Guided Reading Questions (Muscular System)

1. What does the Latin word *mus* mean?  
   The Latin word *mus* means "little mouse."

2. What is the **ESSENTIAL** function of muscle?  
   The essential function is **CONTRACTION** (shortening).

3. List the three different types of muscle that are found in the human body.  
   **SKELETAL, CARDIAC, SMOOTH**

4. Why are skeletal and smooth muscle cells considered **MUSCLE FIBERS**?  
   The skeletal and smooth muscle cells are elongated.

5. What is **CYTOPLASM** referred to in muscle cells?  
   **SARCOPLASM**

6. Which of the three muscle fibers is the largest?  
   **Skeletal Muscle Fibers**

7. Each muscle fiber is enclosed in a delicate connective tissue sheath called an  
   **ENDOMYSIUM**

8. Several covered muscle fibers are then wrapped by a membrane called a  
   **PERIMYSIUM**. This forms a bundle of fibers called a **FASICLE**.

9. The connective tissue that covers the entire muscle is called the  
   **EPIMYSIUM**.

10. What attaches the muscle to bone?  
    **TENDONS**

11. Give three examples of hollow, visceral organs.  
    **STOMACH, URINARY BLADDER, Resp. Passageways**

12. What is the main function of smooth muscle?  
    The main function of smooth muscle is to propel substances along a definite tract or pathway within the body.

13. Compare the contraction of smooth muscle to the contraction of skeletal muscle.  
    Skeletal muscle is like a speedy wind up car that quickly runs down, then smooth muscle is like a steady, heavy-duty engine, that lumbers along tirelessly.

14. Where do you find cardiac muscle?  
    The **walls of the heart**
15. Cardiac muscle fibers are **BRANCHING** cells joined by special junctions called **INTERCALATED DISCS**.

16. What does the term muscular system specifically apply to?

   The muscular system applies specifically to SKELETAL MUSCLE.

17. What are the three additional and important functions of skeletal muscle?

   1) MAINTAINS POSTURE  2) STABILIZES JOINTS  3) GENERATES HEAT

18. How do muscles stabilize joints?

   Muscles stabilize joints by pulling bones • when causing movements.

19. How are muscles responsible for stabilizing body temperature?

   As ATP is used to power muscle contractions, nearly 3 quarters of its energy escapes as heat.

**MICROSCOPIC ANATOMY OF SKELETAL MUSCLE**

20. What are the long ribbonlike organelles called that fill the sarcoplasm of the muscle cell? **MYOFIBRILS**

21. What gives the muscle cell a striped appearance?

   Alternating LIGHT and DARK bands along the length of the aligned myofibrils give the cell a striped appearance.

22. Myofibrils are actually chains of tiny contractile units called **SARCOMERES**.

23. What are the two types of myofilaments? What are they made of?

   1) **THICK FILAMENTS** = made of MYSIN (Protein)
   2) **THIN FILAMENTS** = made of ACTIN (contractile protein)

24. Specifically, what is responsible for the banding pattern in the skeletal muscle cells?

   It is the precise arrangement of the myofilaments in the myofibrils that produces the banding pattern or striations in skeletal muscle cells.

25. What is the structure in the muscle fiber that is considered a specialized smooth endoplasmic reticulum? **Sarcoplasmic Reticulum**

   a. What is this organelle’s major role?

      The major role is to store calcium and to release it on demand when the muscle fiber is stimulated to contract.

      *CALCUM provides the final “go” signal for contraction.*