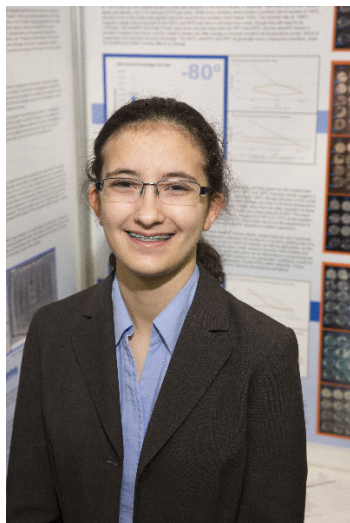


# CWSF 2019 - Fredericton, New Brunswick



## Patricia Rea

### BioGrade Yeast: Biomanufacturing with Antifreeze-Yeast on Mars

**Challenge:** Discovery

**Category:** Junior

**Region:** York

**City:** Markham, ON

**School:** St. Justin Martyr E.S.

**Abstract:** Mars colonists will need to independently produce food and materials. Genetically engineered yeast has proven to be an effective biofactory. It's relatively fast growing, can produce plastics and foods, is lightweight for transport and has a high yield. However, an environmental failure could be catastrophic. This project tests the survival of yeast genetically engineered with antifreeze proteins when exposed to temperatures like those on Mars.

#### Biography

My name is Patricia Rea. I'm a Grade 8 student at St. Justin Martyr CES and Junior Editor of Zero to Genetic Engineering Hero by Dr. Justin Pahara and Julie Legault, a biotechnology handbook now being used by many iGEM teams. My interest in synthetic biology began after discovering a video on CRISPR in grade 7. My long-term goal is to create a strain of yeast that can achieve cryptobiosis in order to survive the temperature, atmosphere and radiation of Mars. This year I was a featured panelist at Metamorphosis 2019, one of Ontario's largest STEM conferences. At Metamorphosis I also led a hands-on protein folding workshop. I volunteer with Markham, Ontario's youth-led outreach group STEM Kids Rock, and achieved 1st place at the 2019 Lunenfeld Tanenbaum Research Institute Science Fair. For anyone looking to dive into science fairs, I've learned that if you have an idea, that you should just go for it. Find the help and mentorship you need to make your idea a reality, and persevere when it gets tough. Anyone has the potential to change the world.

#### Awards

#### Value

Excellence in Astronomy Award - Junior Sponsor: Royal Astronomical Society of Canada	\$500
Excellence Award - Junior - Silver Medal Sponsor: Youth Science Canada	
Challenge Award - Discovery - Junior Sponsor: Youth Science Canada	
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
<b>Total</b>	<b>\$2 500</b>