

## CWSF 2014 - Windsor, Ontario



### Nathan Kuehne

#### Early Cancer Detection: A Fluorescence-Based Approach

**Challenge:** Health

**Category:** Intermediate

**Region:** Vancouver Island

**City:** Victoria, BC

**School:** Glenlyon Norfolk School

**Abstract:** A fluorescence procedure was optimized to identify the acetylated product of the pharmaceutical amantadine, as a biomarker for some tumour-based cancers. Extracted urine samples containing acetylamantadine exhibited a quenching of fluorescence when dye in a host-guest complex was displaced by the acetylamantadine, thus indicating cancer cells were present. This procedure points to the possible widespread use of amantadine as an efficient, early cancer detection method.

#### Biography

I live in Victoria, British Columbia, and attend Glenlyon Norfolk School. My interests include piano, basketball, and Ukrainian dance. I speak five languages to some level, and enjoy learning new ones. I have received awards for academic achievement, public speaking, science, and dance. I am honoured to be a finalist at the Canada-Wide Science Fair for the second time. The need for cancer research is vital, as one in four Canadians are diagnosed with cancer at some point in their lifetime. In speaking with friends, family, and some researchers in the field, I discovered that there are very few viable mass-population screening systems for hard to detect tumour-based cancers. I was able to design a simple, relatively inexpensive, and quick test that could identify the presence of multiple types of tumour-based cancers. I plan to refine the sensitivity and specificity of this test in the future. My advice to students thinking about doing a science fair project is: absolutely, go for it! Although it can be great deal of work, once you are done, and you have the opportunity to present your work, it is all worthwhile and you will have learned so much along the way.

#### Awards

#### Value

Canadian Society for Medical Laboratory Science Award Intermediate Sponsor: Canadian Society for Medical Laboratory Science	\$750
Challenge Award - Health - Intermediate Sponsor: Canadian Institutes of Health Research	\$750
Excellence Award - Intermediate - Gold Medal Sponsor: Youth Science Canada	\$700
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
<b>Total</b>	<b>\$6 200</b>