

## Acid base and blood gas analyser

### Vocabulary warm-up

1 Match the words in English with their translations:

1 unknown	ponořit
2 inner side	tenká vrstva
3 coated	dosáhnout
4 immerse	neznámý
5 plastic jacket	nylonová síťka
6 basically	vnitřní strana
7 nylon net	plastikový obal
8 uncharged molecules	tím
9 pass through	v zásadě
10 thin layer	projít skrz
11 reach	nenabité molekuly, molekuly bez náboje
12 thereby	potazený

### Reading

1 Read the text and complete the gaps with the words from the box:

electrode	uncharged	partial	analysers	diffuse	electrolyte	solution
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Most acid base and blood gas \_\_\_\_\_ (1) measure pH, pCO<sub>2</sub>, pO<sub>2</sub> *by means of* selective electrodes.

#### pH electrode

A pH electrode is a glass \_\_\_\_\_ (2) with a pH-sensitive glass membrane to *seal* its tip. On the inner side of the membrane is a buffer solution with constant pH. A silver wire coated with AgCl is immersed in this solution and, via a *plug*, connected to the measuring instrument. On the other side of the glass membrane is a \_\_\_\_\_ (3) of unknown pH (the sample).

#### pCO<sub>2</sub> electrode

pCO<sub>2</sub> is defined as the \_\_\_\_\_ (4) pressure of CO<sub>2</sub> in a gas phase in *equilibrium* with the blood, and is measured by a pCO<sub>2</sub> electrode.

A pCO<sub>2</sub> electrode is a combined glass and silver/silver chloride (Ag/AgCl) reference electrode placed in a plastic jacket, which is filled with a bicarbonate \_\_\_\_\_ (5). The jacket is covered with a 20 µm silicon membrane placed on a 50 µm nylon net.

The pCO<sub>2</sub> electrode is basically a pH electrode with a silicon membrane added. This membrane allows only \_\_\_\_\_ (6) molecules (i.e. CO<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>) to pass through it. Charged ions, such as H<sup>+</sup>, will not pass. Consequently, dissolved CO<sub>2</sub> from the sample will \_\_\_\_\_ (7) into the thin layer of bicarbonate electrolyte until equilibrium is reached.

2 Now answer these questions:

- 1 What are the electrodes made of?
- 2 Where on the electrode is the glass membrane?
- 3 Does the pH in the buffer solution change?
- 4 What is the role of the silver wire?
- 5 Where is the bicarbonate electrolyte situated?
- 6 What is the difference between a pCO<sub>2</sub> electrode and a pH electrode?
- 7 What kind of molecules pass through the silicon membrane?
- 8 How long do the CO<sub>2</sub> molecules move into the bicarbonate electrolyte?

## Grammar Point

### A Adjectives and Adverbs – Comparison

Complete the sentences using comparative or superlative forms:

1. This coffee is very weak. I like it a bit ....
2. The hotel was surprisingly big. I expected it to be .....
3. The hotel was surprisingly cheap. I expected it to be .....
4. Don't worry. The situation isn't so bad. It could be .....
5. This is the .... film I have ever seen.
6. You were a bit depressed yesterday, but you look ..... today. (good)
7. My mother is ..... than my father. (old)
8. Our shop has the .....prices. (low)
9. Frying is the ..... way of cooking. (healthy)
10. Spring is ..... of the four seasons. (beautiful)

### B Expressing “*už ne/ještě ne*” in English

Translate into English:

1. Už mi nepíše \_\_\_\_\_.
2. Už to nechci slyšet! \_\_\_\_\_
3. Už spolu nechodí. \_\_\_\_\_
4. Chceš znát odpověď? Ne, ještě ne. \_\_\_\_\_
5. Ještě na tom nepracuji. \_\_\_\_\_