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Nota di contenuto	ROUTE MAPS IN GENE TECHNOLOGY; CONTENTS; PREFACE; ABOUT THE ROUTE MAPS FORMAT; 1. THE CONCEPT OF GENES IS DEVELOPED; 2. GENES ARE LOCATED TO CHROMOSOMES; 3. GENES ARE COMPOSED OF DNA; 4. THE CHEMICAL BUILDING BLOCKS OF NUCLEIC ACIDS; 5. FORMATION OF THE DNA DOUBLE HELIX; 6. PACKAGING OF DNA WITHIN CELLS; 7. CHROMATIN STRUCTURE AND THE FUNCTIONAL ACTIVITY OF GENES; 8. TYPES AND FUNCTIONS OF DNA-PROTEIN INTERACTIONS; 9. ORGANISATION OF GENOMES INTO MULTIPLE CHROMOSOMES; 10. DISTRIBUTION OF NUCLEIC ACIDS WITHIN EUKARYOTIC CELLS; 11. TYPES OF RNA MOLECULES 12. THE ANATOMY OF EUKARYOTIC CHROMOSOMES 13. ORGANISATION OF GENES WITHIN CHROMOSOMES; 14. THE MOLECULAR ANATOMY OF EUKARYOTIC GENES; 15. CHROMOSOME ABERRATIONS AND LINKS TO HUMAN DISEASE; 16. TYPES OF MUTATIONS AND THEIR EFFECTS; 17. FORMS OF CHEMICALLY ALTERED DNA; 18. DNA REPAIR MECHANISMS;

19. LINKAGE ANALYSIS; 20. PEDIGREE ANALYSIS AND MODES OF INHERITANCE; 21. GENES DICTATE THE NATURE OF PROTEINS; 22. THE NATURE OF THE GENETIC CODE; 23. TRANSCRIPTION: FORMING GENETIC MESSAGES; 24. POST-TRANSCRIPTIONAL PROCESSING OF MESSENGER RNA; 25. TRANSFER AND RIBOSOMAL RNA PROCESSING/MODIFICATION

26. MECHANISMS REGULATING GENE EXPRESSION; 27. TRANSCRIPTIONAL REGULATORY SEQUENCES; 28. OPERONS AND PROKARYOTIC CONTROL OF GENE EXPRESSION; 29. TRANSCRIPTION FACTORS AND GENE EXPRESSION; 30. IN VIVO TRANSLATION: DECODING GENETIC MESSAGES; 31. SEQUENCES INVOLVED IN CELLULAR PROTEIN TARGETING; 32. EUKARYOTIC CELL DIVISION: MITOSIS AND MEIOSIS; 33. MOLECULAR MECHANISMS OF CELL CYCLE CONTROL; 34. GENETIC RECOMBINATION MECHANISMS; 35. GENE TRANSFER DURING BACTERIAL REPRODUCTION; 36. TRANSPOSABLE GENETIC ELEMENTS: TRANSPOSONS; 37. IN VIVO DNA REPLICATION; 38. GENETIC CONTROL OF DEVELOPMENT

39. THE NATURAL BIOLOGY OF BACTERIOPHAGES; 40. BACTERIOPHAGE GENETICS; 41. RECOMBINANT DNA TECHNOLOGY; 42. ENZYMES COMMONLY USED IN MOLECULAR BIOLOGY METHODS; 43. RESTRICTION ENDONUCLEASES; 44. RESTRICTION FRAGMENT LENGTH POLYMORPHISMS; 45. ISOLATION OF NUCLEIC ACIDS FROM CELLS AND TISSUES; 46. VISUALISING NUCLEIC ACIDS; 47. ELECTROPHORESIS OF NUCLEIC ACIDS; 48. IN VITRO HYBRIDISATION; 49. TYPES OF HYBRIDISATION ASSAY FORMATS; 50. SOUTHERN BLOTTING; 51. IN SITU HYBRIDISATION; 52. MEASURING TRANSCRIPTIONAL ACTIVITY VIA MESSENGER RNA; 53. CONVERTING MESSENGER RNA INTO COMPLEMENTARY DNA

54. METHODS FOR DETERMINING DNA NUCLEOTIDE SEQUENCES; 55. THE POLYMERASE CHAIN REACTION; 56. ALTERNATIVES TO PCR-BASED IN VITRO DNA/RNA AMPLIFICATION; 57. IN VITRO TRANSLATION METHODS; 58. TYPES AND METHODS OF GENE PROBE GENERATION; 59. CHEMICAL SYNTHESIS OF OLIGONUCLEOTIDES; 60. TYPES AND APPLICATIONS OF NUCLEOTIDE ANALOGUES; 61. METHODS FOR LABELLING GENE PROBES; 62. FUNDAMENTAL PRINCIPLES OF CLONING; 63. THE NATURE OF CLONING VECTORS; 64. INSERTING FOREIGN DNA INTO VECTORS; 65. THE DEVELOPMENT OF BACTERIOPHAGE VECTORS; 66. PLASMIDS: DEVELOPMENT AS CLONING VECTORS

67. YEAST-DERIVED PLASMID VECTORS

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#### Sommario/riassunto

Route Maps in Gene Technology is an exciting new introductory textbook for first-year undergraduates in molecular biology and molecular genetics. The subject is broken down into 140 to 150 key concepts or topics, each of which is dealt with in one doublepaged spread. These range from basic introductory principles to applied topics at the cutting edge of research. A control strip along the top of the page shows the student which pages need to have been read beforehand and which topics may be followed afterward. In addition, at the front of the book are a selection of 'routes,' which the

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