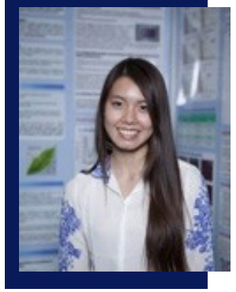
*Canada-Wide Science Fair*

# Lethbridge, Alberta…



### Linda Lu, Waterloo Collegiate Institute

Antioxidants Induce Severe Death to Human Normal Cells

Antioxidants are widely thought to benefit health. This project shows strikingly that green tea and its extract (EGCG) induced significant death and DNA damage in human lung and skin normal cells. The results provide a compelling explanation why antioxidants increased lung and skin cancers observed in clinical trials, and unravel a new damaging mechanism. This study may lead to effective prevention and therapies of diseases.

**Awards**: Excellence Award - Senior Bronze Medal Sponsor: YSC ($100), U of O Entrance Scholarship Senior- Bronze Medallist ($1000), UWO Entrance Scholarship Bronze Medallist ($1000).

### Sherwood Marks, Rockwood Mennonite Collegiate

En Garde: Fencing Dummy Fights Back

My invention is a mechanical fencing dummy that thrusts with proper form to provide fencers an efficient and useful training partner. Although fencers need to practice frequently to improve their skills, a human opponent is not always available. This dummy allows fencers to practice alone to improve their fencing techniques, timing, distance, stamina, speed and more. The dummy's arm is actuated by a pneumatic cylinder.

### Nish Singh, Centennial Public School

Gosh, My House Keeps Moving!

This project aimed to determine the effect of space weather on the accuracy of GPS equipment used in cars. Investigations were made to study the impact of proton density, total electron content, solar wind speed and factors such as proximity to high buildings etc. A simple error estimator software was made to auto-correct the readings, based on correlation observed in the experiments.

**Awards**: Excellence Award - Junior - Bronze Medal
Sponsor: YSC ($100), UWO Entrance Scholarship Bronze Medalist ($1000).

### Emma Hoover, John McCrae Public School

Plants That Bug Superbugs

Antibiotic resistance in bacteria has become one of the major public health concerns of the 21st century. In my project, I designed and developed an assay for using ethnobotanical extracts to determine their efficiency against antibiotic resistant strains of bacteria. The end goal would be to develop semi-synthetic compounds from these natural products in order to develop new drugs to replace synthetic antibiotics.
**Awards:** Excellence Award - Junior - Bronze Medal Sponsor: YSC ($100) UWO Entrance Scholarship Bronze Medalist ($1000).

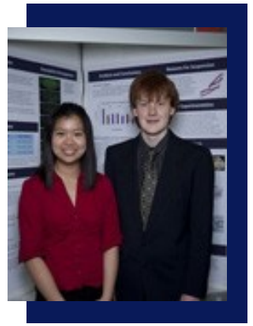
### Nikhil Patil, Centennial Public School

Subliminal Stimuli - Can You Be Subliminally Misled?

This project revolves around the idea of making subliminal stimuli effective, as it is not powerful enough simply used by itself. Multiple novel conditions were found in order to make subliminal stimuli effective. Three experiments were conducted, with 165 subjects each. Statistical tests such as the chi-squared test of independence as well as the correlation coefficient test were used to ensure valid findings.

**Awards:** Excellence Award - Junior - Silver Medal
Sponsor: YSC ($300), UWO Entrance Scholarship Silver Medallist ($2000).

### Max Reed & Kelly Dong, Centennial Collegiate & Vocational Institute



The Effects of Hypoxia on Embryonic Development

Our work investigated the use of hypoxia, or low oxygen, as an alternative to hypothermia for storing organs and tissues. To determine whether or not it was possible to use hypoxia in this way, the embryos of Drosophila melanogaster, or the fruit fly, were incubated in low-oxygen conditions. We found that this could stop the embryos from developing while maintaining their viability.

**Awards:** Excellence Award - Senior - Silver Medal Sponsor: YSC ($300), Dalhousie University Faculty of Science Entrance Scholarship Senior Silver Medallist ($2500), UBC Science Entrance Award Senior Silver Medallist ($2000), U of O Entrance Scholarship Senior Silver Medallist ($2000).


### Daniel Penner & Aaron Buckley, Waterloo Collegiate Institute

The Spots in the Lots

Increasing parking demands cause thousands of litres of gasoline to be burned by drivers trying to find a parking spot. We created a model predicting the hourly occupancy of parking lots based on their surrounding features. By forecasting parking trends, drivers can be routed to the nearest parking lot that is likely to have available spots thus greatly reducing wasted time and emissions.

**Awards**: Excellence Award - Senior - Silver Medal Sponsor: YSC ($300), Dalhousie University Faculty of Science Entrance Scholarship Senior Silver Medallist ($2500), UBC Science Entrance Award Senior Silver Medallist ($2000), U of O Entrance Scholarship Senior Silver Medallist - ($2000), UWO Scholarship Silver Medallist ($2000).