

# CWSF 2019 - Fredericton, New Brunswick



## Callum Yoker

### Manipulating Microbial Membrane Permeability to Dyes

**Challenge:** Health

**Category:** Junior

**Region:** Windsor

**City:** Lakeshore, ON

**School:** Tecumseh Vista Academy - Elementary

**Abstract:** Genetic engineering has incredible applications in medicine, agriculture, and the environment - and it starts at the microscopic level, as in this project with bacteria. Microbes were chemically treated with different electrolytes to determine optimal membrane permeability to dyes, which were used as a substitute for other foreign material, like DNA. The objective achieved was the development of a preliminary model for bacterial genetic engineering.

#### Biography

My name is Callum Yoker and I am a Grade 8 student at Tecumseh Vista Academy. I have an innate curiosity and I enjoy a great many things in life, but I have an unabashed passion for chess, music and all that is science. I play chess on a competitive level, having competed at the Canadian Youth Chess Championships and the Pan-American Chess Youth Championships. I also love playing the piano, violin, trumpet or French horn. But none of my adventures compare to participating at the Canada Wide Science Fair. My project was largely inspired by my interest in medicine, which is rooted in hopefully one day being able to make a meaningful contribution to the study of Parkinson's, a disease which my grandfather (my inspiration for chess and science) courageously battles daily. My hope is to expand my project into the field of cellular and molecular genetics and eventually study the causes and potential cures for diseases like Parkinson's. The advice I would give to other students thinking of doing a project is that creativity and science knows no bounds, and what better way to explore your creative outlets than in a project that inspires you. Just do science!

#### Awards

#### Value

Excellence Award - Junior - Gold Medal Sponsor: Youth Science Canada	
Challenge Award - Health - Junior Sponsor: Youth Science Canada	
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
Youth Can Innovate Awards - Junior Sponsor: The Gwyn Morgan and Patricia Trottier Foundation	\$500
<b>Total</b>	<b>\$4 500</b>