

These are the errors that appear year after year in examiner reports. Knowing *what not to write* is just as important as knowing what to write. ★ marks Higher Tier only. Every mistake here has cost students marks in real exams.

Natural Selection and Genetic Modification

■ **Students often write:** *"The environment causes mutations that help organisms survive."*

✓ **Correct answer:** Mutations are RANDOM — they are not directed by the environment. The environment then SELECTS which mutations are advantageous (natural selection). Organisms with helpful mutations survive better and reproduce more.

■ **Examiner insight:** Mutations: random. Environment: selector, not cause. This is a fundamental principle of evolutionary biology. Saying the environment "causes" helpful mutations is Lamarckism, not Darwinism.

■ **Students often write:** *"Restriction enzymes and ligase both cut DNA."*

✓ **Correct answer:** RESTRICTION enzymes CUT DNA at specific sequences. LIGASE JOINS (seals) DNA pieces together by forming phosphodiester bonds. Completely opposite functions. Both are essential in Edexcel genetic engineering content.

■ **Examiner insight:** Restriction = scissors (cut). Ligase = glue (join). Know both by name and function for Edexcel Topic 4.