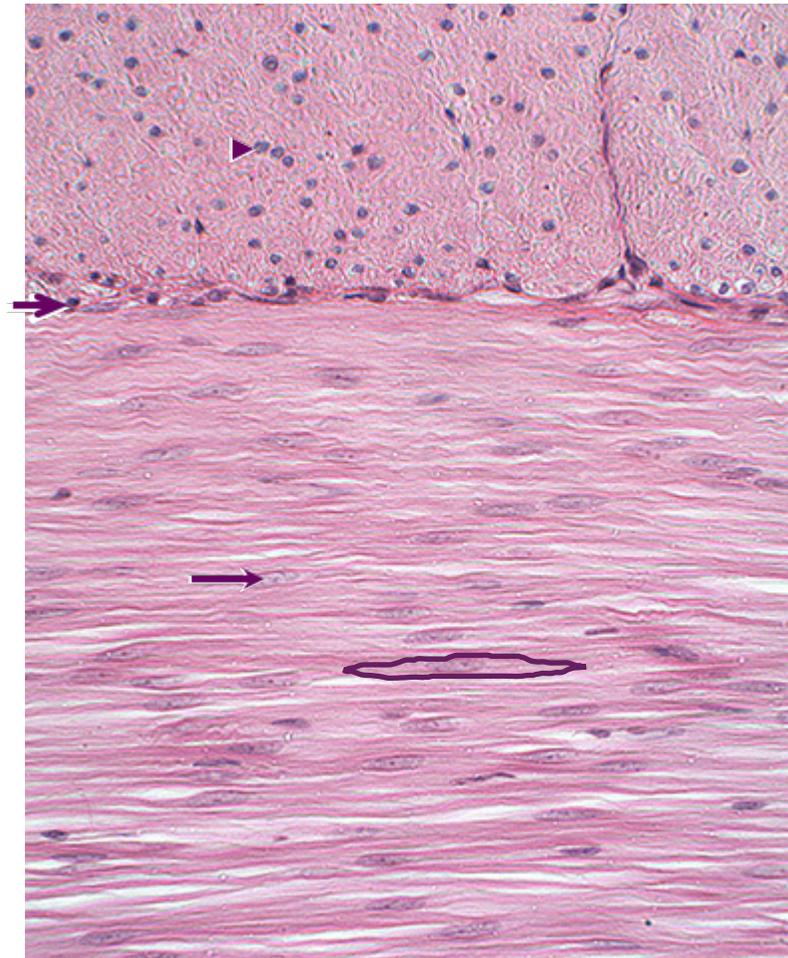


## PST-musc-7: Smooth Muscle Visual Microscopy Kit



This is smooth muscle tissue from a cross section of an intestinal wall, stained using hematoxylin and eosin. The hematoxylin typically stains nuclei purple because it stains nucleic acids and proteins, while the eosin typically stains cytoplasm pink. Smooth muscle tissue in the intestinal wall runs in two directions: the outer longitudinal layer and the inner circular layer. The two directions enable the intestine to shorten and widen (outer) as well as lengthen and narrow (inner) in order to propel chyme (digesting food) along through peristalsis.

- Indicates a nucleus cut in longitudinal section
- ▶ Indicates a nucleus cut in cross section
- Indicates the border between the longitudinal (top) and circular (bottom) layers

Smooth muscle cells are described as spindle-shaped, and that is a visible characteristic in the circular layer where the cells were cut in longitudinal section, indicated by the outlined cell. The nuclei are often called corkscrew-shaped because unless the cell is stretched, the nucleus is not taught and may look wiggly like a corkscrew.

## For all Cell Zone<sup>®</sup>, Inc. posters

### General Instructions:

- Move from room to room or maintain in one location
- Hang on any permanent or removable hook by the grommet
- Use a dry erase marker on the frame; erase the same day to ensure clarity
- Store multiple posters by stacking so that the grommet cannot scratch the front of a neighboring poster

### Advantages with using posters:

- Hanging real cell micrographs makes your classroom or lab space look like a place where real science is done
- The posters can be hung as art or for learning
- The posters can be paired with microscopy or used separately
- You will always have a good example of what you want your students to see

### Lessons for this specific poster

1. Have your students identify the type of tissue this is (epithelial, connective, muscle, nervous). Then have them identify the specific type of muscle tissue visible (skeletal, cardiac, smooth). Then ask them to explain where this type of muscle tissue is found.
2. Ask your students to explain how it is possible for the top and bottom of this poster image to be the same type of muscle tissue. See if they can explain that the muscle tissue must run in two directions.
3. Hand your students a dry erase marker and have them label
  - each layer of the muscle tissue. Note that it is difficult for a student to label the top half as the longitudinal layer when the cells are clearly cut in cross-section. Therefore, have them label both the name of each layer and the direction of section of each layer.
  - nuclei and make cell outlines in each layer.
4. When pairing the use of the poster with microscopy, you can do each of the following:
  - Set up numbered microscopes with pointers on specific muscle tissues and cells and have them match the number to the entire poster or to specific items in the poster. Microscopes could show low power or high power views of different muscle tissues, some smooth, some not smooth. For more advanced classes, also include dense regular connective tissue for comparison. Have students put the microscope numbers onto the poster with a dry erase marker, where those microscopes that have high power smooth muscle views have arrows to specific items in the poster.
  - Use a dry erase marker on the frame to indicate a part of the cell or the field. Have your students, each working on their own microscopes or in pairs, put their pointer on a similar structure in their microscope fields. You can check their choices, or have them check on each other.

