

## CWSF 2017 - Regina, Saskatchewan



### Emily Rafuse

#### Increased Activity Improves Motor Neuron Function in a Cell Culture Model of ALS

**Challenge:** Health

**Category:** Intermediate

**Region:** Halifax

**City:** Halifax, NS

**School:** Elizabeth Sutherland School

**Abstract:** Amyotrophic Lateral Sclerosis (ALS) is a fatal disease caused by degeneration of motor neurons (MNs). It is unknown whether increasing motor activity is beneficial or harmful in ALS. A cell culture model of ALS was developed to test effects of increasing activity on MN function. ALS MNs maintained better connections with muscle fibers when activity was increased, suggesting that exercise may be beneficial in ALS.

#### Biography

Emily Rafuse is in grade 9 French Immersion at Elizabeth Sutherland School in Halifax, Nova Scotia. Her favourite extracurricular activities include riding horses and agility training with her dog. She also has an interest in music, playing piano for the past 10 years and the flute in her school band. In previous years, Emily and her science fair partner studied the effect of formaldehyde as a risk factor for ALS, winning "Passion for Science" and "Best Chemistry" at their regional science fair, and the junior award for toxicology at CWSF in 2016. Emily has always been interested in neuroscience, starting from her first presentation on the brain and spinal cord to her class in grade 3, to her participation in ALS fundraising events, including "Walk for ALS" and the "Ice Bucket Challenge". This year she studied the effect of exercise on progression of ALS, using a tissue culture model to investigate how increasing motor neuron activity would affect their attachment to muscle fibers. Her advice: find something you are passionate about, be open to changing ideas, and be willing to work hard.