Jonathan Stecyk, PhD., is a comparative physiologist whose research aims to understand how the cardiovascular system of anoxia-tolerant vertebrates functions during times of oxygen deprivation. His research employs a wide range of techniques and spans from the level of the whole animal to the gene to better understand how these animals can live without oxygen, whereas others cannot.

The red-eared slider freshwater turtle (Trachemys scripta) remarkably recovers repeatedly from anoxia with intact and surviving neurons. The goal of this research is to advance our understanding of cerebral blood flow (CBF) regulation in vertebrates under conditions of low temperature and oxygen availability. Understanding how the turtle survives a reduction of blood flow to the entire brain, may give us clues to help brain cells survive after a global ischemic event that is a consequence of cardiac arrest.

Rachael Hannah, PhD., is an associate professor of biological sciences at UAA. She grew up in Vermont, and her love for science blossomed at an early age. Her research interests explore how blood vessels in our brains control the amount of sugar and oxygen that is delivered to brain cells (neurons, astrocytes, and other glial cells), and how this control can become unregulated after a stroke or traumatic brain injury.

Most vertebrates die within minutes of oxygen deprivation (termed anoxia) because the heart and brain requires a continuous supply of oxygen. For example, heart attacks and strokes are one of the most common causes of death in the Western world. However, some fish and turtle species can survive and recover successfully from weeks to months without oxygen. My presentation will highlight our current understanding of how the heart of these species can continue to beat in the absence of oxygen.

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