Lesson 4.1: Bone as a Living Tissue

Objectives:
1. Describe the functions of the skeletal system.
2. Identify the two types of bone tissue and explain the differences between them.
3. Describe the anatomical structure of a typical long bone.
4. Explain the processes through which bones grow in length and diameter during normal human development.
5. Discuss bone remodeling, including the cells responsible and the practices and environments that can dramatically influence remodeling.

I. Functions of the Skeletal System
   A. Support
   B. Protection
   C. Movement
   D. Storage
   E. Blood Cell Formation

II. Structures and Classifications of Bones
   A. Composition of Bones
   
   B. Organization of Bones

<table>
<thead>
<tr>
<th>Figure 4.2 Properties of the Two Types of Bone Tissue</th>
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<tbody>
<tr>
<td><strong>Structure</strong></td>
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<tr>
<td>Mineral content</td>
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<tr>
<td>Strength</td>
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<tr>
<td>Flexibility</td>
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<td>Shock-absorbing ability</td>
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<td>Primary locations</td>
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</table>
C. Shape Categories of Bones
   1. Long Bones
   2. Short Bones
   3. Flat Bones
   4. Irregular Bones

D. Anatomical Structure of Long Bones

III. Growth and Development of Bones
A. Osteoblasts and Osteoclasts
B. Bone Formation
C. Longitudinal Growth
D. Circumferential Growth
E. Adult Bone Development

IV. Remodeling of Bones
A. Hypertrophy of Bones
B. Atrophy of Bones