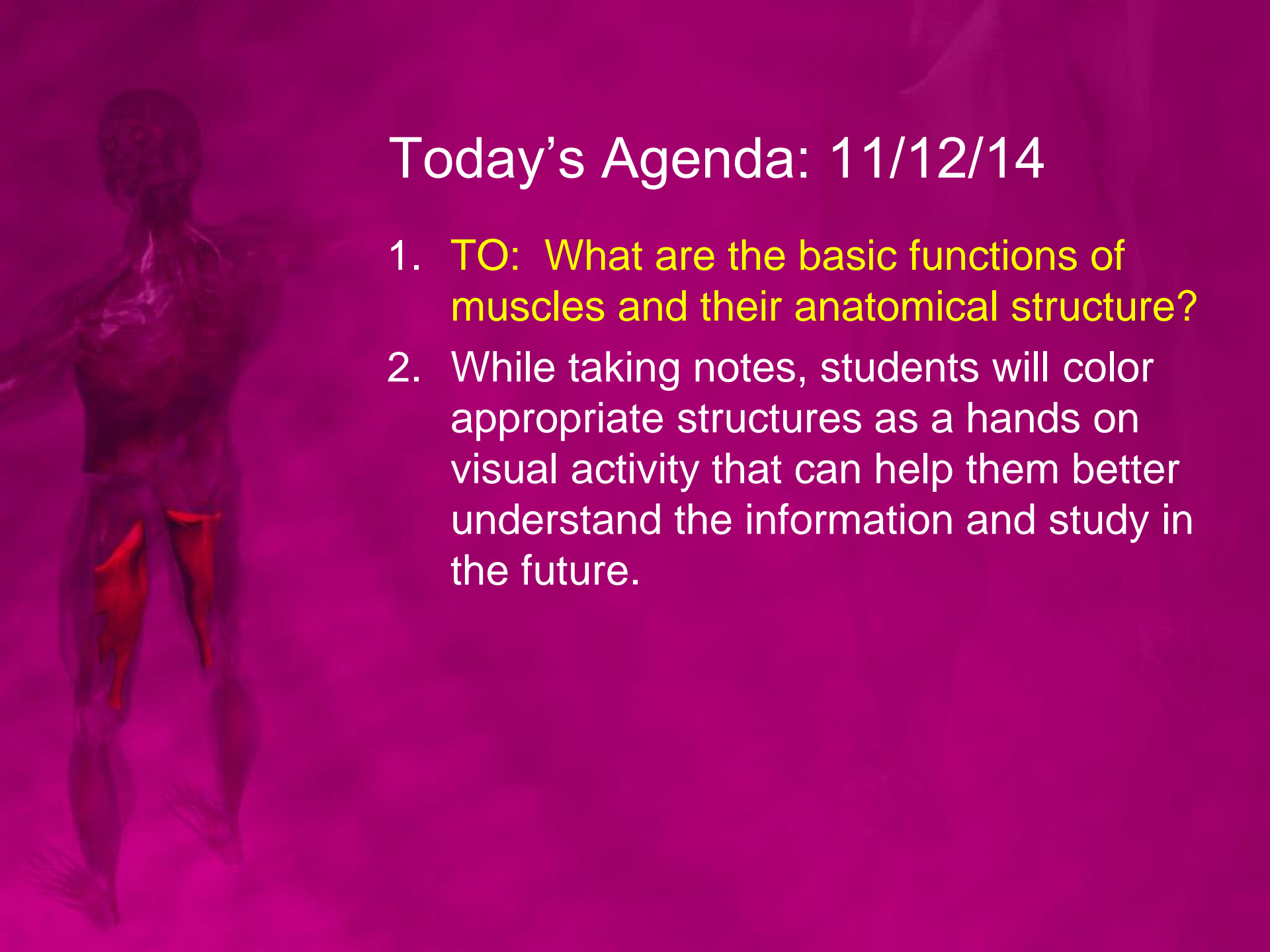


Today's Agenda: 11/12/14

1. **TO: What are the basic functions of muscles and their anatomical structure?**
2. While taking notes, students will color appropriate structures as a hands on visual activity that can help them better understand the information and study in the future.



Muscular System

- More than 40% of the body's weight comes from skeletal muscle
- Functions of muscle:
 1. Provide movement
 2. Maintain body's posture
 3. Produce heat to maintain body's temperature





Characteristics of Muscle Tissue

- **Excitability** – The ability to respond to stimulation.
- **Contractility** – The ability to shorten and produce a force (tension).
- **Extensibility** – The ability to be elongated (stretched).
- **Elasticity** – The ability to rebound to its original (normal) resting length after being stretched.

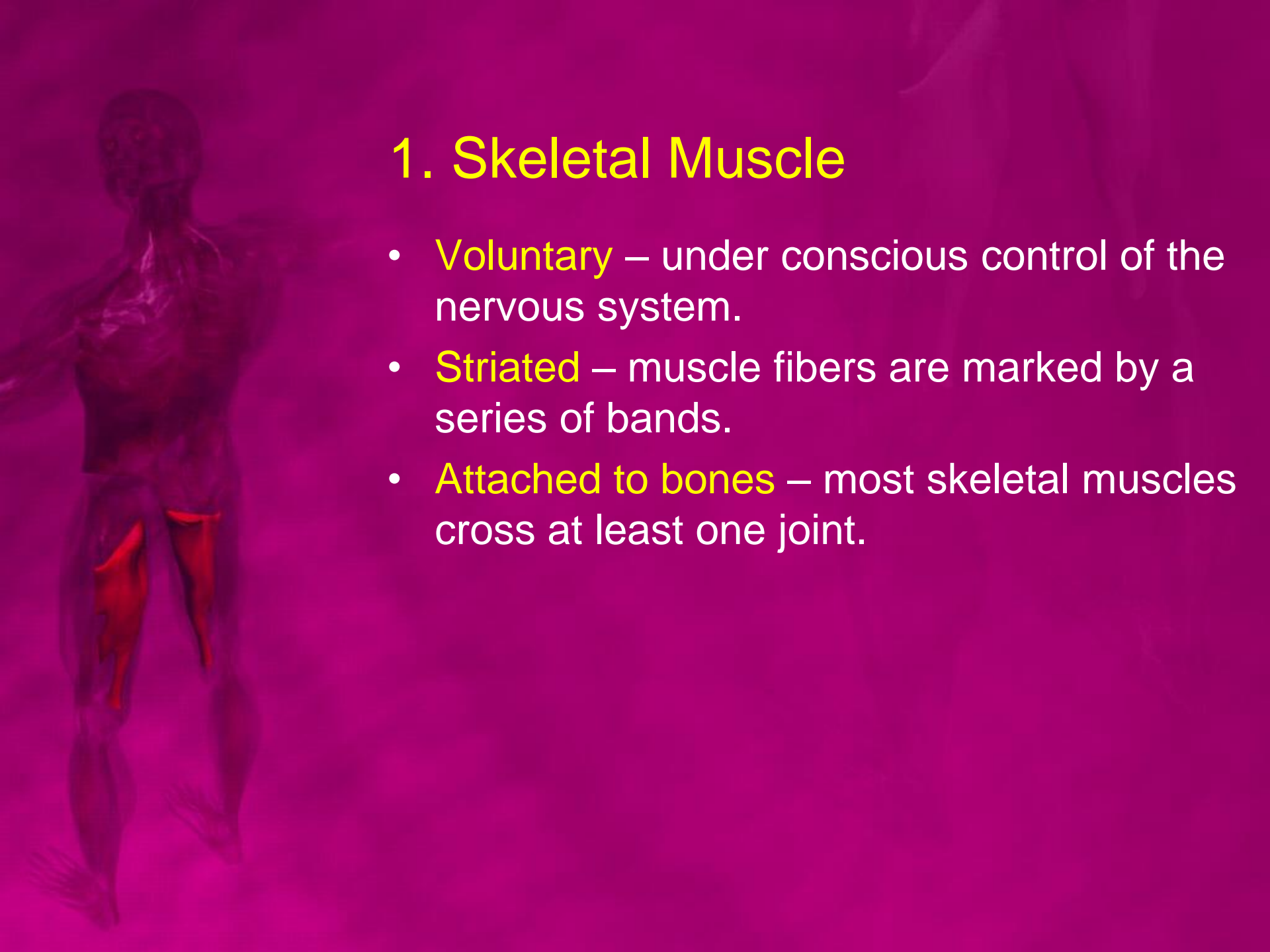
Types of Muscle Tissue

1. Skeletal
2. Cardiac
3. Smooth



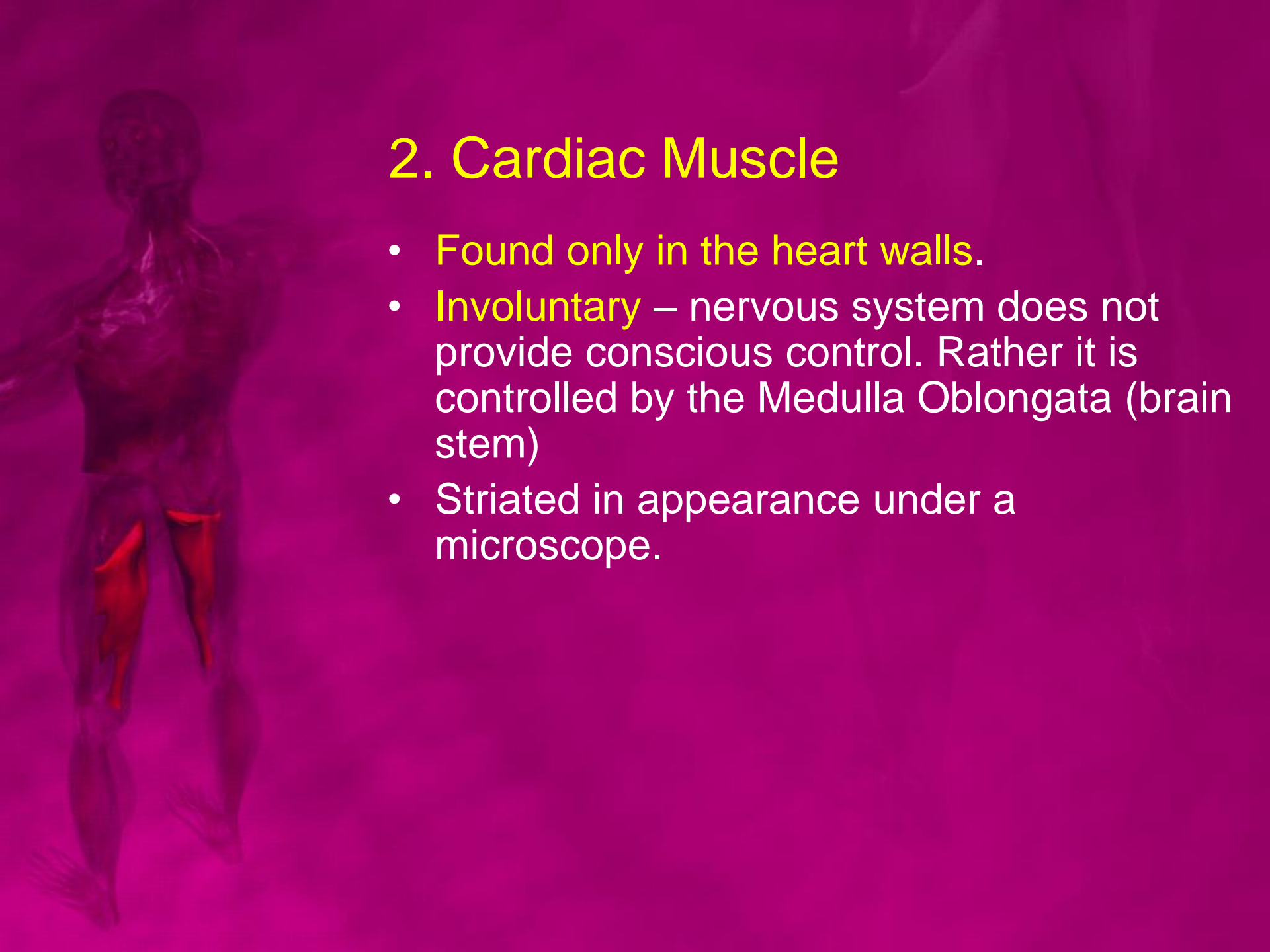
1. Skeletal Muscle

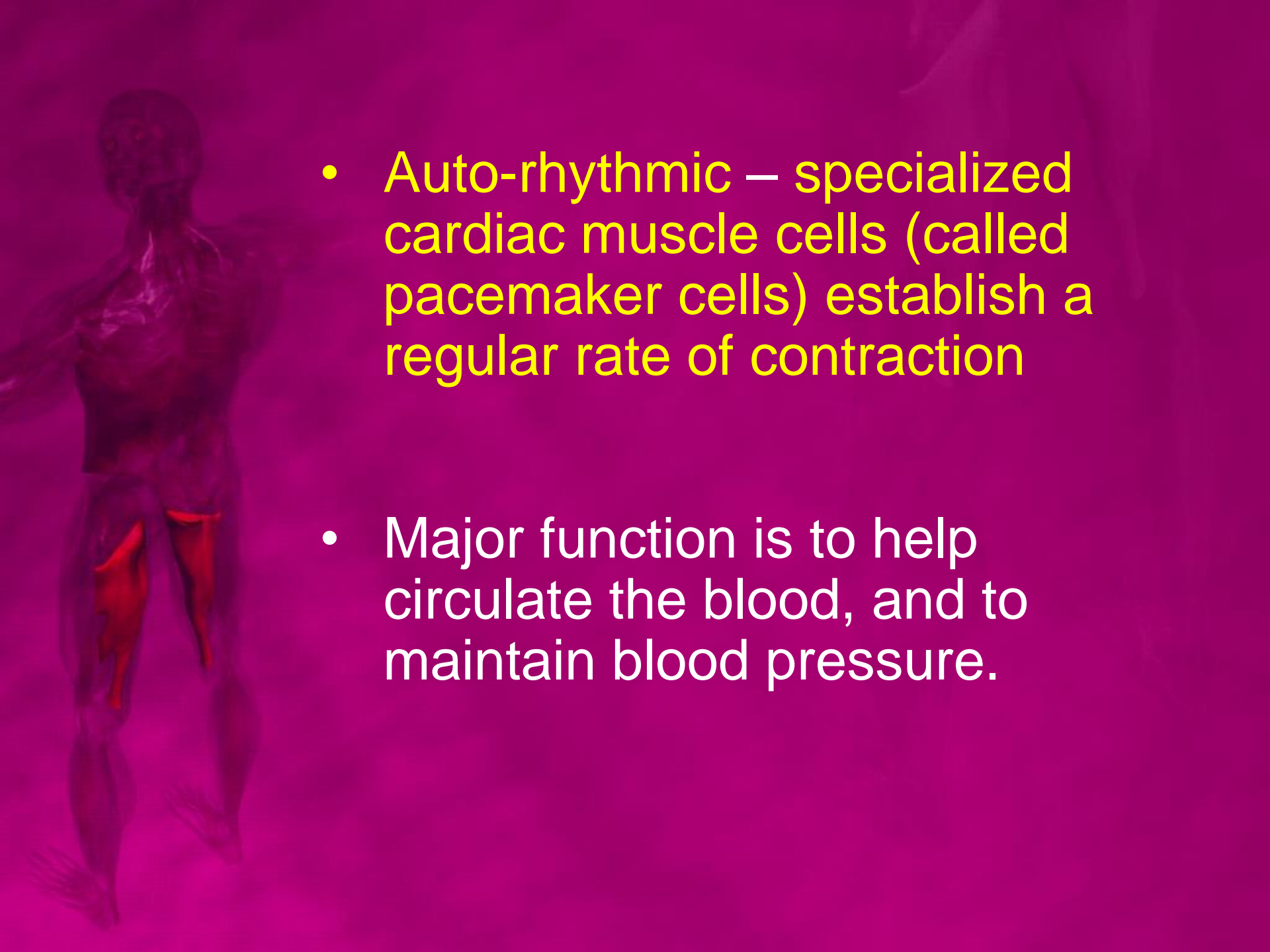
- **Voluntary** – under conscious control of the nervous system.
- **Striated** – muscle fibers are marked by a series of bands.
- **Attached to bones** – most skeletal muscles cross at least one joint.



2. Cardiac Muscle

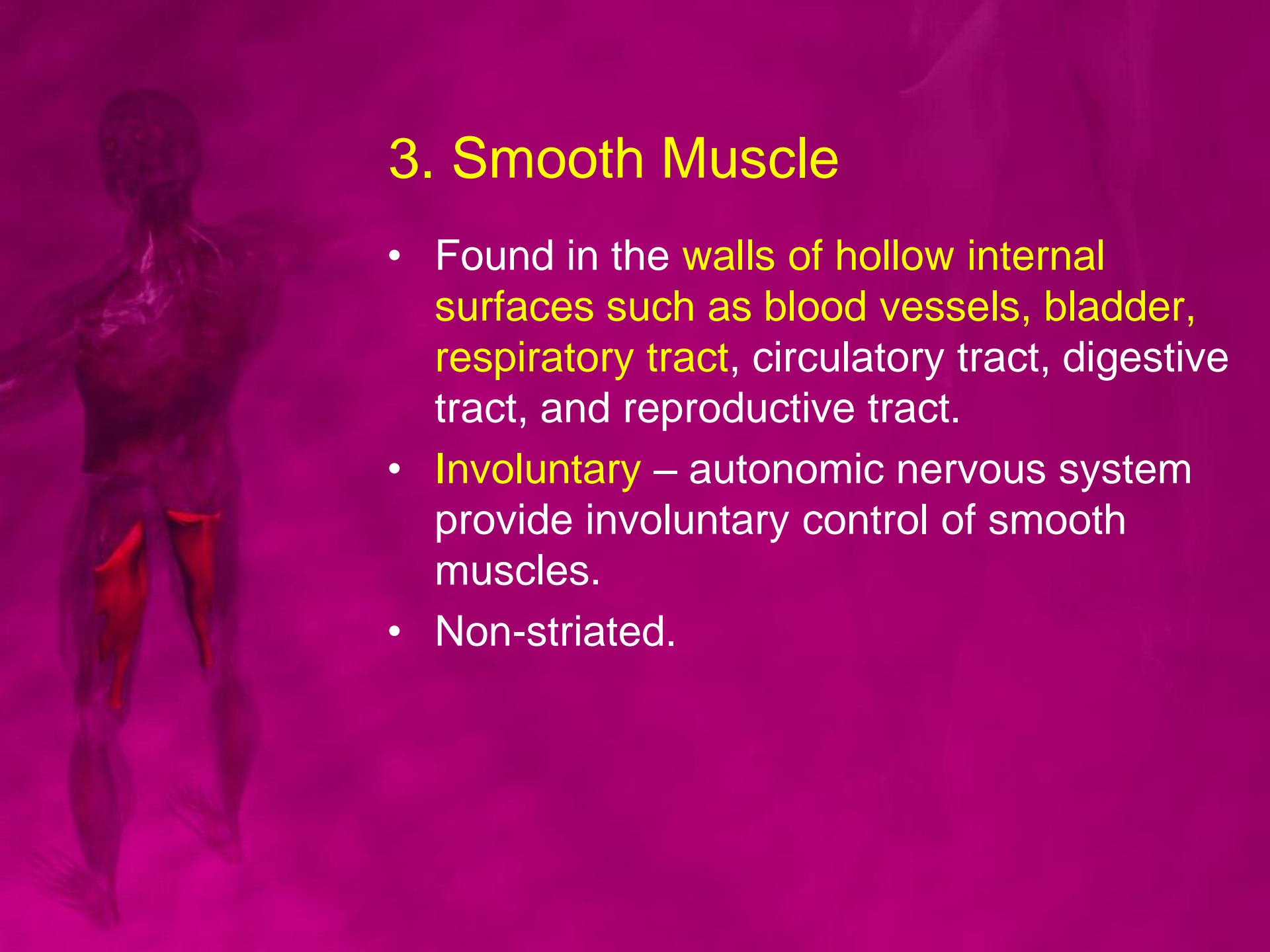
- Found only in the heart walls.
- **Involuntary** – nervous system does not provide conscious control. Rather it is controlled by the Medulla Oblongata (brain stem)
- Striated in appearance under a microscope.



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- Auto-rhythmic – specialized cardiac muscle cells (called pacemaker cells) establish a regular rate of contraction
 - Major function is to help circulate the blood, and to maintain blood pressure.

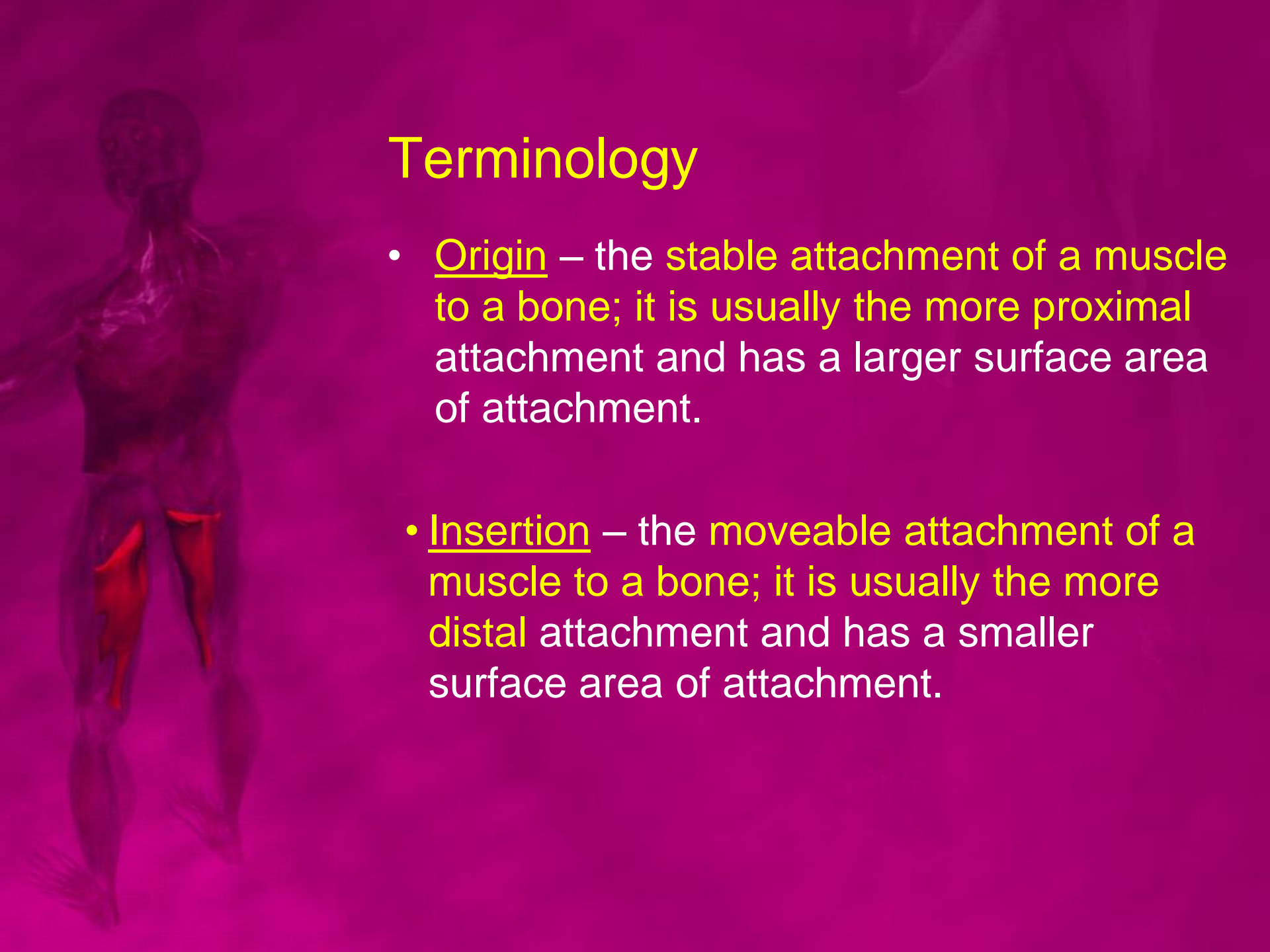
3. Smooth Muscle

- Found in the **walls of hollow internal surfaces such as blood vessels, bladder, respiratory tract**, circulatory tract, digestive tract, and reproductive tract.
- **Involuntary** – autonomic nervous system provide involuntary control of smooth muscles.
- Non-striated.



Terminology

- Origin – the stable attachment of a muscle to a bone; it is usually the more proximal attachment and has a larger surface area of attachment.
- Insertion – the moveable attachment of a muscle to a bone; it is usually the more distal attachment and has a smaller surface area of attachment.





Muscle Belly – the main body of the muscle

Tendon – connects muscle to bone

Atrophy – wasting away of muscle due to disease or degeneration.

Hypertrophy – an increase in cross-sectional diameter of a muscle due to exercise.

Terminology



- Slow-Twitch Muscle Fibers – Take **three times as long to contract after stimulation**, however they can continue contracting for extended periods
- Fast Twitch Muscle Fibers - **contract quickly; fatigue quickly**; used in events lasting less than 30 seconds
- Agonist (prime mover) – a muscle whose contraction is chiefly responsible for producing a particular movement. (For example – the biceps brachii is a prime mover that flexes the elbow.)

Terminology



- Antagonist – a muscle whose actions oppose the desired motion. (For example – the triceps brachii is an antagonist of the biceps brachii since its primary motion is extension of the elbow.)
- Stabilizers – muscles which help to stabilize a joint while the limb is moved.
- Synergist – muscle assisting the prime mover in performing an action.