

This is the **Higher Separate** version — includes all Higher Tier content (marked ★) and all Separate Science content.

Characteristics are inherited from parents through the passing on of alleles in gametes.

- Punnett squares predict offspring genotype/phenotype ratios
- Cystic fibrosis: recessive (ff) — thick mucus in lungs. Both parents must carry allele (Ff = carrier)
- Polydactyly: dominant (D) — extra digits. One copy sufficient
- ★ HT Sickle cell anaemia: recessive — abnormal haemoglobin. Heterozygotes resistant to malaria
- Sex: females XX, males XY. 50:50 probability each pregnancy
- ★ HT Sex-linked traits: genes on X chromosome — more common in males

### Key Terms

|                        |  |
|------------------------|--|
| <b>Carrier</b>         | Heterozygous individual with recessive allele but no symptoms  |
| <b>Cystic fibrosis</b> | Recessive disorder — thick mucus — both alleles must be faulty |
| <b>Polydactyly</b>     | Dominant disorder — extra digits — one allele sufficient       |

■ **Exam Tip:** Cystic fibrosis: RECESSIVE (need ff). Polydactyly: DOMINANT (need only D). This is the most commonly confused pair in GCSE genetics.