# Riku Case Study

Riku is a 19-year-old college student. One morning, after a long night of studying, Riku woke up and made himself a hot cup of coffee and toast. Much to his surprise, when he brought the cup to his mouth to drink, the coffee spilt onto the table. Riku went to the bathroom mirror and noticed the left side of his face seemed to droop. He quickly got dressed and ran to the medical clinic on the college campus. As he ran, his left eye began to feel scratchy and dry, but he could not blink in response. The physician at the clinic listened to Riku’s story and then did a careful cranial nerve examination. She concluded that Riku had Bell palsy, an inflammatory condition of the facial nerve most likely caused by a virus.

1. What are an afferent neuron and efferent neuron? What are efferent components of the facial nerve and their actions?
2. Under certain circumstances, axons in the peripheral nervous system can regenerate after sustaining damage. Why is axonal regeneration in the central nervous system much less likely?
3. At a healthy myoneural junction, acetylcholine is responsible for stimulating muscle activity. What mechanisms are in place to prevent the continuous stimulation of a muscle fiber after the neurotransmitter is released from the presynaptic membrane?