*This is the **Higher Separate** version — includes all Higher Tier content (marked ★) and all Separate Science content.*

Three types of blood vessel — arteries, veins and capillaries — each adapted for their specific role in circulation.

- Arteries: carry blood AWAY from the heart. Thick muscular and elastic walls. Small lumen. High pressure.
- Veins: carry blood TOWARDS the heart. Thin walls. Large lumen. Low pressure. Contain VALVES to prevent backflow.
- Capillaries: connect arteries to veins. Walls one cell thick (thin as possible). Large surface area. Site of exchange between blood and tissues.
- At capillaries: O■ and glucose diffuse OUT to cells; CO■ and waste diffuse IN to blood.

★ **HT** The elastic walls of arteries stretch and recoil — smoothing out the pulsatile flow from the heart.

★ **HT** Veins have larger lumens than arteries of the same size because blood pressure is lower — less resistance needed.

Key Terms

Artery	Blood vessel carrying blood away from heart — thick walls, high pressure, no valves
Vein	Blood vessel carrying blood to heart — thin walls, low pressure, valves prevent backflow
Capillary	Microscopic blood vessel, one cell thick — site of exchange between blood and tissues
Lumen	The central cavity of a blood vessel through which blood flows

■ **Exam Tip:** Remember: A = Away (arteries carry blood away from heart). Veins have VALVES. Capillaries have walls ONE CELL thick. In a 4-mark question comparing all three, give a structural feature and link it to function for each.