

Each DNA molecule is packed into a [REDACTED].

1

[REDACTED] contain instructions for making [REDACTED].

2

The two strands of DNA twist to form a [REDACTED].

3

When replicating, the [REDACTED] between the DNA strands break, and [REDACTED] come to bind with the exposed ones on the separated strands to form new strands.

4

Proteins act alone or in [REDACTED] to perform many cellular functions.

5

The four DNA bases are...

6

A [REDACTED] backbone provides structure for the DNA.

7

[REDACTED] bonds hold the two strands of DNA together.

8

Genes contain instructions for making proteins.

Each DNA molecule is packed into a chromosome.

2

1

When replicating, the hydrogen bonds between the DNA strands break, and new bases come to bind with the exposed ones on the separated strands to form new strands.

The two strands of DNA twist to form a double helix.

4

3

Adenine, Thymine, Guanine, Cytosine

Proteins act alone or in complexes to perform many cellular functions.

6

5

Hydrogen bonds hold the two strands of DNA together.

A sugar-phosphate backbone provides structure for the DNA.

8

7

binds to , binds to

9

Before a cell divides, its DNA is duplicated using .

10

What is the Karyotype?

11

What is an autosome?

12

In addition to the autosomes, what other chromosomes are there?

13

is the process where a sperm producing cell or an egg producing cell makes a new cell with 23 chromosomes.

14

is when an exact replica of the genome is made (46 chromosomes).

15

is when only one chromosome from each pair is passed on to the new (sperm/egg).

16

Before a cell divides, its DNA is duplicated using semi-conservative replication.

10

Adenine binds to Thymine, Cytosine binds to Guanine.

9

One of the 22 pairs of normal chromosomes in humans.

12

The 23 pairs of chromosomes in the cell.

11

Meiosis is the process where a sperm producing cell or an egg producing cell makes a new cell with 23 chromosomes.

14

One pair of sex chromosomes.

13

Meiosis is when only one chromosome from each pair is passed on to the new gamete (sperm/egg).

16

Mitosis is when an exact replica of the genome is made (46 chromosomes).

15

DNA → RNA → protein

17

When a gene is , it forms many molecules.

18

molecules get into proteins.

19

Define an allele

20

Define polymorphism (in the context of DNA)

21

is when a person has two copies of one allele on a gene locus.

22

is when a person has two different alleles on a gene locus.

23

A gene is if the protein that it produces can be compensated for by the correct protein produced by .

24

When a gene is transcribed, it forms many RNA molecules.

DNA $\xrightarrow{\text{transcription}}$ RNA $\xrightarrow{\text{translation}}$ protein

18

17

Any of several forms of a gene, usually arising through mutation. Alleles are responsible for hereditary variation.

RNA molecules get translated into proteins.

20

19

Homozygous is when a person has two copies of one allele on a gene locus.

The existence of several alleles for one gene locus. Individuals have one or two alleles per locus.

22

21

A gene is recessive if the mutated protein that it produces can be compensated for by the correct protein produced by an alternative allele.

Heterozygous is when a person has two different alleles on a gene locus.

24

23

If a mutated gene produces proteins that fulfil a new function, then it may be , since the original function will be fulfilled by .

25

Genes can be , or .

26

Define genotype.

27

Define phenotype

28

The phenotype is controlled by derived from , and the .

29

What bloodgroup is made from two co-dominant alleles?

30

Blood groups:

	I^A	I^B	i
I^A	<input type="text"/>	<input type="text"/>	<input type="text"/>
I^B	<input type="text"/>	<input type="text"/>	<input type="text"/>
i	<input type="text"/>	<input type="text"/>	<input type="text"/>

31

Allele frequency is linked to to its in a given .

32

Genes can be recessive, dominant or co-dominant.

If a mutated gene produces proteins that fulfil a new function, then it may be co-dominant, since the original function will be fulfilled by the other allele.

26

25

The physical appearance of an individual, including its observable or measurable traits.

The genetic make-up of an individual, which includes the genes or alleles present in it.

28

27

AB

The phenotype is controlled by proteins derived from genes, and the environment.

30

29

Allele frequency is linked to the fitness it provides to its carriers in a given environment.

Blood groups:

	I^A	I^B	i
I^A	A	AB	A
I^B	AB	B	B
i	A	B	O

32

31

Define genetic fitness

33

If an allele provides _____, it is likely to _____ and become _____ in a given population.

34

Mutations have allowed us to _____ our diet. This includes a mutation that lets us produce _____ during adulthood (to drink milk) and another one that reduces the function of a _____ allowing us to eat broccoli and sprouts! This is an example of _____.

35

Carriers of _____ alleles are _____ and get protection from malaria.

36

Carriers of _____ alleles die if they are _____ since their haemoglobin does not function well.

37

People _____ for a mutation affecting _____ are asymptomatic and immune to HIV. Probably because this gave protection against _____ and _____ in the past. This mutation is less effective against pathogens from _____.

38

Environment interaction can influence the genotype. _____ and _____ are sensitive to temperature, and change colour at different temperatures. This is caused by temperature sensitive _____.

39

The environment affects the phenotype; a _____ can make a human twin grow to be smaller, and flowers have _____ based on the soil _____.

40

If an allele provides an advantage, it is likely to persist and become more prominent in a given population.

34

The reproductive success of a genotype, measured as the number of offspring produced by and individual that survive to a reproductive age relative to the average age for the population.

33

Carriers of sickle cell anaemia alleles are asymptomatic and get protection from malaria.

36

Mutations have allowed us to diversify our diet. This includes a mutation that lets us produce lactase during adulthood (to drink milk) and another one that reduces the function of a bitter substance taste receptor allowing us to eat broccoli and sprouts! This is an example of natural selection.

35

People homozygous for a mutation affecting CCR5 are asymptomatic and immune to HIV. Probably because this gave protection against the plague and smallpox in the past. This mutation is less effective against pathogens from developing countries.

38

Carriers of sickle cell anaemia alleles die if they are homozygous since their haemoglobin does not function well.

37

The environment affects the phenotype; a worse diet can make a human twin grow to be smaller, and flowers have different colours based on the soil pH.

40

Environment interaction can influence the genotype. Himalayan rabbits and arctic foxes are sensitive to temperature, and change colour at different temperatures. This is caused by temperature sensitive tyrosine.

39

Most [redacted] are due to several genes and the environment (e.g. [redacted], [redacted], [redacted]).

41

A greater similarity between [redacted] for a particular [redacted] compared to [redacted] provides evidence that [redacted] factors play a role.

42

[redacted] twins share all their genes and their home environment. [redacted] twins share [redacted] their genes and a home environment.

43

A greater similarity between identical twins for a particular trait compared to fraternal twins provides evidence that genetic factors play a role.

42

Most phenotypes are due to several genes and the environment (e.g. skin colour, height, weight).

41

Identical twins share all their genes and their home environment. Fraternal twins share half their genes and a home environment.

43