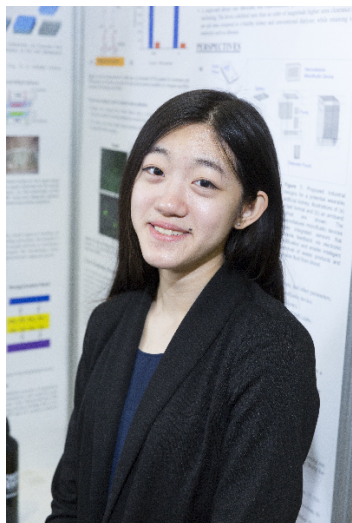


# CWSF 2018 - Ottawa, Ontario



## Connie Cheng

### A Novel Kidney-Mimicking Microfluidic Device for Hemodialysis

**Challenge:** Innovation

**Category:** Senior

**Region:** Waterloo-Wellington

**City:** Waterloo, ON

**School:** Laurel Heights S.S.

**Abstract:** A novel biologically inspired device that cleans waste products from the blood for people with kidney failure was created. Current hemodialysis devices are very expensive and too large to be portable. My device is over sixty-three times more efficient at filtration, costs less than a dollar to make, and fits in the palm of the hand. This device has the potential to revolutionize hemodialysis treatment.

## Biography

Hello! I am currently a senior at Sir John A Macdonald Secondary School, and plan to double major in biology and design in university. I have conducted research in a lab at the University of Waterloo since eighth grade, and recently presented my work at an international conference and in a published paper. Outside of research, I love to work on my startup, draw and paint, run track, and play badminton. My project was inspired by people in my life who have kidney disease and require hemodialysis. Their negative experiences and dissatisfaction with treatment prompted me to ask the question: "How can I improve current hemodialysis devices?", which led me to create a novel device that targets design flaws and will hopefully improve user experience. I currently have a patent pending, and in the future hope to continue improving the device and use my design skills to turn this device into a commercially available product. For students thinking about doing a project - reach out to teachers, faculty, and others with expertise, who don't necessarily have to be in the field that your project is in. The guidance, knowledge, resources, and unique perspectives they can give you are invaluable.

## Awards

## Value

S.M. Blair Family Foundation Award - Senior Sponsor: S.M. Blair Family Foundation	\$1 000
Excellence Award - Senior - Silver Medal Sponsor: Youth Science Canada	
Carleton University Entrance Award Senior Silver Medallist - \$2,000 Entrance Award Sponsor: Carleton University	\$2 000
Dalhousie University Faculty of Science Entrance Scholarship Senior Silver Medallist - \$2500 Entrance Scholarship Sponsor: Dalhousie University, Faculty of Science	\$2 500
UBC Science (Vancouver) Entrance Award Senior Silver Medallist - \$2000 Entrance Scholarship Sponsor: The University of British Columbia (Vancouver)	\$2 000
University of Ottawa Entrance Scholarship Senior Silver Medallist - \$2000 Entrance Scholarship Sponsor: University of Ottawa	\$2 000
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
<b>Total</b>	<b>\$11 500</b>