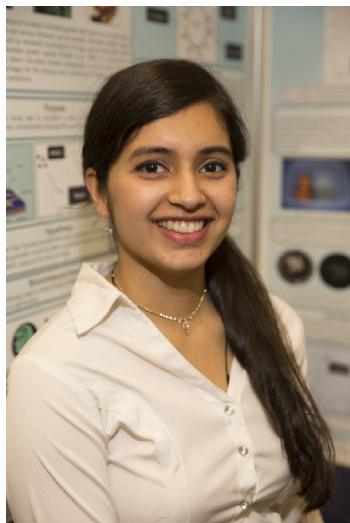


CWSF 2016 - Montreal, Quebec



Devanshi Shukla

A Biosensor for the Detection of Microbial Contamination

Challenge: Environment

Category: Senior

Region: Waterloo-Wellington

City: Guelph, ON

School: Centennial Collegiate & Vocational Institute

Abstract: Many species of fungi release a microbial volatile compound called p-cymene, before the fungal growth is visible. P.putida cells were transformed with a plasmid containing a promoter that is only activated in the presence of p-cymene, which allows the transcription of a gene cluster that produces bioluminescence. Hence, if bioluminescence is produced, it serves as an indicator for fungal growth that is not yet visible.

Biography

Science is about asking questions, finding unknown paths and creating change - a notion that inspires me. Every year, millions of people get food poisoning - causing complications and negative effects to their health. One of the main reasons for this is because fungal contamination is not always visible. So this year, I worked on developing a sensor to detect fungal growth in food and the environment before visible signs are present. Furthermore, once fungal growth is detected, it could be inhibited by the release of plant volatile compounds which are effective anti-fungal agents. Aside from pursuing my research interests, I also love volunteering at the hospital and playing the piano! My advice for other students planning to do a project - think about the fact that the world's biggest problems can be solved by its smallest things.

Awards

Value

The Manning Innovation Achievement Award - Senior Sponsor: Ernest C. Manning Awards Foundation	\$500
The Manning Innovation Achievement Award and \$4000 Manning Young Canadian Innovation Award and also receive an additional \$3000 towards their post-secondary education. Sponsor: Ernest C. Manning Awards Foundation	\$4 000
Weizmann Canada Award for Scientific Achievement - Senior Sponsor: Weizmann Canada	\$4 700
Excellence Award - Senior - Gold Medal Sponsor: Youth Science Canada	\$250
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
Total	\$31 450