**Biology 12 ANSWERS**

**p. 354 # 9-12**

**9. Neurons** are basic structural cells of the nervous system. Their job is to detect stimuli, and

communicate with other neurons using electrochemical signals. Through these actions, they

regulate body processes.

**Glial cells** are support cells which nourish neurons, remove their wastes, defend against

infection, and provide a supportive framework for nervous system tissues.

**10.** See class notes!!

**11.** 3 Types of Neurons are:

1. multipolar – several dendrites and one main axon, found in brain and spinal cord.
2. bipolar – a single main dendrite and a single axon, found in ear, retina, olfactory area of brain
3. unipolar – single connection extends from cell body, dendrite and axon fused, in PNS

**12.** Sensory receptors in eyes take info. about the tennis ball to the brain and spinal cord.

Interneurons process the information and trigger motor neurons to allow you to move out of the

way of the tennis ball.

Typical reflexes occur much more quickly and usually involve only 3 different neurons. Parts of

the brain involved in voluntary muscle control generally process this information much slower.

**Biology 12 ANSWERS**

**p. 357 # 13-18**

**13.** Resting membrane potential refers to the charge a neuron has at rest, when it is not actively

sending a signal. It is maintained by the Na+/K+ pump. The resting potential is -70 mV and the

inside of the membrane is negatively charged, and the outside is positively charged.

**14.** The three factors which contribute to the resting potential are: (1) the imbalance of charge

created by the sodium potassium pump, (2) large, negatively charged proteins in the cell, and

(3) the presence of ion channels which allow passive movement of ions.

**15.** After a phosphate from ATP activates the transport protein, 3 Na+ ions are transported out of the

cell, followed by 2 K+ which exit the cell.

**16.** When a neuron reaches threshold potential, sodium gates open and sodium floods into the cell,

making the inside of the cell positive and the outside negative. This is depolarization. The cell

then undergoes repolarization by having sodium gates close and potassium gates open.

Potassium ions then exit the cell, returning the cell back to its resting charge. The sodium

potassium pump then maintains the resting potential.

**17.** Repolarization is necessary to return the neuron to its resting potential. This involves the exit of

potassium ions until the cell reaches -90mV. This is an over-correction, so the sodium potassium

pump helps to return the cell back to its resting potential.

**18.** If sodium channels are blocked by the toxin, then neurons are unable to depolarize. This means

that the neuron would be unable to send a signal.