CWSF 2018 - Ottawa, Ontario

Nicolas Fedrigo

Spinal Fusions: Redesigning the Pedicle Probe to Prevent Vertebral Breaches

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 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 Sponsor: The Gwyn Morgan and Patricia Trottier Foundation	$3 000
University of Toronto Engineering Award - Senior Sponsor: University of Toronto, Faculty of Applied Science & Engineering	$3 000
Excellence Award - Senior - Gold Medal Sponsor: Youth Science Canada	
Challenge Award - Innovation - Senior Sponsor: Youth Science Canada	
Carleton University Entrance Award Senior Gold Medallist - $4,000 Entrance Award Sponsor: Carleton University	$4 000
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
Platinum Award - Best Senior Project Sponsor: Youth Science Canada	$1 000
Total	$33 000

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