

## Cardiovascular part 2

Bio 250

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### Blood Vessels: The Vascular System

- Taking blood to the tissues and back
  - Arteries
  - Arterioles
  - Capillaries
  - Venules
  - Veins

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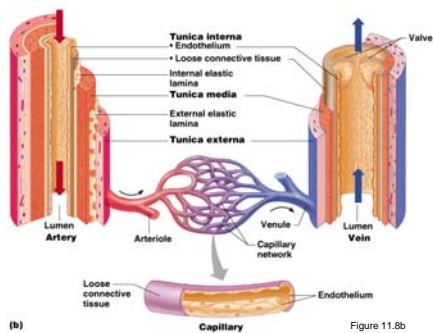
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Figure 11.8b

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## Blood Vessels: Anatomy

- Three layers (tunics)
  - Tunic intima
    - Endothelium
  - Tunic media
    - Smooth muscle
    - Controlled by sympathetic nervous system
  - Tunic externa
    - Mostly fibrous connective tissue

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## Differences Between Blood Vessel Types

- Walls of arteries are the thickest
- Lumens of veins are larger
- Skeletal muscle “milks” blood in veins toward the heart
- Walls of capillaries are only one cell layer thick to allow for exchanges between blood and tissue

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## Movement of Blood Through Vessels

- Most arterial blood is pumped by the heart
- Veins use the milking action of muscles to help move blood

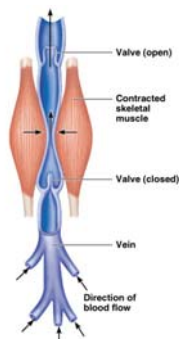


Figure 11.9

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## Capillary Beds

- Capillary beds consist of two types of vessels
- Vascular shunt – directly connects an arteriole to a venule

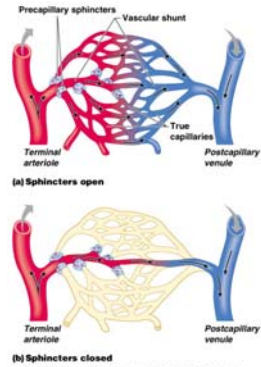


Figure 11.10

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## Capillary Beds

- True capillaries – exchange vessels
- Oxygen and nutrients cross to cells
- Carbon dioxide and metabolic waste products cross into blood

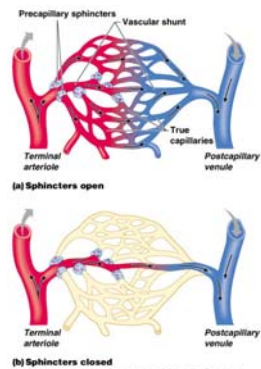


Figure 11.10

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## Diffusion at Capillary Beds

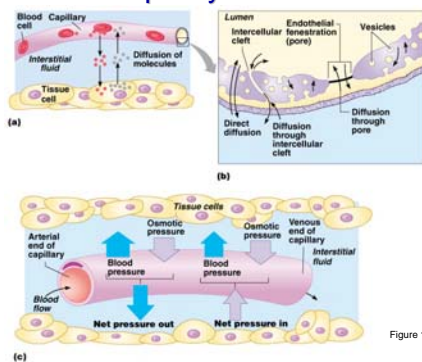


Figure 11.20

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## Major Arteries of Systemic Circulation



Figure 11.11

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## Major Veins of Systemic Circulation

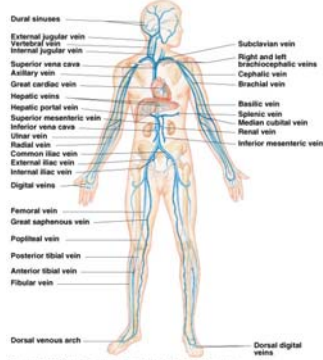


Figure 11.12

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## Arterial Supply of the Brain

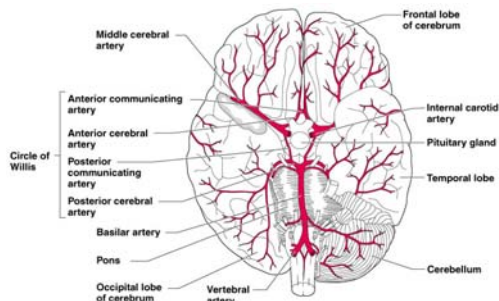


Figure 11.13

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## Hepatic Portal Circulation

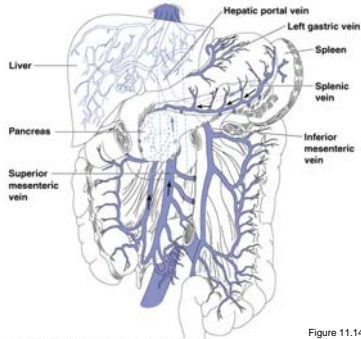


Figure 11.14

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## Circulation to the Fetus

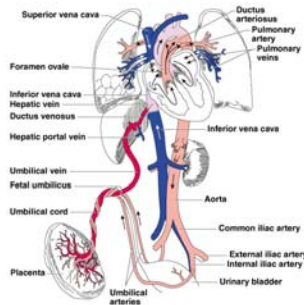


Figure 11.15

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## Pulse

- Pulse – pressure wave of blood
- Monitored at “pressure points” where pulse is easily palpated

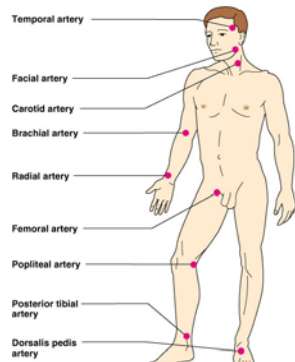


Figure 11.16

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## Blood Pressure

- Measurements by health professionals are made on the pressure in large arteries
  - Systolic – pressure at the peak of ventricular contraction
  - Diastolic – pressure when ventricles relax
- Pressure in blood vessels decreases as the distance away from the heart increases

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