

<b>CHAPTER 10</b>	<b>Investigation 10.A: Observing Muscle Tissue</b>	<b>BLM 10.1.2</b>
<b>HANDOUT</b>		

**Questions:** How do the three types of muscle tissue differ under microscopic examination? What conditions are necessary for a muscle fibre to contract?

### Safety Precautions

Make sure that your hands are dry when handling electrical equipment. Handle microscope slides carefully, since they can break easily and cause cuts.

### Materials

- petri dish with glycerol
- light microscope
- small forceps or tweezers
- teasing needle
- prepared slides of different and skeletal muscle tissue muscle tissues
- dropper pipette
- 2 microscope slides
- 2 cover slips

### Procedure

#### Part 1

1. Place the slide of the skeletal muscle tissue on the microscope stage, and focus using the low-power lens.
2. Scan the slide to find an area where you can observe individual muscle fibres.
3. Observe the fibres, using Figure 10.1 for reference. In the following table, record your observations of the fibres, including their organization, the presence or absence of striations, and the presence (and number) or absence of nuclei in each fibre.

Data Table for Part 1

Type of muscle	Organization of fibres	Description of fibres	Description of nuclei
skeletal			
smooth			
cardiac			

4. Make your own drawing of skeletal muscle tissue on the following page. Label your drawing as completely as you can, and estimate the size of the cells.
5. Repeat steps 2 to 5 until you have observed all three types of muscle tissue.
6. Answer Analysis questions 1 to 3 and Conclusion question 5.

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Drawing of skeletal muscle tissue

Drawing of smooth muscle tissue

Drawing of cardiac muscle tissue

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## Part 2

1. Label two slides 1 and 2. On each slide, mount a strand of glycerinated muscle fibres in a drop of glycerol. Place each slide on a ruler, and measure the length of the strand. Record the length of each strand in the first row of the following data table.

Data Table for Part 2

Solution	Length (mm)	
	Slide 1	Slide 2
<b>glycerol alone</b>		
<b>potassium-magnesium salt solution alone</b>		
<b>ATP alone</b>		
<b>both salt solution and ATP</b>		

2. If there is more than a small drop of glycerol on each slide, soak up the excess with a piece of lens paper held at the edge of the glycerol, farthest from the fibre strand.
3. To slide 1, add a few drops of the salt solution that contains potassium ions and magnesium ions. Measure any change in the length of the strand, and record your results.
4. To slide 2, add a few drops of ATP solution. Measure and record any change in the length of the strand.
5. Now add ATP solution to slide 1. Measure and record any change in the length of the strand.
6. To slide 2, add a few drops of the potassium-magnesium solution. Measure and record any change in the length of the strand.
7. Answer Analysis question 4 and Conclusion questions 6 and 7.

## Analysis

1. Describe each type of muscle tissue.



