

Flow Cytometry Worksheet

A Lead-in

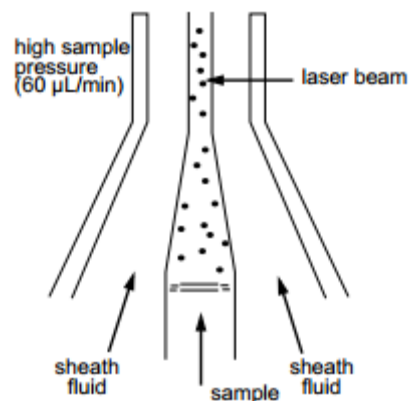
1 Have you ever worked with a flow cytometer? Is it difficult to manipulate? Why yes/no?

2 What is flow cytometry used for?

B Vocabulary warm-up

B1 Pronounce correctly and find the Czech equivalent:

- | | |
|------------------|----------------------------|
| 1 Particles | a) odpovídající, příslušný |
| 2 Fluid | b) vydávat, vyzařovat |
| 3 Beam | c) čočky |
| 4 Granularity | d) optická lavice/soustava |
| 5 Complexity | e) zpracovat |
| 6 Fluorescence | f) granularita |
| 7 Emit | g) částice |
| 8 Scatter | h) paprsek |
| 9 Illuminate | i) složení (buňky) |
| 10 Appropriate | j) kapalina |
| 11 Convert | k) světélkování |
| 12 Process | m) laločnatost |
| 13 Lenses | n) rozptýlit |
| 14 Lobularity | o) osvětit, ozářit |
| 15 Optical bench | p) přeměnit |



C Reading

C1 Do the reading activity and answer the following questions:

1 What properties of a cell or particle can you measure by a flow cytometer?

2 What light source is used in most flow cytometers? Which verbs do you associate with light?

3 What are the three main systems in a flow cytometer? What is their role?

C2 Now read the following text and fill each gap with ONE word. Then answer the three questions below.

In the flow cytometer, _____ (1) are carried to the laser in a fluid stream. The part of the fluid stream where these are located is called the sample core. _____ (2) particles pass through the laser beam, they scatter laser light. Any fluorescent molecules present _____ (3) the particle fluoresce. The scattered and fluorescent light is collected _____ (4) lenses. A combination of beam splitters and filters brings the scattered and fluorescent light to the detectors. The detectors produce electronic signals. _____ (5) signals correspond with the optical signals striking the detectors.

4 What is the name of the portion of the fluid stream where the cells are located?

5 When cells labelled with fluorescent molecules pass through the laser beam, what two types of light signals are generated?

6 Which part of the flow cytometer collects light emitted from a particle?

D Flow cytometry – listening

A Match these words to make collocations:

- | | |
|-------------|--------------------------------|
| 1 compare | a) cells through the cytometer |
| 2 treat | b) an antigen |
| 3 put | c) through the laser beam |
| 4 pass | d) to the blood |
| 5 detect | e) patients |
| 6 spread | f) results |
| 7 label up | g) leukaemia |
| 8 align | h) with a fluorescent antibody |
| 9 recognize | i) cells into a single file |

B Listen and decide if the statements are true or false.

- 1 Dr Wallace meets a lot of patients every day.
- 2 He mentions two examples of samples he works with.
- 3 As examples of antigens, he mentions CD4, leukaemia and lymphoma antigens.
- 4 As part of his job, he looks for ways to treat minimal residual disease (=decrease the number of leukaemic cells).
- 5 The standard flow cytometers in their laboratory can process 70 000 cells per second.
- 6 Thanks to the flow cytometer, the pathologist can look at hundreds of thousand cells per second.
- 7 They are able to get results in two hours.
- 8 According to Dr Wallace, ancillary tests are always necessary.

E Grammar point

Past perfect (předminulý čas)

15.1 Read the situations and write sentences from the words in brackets.

- 1 You went to Sue's house, but she wasn't there.
(she / go / out) She had gone out.
- 2 You went back to your home town after many years. It wasn't the same as before.
(it / change / a lot) _____
- 3 I invited Rachel to the party, but she couldn't come.
(she / arrange / to do something else) _____
- 4 You went to the cinema last night. You got to the cinema late.
(the film / already / start) _____
- 5 It was nice to see Daniel again after such a long time.
(I / not / see / him for five years) _____
- 6 I offered Sue something to eat, but she wasn't hungry.
(she / just / have / breakfast) _____

15.2 For each situation, write a sentence ending with **never ... before**. Use the verb in brackets.

- 1 The man sitting next to you on the plane was very nervous. It was his first flight.
(fly) He'd never flown before.
- 2 Somebody sang a song. I didn't know it.
(hear) I _____ before.
- 3 Sam played tennis yesterday. He wasn't very good at it because it was his first game.
(play) He _____
- 4 Last year we went to Mexico. It was our first time there.
(be there) We _____

15.4 Put the verb into the correct form, past perfect (**I had done**) or past simple (**I did**).

- 1 'Was Paul at the party when you arrived?' 'No, he had gone (go) home.'
- 2 I felt very tired when I got home, so I _____ (go) straight to bed.
- 3 The house was very quiet when I got home. Everybody _____ (go) to bed.
- 4 Sorry I'm late. The car _____ (break) down on my way here.
- 5 We were driving along the road when we _____ (see) a car which _____ (break) down, so we _____ (stop) to help.