

Inheritance

Chromosomes, genes and proteins

Chromosomes

made of DNA contain genes

Gene and allele

gene: DNA coding for protein allele: alternative form

Inheritance of sex

XX female, XY male sperm decides sex 1:1 ratio

Bases decide amino acids **Supplement**

amino acid sequence gives protein shape

Making a protein **Supplement**

gene stays in nucleus mRNA copy to cytoplasm

ribosome assembles amino acids

Gene expression **Supplement**

same genes in body cells only some expressed

Haploid and diploid **Supplement**

haploid: one set diploid: two sets human: 23 pairs

Mitosis and meiosis **Supplement**

Mitosis **Supplement**

identical cells chromosomes copied first

number maintained

Roles of mitosis **Supplement**

growth repair replacement asexual reproduction

Stem cells **Supplement**

unspecialised divide by mitosis daughters specialise

Meiosis **Supplement**

makes gametes reduction division diploid to haploid

genetically different

Monohybrid inheritance

Key terms

Genotype Phenotype Homozygous Heterozygous

Dominant and recessive

Dominant: expressed if present

Recessive: needs no dominant

Pure-breeding

Identical homozygous parents

Heterozygous: not pure-breeding

Genetic diagrams

Punnett squares 3:1 ratio 1:1 ratio

Pedigree diagrams

Squares male, circles female

Unaffected parents, affected child: recessive

Test cross **Supplement**

Unknown × homozygous recessive

All dominant: homozygous Some recessive: heterozygous

Codominance **Supplement**

Both alleles expressed ABO: IA, IB, Io

Sex linkage **Supplement**

Gene on X chromosome Colour blindness

More common in males