

## CWSF 2016 - Montreal, Quebec



### Camila Moran-Hidalgo, Zoe Chisholm

#### Antimicrobial Wound Dressing from Synthesized Silver Nanoparticles on Cellulose

**Challenge:** Innovation

**Category:** Junior

**Region:** Bay Area

**City:** Dundas, ON, Hamilton, ON

**School:** Sir William Osler

**Abstract:** The aim of this project is to create an antimicrobial powder wound dressing by synthesizing silver nanoparticles onto cellulose. We compared three methods of synthesizing silver nanoparticles onto a cellulose powder; a chemical synthesis method, a plasma treatment method and an autoclave reduction method. It was found that all three methods of synthesis produced spherical nanoparticles and had antimicrobial effects against *Streptococcus pneumoniae*.

#### Biographies

Camila - My friend Zoe Chisholm and I started this project because we started reading a lot about bacteria that was developing resistance to the strongest antibiotics on the market.

This bacteria that develops a resistance to antibiotics are often called super-bugs, and super-bugs were killing millions of people around the world and we wanted to help. We developed a project with the aim to manufacture an antimicrobial powder wound dressing by synthesizing silver nanoparticles. This was because silver has long been known to have antimicrobial properties. For further investigation I would like to test our powder against a variety of different fungi, vir...

Zoe - Camila and I were inspired for our project after reading a statistic from The Review on Antimicrobial Resistance Project that estimates that antibiotic resistant bacteria account for a total of 700,000 deaths worldwide every year. Our future plans with this project would include additional testing with the autoclave synthesis method. This would be beneficial because autoclaves are very accessible and the "green" synthesis of silver nanoparticles is a very relevant topic as well as being quick and convenient. Examples of further testing would include changing the temperature, pressure and duration that the samples would be autoclaved. We w...

#### Awards

#### Value

Excellence Award - Junior - Gold Medal Sponsor: Youth Science Canada	\$250
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
Total	\$4 250