WJEC Wales Biology GCSE

2.3 - DNA and Inheritance

Flashcards

Describe the structure of DNA

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- It is a polymer made of many nucleotide monomers
- It is made of 2 strands in the shape of a double helix

Give the letters that represent the 4 bases in DNA

Give the letters that represent the 4 bases in DNA

A T C and G

Describe the pairing rules in DNA

Describe the pairing rules in DNA

A pairs with T

C pairs with G

Name the 4 bases in DNA (Higher)

Name the 4 bases in DNA (Higher)

Adenine (A), Thymine (T), Cytosine (C) and Guanine (G)

Describe transcription (Higher)

Describe transcription (Higher)

1) DNA unzipped
2) Complementary mRNA nucleotides bind and are joined together
3) mRNA detaches and leaves the nucleus

Describe translation (Higher)

Describe translation (Higher)

1) mRNA travels to a ribosome
2) Carrier molecules carry specific amino acids to the ribosome based on the mRNA sequence
3) The amino acids are joined together

How does the sequence of DNA affect the protein made in protein synthesis? (Higher)

How does the sequence of DNA affect the protein made in protein synthesis? (Higher)

DNA is a triplet code where 3 bases code for one amino acid and the order of amino acids determine the protein produced

What is genetic profiling?

What is genetic profiling?

A method of comparing DNA by cutting it into fragments and comparing the fragments with each other

Give 3 uses of genetic profiling

Give 3 uses of genetic profiling

- Paternity testing (working out who is the biological parent of a child)
- Forensic identification (matching a criminal to DNA left at a crime scene)
- Matching an organism's DNA to classify it

Give 2 benefits of genetic profiling

Give 2 benefits of genetic profiling

- It can help to catch criminals
- It can be used to identify the presence of disease-causing genes

What are the ethical issues surrounding genetic profiling?

What are the ethical issues surrounding genetic profiling?

It could be used against people by insurance companies based on a person's predisposition to certain diseases

What is a gene?

What is a gene?

A section of DNA that codes for a protein

What are alleles?

What are alleles?

Different versions of the same gene

What is a chromosome?

What is a chromosome?

Tightly packaged DNA around histone proteins

What are gametes?

What are gametes?

Gamete are sex cells (sperm or eggs)

What is a dominant allele?

What is a dominant allele?

A version of a gene where only one copy is needed for it to be expressed

What is a recessive allele?

What is a recessive allele?

A version of a gene where two copies are needed for it to be expressed

What is meant when an organism is homozygous?

What is meant when an organism is homozygous?

When an organism has two copies of the same allele (two recessive or two dominant)

What is meant when an organism is heterozygous?

What is meant when an organism is heterozygous?

When an organism has two different versions of the same gene (one dominant and one recessive)

What is the genotype?

What is the genotype?

The genes present for a trait

What is the phenotype?

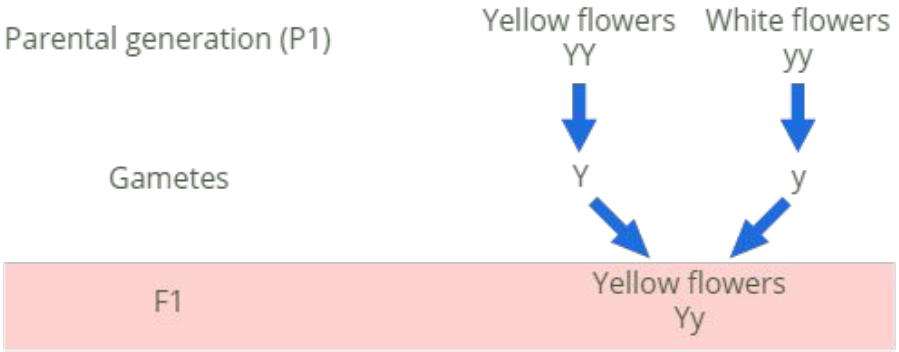
What is the phenotype?

The visible characteristic

What is the F1 generation?

What is the F1 generation?

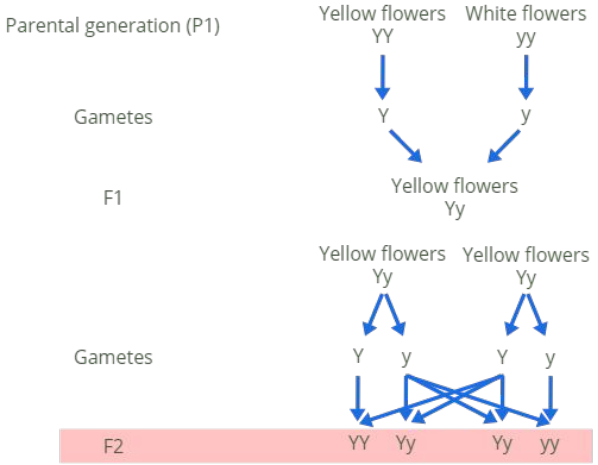
The offspring produced when 2 organisms are bred together



What is the F2 generation?

What is the F2 generation?

The offspring produced when two offspring (F1 generation organisms) are bred together



What is selfing?

What is selfing?

When gametes from the same parent fuse (e.g. when pollen from a plant lands on the stigma of that same plant)

How are dominant alleles represented in a punnett square?

How are dominant alleles represented in a punnett square?

They are represented using uppercase letters

How are recessive alleles represented in a punnett square?

How are recessive alleles represented in a punnett square?

They use the lowercase version of the same letter as the dominant allele

Draw a Punnett square for a cross between a homozygous recessive blue eyed female (bb) with a heterozygous brown eyed male (Bb)

Draw a Punnett square for a cross between a homozygous recessive blue eyed female (bb) with a heterozygous brown eyed male (Bb)

	B	b
b	Bb	bb
b	Bb	bb

50% brown eyes	Bb
50% blue eyes	bb

Draw a Punnett square for a cross between a homozygous dominant red flower (RR) with a homozygous recessive white flower (rr)

Draw a Punnett square for a cross between a homozygous dominant red flower (RR) with a homozygous recessive white flower (rr)

	R	R
r	Rr	Rr
r	Rr	Rr

100% Red flowers	Rr

Draw a Punnett square for a cross between two heterozygous cystic fibrosis carriers (Ff)

Draw a Punnett square for a cross between two heterozygous cystic fibrosis carriers (Ff)

	F	f
F	FF	Ff
f	Ff	ff

25% healthy	FF
50% carriers	Ff
25% have CF	ff

Draw a Punnett square to show how sex is determined

Draw a Punnett square to show how sex is determined

	X	X
X	XX	XX
Y	XY	XY

50% Male	XY
50% Female	XX

What is genetic engineering?

What is genetic engineering?

Altering the genome of an organism

What is a transgenic organism?

What is a transgenic organism?

An organism that contains foreign DNA

Give 2 advantages of genetically modified crops

Give 2 advantages of genetically modified crops

- Better crop yields
- Food will last longer and taste better

Give 2 disadvantages of genetically modified crops

Give 2 disadvantages of genetically modified crops

- The new genes can easily spread to other plants in the environment
- We don't know what long term effects GM crops cause on health