocal crosses  
Chloroplast variants; Mitochondrial variants; Summary and perspective; Further reading; References; 2: FROM MUTATIONS TO GENES; Defining the gene by mutation and complementation; What is it that the markers mark?; The collection of mutants; Sorting of mutants into complementation groups; An interim definition of the gene; Mapping within the gene; The detection of recombination within genes; Mapping by reference to flanking markers; Recombination frequency; Deletion mapping; The determination by genes of protein structure  
Colinearity of the gene and its encoded protein product  
Biochemistry of polypeptide synthesis; Not all genes encode proteins; Conclusions; References; 3: THE GENE AS DNA SEQUENCE; Characterization of DNA fragments; Restriction endonucleases; Separating and sizing DNA fragments; Probing for specific sequences; Making restriction-site maps; Cloning and cloning vectors; Making recombinant DNA molecules; Escherichia coli plasmid vectors; Yeast 2-um plasmid and shuttle vectors; Lambda (l) bacteriophage and cosmid vectors; Yeast artificial chromosomes (YACs)  
Screening DNA libraries for functional genes  
Genomic libraries and cDNA libraries; Gene identification by complementation of mutants; Screening gene libraries with DNA probes; Designing gene-specific probes; Use of cDNA probes; Screening for gene expression; Probing across species or group boundaries; Positional cloning; Confirming the identity of cloned sequences; DNA sequence and open reading frames; Using the clone to disrupt the corresponding gene; Hybridization back to chromosomes; Simultaneous mutagenesis and gene tagging; The principle; Transposon tags; Conclusion; References  
4: THE EVOLVING CONCEPT OF THE GENE

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Sommario/riassunto

Authored by a very eminent geneticist, this text gives students a thorough appreciation of the development and potential of analytical genetic techniques. Beginning with a consideration of both the classical Mendelian and the molecular biological aspects of genetic analysis, the book goes on to discuss progress in three key areas of genetics. Firstly the elucidation of the detailed structure and overall organization of the genome, secondly the way that genetic differences at the molecular level account for heritable variation in populations, and finally an explanation of how the genes control

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