

# CWSF 2017 - Regina, Saskatchewan



## Tasnia Nabil

### A Novel Computational Tool to Advance Ferromagnetic NanoTherapy to Cure Cancer

**Challenge:** Innovation

**Category:** Senior

**Region:** Windsor

**City:** Windsor, ON

**School:** Massey S.S.

**Abstract:** A novel computational approach is proposed to advance Ferromagnetic NanoTherapy as an effective therapeutic solution for cancer. An interactive mathematical model and Computational Fluid Dynamic simulations determine the required parameters for an optimized therapy and provide a visualization of the nanoparticle heating in the tumor. A small-scale prototype validated the model. Overall, this is a powerful tool to advance this therapy into routine clinical applications.

#### Biography

I am a grade 11 student enrolled in the enrichment program at Vincent Massey Secondary School. This is my fourth time at CWSF and ninth regional fair overall. Science has always been my greatest passion from a young age. My investigations have ranged from optimizing photovoltaic technology to implementing nanotechnology in solar collectors and cancer research to better our lives. Aside from CWSF, I have participated and placed in other science competitions such as the Sanofi Biogenius Competition and in various Science Olympiads. I also participate and placed in various writing contests and math, physics, biology, and chemistry competitions. In my free time, I give back to the community by volunteering at the hospital and raising awareness for cancer research. I believe youth are the future of science and hope to inspire the younger generation.

#### Awards

#### Value

The Actuarial Foundation of Canada Award - Senior Sponsor: The Actuarial Foundation of Canada	\$1 000
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
<b>Total</b>	<b>\$23 250</b>