Cellular Energetics

AP Biology · Vocabulary in context

Word	Example
enzyme /ˈenzaɪm/	The **enzyme** speeds up the reaction.
catalyst /ˈkætəlɪst/	A **catalyst** speeds up a reaction without being used up.
activation energy /ˌæktɪˈveɪʃn ˈenədʒi/	Enzymes lower the **activation energy** of a reaction.
active site /ˈæktɪv saɪt/	The substrate fits into the **active site** of the enzyme.
substrate /ˈsʌbstreɪt/	Starch is the **substrate** of amylase.
denatures /ˈdenətʃəz/	Heat **denatures** an enzyme by changing its shape.
Inhibitors /ɪnˈhɪbɪtəz/	**Inhibitors** slow down enzymes.
independent variable /ˌɪndɪˈpendənt ˈveərɪəbl/	The **independent variable** is the one you change.
dependent variable /dɪˈpendənt ˈveərɪəbl/	The **dependent variable** is the one you measure.
controlled variables	Temperature and pH are **controlled variables** in this experiment. pH
The first law /ðə fɜːst lɔː/	**The first law** of thermodynamics says energy cannot be made or destroyed.
The second law /ðə ˈsekənd lɔː/	**The second law** says every energy change loses some energy as heat.

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entropy /ˈentrəpi/	A file with high **entropy** is hard to compress.
constant input of free energy /ˈkɒnstənt ˈɪnpʊt ɒv friː ˈenədʒi/	Living things need a **constant input of free energy**.
Photosynthesis /ˌfəʊtəʊˈsɪnθəsɪs/	**Photosynthesis** turns light energy into sugar.
Calvin cycle /ˈkælvɪn ˈsaɪkl/	In the **Calvin cycle**, carbon dioxide is turned into sugar in the stroma.
thylakoid /ˈθaɪləkɔɪd/	Each **thylakoid** is a flat sac inside the chloroplast where light is absorbed.
photosystem /ˌfəʊtəʊˈsɪstəm/	A **photosystem** is a group of pigments that catch light energy.
proton gradient /ˈprəʊtɒn ˈgreɪdɪənt/	A **proton gradient** drives ATP synthase.
ATP synthase /ˌeɪ tiː ˈpiː ˈsɪnθeɪs/	**ATP synthase** makes ATP as hydrogen ions flow through it. ATP
chemiosmosis /ˌkemɪəzˈməʊsɪs/	In **chemiosmosis**, hydrogen ions flow back through the membrane and drive ATP synthase.
stroma /ˈstrəʊmə/	The **stroma** is the fluid in the chloroplast where the Calvin cycle happens.
Carbon fixation	**Carbon fixation** adds CO_2 to an organic molecule. CO_2
rubisco /ruːˈbɪskəʊ/	The enzyme **rubisco** fixes carbon dioxide.
Reduction /rɪˈdʌkʃn/	**Reduction** in the Calvin cycle uses NADPH. NADPH

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Regeneration /riːˌdʒenəˈreɪʃn/	**Regeneration** rebuilds the starting molecule of the Calvin cycle.
prokaryotes /ˈprɒkərɪəʊts/	Bacteria are **prokaryotes**: they have no nucleus.
cyanobacteria /ˌsaɪəˌnɒbækˈtɪərɪə/	**Cyanobacteria** were the first organisms to make oxygen.
oxygenated atmosphere /ˈɒksɪdʒeneɪtɪd ˈætməsfɪə/	Photosynthesis created an **oxygenated atmosphere**.
banded iron formations /ˈbændɪd ˈaɪən fɔːˈmeɪʃnz/	**Banded iron formations** show when oxygen first built up.
Cellular respiration /ˈseljʊlə ˌrespɪˈreɪʃn/	**Cellular respiration** releases energy from glucose.
Glycolysis /glaɪˈkɒləsɪs/	**Glycolysis** splits glucose into two pyruvates.
Krebs cycle /krebz ˈsaɪkl/	The **Krebs cycle** releases carbon dioxide and makes reduced NAD. NAD
electron transport chain /ɪˈlektrɒn ˈtrænspɔːt tʃeɪn/	The **electron transport chain** passes electrons along proteins in the inner membrane.
fermentation /fɜːmənˈteɪʃn/	Yeast makes alcohol by **fermentation** when there is no oxygen.
pyruvate /ˈpaɪruːveɪt/	Glycolysis turns one glucose into two molecules of **pyruvate**.
Pyruvate oxidation	**Pyruvate oxidation** turns pyruvate into acetyl-CoA. A
final electron acceptor /ˈfaɪnl ɪˈlektrɒn əkˈseptə/	Oxygen is the **final electron acceptor** in respiration.

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Word	Example
uncoupler	An **uncoupler** lets protons leak, so less ATP is made.
lactic acid /ˈlæktɪk ˈæsɪd/	Hard exercise makes **lactic acid** in your muscles.
null hypothesis /nʌl haɪˈpɒθəsɪs/	The **null hypothesis** says there is no difference between the groups.

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