Lab 4

- Anatomy of Arteries, Veins and Capillaries
- Identification of major blood vessels
- Blood Flow
- Blood Pressure
- Lymphatic System (will cover in lab 6)
- ABO Blood Groups
### Table 19.1

**Summary of Blood Vessel Anatomy**

<table>
<thead>
<tr>
<th>Vessel Type/ Illustration*</th>
<th>Average Lumen Diameter (D) and Wall Thickness (T)</th>
<th>Relative Tissue Makeup</th>
</tr>
</thead>
</table>
| Elastic artery             | D: 1.5 cm  
T: 1.0 mm                             | Endothelium  
Elastic Tissues  
Smooth Muscles  
Fibrous (Collagenous) Tissues |
| Muscular artery            | D: 6.0 mm  
T: 1.0 mm                             |                        |
| Arteriole                  | D: 37.0 μm  
T: 6.0 μm                             |                        |

*Size relationships are not proportional. Smaller vessels are drawn relatively larger so detail can be seen. See column 2 for actual dimensions.
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</thead>
<tbody>
<tr>
<td>Capillary</td>
<td>D : 9.0 µm, T : 0.5 µm</td>
<td></td>
</tr>
<tr>
<td>Venule</td>
<td>D : 20.0 µm, T : 1.0 µm</td>
<td></td>
</tr>
<tr>
<td>Vein</td>
<td>D : 5.0 mm, T : 0.5 mm</td>
<td></td>
</tr>
</tbody>
</table>

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Veins

• Structural adaptations ensure return of blood to heart despite low pressure
  • Large-diameter lumens offer little resistance
  • **Venous valves** prevent backflow of blood
    • Most abundant in veins of limbs
  • **Venous sinuses**: flattened veins with extremely thin walls (e.g., coronary sinus of the heart and dural sinuses of the brain)
Functional Factors Aiding Venous Return

1. **Muscular pump**: contraction of skeletal muscles "milks" blood toward heart; valves prevent backflow

2. **Respiratory pump**: pressure changes during breathing move blood toward heart by squeezing abdominal veins as thoracic veins expand

3. **Venoconstriction** under sympathetic control pushes blood toward heart
Figure 19.7

Valve (open)

Contracted skeletal muscle

Valve (closed)

Vein

Direction of blood flow
Blood Pressure

- What is blood pressure?
- How is it measured?
- Where is it measured?
- Systolic vs. Diastolic?