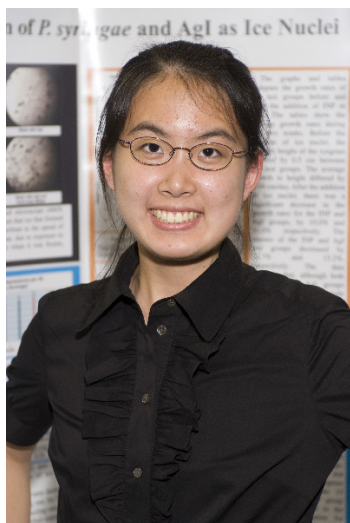


# CWSF 2009 - Winnipeg, Manitoba



## Mary Zhao

### Grasping Water

**Division:** Engineering & Computing Sciences / Environmental Innovation

**Category:** Senior

**Region:** Greater Vancouver

**City:** Vancouver, BC

**School:** Sir Winston Churchill Secondary

**Abstract:** This project explores a novel weather modification method: replacing the current ice nucleator AgI with the Ice Nucleating Protein (INP) of *P. syringae* in cloud seeding. Replacing AgI is crucial because silver ions inhibit microorganisms' growth. AgI and INP's effects on the nitrogen intake of ryegrass and catalyzing of ice nucleation were examined. Results indicate that INP is an environmentally-friendly and commercially-viable alternative for AgI.

### Biography

I am a grade 11 student in the International Baccalaureate program at Sir Winston Churchill Secondary School. I love the sciences, especially biology, because I am intrigued by the fascinating array of possibilities that science offers. I hope to enter the biomedical field. In school, I am in a variety of clubs. I am a columnist, secretary, and senior editor of the school science journal Big Bang and a member of the peer tutor club. I was a member of the Model UN club and the school orchestra in the past four years. I have participated in a variety of contests, including placing 5th in Canada for the North American Computational and Linguistics Olympiad and ranking in the top quarter for the Pascal and Cayley math contests. I was selected to write the DNA Day essay and the National Council of Teachers of English essay contests. In my spare time, I play music, read, draw, and swim. I enjoy studying different languages and have obtained Diploma of Studies in French. I am currently working towards my Teacher's diploma with the Royal Conservatory of Music. In the future, I hope to travel around the world and share my passion for science.

### Awards

### Value

|  |                 |
|--|-----------------|
| Canadian Stockholm Junior Water Prize<br>Sponsor: Canadian WEF Member Associations, the Canadian Water and Wastewater Association, and Jacobs                              | \$2 000         |
| The Manning Innovation Achievement Award<br>Sponsor: Ernest C. Manning Awards Foundation   | \$500           |
| Dalhousie University Faculty of Science Entrance Scholarship<br>Senior Silver Medallist - \$2000 Entrance Scholarship<br>Sponsor: Dalhousie University, Faculty of Science | \$2 000         |
| UBC Science (Vancouver) Entrance Award<br>Senior Silver Medallist - \$2000 Entrance Scholarship<br>Sponsor: The University of British Columbia (Vancouver)                 | \$2 000         |
| The University of Western Ontario Scholarship<br>Silver Medallist - \$1500 Entrance Scholarship<br>Sponsor: University of Western Ontario                                  | \$1 500         |
| University of Ottawa Entrance Scholarship<br>Senior Silver Medallist - \$3000 Entrance Scholarship<br>Sponsor: University of Ottawa  | \$3 000         |
| Honourable Mention - Environmental Innovation - Senior<br>Sponsor: EnviroExpo, Presented by VIA Rail Canada  | \$100           |
| Silver Medal - Earth & Environmental Sciences - Senior<br>Sponsor: Petro-Canada  | \$700           |
| <b>Total</b>   | <b>\$11 800</b> |