Physiology of the Eye

- Pupil- adjustable opening in the center of the eye
- Iris- a ring of muscle that forms the colored portion of the eye around the pupil and controls the size of the pupil opening
- Lens- transparent structure behind pupil that changes shape to focus images on the retina

Eye Anatomy

How Vision works

- Accommodation- the process by which the eye's lens changes shape to help focus near or far objects on the retina
- Retina- the light-sensitive inner surface of the eye, containing receptor rods and cones plus layers of neurons that begin the processing of visual information

Retina’s Reaction to Light

- Optic nerve- nerve that carries neural impulses from the eye to the brain
- Blind Spot- point at which the optic nerve leaves the eye, creating a “blind spot” because there are no receptor cells located there
- Fovea- central point in the retina, around which the eye's cones cluster

Pathways from the Eyes to the Visual Cortex
Illusory Contours

Visual Information Processing

- Parallel Processing
  - simultaneous processing of several aspects of a problem simultaneously

- Trichromatic (three color) Theory
  - Young and Helmholtz
  - three different retinal color receptors
    - red
    - green
    - blue

- Opponent-Process Theory
  - opposing retinal processes enable color vision
    - "ON"    "OFF"
    - red     green
    - green   red
    - blue    yellow
    - yellow  blue
    - black   white
    - white   black

- Color Constancy
  - Perceiving familiar objects as having consistent color, even if changing illumination alters the wavelengths reflected by the object