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Answers

Autumn leaves: the mechanisms behind their changing colours

Answers to practice exam questions on pp. 2–6

Martin Rowland

1 **a** Comparison:

- Both absorb light (in red and green parts of visible spectrum).

Contrast:

- Peaks of absorption by chlorophyll a are more extreme than those of chlorophyll b.

  OR

  Chlorophyll a absorbs dark blue and dark red wavelengths but chlorophyll b absorbs light blue and (reddish-)orange wavelengths.

- Chlorophyll b passes (light) energy to chlorophyll a but chlorophyll a passes chemical energy / electrons into the electron transport system.

b Prevent (light) damage to chlorophyll by absorbing light.

2 (DNA-binding domain) binds to specific base sequence of DNA.

(Binds to DNA of) enhancer / promotor of adjacent (regulated) gene.

(Bound transcription factor) binds to (other) proteins.

(Transcription factor and bound proteins) allow / repel binding of RNA polymerase.

The world's rarest fish: swimming on the edge of existence

Answers to practice exam questions on pp. 16–19

Martin Rowland

1 Low light intensities will reduce the rate of photosynthesis of the algae.

Leading to low population growth of the algae and a shortage of food (for the pupfish).

2 **a** New base sequence encodes a different amino acid.

Which changes the primary structure of the encoded protein.

b Due to degenerate nature of the genetic code, the new base sequence encodes same amino acid.

Substitution occurs within an intron / within non-coding DNA