

# Daniella Morrone

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I am a 4th year undergraduate student at the University of Toronto, pursuing an Astronomy & Physics Specialist and minors in both Mathematics and French Language. I am an aspiring early career researcher who is passionate about astronomy and has significant experience and skills to support a career in research. My research interests include galaxy formation and evolution, cosmology and exoplanets.

## Education

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### University of Toronto

*H.B.Sc. Astronomy & Physics Specialist, Minors in Mathematics and French Language* 2018 – 2023

- 88% average in astronomy courses (3.80 GPA on 4 point scale)
- 84% average in upper level courses (3.64 GPA on 4 point scale)

### Bishop Allen Academy Catholic Secondary School

*OSSD* 2014 – 2018

- Ontario Scholar with 92% average in top six grade 12 courses
- Completed 12 courses and 4 examinations in the Advanced Placement program

## Research Experience

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### Research Projects

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#### Employing Galaxy Morphology to Decode Galaxy Evolution

University of Toronto

*Supervisors: Dr. Kartheik Iyer & Dr. Lamiya Mowla*

*Summer 2021*

- Used Python and data from the SIMBA suite of cosmological simulations to measure morphological parameters of high redshift galaxies
- Developed a pipeline comparing morphological characteristics of simulated and observed galaxies
- Participated in midterm and final presentations, created an academic poster and a research summary delivered to Faculty and interested public

#### Behavioural and Pathological Characterization of Prodromal Alzheimer's Disease in TgF344-AD Rat Model

Sunnybrook Research Institute

*Supervisor: Dr. JoAnne McLaurin*

*Summer 2019*

- Performed experiments and data analysis in a laboratory setting
- Characterized behaviour and pathology of prodromal Alzheimer's Disease in a rat model
- Participated in a final presentation, created an academic poster and a research summary

## Scholarships, Awards & Honours

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### Summer Undergraduate Research Program (SURP) Fellowship

*Dunlap Institute for Astronomy & Astrophysics, \$9,595*

2021

### SURP Student Spotlight

*Dunlap Institute for Astronomy & Astrophysics*

2021

### SRI Summer Student Research Program

*Sunnybrook Research Institute, \$6,978*

2019

## Ontario Scholar

Toronto Catholic District School Board

2018

- Distinction for graduating students with an average of 80% or greater in top six grade 12 courses

## Advanced Placement with Honor Award

Advanced Placement College Board

2018

- Recognition for attaining an average score of at least 3.25 (on a 4 point scale) on all AP Exams taken and scores of 3.0 or higher on four or more exams

## Subject Award in Grade 12 Religious Education

Bishop Allen Academy Catholic Secondary School

2018

- Recognition of academic excellence

## Extended French Certificate with Specialization

Toronto Catholic District School Board

2018

- Distinction for graduating students having taken a minimum of seven Extended French credits, of which four are French Language credits and three are other credits in French

## Instrumental Music Certificate with High Distinction

Bishop Allen Academy Catholic Secondary School

2018

- Completed four years of Instrumental Music Courses with Distinction

## Presentations

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### Invited & Public Talks.....

#### SDSS-V 2021 Collaboration Meeting

*Decoding galaxy evolution through the lens of galaxy morphology.*

Johns Hopkins University/Online

August 2021

#### SURP Midterm Presentation

*What does morphology tell us? Understanding galaxy evolution through the lens of galaxy shapes and sizes.*

University of Toronto/Online

July 2021

#### Vitrine de savoirs 2021 - Sprint-présentations de la relève en recherche

*Que nous dit la morphologie des galaxies? Procédure pour identifier les lacunes dans nos simulations actuelles.*

L'Acfas/Online

June 2021

### Conference Posters.....

#### SURP Poster Presentation

*What does morphology tell us? Employing galaxy morphology to decode galaxy evolution.*

University of Toronto/Online

August 2021

#### SDSS-V 2021 Collaboration Meeting

*What does morphology tell us? Employing galaxy morphology to decode galaxy evolution.*

Johns Hopkins University/Online

August 2021

#### 407 ETR Summer Student Poster Competition

*Behavioural and Pathological Characterization of Prodromal Alzheimer's Disease in TgF344-AD Model.*

Sunnybrook Research Institute

August 2019

## Teaching Experience

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### Teaching Assistant

AST101: The Sun and Its Neighbours

University of Toronto

Fall 2021

- Marking midterm tests and observing project plans and assignments, assisting with online

- delivery of course, and participating in training meetings
- Completion of five hours of training in the Teaching Assistant Training Program

## Other Relevant Work & Volunteer Experience

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### **USMCSU Mental Health & Accessibility Committee**

*Member*

**University of Toronto**

*Fall 2021 & Winter 2022*

- Work alongside the VP of Mental Health & Accessibility on the SMC Student Union to promote and develop mental health and accessibility initiatives and plan events, socials and workshops
- Collaborate with other students groups to increase the visibility of mental health and accessibility resources

### **USMC Mentorship Program**

*Academic Representative*

**University of Toronto**

*Fall 2021 & Winter 2022*

- Help mentees in a similar program/faculty/study-area regarding program-specific concerns
- Help to organize Professional Development Seminars in the Program
- Leaders in a Registered Study Group & Learning communities project within the program

### **SMC Orientation**

*Leader*

**University of Toronto**

*Summer 2019, 2020, 2021*

- Orient first years into university life, specifically a group of 20-30 students
- Run and moderate events online and in-person
- In 2021, moderated an academic panel (online) and lead a campus tour (in-person)

### **USMCSU Formal Committee**

*Member*

**University of Toronto**

*Winter 2020*

- Work alongside the VP of Community Life on the SMC Student Union to plan and execute the St. Michael's College Formal event
- Worked specifically on promotional aspects of planning the event

## Mentorship

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### **Mentor.....**

#### **Ruchira Ray Verma – Mentee**

*USMC Mentorship Program*

**University of Toronto**

*Fall 2021 & Winter 2022*

#### **Erica Rose – Mentee**

*USMC Mentorship Program*

**University of Toronto**

*Summer, Fall 2021 & Winter 2022*

#### **Jing-Zu Tate Li – Mentee**

*USMC Mentorship Program*

**University of Toronto**

*Summer, Fall 2021 & Winter 2022*

#### **Joshua Thoppil – Mentee**

*USMC Mentorship Program*

**University of Toronto**

*Summer, Fall 2021 & Winter 2022*

#### **Jou Glasheen – Mentee**

*USMC Mentorship Program*

**University of Toronto**

*Summer, Fall 2021 & Winter 2022*

### **Mentee.....**

#### **Jacob Taylor – Mentor**

*Astronomy & Astrophysics Undergraduate Mentorship Program*

**University of Toronto**

*Fall 2020 & Winter 2021*

## Workshops, Training, & Professional Development

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### Teaching Assistant Training Program

University of Toronto

Teaching Assistant

September 2021

- Training completed: Policies & Procedures for Teaching Assistants at the University of Toronto, Grading, Introduction to Quercus

### SURP Astro 101 Lecture Series

University of Toronto

Summer Research Student

Summer 2021

- Summer series of weekly introductory astronomy lectures
- Topics included planets & exoplanets, galaxy formation & evolution, instrumentation, statistics, cosmology, black holes

### SURP Professional Development Series

University of Toronto

Summer Research Student

Summer 2021

- Summer series of weekly professional development workshops and seminars
- Topics included careers in astronomy, grad school applications & experiences, presenting research

### Call it out: racism, racial discrimination & human rights

Ontario Human Rights Commission

Orientation Leader, Mentor

July 2021

- Foundation for learning about race, racial discrimination and human rights protections under Ontario's Human Rights Code
- Historical overview of racism and racial discrimination, explains what "race," "racism" and "racial discrimination" mean, and provides approaches to preventing and addressing racial discrimination
- Awarded certificate

### LivingWorks Start

LivingWorks

Orientation Leader, Mentor

July 2020, 2021

- Teaches how to recognize suicidal behaviours and refer others to help and support
- Series of real life scenarios and interactive modules
- Awarded certificate

### Identify, Assist, Refer Education Module

University of Toronto

Orientation Leader, Mentor

July 2020, 2021

- Addresses identification of mental illnesses and methods of assisting and referring to resources
- Awarded certificate

### Shutdown STEM

University of Toronto

Attendee

July 2021

- Day-long workshop within the Astronomy & Astrophysics department pertaining to action against racism, with a special focus on Indigenous peoples
- Included presentations, discussions, and activities such as researching and letter-writing

### Introduction to Computational Astrophysics

University of Toronto

Student

May 2021

- 2-week intensive introductory course to coding and data analysis with Python, instructed by Dr. Norman Murray
- Covered topics such as advanced plotting, statistical analysis, and machine learning

### Equity & Diversity Training

University of Toronto

Orientation Leader

July 2020

- Learned how to create virtual and physical spaces that are inclusive and equitable for all
- Explored ways to become advocates for one another in seeking equity

## Relevant Coursework

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- **Astronomy:** Astronomy Research (IPR), Introduction to Computational Astrophysics, Practical Astronomy, Introduction to Astrophysics, Galaxies & Cosmology, Stars & Planets
- **Physics:** Classical Mechanics (IPR), Quantum Mechanics (IPR), Introduction to Quantum Mechanics, Electricity & Magnetism, Thermal Physics, Practical Physics, Foundations of Physics I & II
- **Mathematics:** Partial Differential Equations (IPR), Complex Variables, Ordinary Differential Equations, Calculus I & II
- **Computer Programming:** Introduction to Computational Astrophysics

## Technical & Personal Skills

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- **Programming Languages:** Python, HTML
- **Software:** L<sup>A</sup>T<sub>E</sub>X, Git
- **Operating Systems:** macOS, Windows
- **Spoken Languages:** English (Native or bilingual proficiency), French (Working proficiency)
- **Personal & Professional Skills:** Leadership, presenting, critical thinking, organization, communication, time management, collaboration

## Extracurricular Activities

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**Pair-A-Dice Board Game Club**  
*General Member*

**University of Toronto**  
*Fall 2019 & Winter 2020*

**Vocal & Instrumental Jazz Bands**  
*1<sup>st</sup> & 2<sup>nd</sup> Trumpet*

**Bishop Allen Academy**  
*Winter 2014 - Winter 2018*

**Concert Band**  
*1<sup>st</sup> & 2<sup>nd</sup> Trumpet*

**Bishop Allen Academy**  
*Winter 2014 - Winter 2018*

## Media Appearances

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**SURP Project Showcase**  
*Poster & Research Summary*

2021

**SURP Student Spotlight**  
*Student of the Week interview*

2021

**Meet the SMC Mentorship Team 2021-2022**  
*Facebook & Instagram*

2021