

Name: .....

Class: .....



Name the two naturalists that put forward the theory of evolution by natural selection.

**Alfred Russel Wallace and Charles Darwin**

Which substance is converted to urea in the liver?

**Excess amino acids**

Hypercholesterolemia (HC) is the result of a mutation in the genome. It is caused by a dominant allele on chromosome 19. The mutation involved causes a change in the DNA nucleotides.

i. Write the words allele, chromosome, genome and nucleotide in the boxes to show their size from smallest feature to largest feature.

|                  |                   |
|------------------|-------------------|
| Smallest feature | <b>nucleotide</b> |
|                  | <b>allele</b>     |
|                  | <b>chromosome</b> |
| Largest feature  | <b>genome</b>     |

ii. One in 500 people are heterozygous for HC. There are 66 000 000 people in the UK. Calculate how many people in the UK are heterozygous for HC.

$$66\,000\,000 \div 500 = 132\,000$$

Number of people = **132 000**

iii. A woman who does not have HC and a man who is heterozygous are expecting a baby. What is the probability of the baby having HC? Complete the genetic diagram to explain your answer. Use **D** for the dominant HC allele and **d** for the recessive allele.

|     |          |           |           |
|-----|----------|-----------|-----------|
|     |          | Woman     |           |
|     |          | <b>d</b>  | <b>d</b>  |
| Man | <b>D</b> | <b>Dd</b> | <b>Dd</b> |
|     | <b>d</b> | <b>dd</b> | <b>dd</b> |

Probability = **50 % or 0.50**

Give the **word and balanced symbol** equation for aerobic respiration.

**Glucose + oxygen → carbon dioxide + water**

