

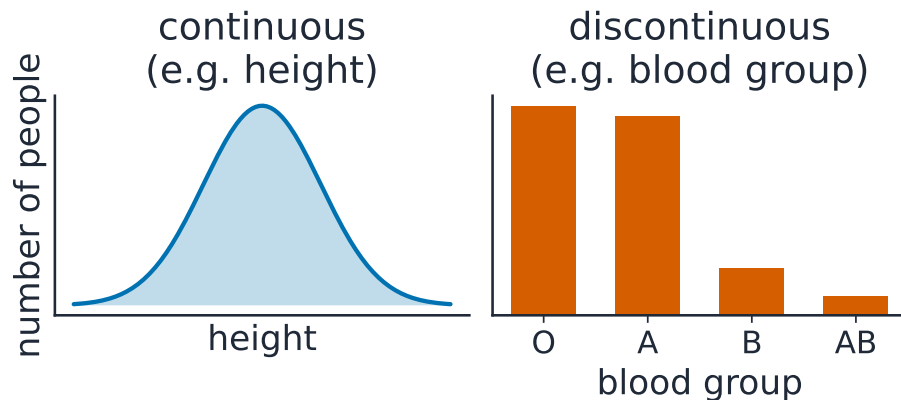
Exercise walk-through

18.1

Variation

IGCSE Biology

Variation



continuous: smooth range · discontinuous: discrete groups

- **continuous variation** – a smooth range of **phenotypes** between two extremes (for example body length and body mass).
- **discontinuous variation** – a few separate phenotypes with nothing in between (for example **ABO blood groups**, or seed shape in peas).

Mutation is where new variation comes from

original: A T G C A
mutated: A T T C A → a change in the
bases = a new allele

A **mutation** is a genetic change.
It is how **new alleles** are
made, so it is the original source of *all*
variation.

- **ionising radiation**
(X-rays) and some chemicals
raise the **rate**
- **(Supplement)**
meiosis, random
fertilisation and random mating
then *shuffle* what mutation
created

Exercises 2.1·2.2

2.1 Give one example of discontinuous variation.

[1]

2.2 State the source of all new alleles.

[1]

Exercises 2.1·2.2

2.1 Give one example of discontinuous variation.

[1]

2.1

- discontinuous variation e.g. **ABO blood groups** (or seed shape)

2.2 State the source of all new alleles.

[1]

2.2

- all new alleles come from **mutation**

Exercise 3.1

3.1 Human height shows continuous variation because it is affected by:

[1]

☐

A genes only

B the environment only

C both genes and the environment

D neither

Exercise 3.1

3.1 Human height shows continuous variation because it is affected by:

[1]

☐

A genes only

B the environment only

C both genes and the environment

D neither

3.1 C

- human height is affected by **both genes and the environment**
- A and B are only one cause; D is false

Exercise 3.2 (a)

3.2 Mutations are genetic changes.

(a) State what a mutation is.

[1]

Exercise 3.2 (a)

3.2 Mutations are genetic changes.

(a) State what a mutation is.

[1]

(a)

- a mutation is a **(random) genetic change** in the DNA base sequence

Exercise 3.2 (b)

3.2 Mutations are genetic changes.

(b) State two things that increase the rate of mutation.

[2]

Exercise 3.2 (b)

3.2 Mutations are genetic changes.

(b) State two things that increase the rate of mutation.

[2]

(b)

- **ionising radiation** (e.g. X-rays)
- **certain chemicals**