KEY CONCEPT
Scientists study the functions and chemistry of the brain.
New techniques improve our understanding of the brain.

• Today, scientists study the brain without surgery.
There are three common technologies.
- CT uses x-rays to view structure.
- MRI uses magnetic fields and radio waves to view structure.
- PET detects activity, where glucose is used, in the brain.
Changes in brain chemistry can cause illness.

- Different neurotransmitters relate to different functions.
  - some stimulate impulses
  - some prevent impulses
29.5 Brain Function and Chemistry

- Abnormal levels of neurotransmitter can cause illness.
  - schizophrenia
  - depression
Drugs alter brain chemistry.

- Addiction is the physiological need for a substance.
- Tolerance occurs when more drug is needed to produce an effect.
- Drugs might cause desensitization or sensitization.
  - desensitization: more neurotransmitter leads to fewer receptors
  - sensitization: less neurotransmitter leads to more receptors.

When the amount of neurotransmitter becomes abnormal, the adjacent neuron adapts.
• Stimulants cause more action potentials
  – may increase neurotransmitter in synapse
  – may decrease removal of neurotransmitter in synapse
• Depressants cause fewer action potentials.
  – may produce neurotransmitter that prevent impulses
  – may slow release of neurotransmitter that generates impulses