

## Scheme of work for Chapter 8, *Cell respiration and photosynthesis*

Syllabus section	Content	Time required	Outline of lesson content	Coursebook resources	Worksheets	Teacher's resources / Teaching ideas
8.1	Cell respiration	5–6 lessons	<ul style="list-style-type: none"> <li>Draw and label a mitochondrion as seen using the electron microscope and identify the areas in which glycolysis, the Krebs cycle and the electron transfer chain occur; explain the relationship between the structure and function of the mitochondrion</li> <li>Outline the process of glycolysis and identify oxygen, hydrogen and electron loss and gain during oxidation and reduction</li> <li>Explain aerobic respiration – the link reaction, Krebs cycle and electron transfer chain</li> <li>Explain oxidative phosphorylation in terms of chemiosmosis</li> </ul>	p194–201  Short-answer Qs p196, p200–201  End-of-chapter Qs p210–213: Q1, Q2, Q3, Q4, Q9, Q11	Support: Q1, Q2, Q5  Extension: Q2, Q3	In a HL class, this can be taught with 3.7  Practical activities: opportunity for assessed practical using yeast; modelling and comparing chloroplasts and mitochondria  Exemplar exam questions

8.2	Photosynthesis	5–6 lessons	<ul style="list-style-type: none"> <li>• State that photosynthesis consists of light-dependent and light-independent reactions; explain the relationship between the structures of the chloroplast seen using the electron microscope and their functions; identify the sites of the reactions of photosynthesis</li> <li>• Explain the light-dependent reactions including the roles of the two photosystems, photolysis of water, electron transport, cyclic and non-cyclic photophosphorylation and reduction of NADP<sup>+</sup></li> <li>• Explain the light-independent reactions including the roles of RuBP, reduction of GP to TP, and NADPH + H<sup>+</sup></li> <li>• Explain the relationship between action and absorption spectra of photosynthetic pigments</li> <li>• Explain the concept of limiting factors using light intensity, temperature and CO<sub>2</sub> concentration as examples</li> </ul>	<p>p201–210</p> <p>Short-answer Qs p206, p210</p> <p>TOK p206</p> <p>End-of-chapter Qs p210–213: Q1, Q5, Q6, Q7, Q8, Q10, Q12</p>	<p>Support: Q1, Q2, Q3, Q4, Q5</p> <p>Extension: Q1, Q4, Q5</p>	<p>In a HL class, this can be taught with 3.8</p> <p>Practical activities: chromatography of plant pigments; opportunity for assessed practical investigating rate of photosynthesis – link to ICT if data loggers are used; practical to investigate accessory pigments</p> <p>Link to TOK: crops in glasshouses</p> <p>Exemplar exam questions</p>
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