

# 4 Molecules of life – Part 1

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

## Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

| English       | 中文    | Write it 3 times (English) |       |       |
|---------------|-------|----------------------------|-------|-------|
| molecule      | 分子    | _____                      | _____ | _____ |
| carbohydrates | 碳水化合物 | _____                      | _____ | _____ |
| fats          | 脂肪    | _____                      | _____ | _____ |
| proteins      | 蛋白质   | _____                      | _____ | _____ |
| elements      | 元素    | _____                      | _____ | _____ |
| carbon        | 碳     | _____                      | _____ | _____ |
| hydrogen      | 氢     | _____                      | _____ | _____ |
| nitrogen      | 氮     | _____                      | _____ | _____ |
| starch        | 淀粉    | _____                      | _____ | _____ |
| cellulose     | 纤维素   | _____                      | _____ | _____ |
| glucose       | 葡萄糖   | _____                      | _____ | _____ |
| amino acids   | 氨基酸   | _____                      | _____ | _____ |
| fatty acids   | 脂肪酸   | _____                      | _____ | _____ |
| glycerol      | 甘油    | _____                      | _____ | _____ |

## Recall

Living things are built from three main kinds of **molecule** 分子: **carbohydrates** 碳水化合物, **fats** 脂肪 and **proteins** 蛋白质. Each is made from a few chemical **elements** 元素.

## New ideas

Read these first, then do the Practice.

### ■ 1 The elements in food



- carbohydrates and fats: **carbon** 碳, **hydrogen** 氢 and oxygen.
- proteins: the same three, plus **nitrogen** 氮.

### ■ 2 Big molecules from small units

Large molecules are built by joining many small units, like beads on a string:



| Large molecule                              | Built from                                    |
|---------------------------------------------|-----------------------------------------------|
| <b>starch</b> 淀粉 (and <b>cellulose</b> 纤维素) | many <b>glucose</b> 葡萄糖 units                 |
| proteins                                    | <b>amino acids</b> 氨基酸                        |
| fats                                        | <b>fatty acids</b> 脂肪酸 and <b>glycerol</b> 甘油 |

**Watch out:** carbohydrates and fats contain carbon, hydrogen and oxygen; **proteins** contain those three **plus nitrogen** — nitrogen is the giveaway for protein. Starch is made of **glucose**, but a fat is made of *two* kinds of unit (fatty acids **and** glycerol).

## Practice

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Try these in order.

**4.1** Which three elements are found in carbohydrates? [1]

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**4.2** Which extra element do proteins contain? [1]

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**4.3** What small units join together to make starch? [1]

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**4.4** What two kinds of molecule join together to make a fat? [2]

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**4.5** Name the small units that make up a protein. [1]

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**4.6 Challenge.** A food molecule contains nitrogen as well as carbon, hydrogen and oxygen. What type of molecule is it, and what small units is it built from? [2]