

18.1 Variation

Name: _____ Class: _____ Date: _____ **Total: 6 marks**

KEY WORDS variation 变异 • continuous 连续 • mutation 突变 • discontinuous 不连续
• continuous variation 连续变异

Objective

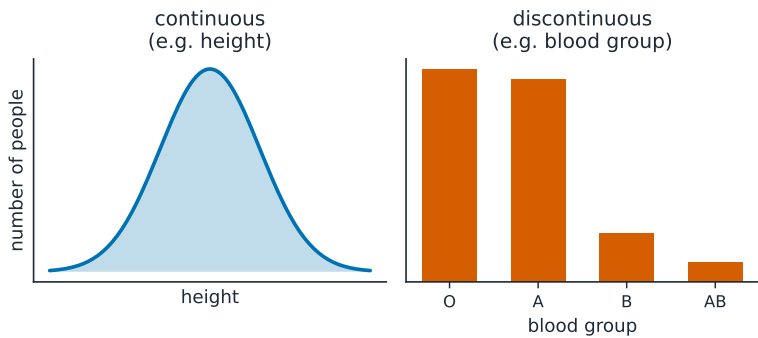
Build the skills to answer exam questions on **variation** 变异 — **continuous** 连续 and **discontinuous** 不连续 variation, and **mutation** 突变.

You must be able to:

- distinguish continuous and discontinuous variation, with examples
- state the causes of each
- describe mutation as the source of new alleles

1 Worked examples

■ Two types of variation



continuous: smooth range • discontinuous: discrete groups

Continuous: a smooth range (genes + environment). Discontinuous: separate groups (genes only)



over many generations the population becomes better adapted

Variation is the raw material of natural selection

- **continuous:** e.g. height, mass. **discontinuous:** e.g. blood group.
- **mutation:** a random change in DNA — makes new alleles (the source of all variation). Radiation/chemicals raise the rate.

2 Practice

2.1 Give one example of discontinuous variation. [1]

2.2 State the source of all new alleles. [1]

3 Exam-style questions

3.1 Human height shows continuous variation because it is affected by: [1]

- | | |
|---|---|
| A | B |
| C | D |
- A genes only
B the environment only
C both genes and the environment
D neither

3.2 Mutations are genetic changes.

(a) State what a mutation is. [1]

(b) State two things that increase the rate of mutation. [2]