

## Acid base and blood gas analyser

### Vocabulary warm-up

1 Match the words in English with their translations:

unknown	ponořit
inner side	tenká vrstva
coated	dosáhnout
immerse	neznámý
plastic jacket	nylonová síťka
basically	vnitřní strana
nylon net	plastikový obal
uncharged molecules	nenabité molekuly, molekuly bez náboje
pass through	v zásadě
thin layer	projít skrz
reach	tím
thereby	potažený

### 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 mounted in a plastic jacket, which is filled with a bicarbonate \_\_\_\_\_ (5). The jacket is covered with a 20 µm silicon membrane moulded 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 How do the analysers find out about pH, pCO<sub>2</sub> and pO<sub>2</sub>?
- 2 What is the connection between the buffer solution and the measuring instrument?
- 3 Where is the sample situated?
- 4 Where can you find the silicon membrane?
- 5 Which molecules pass through the membrane?

## Listening

*A Pre-listening warm-up. Put the words in the correct order.*

- 1 blood do a gas
- 2 sure gloves you have your make on
- 3 in password put your
- 4 machine put syringe into the the
- 5 hit "analyse" button the
- 6 the for patient ask ID
- 7 scanner use a
- 8 it manually put in
- 9 syringe the remove
- 10 the sharps syringe in container a discard

*B Watch and answer these questions:*

- 1 What is the first thing you should do before running the test?
- 2 Does the machine require a password?
- 3 Which type of blood is being tested?
- 4 How can you read the patients ID?
- 5 How long does the testing take?
- 6 How do you know the test is over?
- 7 How do you get your results?
- 8 What do you have to do with the syringe?
- 9 What is the last thing you do?