**Animal Form and Function**:

Ch. 40

Arrangement:

 Single celled organism:

 Multicelled organisms:

 Animalia:

**Tissues**:

 Tissue:

 Epithelial tissue:

 Simple epithelium:

 Stratified epithelium

 Cuboidal cell:

 Columnar cell:

 Squamous cell:

 Connective tissue:

 Collagenous fibers:

 Elastic fibers:

 Loose connective tissue:

 Fibrous connective tissue:

 Tendon:

 Ligament:

 Adipose tissue:

 Bone: support

 Osteoblast:

 Osteoclast:

 Blood:

Muscle tissue:

Skeletal muscle:

 Cardiac muscle:

 Intercalated disk:

 Smooth muscle:

 Nervous tissue:

 Neuron: (nerve cell) tissue

 Structure:

**Organ systems**:

 Organ:

 Organ system:

 Thoracic cavity:

 Abdominal cavity:

 Mesentery:

 Diaphragm:

 Digestive system:

 Circulatory system:

Respiratory system:

Excretory system:

 Immune system:

 Endocrine system:

 Reproductive system:

 Nervous system:

 Integumentary system:

 Skeletal system:

 Muscular system:

**Sustain form and function**:

**Bioenergetics**:

 **(Fig 40.7)**

 Bioenergetics:

 Cellular respiration:

 Glycolysis:

 CTA cycle:

 Oxidative phosphorylation, chemiosmosis:

**Metabolic rate**:

Metabolic rate:

 Measured:

Strategies:

 Endothermic:

 Ectothermic:

Influences:

 Size:

Activity:

 Basal metabolic rate:

 Standard metabolic rate:

 Other factors:

 Energy costs:

**(Fig 40.10)**

**Regulation of internal environment**:

 Interstitial fluid:

 Homeostasis:

 Human:

 Fluctuations:

 Regulator:

 Conformer:

 Freshwater fish:

 Homeostatic control system:

 Receptor:

 Control center:

 Effector:

 Negative feedback loop:

 Positive feedback loop:

**Thermoregulation**:

 Thermoregulation:

 **(Fig 40.12)**

 Ectotherms:

 Endotherms:

 Heat exchange: **(Fig 40.13)**

 Conduction:

 Convection:

 Radiation:

 Evaporation:

**Balance heat exchange**:

 Insulation: hair,

 Integumentary system:

 Epidermis: dead epithelial cells

 Dermis:

 Hypodermis:

 Circulatory adaptation:

 Vasodilatation:

 Vasoconstriction:

 Countercurrent exchange:

 Evaporative heat loss:

Behavioral response:

 Metabolic heat production:

 Nonshivering thermogenesis:

 Brown fat:

 **(Fig 40.20)**

**Feedback mechanisms**: **(Fig 40.21)**

**Adjust to temperature change**:

 Acclimatization:

 Endotherms:

 Heat-shock proteins:

 Ectotherms: