

CWSF 2014 - Windsor, Ontario



Mikaela Preston

Co-Cultivation of Purple Non-Sulfur Bacteria and Yeast for Biofuel Production

Challenge: Energy

Category: Senior

Region: York

City: Markham, ON

School: Havergal College

Abstract: Acetic acid is a common inhibitor of the enzymatic-hydrolysis of lignocellulosic waste-products into bioethanol by yeast. Purple non-sulfur bacteria can consume acetic acid and produce hydrogen, another biofuel. In this project, these two organisms were co-cultured to remove acetic acid inhibition, increase ethanol production, and co-synthesize two valuable biofuels. When the yeast was cultured with the bacteria, ethanol production rose by up to 68%.

Biography

Hey, I'm Mikaela Preston from Toronto. This year, as in previous years, my project is focused on renewable fuel. Next year I am off to the University of Pennsylvania to study energy research and continue to help make sustainability a reality. I'm sad to be experiencing my final science fair but honoured to have been a part of such an amazing group of people for the past 5 years. I've always known I wanted to be a scientist, except during the phase where I wanted to be a horse racer despite never having ridden a horse... But I digress. Next year and for the rest of my life, science fairs will remain in my heart. I admit it, I'm a bit of a science nerd, but hey, what's life without passion? The passion that sums me up isn't only science. I love martial arts, snowboarding, Green Day, chocolate, and sparkly shoes, but the guiding source of inspiration for me is always the pure awe and beauty of this incredible universe we share a brief moment of time in. And as Richard Feynman said, "We are atoms with consciousness, matter with curiosity." I wish to make the most of my curiosity.

Awards

Value

The Manning Innovation Achievement Award Sponsor: Ernest C. Manning Awards Foundation	\$500
Renewable Energy Award - Senior Sponsor: Ontario Power Generation	\$1 000
Challenge Award - Energy - Senior Sponsor: Youth Science Canada	\$1 000
Excellence Award - Senior - Gold Medal Sponsor: Youth Science Canada	\$700
Dalhousie University Faculty of Science Entrance Scholarship Senior Gold Medallist - \$5000 Entrance Scholarship Sponsor: Dalhousie University, Faculty of Science	\$5 000
UBC Science (Vancouver) Entrance Award Senior Gold Medallist - \$4000 Entrance Scholarship Sponsor: The University of British Columbia (Vancouver)	\$4 000
University of Manitoba Entrance Scholarship Senior Gold Medallist - \$5000 Entrance Scholarship Sponsor: University of Manitoba	\$5 000
University of Ottawa Entrance Scholarship Senior Gold Medallist - \$4,000 Entrance Scholarship Sponsor: University of Ottawa	\$4 000
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
University of Windsor Entrance Scholarship Senior Challenge Award Recipient - \$2000 Entrance Scholarship Sponsor: University of Windsor	\$2 000
Total	\$27 200