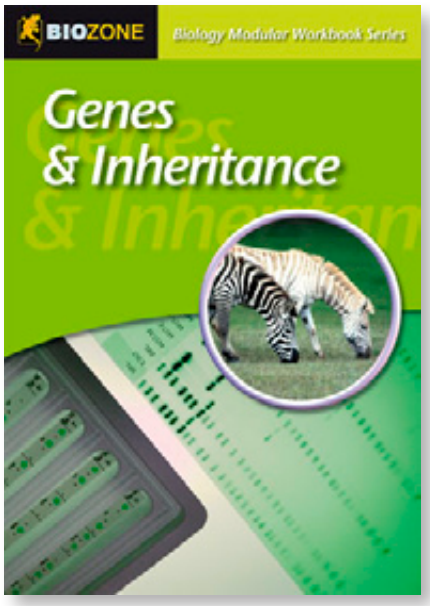
BIOZONE

Fact Sheet

Genes & Inheritance



Genes & Inheritance

A seamless integration of fundamental concepts and new information, Genes & Inheritance offers students ample opportunity to both consolidate and extend their knowledge in the rapidly developing areas of molecular genetics and Mendelian and non-Mendelian inheritance.

Suitability:

- Grades 10-12
- Community College

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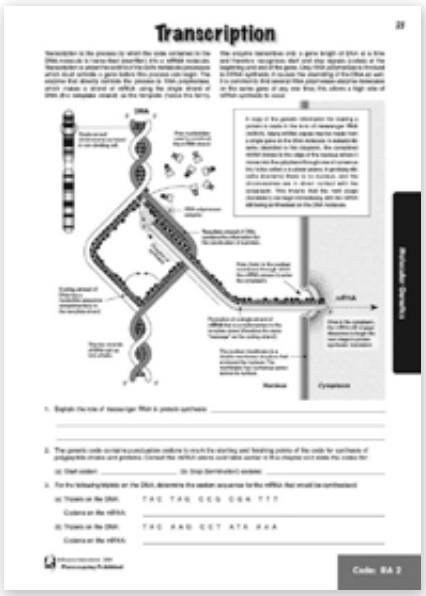
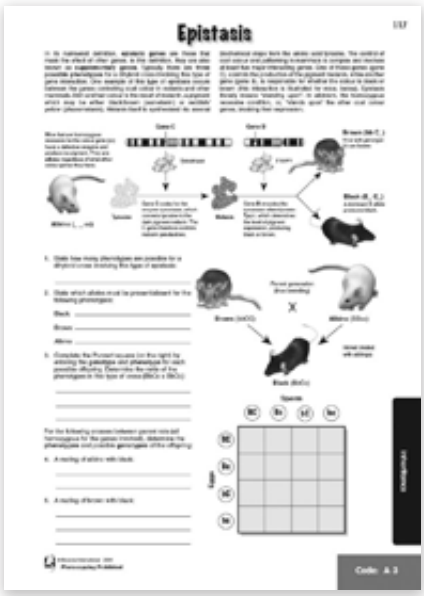
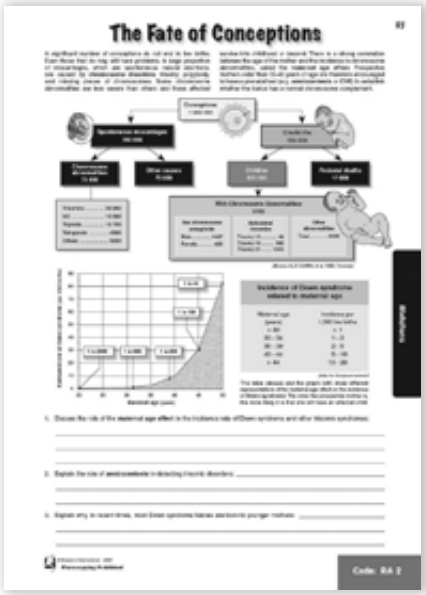
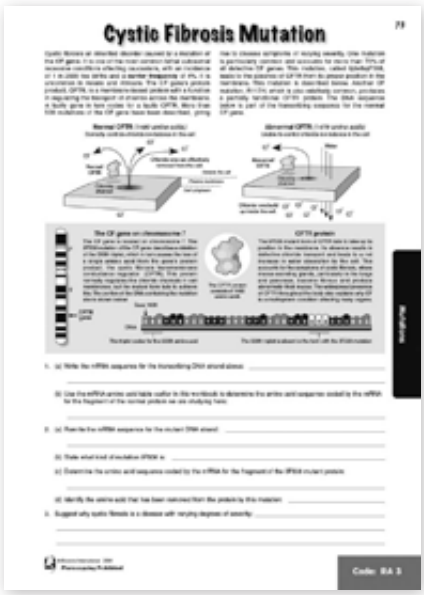
Biozone's unique formula encourages self direction, while dovetailing with traditional resources.









Chapters

- Molecular Genetics
- Control of Gene Expression
- Genes and Chromosomes
- Mutations
- Inheritance

Features

- **Introduction to the topic:** A concise introduction to the concepts in the activity.
- **Easy to understand diagrams:** Highly visual, clearly annotated diagrams improve the accessibility of information.
- **Consolidation and branching out:** Activities provide information to consolidate basic knowledge, while allowing scope for exploring. Differential instruction becomes easier and students at all levels are encouraged to be 'thinkers'.
- **Write-on format:** Activities provide information to consolidate basic knowledge, while allowing scope for exploring.
- **Tear-out pages:** Each page has a perforation to allow easy removal for marking, or placement in a ring binder.
- **Activity Code:** Each activity is coded to identify the skills required for its completion.

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Genes & Inheritance

Content Overview

MOLECULAR GENETICS
The Role of DNA in Cells
Nucleic Acids
DNA Molecules
The Genetic Code
Creating a DNA Model
DNA Replication
The Simplest Case: Genes to Proteins
Analysing a DNA Sample
Gene Expression
Transcription
Translation
Protein Synthesis

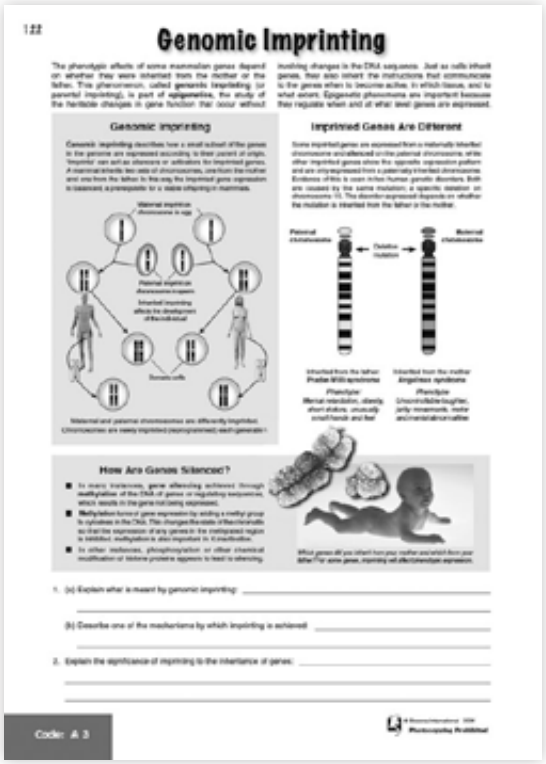
CONTROL OF GENE EXPRESSION
Metabolic Pathways
Gene Control in Prokaryotes
Gene Control in Eukaryotes
Defective Gene Regulation
The Role of Genes in Development

GENES AND CHROMOSOMES
Genomes
Eukaryote Chromosome Structure
Karyotypes
Human Karyotype Exercise
Genome Projects
The Human Genome Project
Sources of Genetic Variation
Gene-Environment Interactions
Cell Division
Mitosis and the Cell Cycle
Meiosis
Crossing Over
Crossing Over Problems
Linkage
Recombination
Chromosome Mapping

MUTATIONS
The Effect of Mutations
Mutagens
For Harm or Benefit?
Gene Mutations
Point Mutation Problems
Examples of Gene Mutations
Sickle Cell Mutation
Cystic Fibrosis Mutation
Genetic Counselling
Chromosome Mutations
Antibiotic Resistance
Aneuploidy in Humans
Aneuploidy in Sex Chromosomes
Trisomy in Human Autosomes
Polyploidy
The Fate of Conceptions

INHERITANCE
Alleles
Mendel's Pea Plant Experiments
Mendel's Laws of Inheritance
Basic Genetic Crosses
Monohybrid Cross
Dominance of Alleles
Multiple Alleles in Blood Groups
Dihybrid Cross
Dihybrid Cross with Linkage
Lethal Alleles
Using Chi-Squared in Genetics
Chi-Squared Exercise
Human Genotypes
Sex Linkage
The Advantages of Sex
Inheritance Patterns
Pedigree Analysis
Interactions Between Genes
Collaboration

INHERITANCE (CONTINUED)
Complementary Genes
Polygenes
Epistasis
Inheritance in Domestic Cats
What Genotype has that Cat?
Summary of Gene Interactions
Genomic Imprinting
Problems in Mendelian Genetics
Artificial Selection
The Domestication of Wheat
Sex Determination



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