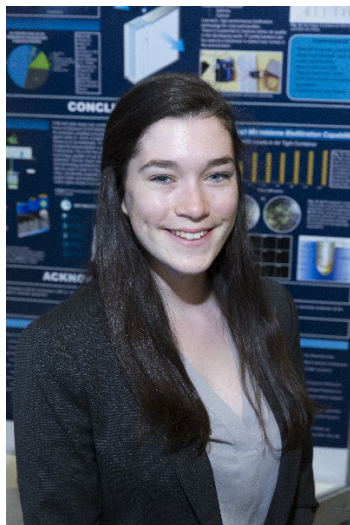


# CWSF 2018 - Ottawa, Ontario



## Rebecca Baron

### A Novel Microbial Biofiltration Technology for Improving Indoor Air Quality

**Challenge:** Environment

**Category:** Senior

**Region:** Greater Vancouver

**City:** Vancouver, BC

**School:** Prince of Wales Secondary

**Abstract:** A genetically engineered biofiltration technology was developed to improve the quality of indoor air by removing sublethal concentrations of formaldehyde (a carcinogenic volatile organic compound). Formaldehyde and formate dehydrogenase genes found within *Pseudomonas putida* KT2440 bacteria were amplified using polymerase-chain reaction to enhance the bioremediation capabilities of *Escherichia coli* K-12 bacteria. This strain was capable of degrading 40 parts per million of formaldehyde.

#### Biography

Rebecca Baron is a grade 12 student at Prince of Wales Secondary School in Vancouver, BC. Her vision includes challenging the stereotypes and cultural biases that prevent girls from pursuing an interest in science. In 2016, she raised awareness for this issue through her TEDx talk "Conquering the Gender Gap in STEM". During her spare time, Rebecca enjoys working as a student ambassador for Room to Read, a nonprofit organization dedicated to promoting literacy and girls' education in developing countries. Rebecca was inspired to develop her science fair project when her mother suffered from a series of asthma attacks. For this reason, this biofiltration technology was developed to improve the quality of life for those suffering with respiratory diseases. Next year, Rebecca would like to develop her project further by screening genomic libraries for other formaldehyde dehydrogenase genes. Rebecca believes that her research will yield new insights into biofiltration technologies that will lead to improved designs and the eventual commercialization of this device. Rebecca's advice to other students is to not give up on their vision and to continually explore the world around them.

#### Awards

#### Value

Excellence Award - Senior - Bronze Medal Sponsor: Youth Science Canada	
Carleton University Entrance Award Senior Bronze Medallist - \$1,000 Entrance Award Sponsor: Carleton University	\$1 000
University of Ottawa Entrance Scholarship Senior Bronze Medallist - \$1000 Entrance Scholarship Sponsor: University of Ottawa	\$1 000
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
<b>Total</b>	<b>\$3 000</b>