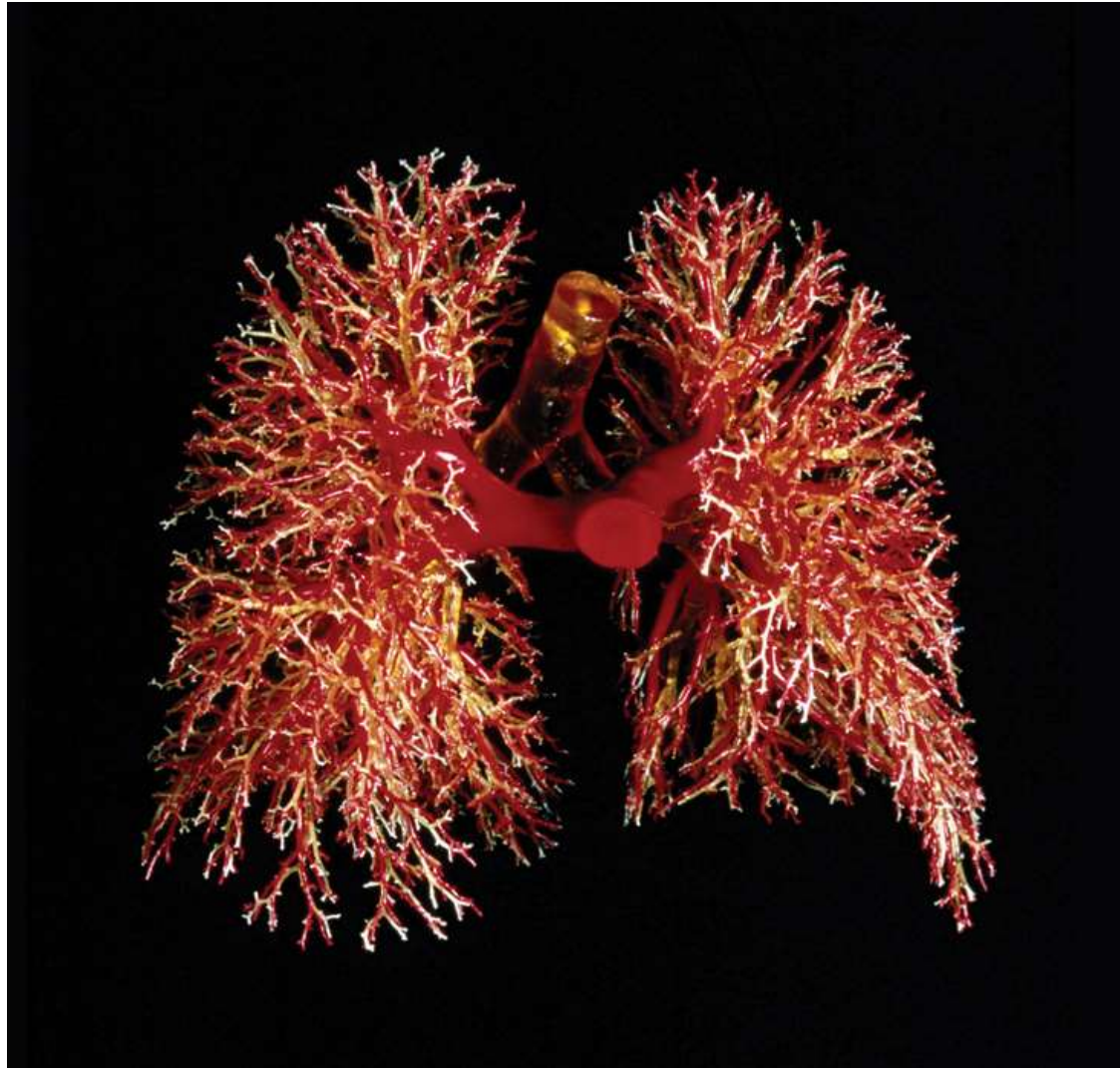


Blood Vessels and Transport

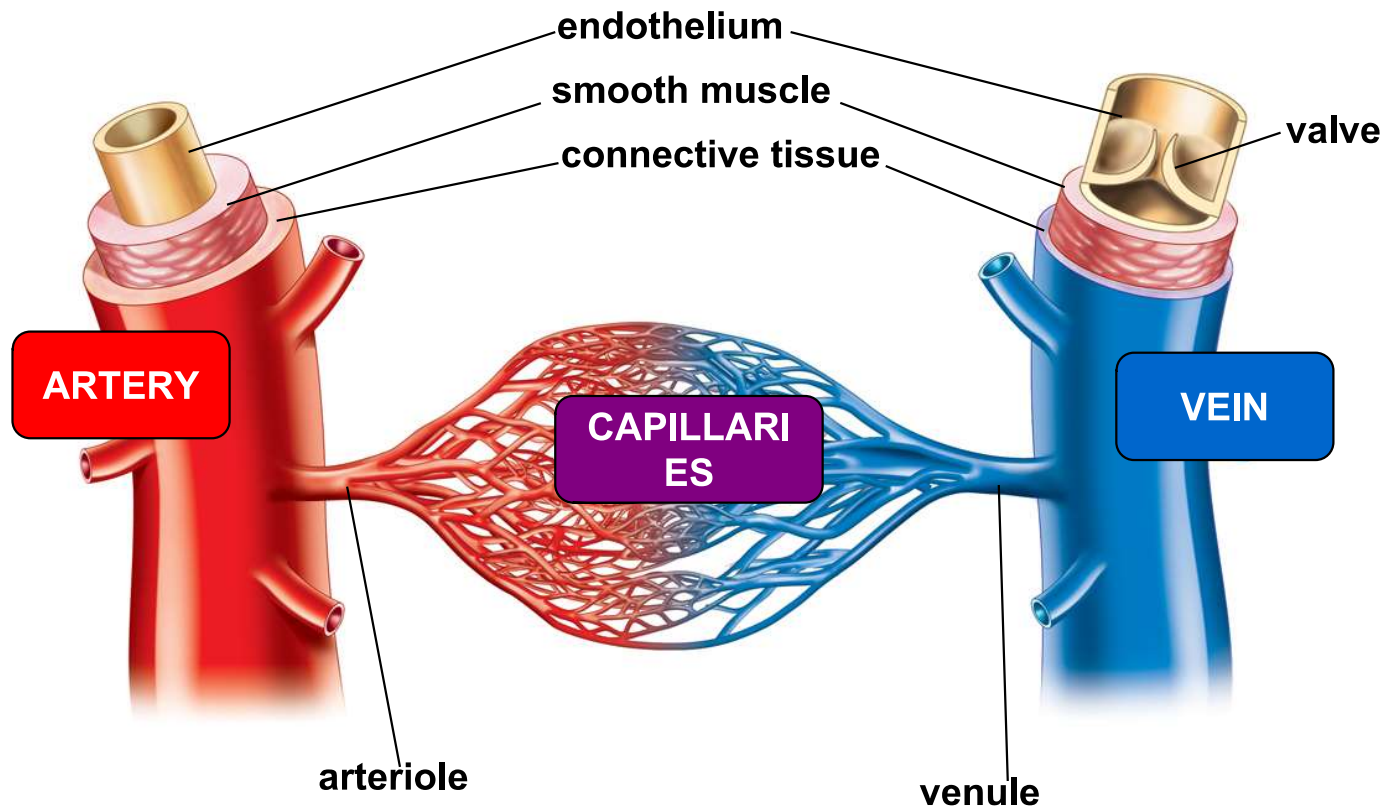
KEY CONCEPT

The circulatory system transports materials throughout the body.



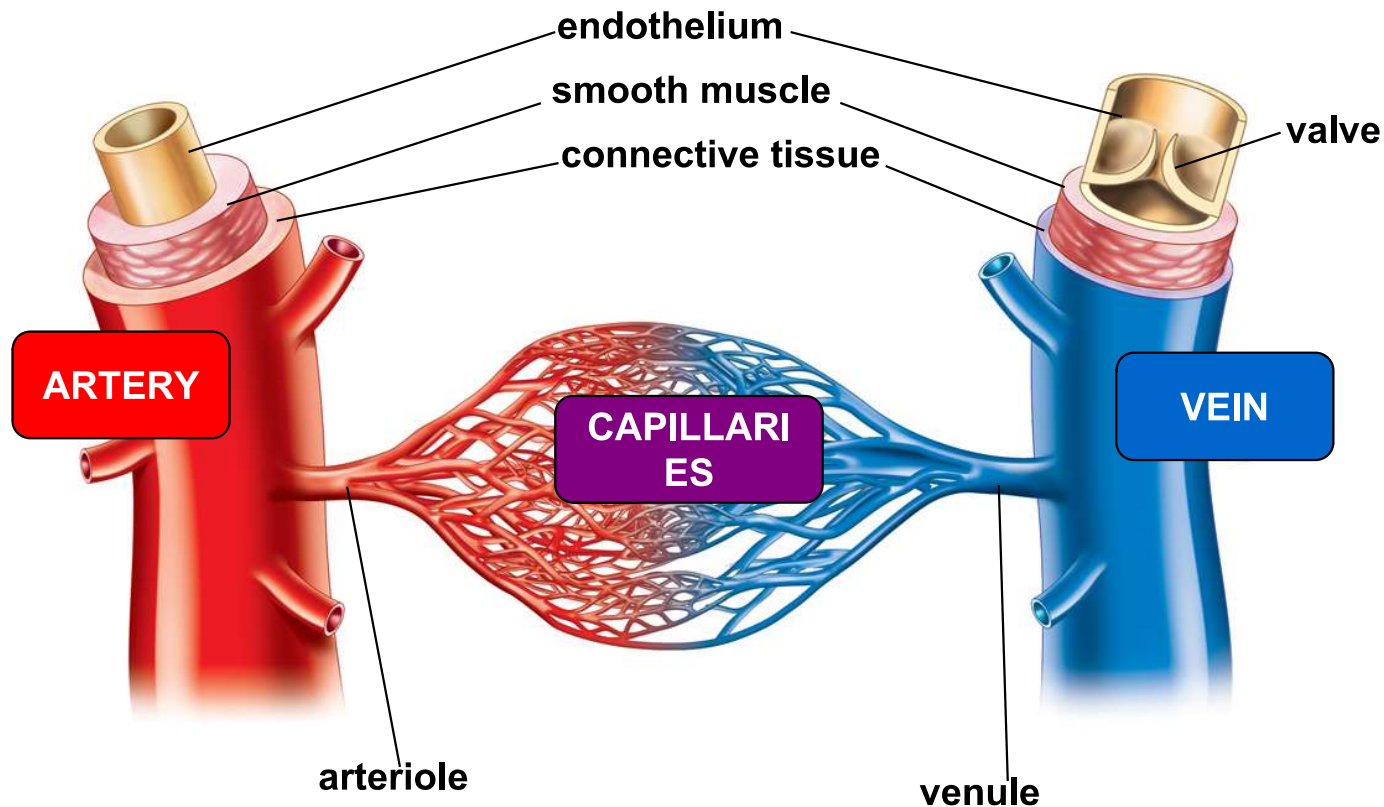
Blood Vessels and Transport

- **Arteries, veins, and capillaries transport blood to all parts of the body.**
- Arteries carry blood away from the heart.
 - blood under great pressure
 - thicker, more muscular walls



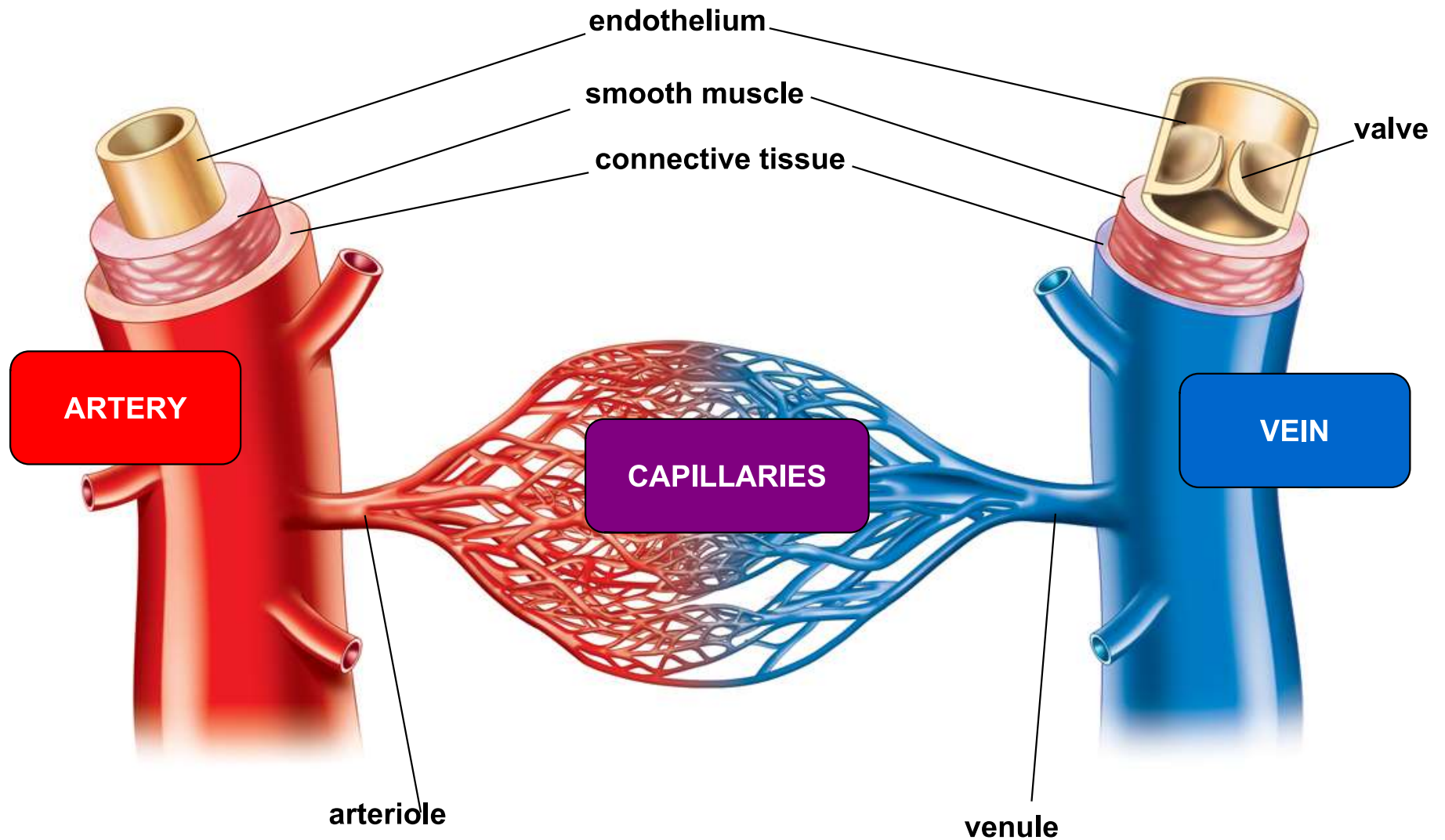
Blood Vessels and Transport

- Veins carry blood back to the heart.
 - blood under less pressure
 - thinner walls, larger diameter
 - valves prevent backflow



Blood Vessels and Transport

- Capillaries move blood between veins, arteries, and cells.



Blood Vessels and Transport

- **Blood vessels comparison:**

| | Arteries | Veins | Capillaries |
|------------------------------------|--|--|---|
| <i>Function</i> | Send blood from heart | Send blood to heart | Material exchange with tissues |
| <i>Pressure</i> | High | Low | Low |
| <i>Lumen Diameter</i> | Narrow | Wide | Extremely narrow (one cell wide) |
| <i>Wall Thickness</i> | Thick | Thin | Extremely thin (single cell thick) |
| <i>Wall Layers</i> | Three <ul style="list-style-type: none">• Tunica adventitia• Tunica media• Tunica intima | Three <ul style="list-style-type: none">• Tunica adventitia• Tunica media• Tunica intima | One <ul style="list-style-type: none">• Tunica intima |
| <i>Muscle & Elastic Fibres</i> | Large amounts | Small amounts | None |
| <i>Valves</i> | No | Yes | No |

Blood Vessels and Transport

- Blood pressure is a measure of the force of blood pushing against artery walls.

- systolic pressure:
left ventricle
contracts
- diastolic pressure:
left ventricle
relaxes

Systolic pressure occurs when the left ventricle contracts. **Diastolic pressure** occurs when the ventricle relaxes. You can write these numbers as a fraction in which systolic pressure is always on top.

$$\frac{120}{70} \quad \begin{array}{l} \text{systolic} = \text{numerator} \\ \text{diastolic} = \text{denominator} \end{array}$$

- High blood pressure can precede a heart attack or stroke.

Blood Vessels and Transport

Blood Pressure

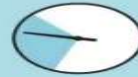

SYSTOLIC
TOP NUMBER

mm Hg


DIASTOLIC
BOTTOM NUMBER

normal

BELOW 120



AND



BELOW 80

elevated

120 - 129



AND



BELOW 80

**high blood
pressure**
STAGE 1

130 - 139



OR



80 - 89

**high blood
pressure**
STAGE 2

140 OR HIGHER



OR



90 OR HIGHER

**hypertensive
crisis**

ABOVE 180



AND/OR



ABOVE 120

CONSULT YOUR DOCTOR IMMEDIATELY

Blood Vessels and Transport

- **Lifestyle plays a key role in circulatory diseases.**
 - Some choices lead to an increased risk of circulatory diseases.
 - smoking
 - long-term stress
 - excessive weight
 - lack of exercise
 - diet low in fruits and vegetables, high in saturated fats



Blood Vessels and Transport

- Circulatory diseases affect mainly the heart and the arteries.
 - artery walls become thick and inflexible
 - plaque blocks blood flow in arteries

