

Tissue Investigation SOLUTIONS



Purpose:

1. To relate the structure of different tissue types to their function.

Analysis & Conclusions:

1. Analyze the main types of tissues under the microscope or micro-viewer and complete the questions.
For **each** of the four general mammalian tissue types you examined, explain how the structure (shape, density, arrangement, extracellular material, etc.) is related to its function.

Epithelial	Thin, flat, multilayered, easily replaced if/when damaged. Minimized damage to a few small cells rather than 1 large cell like body armour. Can shed cells easily if damaged.
Muscle	Long, thin, bundled together. Can contract + stretch to produce + allow for movement. Can have a few or many work together to increase force if needed.
Nerve	Long, thin, branched to allow for many connections and increase contact/communication with many cells at once.
Connective Tissue	Various structures due to wide variety of function. Pick 1 to outline here.

1. Squamous epithelial cells are very susceptible to cancer. Provide a *hypothesis* (a theory with explanation) for this observation.
They are the cells exposed to the environment. They contact more carcinogens.
2. Leukemia is a cancer of the bone marrow cells that usually results in an abnormal increase in white blood cells.
 - a) Why may adult stem cells (such as bone marrow) be prone to becoming cancerous?
Increased mitosis increases opportunity for errors.
 - b) What possible effects could this have on the body? (see blood above) **–impede and/or recruit healthy cells, cancer can spread easily through the blood**
3. Examine the shape of the 3 muscular tissue types.
 - a) Describe the general shape of a muscle cell. **Long & narrow**
 - b) Explain the reason for this shape by referring to their function **Allows for contraction & extension**

4. Red blood cells and the outermost layer of skin do not have nuclei. What do you think is the reason for this? **RBC – no nuclei allows for more hemoglobin & increased function, RBC do not divide, new ones created in bone marrow**
SKIN – they do not divide because of increased exposure to environment & damage therefore do not need nuclei

5. Correctly identify the role of the major tissue types and enter the appropriate letter in the box.

C	Forms membranes	M	Its cells shorten to exert force
M	Allows for the movement of limbs and for organ movements within the body	E	Forms endocrine (hormone) and exocrine (ie salivary, mucous) glands
N	Uses electrochemical signals to carry out its function	M	Allows you to smile, grasp, and swim, ski and throw a ball
C	Supports and reinforces body organs	C	Surrounds and cushions body organs
E	Cells of this tissue may absorb and/or secrete substances	C	Forms the bone
N	Basis of the major controlling system of the body	N	Forms the brain and spinal cord