4 · Energy, Environment, Microbiology and Immunity

Pearson Edexcel · International A-Level · Biology · Vocabulary in context

Word	Example
thylakoid /ˈθaɪləkɔɪd/	Each **thylakoid** is a flat sac inside the chloroplast where light is absorbed.
light-dependent reactions /laɪt dɪˈpendənt rɪˈækʃnz/	**Light-dependent reactions** make ATP and reduced NADP using light energy. ATP NADP
photophosphorylate /ˌfəʊtəʊˈfɒsfɔːrɪleɪt/	Light-driven electron transport helps **photophosphorylate** ADP to ATP. ADP ATP
stroma /ˈstrəʊmə/	The **stroma** is the fluid in the chloroplast where the Calvin cycle happens.
light-independent reactions /laɪt ˌɪndɪˈpendənt rɪˈækʃnz/	**Light-independent reactions** use ATP and reduced NADP to build carbohydrates. ATP NADP
photosystem II	**Photosystem II** replaces lost electrons using electrons from water.
photosystem I	**Photosystem I** absorbs light to raise electron energy again.
ATP synthase /ˌeɪ tiː ˈpiː ˈsɪnθeɪs/	**ATP synthase** makes ATP as hydrogen ions flow through it. ATP
photolysis /fəʊˈtɒləsɪs/	In **photolysis**, light splits water into hydrogen ions, electrons and oxygen. `
electron carriers	**Electron carriers** pass electrons along a transport chain.

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chemiosmosis /ˌkemɪəzˈməʊsɪs/	In **chemiosmosis**, hydrogen ions flow back through the membrane and drive ATP synthase.
cyclic photophosphorylation /ˈsaɪklɪk ˌfəʊtəʊˌfɒsfɔːrɪˈleɪʃn/	**Cyclic photophosphorylation** makes ATP but no reduced NADP. ATP NADP
carbon fixation	**Carbon fixation** adds carbon dioxide to an organic molecule.
rubisco /ruːˈbɪskəʊ/	The enzyme **rubisco** fixes carbon dioxide.
absorption spectrum /əbˈsɔːpʃn ˈspektrəm/	An **absorption spectrum** has dark lines.
action spectrum /ˈækʃn ˈspektrəm/	The **action spectrum** shows that red and blue light give the fastest photosynthesis.
Limiting factors /ˈlɪmɪtɪŋ ˈfæktəz/	**Limiting factors** can stop photosynthesis rising despite more light.
Gross primary productivity /grəʊs ˈpraɪməri ˌprɒdəkˈtɪvɪti/	**Gross primary productivity** is all the energy plants fix before respiration.
net primary productivity /net ˈpraɪməri ˌprɒdəkˈtɪvɪti/	**Net primary productivity** is what is left after plants use some energy in respiration.
habitat /ˈhæbɪtæt/	A pond is the **habitat** of frogs.
population /ˌpɒpjʊˈleɪʃn/	All the rabbits in a field form a **population**.
community /kəˈmjuːnɪti/	All the plants and animals in a pond form a **community**.

Word	Example
ecosystem /ˈiːkəʊsɪstəm/	A pond is an **ecosystem**.
niche /niːʃ/	Each species has its own **niche**: its role and what it eats.
Succession /səkˈseʃn/	**Succession** changes the community as organisms alter local conditions.
climax community /ˈklaɪmæks kəˈmjuːnɪti/	A **climax community** is the stable final stage of succession.
dendrochronology /ˌdendrəkrəˈnɒlədʒi/	**Dendrochronology** uses tree-ring patterns to study past conditions.
enhanced greenhouse effect /enˈhænst ˈgriːnhaʊs ɪˈfekt/	Human greenhouse-gas emissions contribute to the **enhanced greenhouse effect**.
global warming potential /ˈgləʊbl ˈwɔːmɪŋ pəˈtenʃl/	Methane has a higher **global warming potential** than carbon dioxide.
allele frequency /əˈliːl ˈfriːkwənsi/	The **allele frequency** of the blue allele is 30%. 30%
directional selection /daɪˈrekʃənl sɪˈlekʃn/	**Directional selection** favours one extreme, such as darker moths in sooty areas.
stabilising selection /ˈsteɪbəlaɪzɪŋ sɪˈlekʃn/	**Stabilising selection** favours the average, such as babies of medium weight.
Speciation /ˌspiːʃɪˈeɪʃn/	**Speciation** forms new species.
allopatric /ˌæləˈpætrɪk/	**Allopatric** speciation can follow geographical separation of populations.

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Word	Example
sympatric /ˈsɪmpətrɪk/	**Sympatric** speciation occurs without a geographical barrier separating the populations.
turbidity /tɜːˈbɪdɪti/	Mud raises the **turbidity** of river water.
dilution plating /daɪˈluːʃn ˈpleɪtɪŋ/	Use **dilution plating** to estimate viable cells in a suspension.
lag /læg/	During the **lag** phase, bacteria adjust before rapid population growth.
log /lɒg/	Bacterial numbers increase exponentially during the **log** phase.
stationary /ˈsteɪʃənəri/	During the **stationary** phase, divisions roughly balance bacterial deaths.
death /deθ/	During the **death** phase, viable bacterial numbers fall.
capsid /ˈkæpsɪd/	The **capsid** is the protein coat around a virus's DNA or RNA. DNA RNA
Mycobacterium tuberculosis /ˌmaɪkəbækˈtɪərɪəm ˌtjuːbəkjʊˈləʊsɪs/	**Mycobacterium tuberculosis** is the bacterium that causes tuberculosis.
HIV /ˌeɪtʃ aɪ ˈviː/	**HIV** infects helper T cells and can weaken immune defence. T
antigens /ˈæntɪdʒenz/	Germs have **antigens** on their surface.
Humoral /ˈhjuːmərəl/	**Humoral** immunity uses antibodies released by plasma cells.

Word	Example
antibodies /ˈæntɪbɒdiz/	**Antibodies** stick to germs.
B memory cells /biː ˈmeməri selz/	**B memory cells** support a faster response to the same antigen.
Cellular /ˈseljʊlə/	**Cellular** immunity includes T cells acting on infected cells. T
T killer cells /tiː ˈkɪlə selz/	**T killer cells** recognise and destroy infected body cells.
variable region /ˈveərɪəbl ˈriːdʒn/	The **variable region** is different in every kind of antibody.
active /ˈæktɪv/	**Active** immunity involves the body's own response to an antigen.
passive /ˈpæsɪv/	Diffusion is **passive**: it does not need energy from the cell.
herd immunity /hɜːd ɪˈmjuːnɪti/	When most people are vaccinated, **herd immunity** protects the rest.
Bacteriostatic /bæk,tɪərɪəˈstætɪk/	A **bacteriostatic** antibiotic slows or stops susceptible bacteria multiplying.
bactericidal /ˌbæktərɪˈsaɪdl/	A **bactericidal** antibiotic kills susceptible bacterial cells.
polymerase chain reaction /ˌpɒlɪməˈreɪz tʃeɪn rɪˈækʃn/	The **polymerase chain reaction** makes millions of copies of a piece of DNA. DNA
→ **Gel electrophoresis** /dʒel ɪˌlektrəʊfɔːˈriːsɪs/	**Gel electrophoresis** separates DNA fragments according to their size. DNA

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Word	Example
profile /ˈprəʊfaɪl/	Compare band positions when examining a DNA **profile**. DNA
rigor mortis /ˈrɪgə ˈmɔːtɪz/	**Rigor mortis** stiffens muscles after death as ATP becomes unavailable. ATP