

The IDEAS Initiative



Innovation, Diversity, Exploration & Advancement in STEM

Benjamin Tam
CAP Congress 2022

A national, long-term, inter-generational programme to encourage gender minorities to advance within STEM

Getting to the right IDEA...

News ▾

Commentary ▾

Culture ▾

S

Fine men, sexist pigs

Calling out misogyny in Physics

by Shannon Palus / October 11, 2012

Trust

News ▾

Commentary ▾

Culture ▾

Sci + Tech ▾

Features

Editoria

Physics named most misogynistic department

Mechanical Engineering outraged

by Commentary / October 18, 2012

Trust

News ▾

Commentary ▾

Culture ▾

Sci + Tech ▾

Features

Editorials

Co

Physics survey highlights sexism among students

Department recognizes need for "female role models"

by Lola Duffort and Farid Rener / February 11, 2013

1. Create a network and community of female physics students and professors
2. Create a diversity-focused school programme

CANADIAN CONFERENCE FOR UNDERGRADUATE WOMEN IN PHYSICS

McGill University, January 10-12, 2014



STEMEd Programme

Never completed.

1. Create a network and community of female physics students and professors

2. Create a diversity-focused school programme

4 Years Later...

1. Create a network and community for women in STEM
2. Utilize this network to foster a love of the natural sciences in youths

Proposal for Diversity Initiative:
A Physics-based Summer Camp for Girls in
Kingston
v1.0

Erica Caden, Liz Fletcher, Benjamin Tam

December 6, 2018



“Novel Intergenerational Approach”





GIRLS Camp was 'out of this world'

Posted: August 19 2019

Summer Physics & Astronomy Camp for 11-13 year-old girls was volunteer-driven success.

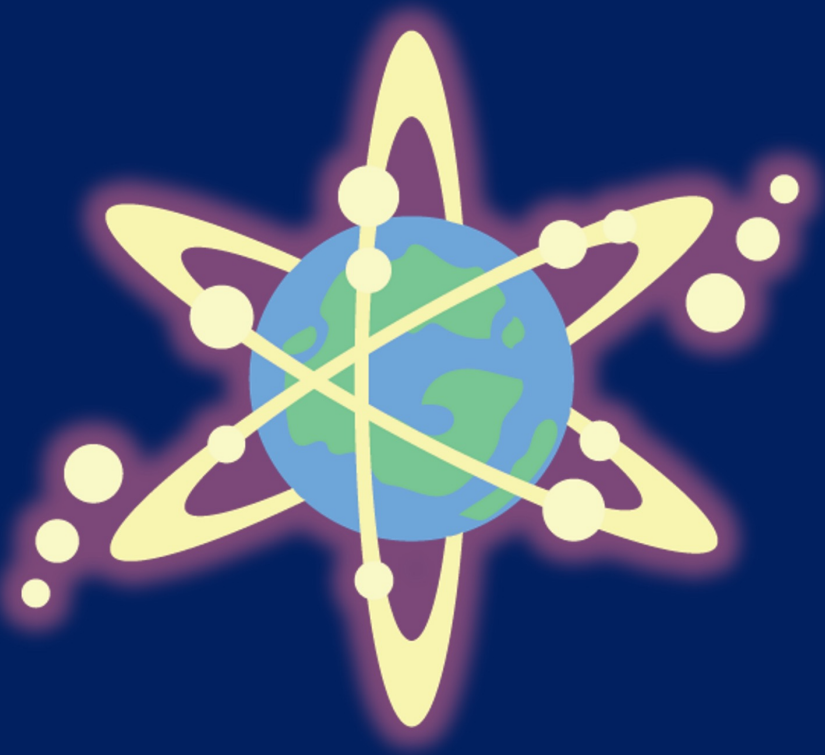
Graduate students in Physics, Engineering Physics and Astronomy planned, promoted and ran the first Girls In Research, Leadership & Science (GIRLS) Summer Camp July 22-26. The fierce summer heat that lit Kingston paled in comparison to the blaze of activity as a flurry of girls could be seen dashing around Stirling Hall, learning and doing science. The girls, aged 11-13, spent the week participating in a series of laboratory experiments, projects, and activities that investigated some of the most elusive questions in

Successes

- “Intergenerational approach” success
- Extreme appetite in volunteers
- National interest
- Easily & affordably scalable

Improvements

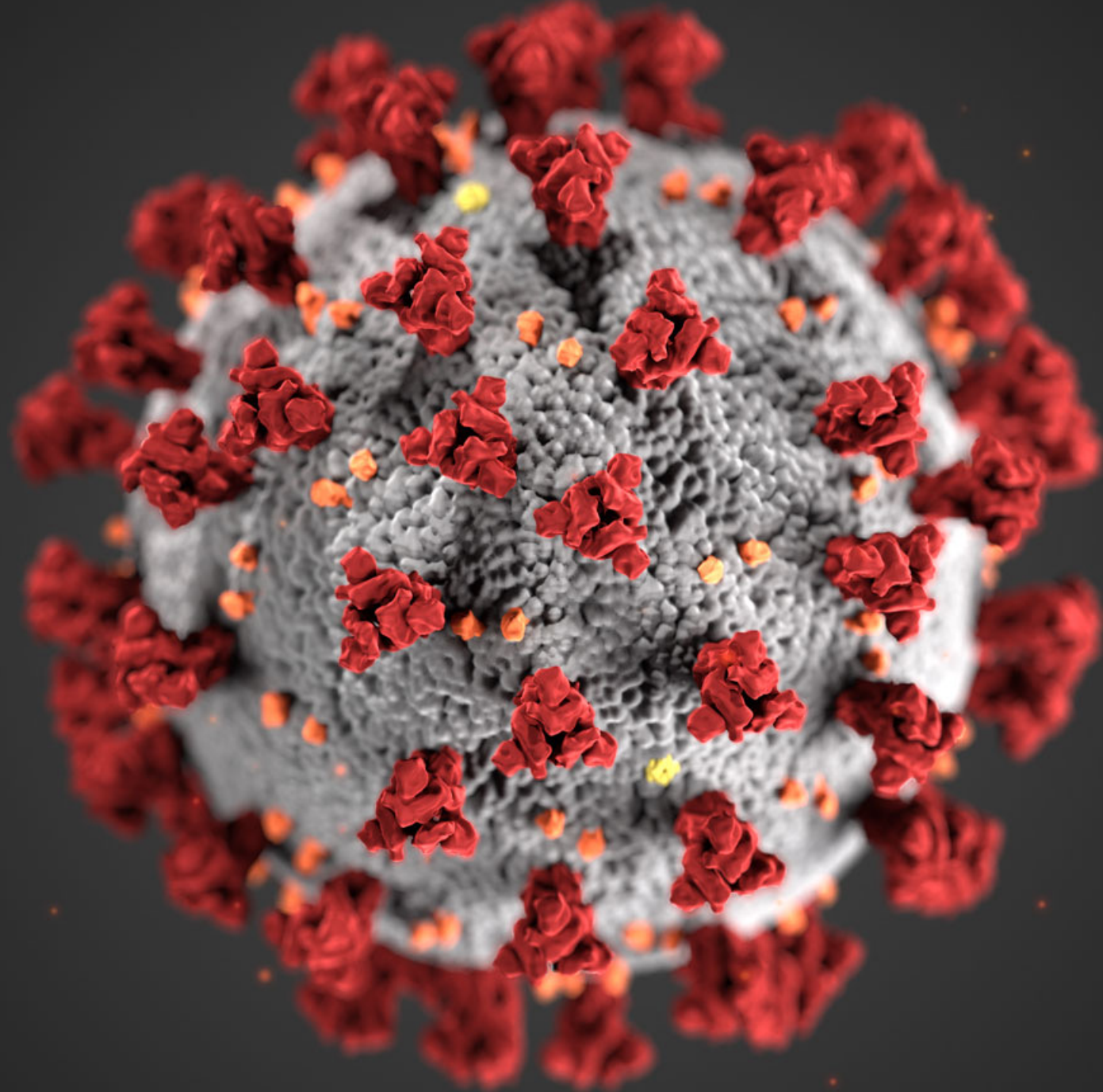
- Outdated scope
- Crowded playing field
- Incomplete pipeline



Innovation,
Diversity,
Exploration &
Advancement in
STEM

IDEAS Mission Statement

1. Create a national network and community for historically under-represented groups in STEM.
2. Utilize this diverse and united front to foster a love of the natural sciences in youths, and to support other programmes with similar objectives.
3. Build a continuous “pipeline of interest” from youths to university and beyond



Canadian Online Science Fair



Registration is now closed!

Registration Deadline: April 20, 2020

Science Fair Date: June 5, 2020

Approve Abstract



Matched grades 6-8
Students with field-specific
grad student mentor



Fund Approved Projects



Hold Competition

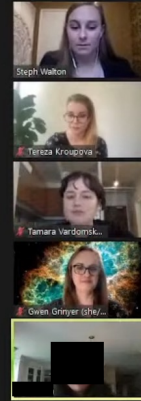
So far...

- 45 grad student mentors
- 72 student applicants
- 38 funded projects
- 6 judges from faculty and government
- 645 unique viewers during finals



Hatch Success of *Triops longicaudatus* in Waters Affected by Agricultural Chemicals

By Sarah [redacted]
Mentor: Annie Krueger
[redacted] Middle School, Grade 7
New Minas, Nova Scotia



Judges:
Dr Gwen Grinyer (Nuclear Science)
Dr Tereza Kroupova (Particle Physics)
Dr Tamara Vardoms kaya (Linguistics)

Current Presenter:
Sarah (Grade 7)



Judges:
Dr Alexandra Pederson (Geography)
Dr Kristine Spekkens (Astrophysics)
Dr Julie Vale (Engineering)

Current Presenter:
Ashleigh [redacted]
Grade 8



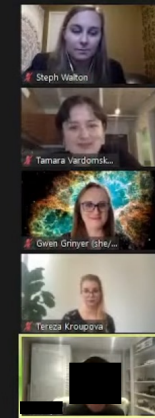
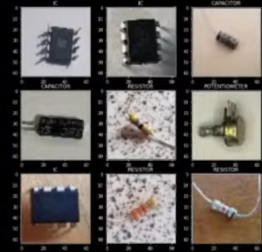
```
Creates dataset
data_dir = "C:/Users/MLSE-IT-HELPDESK/Desktop/OHARADEV/AI/EC_DATASET"
batch_size = 36
img_height = 64
img_width = 64

80% of the images for training, and 20% for validation.

Preprocess training data
train_ds = tf.keras.preprocessing.image_dataset_from_directory(
    data_dir,
    validation_split=0.2,
    subset="training",
    seed=1,
    image_size=(img_height, img_width),
    batch_size=batch_size)

Found 3803 files belonging to 5 classes.
Using 3043 files for training.

Preprocess validation data
val_ds = tf.keras.preprocessing.image_dataset_from_directory(
    data_dir,
    validation_split=0.2,
    subset="validation",
    seed=1,
    image_size=(img_height, img_width),
    batch_size=batch_size)
```



Judges:
Dr Gwen Grinyer (Nuclear Science)
Dr Tereza Kroupova (Particle Physics)
Dr Tamara Vardoms kaya (Linguistics)

Current Presenter:
Zachary (Grade 8)





STEM Stories



So far...


- 10 speakers
- 726 unique viewers
- 93 live submitted questions from locations across North America

Live with: Rosemary Bramante

Submit questions to the Google Form found in the video description below.

Hosted by **The GIRLS Initiative**
Girls for innovation, Research, Leadership & Science





let's talk
ASTROPHYSICS

Please note that all times listed are in EST

	February 20	February 21
1:00 - 1:30 pm	Introduction 1:00 - 1:10 Galaxy Talk Dr. Karen Lee-Waddell ICRAR & CSIRO 1:10 - 1:40	Introduction Talk Sarah Gallagher Canadian Space Agency
1:30 - 2:00 pm	Break 1:40 - 1:55	Workshop 1
2:00 - 2:30 pm	Dark Matter Talk Prof. Nassim Bozorgnia YorkU 1:55 - 2:25	1:20 - 2:00 Break 2:00 - 2:15
2:30 - 3:00 pm	Dark Energy Talk Prof. Celia Escamilla-Rivera ICN-UNAM 2:25 - 2:55	Workshop 2
3:00 - 3:30 pm	Break 2:55 - 3:10	2:15 - 2:55 Break 2:55 - 3:10
3:30 - 4:00 pm	Panel 3:10 - 4:00	Workshop 3 3:10 - 3:50 Closing Remarks 3:50 - 4:00

- 3 invited speakers
- Undergraduate panel
- 50 volunteers from undergraduates to faculty
- 200 workshop attendees (capacity)



22/02/2021

Let's Talk Astrophysics Symposium

Let's Talk Science coordinator Simran Nerval, IDEAS chairperson Ben Tam, and high school student Sarah Poulin sat down with CBC to chat Let's Talk Astrophysics 🧑🏫🖋️

[Let's Talk Astrophysics Symposium](#) Let's Talk Astrophysics Symposium with master's student and theoretical cosmologist Simran Nerval and grade 11 student Sarah Poulin.

Supporting Programmes

IDEAS has provided...

- 46 volunteers (grad students, faculty, industry) sent to help with summer camps, science centers, and school groups
- Volunteers to local outreach programmes
- Volunteers to sit on various academic and outreach panels
- Volunteers to speak at undergraduate workshops
- Support for creation of local outreach and EDI groups

As for the IDEAS Camp...

2022-2023 ramp-up plan

Help
establish
Camps

Location A

Location B

Location C

Unified Workshop
Spring 2023

Deliver Camps
Summer 2023

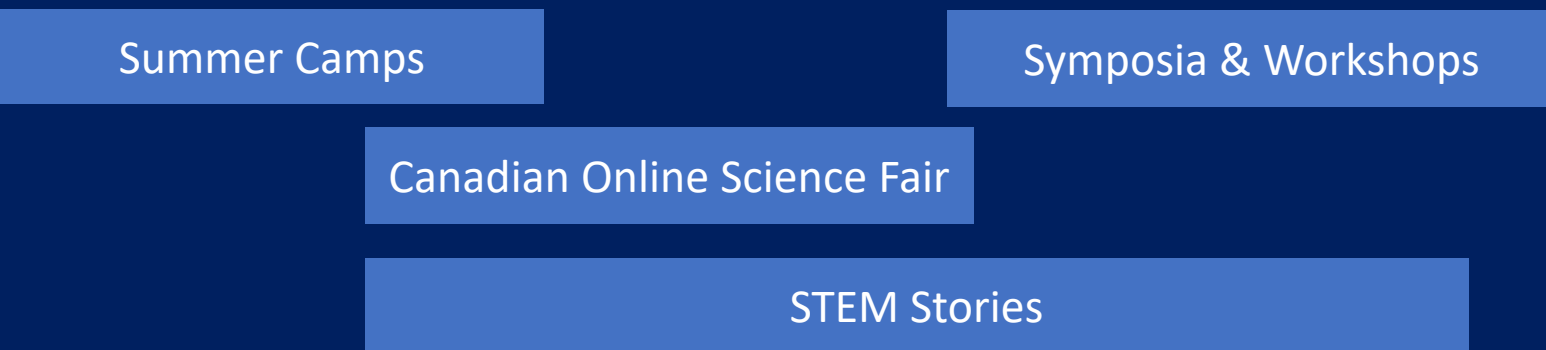
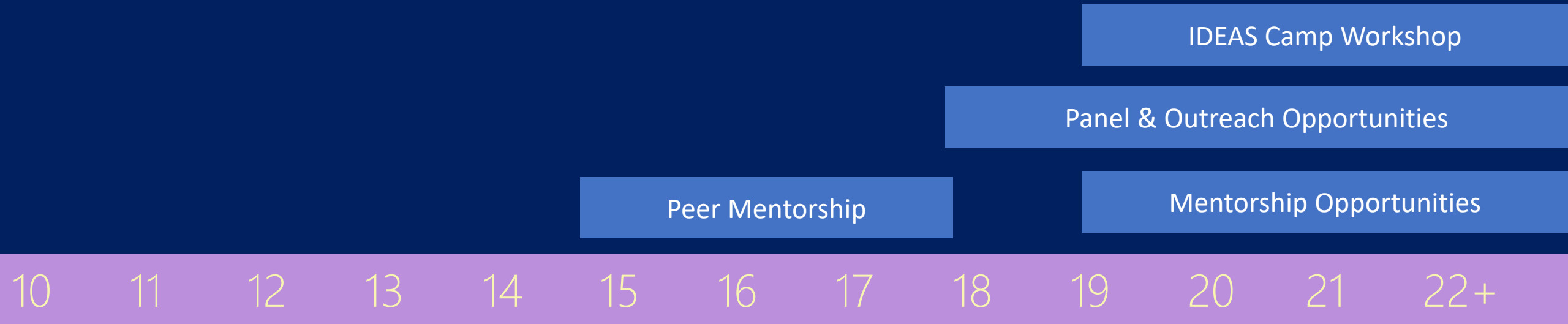
Make Contact
with Existing
Camps

Location D

Location E

Location F

Networking



Outreach

Does it work?

Does it work?

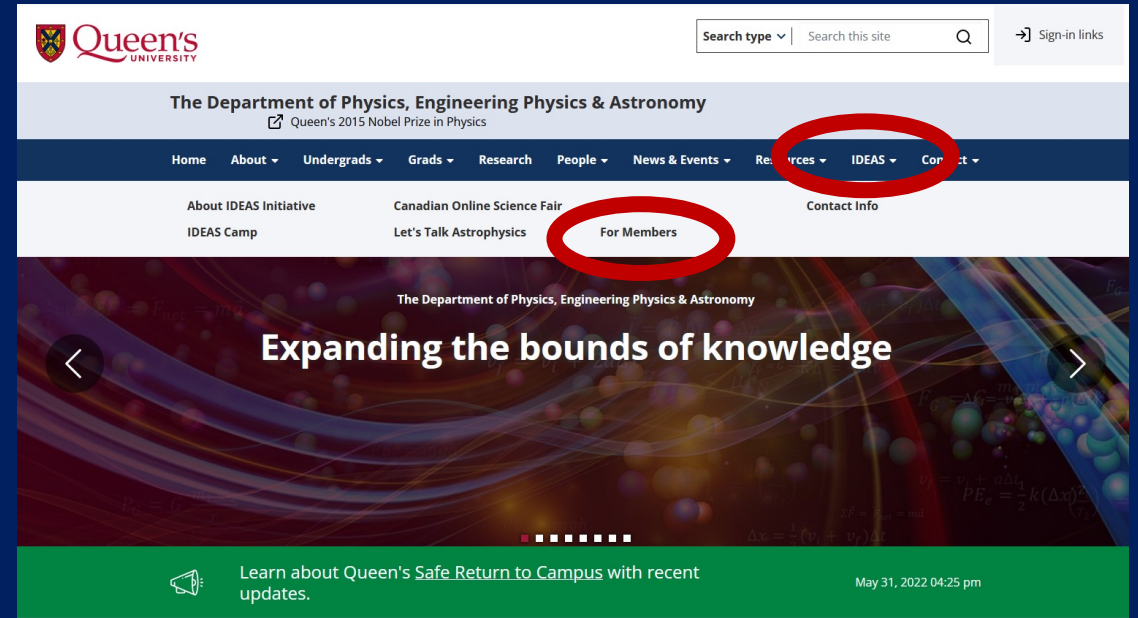
Over the last 3 years, of volunteers who have graduated...

- 90% undergrads have started grad school (n=10)
10% went into education
- 93% MSc volunteers have started a PhD (n=14)
7% went into education
- 100% PhD volunteers are now postdocs (n=6)

Get involved...

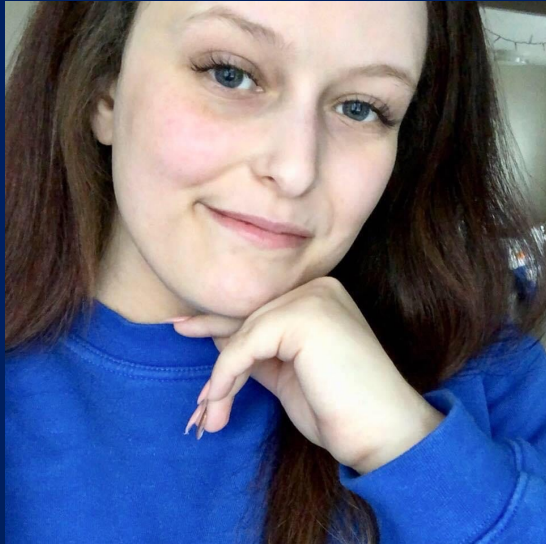
- Currently 187 members
- No financial, time, or effort obligation
- Offered mentoring, volunteering, networking opportunities
- Access to Initiative to help staff your own EDI projects.
- Put your name in online!

All individuals encouraged to participate



www.queensu.ca/physics/

The IDEAS Initiative Executive Board



Jasmine Corning
Vice-Chairperson

PhD Candidate (Queen's)

Stephanie Walton
Executive Director

MSc Candidate (Queen's)

Simran Nerval
General Manager

PhD Candidate (Toronto)

Kelly Cathcart
Director of Operations

MSc (McMaster)

(and me)

- Champion your own local IDEAS Camp!
- Or tell us about your local camp!
- Talk to me and Jasmine this week! (or at physcamp@queensu.ca)

Primary Sponsors

