



CWSF 2018 - Ottawa, Ontario



Breaches

Nicolas Fedrigo

Challenge: Innovation **Category:** Senior

Region: Vancouver Island
City: Victoria, BC

School: Claremont Secondary School

Abstract: Twenty-nine percent of patients who undergo spinal fusions suffer from

Spinal Fusions: Redesigning the Pedicle Probe to Prevent Vertebral

vertebral breaches which cause complications such as infection and paralysis. I addressed this through developing the first pedicle probe that uses tissue-type density gradient analysis to prevent breaches. Additionally, this technology is the first to incorporate guided, personalized procedures in spinal fusions allowing for those with complications such as osteoporosis to

receive this treatment.

Biography

My name is Nicolas Fedrigo and I am a Grade 11 student from Claremont Secondary School. This is my third time attending the Canada-Wide Science Fair. My inspiration for this year's project is that twenty-nine percent of patients who undergo spinal fusions suffer from vertebral breaches which cause complications such as infection and paralysis. I addressed this through developing the first pedicle probe that uses tissue-type density gradient analysis to prevent breaches. Additionally, this technology is the first to incorporate guided, personalized procedures in spinal fusions allowing for those with complications such as osteoporosis to receive this treatment. My experiences in science fairs taught me about the field of biomedical engineering and I am inspired to pursue a career in this field. The improved pedicle probe was the result of an inquiry I had, and so I urge science fair participants to study what they have a passion for. In my spare time, I am president and founder of the Claremont Secondary Science and Engineering Club, along with other volunteering experiences. I have also been a swim instructor at a local recreation centre for elementary school children for over three years now.

Awards	Value
European Union Contest for Young Scientists - Trip to EUCYS	\$3 000
Sponsor: The Gwyn Morgan and Patricia Trottier Foundation	
University of Toronto Engineering Award - Senior	\$3 000
Sponsor: University of Toronto,	
Faculty of Applied Science & Engineering	
Excellence Award - Senior - Gold Medal	
Sponsor: Youth Science Canada	
Challenge Award - Innovation - Senior	
Sponsor: Youth Science Canada	
Carleton University Entrance Award	\$4 000
Senior Gold Medallist - \$4,000 Entrance Award	
Sponsor: Carleton University	
Dalhousie University Faculty of Science Entrance Scholarship	\$5 000
Senior Gold Medallist - \$5000 Entrance Scholarship	
Sponsor: Dalhousie University, Faculty of Science	
UBC Science (Vancouver) Entrance Award	\$4 000
Senior Gold Medallist - \$4000 Entrance Scholarship	
Sponsor: The University of British Columbia (Vancouver)	
University of Manitoba Entrance Scholarship	\$5 000
Senior Gold Medallist - \$5000 Entrance Scholarship	
Sponsor: University of Manitoba	A 1 000
University of Ottawa Entrance Scholarship	\$4 000
Senior Gold Medallist - \$4,000 Entrance Scholarship	
Sponsor: University of Ottawa	0.1.000
Western University Scholarship	\$4 000
Gold Medallist - \$4000 Entrance Scholarship	
Sponsor: Western University	#4.000
Platinum Award - Best Senior Project	\$1 000
Sponsor: Youth Science Canada	¢22.000
Total	\$33 000





