

# Dry Activities

## Activity 4C – Bioenergy crosswords

Crosswords are provided for use at a range of educational levels Primary, Key Stage 3, Key Stage 4 and Post-16. The crosswords cover vocabulary and concepts associated with bioenergy research that students are expected to be familiar with at the educational level specified. There will also be a few words that are included that may be specific to bioenergy research and not covered in the curriculum, designed to stretch students and enrich their understanding of the topic. It would be advisable to introduce students to the words and their meanings in the course of the learning session.

Crosswords support the literacy component of science and will help with spelling, reading, writing, scientific communication, understanding, revision of the terminology and definitions.

### The crosswords can be used in many ways:

- introduction to the topic to elicit prior knowledge
- recapping a previous session
- to build up word lists for wall display
- a fun end of session exercise
- as a takeaway activity

Crosswords and wordsearches provide many levels of differentiation. They can be completed individually or as a group, with or without support sheets listing the words.

They can be used to differentiate by task allowing the student to select a crossword or wordsearch. If the wordsearch is completed with ease then the student can be encouraged to attempt the crossword. Students will have recently found the same words in the wordsearch and so feel more confident in attempting the crossword.

A solution for each crossword and wordsearch is provided which allows students to check their own work and thereby allow you to spend more time engaging with other students.

Word exercises such as sentence loops allow students to expand their vocabulary specific to the subject, and when completed within a group the activities promote discussion and therefore promote their oracy skills.

# Introductory Crossword Clues

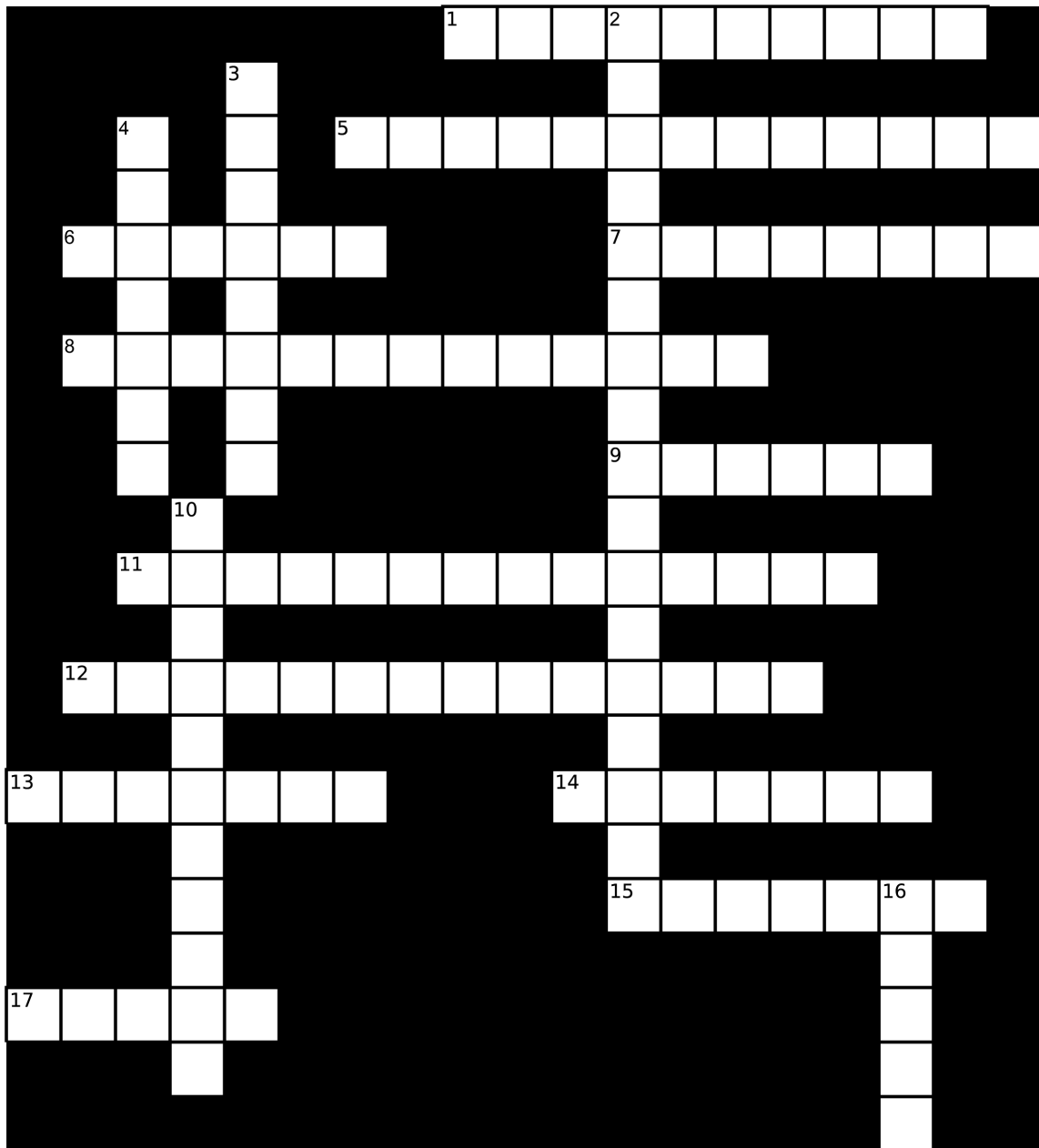
## Across

1. Non-renewable fuel, such as coal, oil and gas (6, 4)
5. The steady increase in the temperature of the Earth's atmosphere (6, 7)
6. An insoluble carbohydrate found in plants and plant products
7. A substance that increases the rate of a reaction
8. A gas produced by the burning of fuels and used in photosynthesis (6, 7)
9. A group of proteins that speed up reactions in living things
11. A method of separating substances where they move at different speeds
12. A process carried out in green plants that uses light
13. With oxygen
14. A renewable fuel produced from biological material
15. The specific sugar made by photosynthesis
17. A measure of the amount of crop produced

## Down

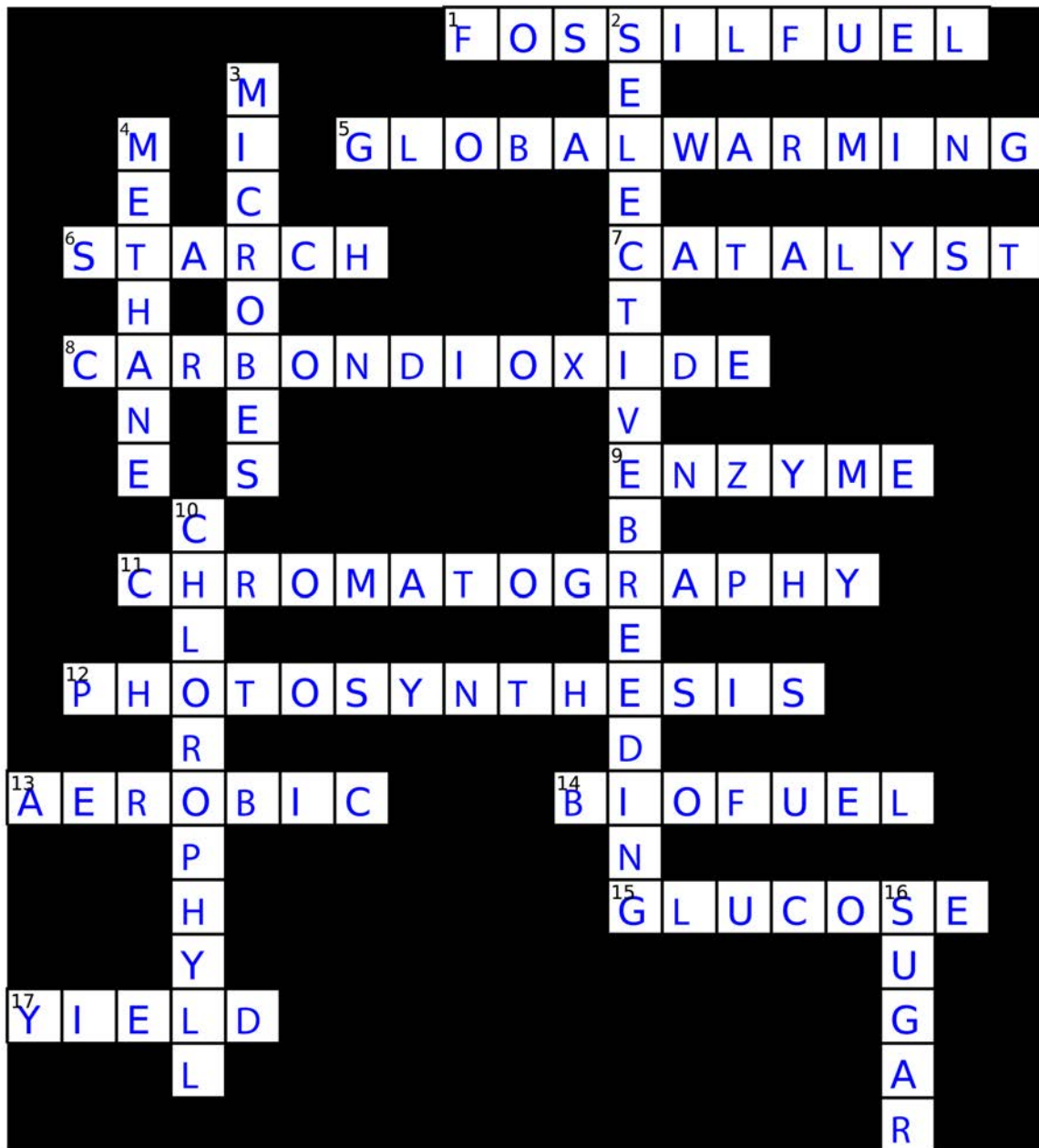
2. The process of producing desirable characteristics in the next generation (9, 8)
3. Very small living things that can only be seen with a microscope
4. A gas that is found with crude oil and produced in decomposition
10. The green chemical in plants that absorbs light energy
16. A carbohydrate that is a source of energy in respiring cells

# Introductory Crossword



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# Introductory Crossword Answers



# Intermediate Crossword Clues

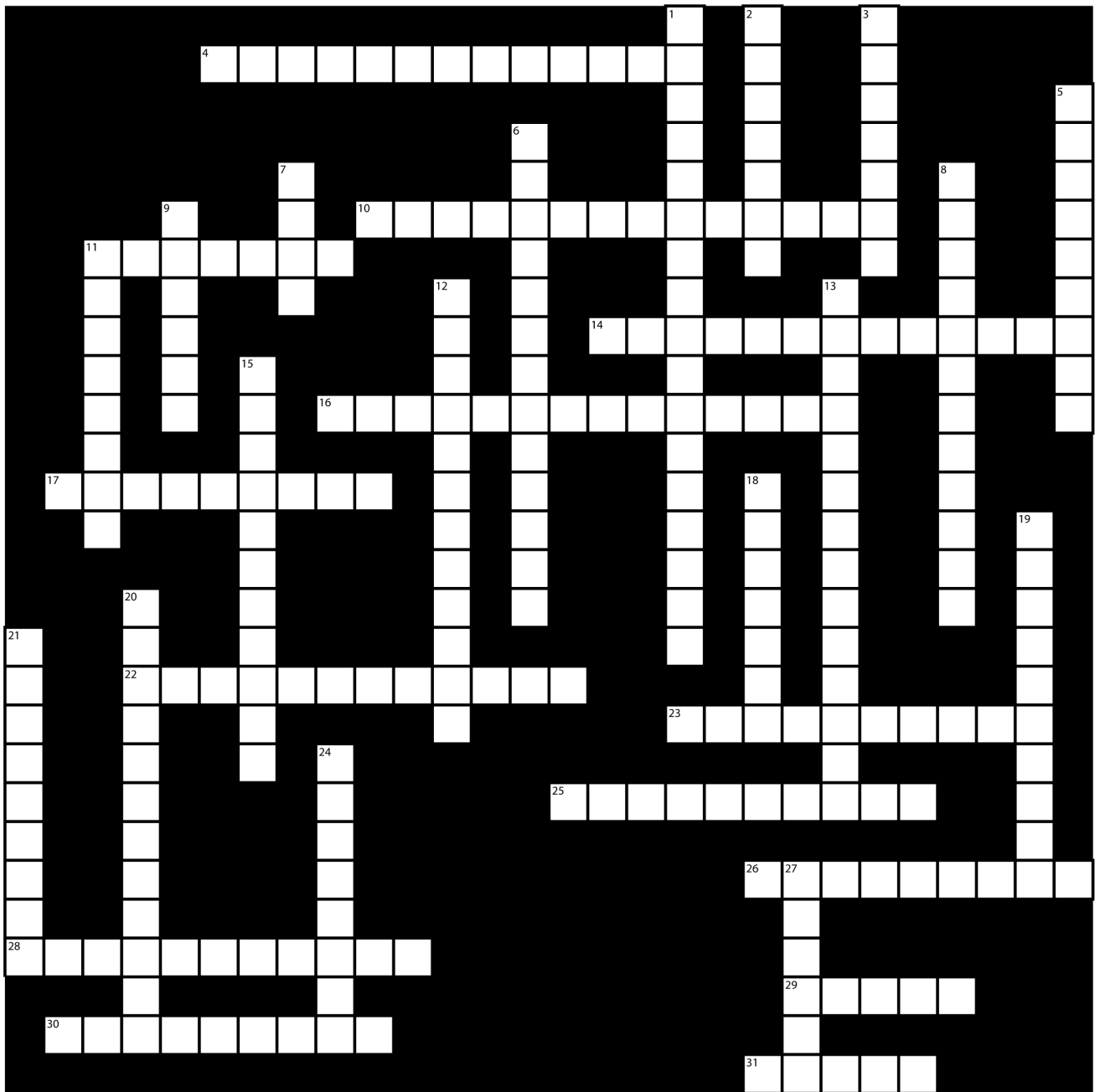
## Across

4. A gas produced by the burning of fuels and used in photosynthesis (6, 7)
10. A process carried out in green plants that uses light
11. A gas that is found with crude oil and produced in decomposition
14. Gas such as carbon dioxide that traps heat in the atmosphere (10, 3)
16. A method of separating substances where they move at different speeds
17. A resource that can be replaced more quickly or at the same rate as it is being used
22. A process in which liquids are purified or separated by heating to form a gas and then condensed back into a liquid
23. Non-renewable fuel, such as coal, oil and gas (6, 4)
25. A layer of gases that surrounds the Earth
26. The material from which the plant cell walls are made
28. The green chemical in plants that absorbs light energy
29. A measure of the amount of crop produced
30. A measurement of the 'thickness' of a fluid
31. Name for the fungus that is single-celled most of its life, used in the production of alcohol and capable of fermenting carbohydrates

## Down

1. The process of producing desirable characteristics in the next generation (9, 8)
2. A renewable fuel produced from biological material
3. The specific sugar made by photosynthesis
5. An organic compound derived from oil or fat that can be used as a transport fuel
6. The steady increase in the temperature of the Earth's atmosphere (6, 7)
7. Part of a chromosome that contains the 'instructions' for a particular characteristic such as leaf shape
8. An anaerobic cellular process in which organic foods are converted into simpler compounds such as alcohol
9. An insoluble carbohydrate found in plants and plant products
11. Very small living things that can only be seen with a microscope
12. The tiny structures inside plant cells where photosynthesis occurs
13. A complex carbohydrate composed of a chain of monosaccharides joined together by glycosidic bonds
15. A compound that contains double or triple bonds
18. The term for the dry weight of a living thing that can be used as a fuel
19. A chemical reaction where a compound, such as starch or cellulose, is broken down by reaction with water into smaller components.
20. Chemicals that are made only from hydrogen and carbon
21. without oxygen
24. A substance that increases the rate of a reaction
27. A group of proteins that speed up reactions in living things

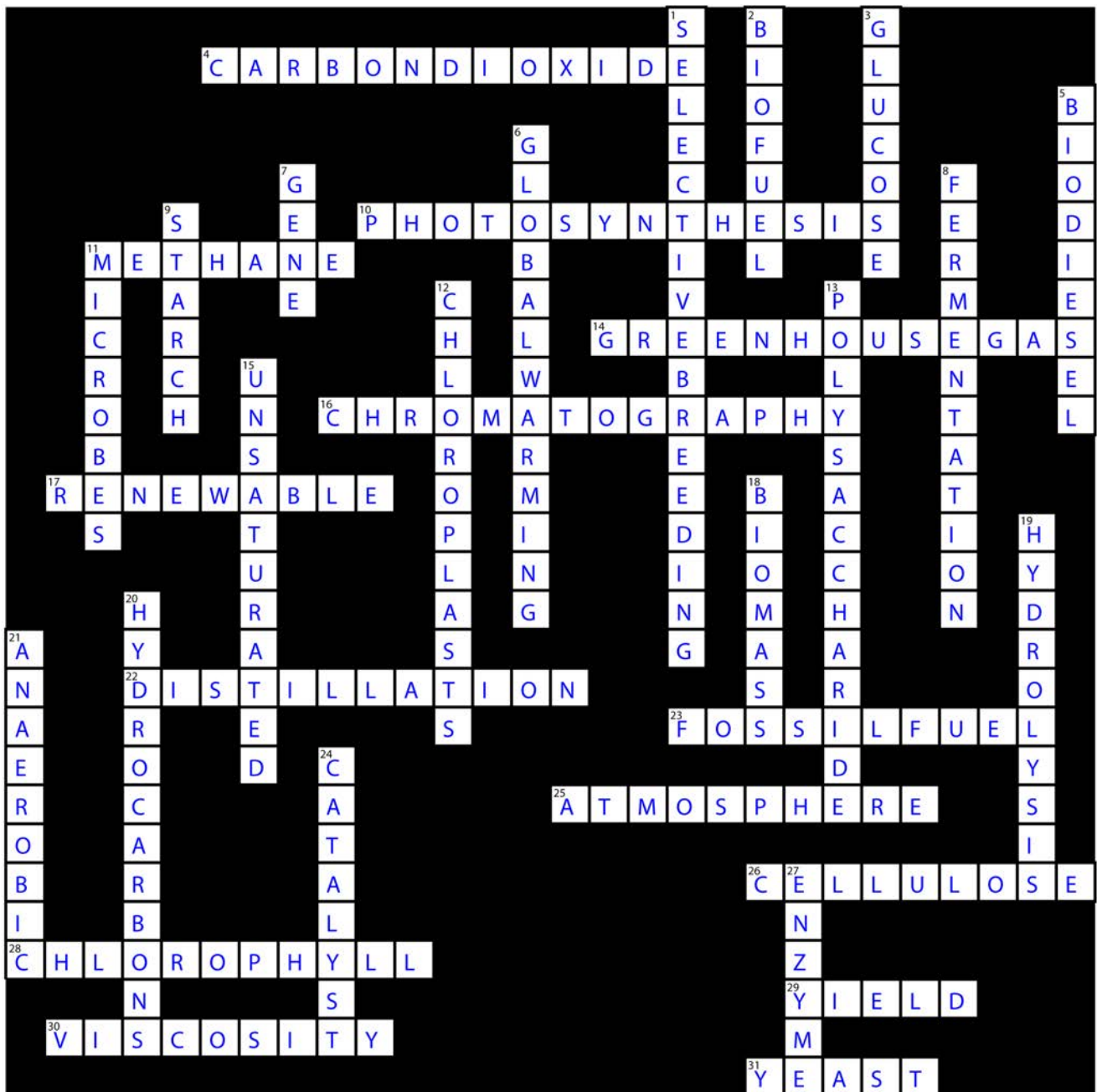
# Intermediate Crossword



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# Intermediate Crossword Answers



# Advanced Crossword Clues

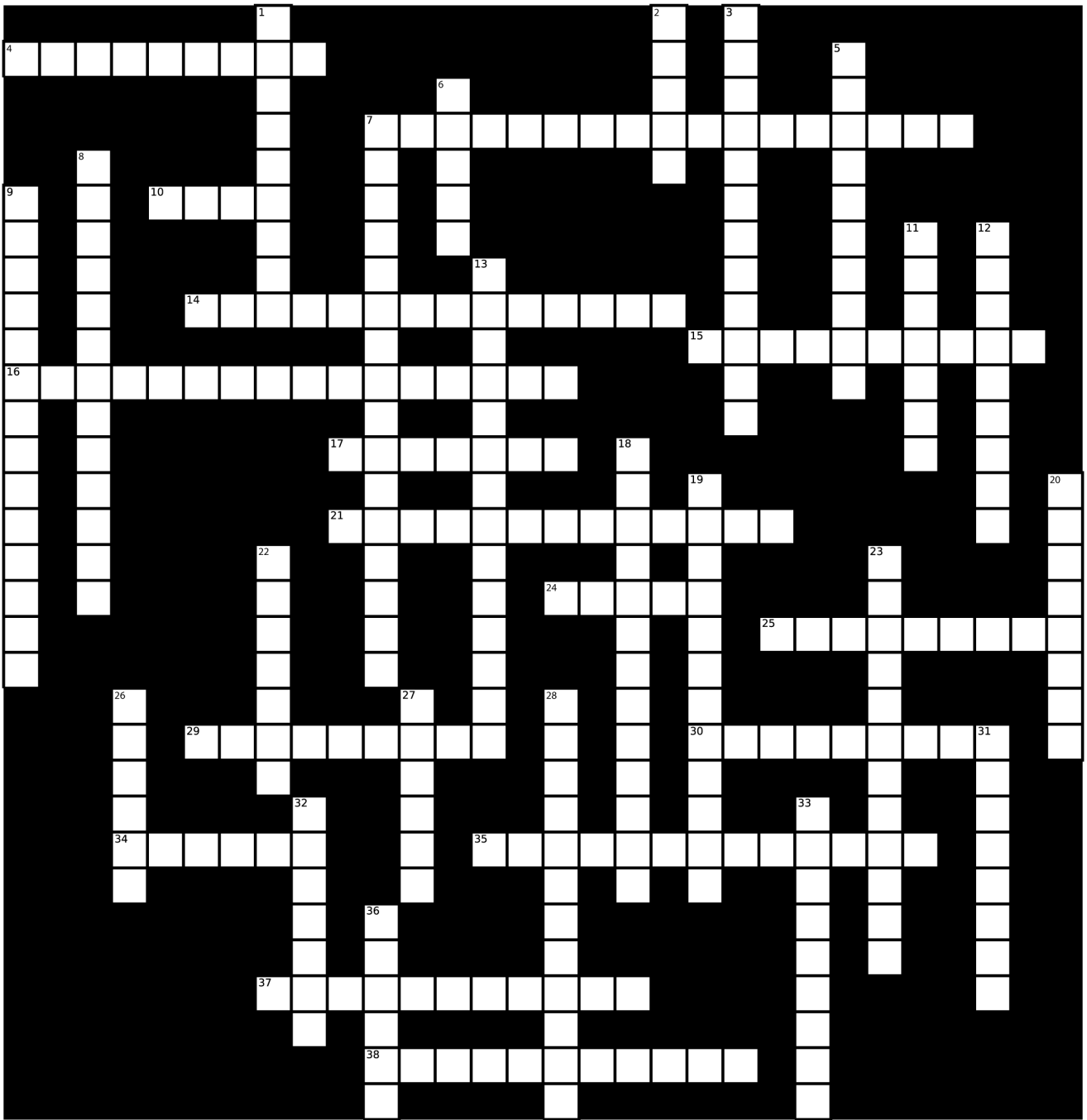
## Across

- A group of long chain hydrocarbons derived from the breakdown of fats with a single carboxylic group and aliphatic tail (5, 4)
- The process of producing desirable characteristics in the next generation (9, 8)
- The fundamental, physical, and functional unit of heredity
- A complex carbohydrate composed of a chain of monosaccharides joined together by glycosidic bonds
- Non-renewable fuel, such as coal, oil and gas (6, 4)
- A new and growing science that focuses on re-designing and re-building natural biological systems synthetically from the ground up (9, 7)
- The term for the dry weight of a living thing that can be used as a fuel
- A gas produced by the burning of fuels and used in photosynthesis (6, 7)
- Name for the fungus that is single-celled most of its life, used in the production of alcohol and capable of fermenting carbohydrates
- The material from which plant cell walls are made
- A measurement of the 'thickness' of a fluid
- Without oxygen
- A group of proteins that speed up reactions in living things
- Traps heat in the atmosphere (10, 3)
- A hydrocarbon that contains double or triple bonds
- The green chemical in plants that absorbs light energy

## Down

- A transport fuel derived from oil or fat
- A type of vascular tissue in terrestrial plants primarily involved transporting water and nutrient and providing structural support
- Chemicals that are made only from hydrogen and carbon
- A chemical reaction where a compound, such as starch or cellulose, is broken down by reaction with water into smaller components
- Phototrophic eukaryotic microorganisms
- The process of converting complex carbohydrate into simple monosaccharide components through hydrolysis
- Applies to a process which occurs without any change in the total amount of carbon dioxide present in the atmosphere (6, 7)
- A process carried out in green plants that uses light
- A renewable fuel produced from biological material
- A resource that can be replaced more quickly or at the same rate as it is being used
- A method of separating substances where they move at different speeds
- The steady increase in the temperature of the Earth's atmosphere (6, 7)
- A process in which liquids are purified or separated by heating to form a gas and then condensed back into a liquid
- Microscopic, single-celled organisms that possess a prokaryotic type of cell structure
- The specific sugar made by photosynthesis
- The tiny structures inside plant cells where photosynthesis occurs
- A tissue in a vascular plant that functions primarily in transporting organic food materials from the photosynthetic organ to all the parts of the plant
- Organic substance which act as a binder for the cellulose fibres in wood and certain plants and adds strength and stiffness to the cell walls
- An anaerobic cellular process in which organic foods are converted into simpler compounds such as alcohol
- A substance that increases the rate of a reaction
- A gas that is found with crude oil and produced in decomposition
- Lasting through the year or for several years
- An insoluble carbohydrate found in plants and plant products

# Advanced Crossword



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# Advanced Crossword Answers

