

CWSF 2013 - Lethbridge, Alberta



Abdullah Farooq

A BAC platform for engineering oncolytic reovirus

Challenge: Health

Category: Senior

Region: Edmonton

City: Sherwood Park, AB

School: Argyll Home School Centre

Abstract: Mammalian orthoreovirus is a double stranded RNA virus which targets Ras-activated cells, accounting for more than 50% of cancers. To improve reoviral oncolytic efficacy rationally, a reverse genetics system (RGS) is necessary. The current RG systems for the reovirus are not amenable for performing targeted mutations. I attempt to engineer an RG platform consisting of all ten reovirus genes in one bacterial artificial chromosome.

Biography

I am in Grade 11, and have been homeschooled from grade one. I have always been interested in science, often doing dissections in my basement with my dad's surgery tools. Two years ago, I decided that I wanted to learn about molecular biology. I used Google to teach myself the basics, then approached a biochemistry lab at the University of Alberta with a project: to make a carbon monoxide biosensor in E.coli. This project got me hooked to molecular biology, and specifically synthetic biology. The following year, I worked with iGEM, an international undergraduate synthetic biology competition, where we used origin of replication controllers to work towards binary control of gene expression. I presented on behalf of our team at Stanford University, and we were able to secure a Gold Medal. While with iGEM, I discovered the bacterial artificial chromosome. In grade 11, I became interested in applying synthetic biology to medical research, and approached a researcher with an idea that I had developed: to build a reoviral reverse genetics system with a fast isothermal assembly method and clone all 10 reovirus genes into the bacterial artificial chromosome. In addition to research, I enjoy parkour, calisthenics, and writing poetry.

Awards

Value

Excellence Award - Senior - Silver Medal Sponsor: Youth Science Canada	\$300
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
Total	\$8 800