

Microscopy I.

Biophysics Lab - 2014/2015 first semester

Date of lab:.....

Evaluation by lab teacher:
 to be corrected*

Measured together with:.....

accepted
signature

Aim of the measurement:

1. *Calibration of the eyepiece scale for the length measurements.*
2. *Determination of the length of frog red blood cells.*

Measuring instruments and materials:

Microscope:

Type:

Function:.....

Objective scale:

Known scaling:

Function:

Specimen:

Type:

Function:

Measurement results:

1. Calibrations:

Used magnification

.... *objective scale units* = *eyepiece scale units* = = μm

Based on the measurement the eyepiece scale unit is (1 EU) = = ... μm .

.....

2. Length measurement:

Magnification:

20 red blood cells were measured.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
<i>length (EU)</i>										
<i>length (μm)</i>										
	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
<i>length (EU)</i>										
<i>length (μm)</i>										

Lab teacher's signature proving lab work:

Results and calculations:

Statistical calculations:

(The calculations were done on EU and the results were converted to micrometers.)

Statistical parameter		EU	μm
arithmetic mean	$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$		
standard deviation	$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}}$		
standard error	$s_x = \frac{s}{\sqrt{n}}$		

1. 95% confidence interval of the length of red blood cells: (using $\bar{x} \pm 2 \cdot s_x$ estimation):

(..... \pm ),
 -

2. 95% reference interval (normal range) of the length of red blood cells (using $\bar{x} \pm 2 \cdot s$ estimation):

(..... \pm ),
 -

3. Histogram (relative frequency distribution) in eyepiece units. (Graph is attached).

Conclusion: