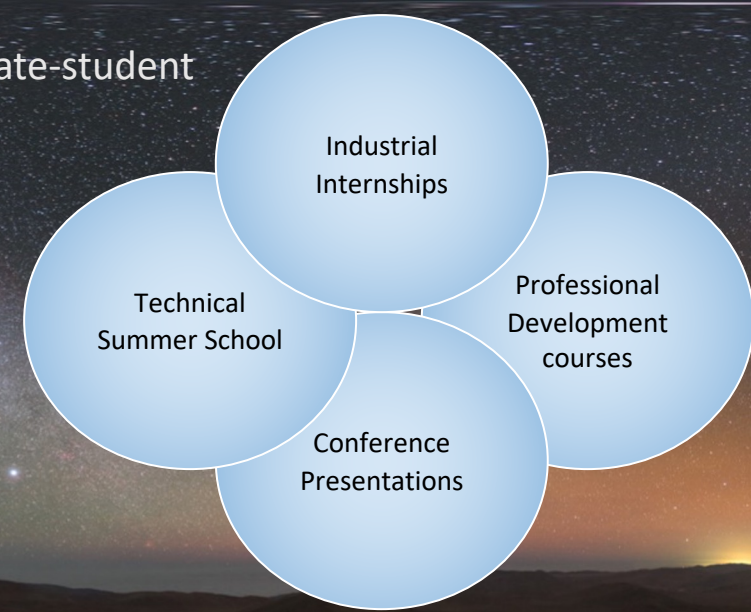


An advanced graduate-student training program:



## NSERC CREATE graduate training program on New Technologies for Canadian Observatories

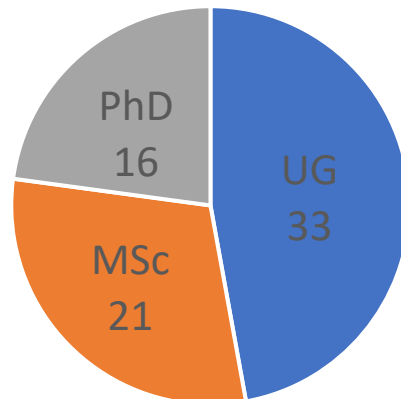
Program Dates: 1 April 2017 – 31 March 2024

NTCO Team: Kim Venn (Director/PI), Colin Bradley (UVic), JJ Kavelaars, Brenda Matthews, Dave Andersen, Luc Simard (NRC), Simon Thibault (Laval), René Doyon (UdM), Suresh Sivanandam, Bryan Gaensler (UofT), Chris Wilson (McMaster)

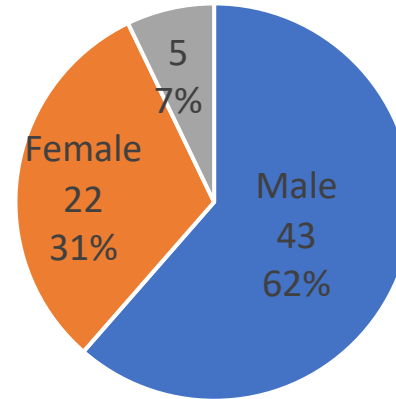
### Motivations:

- The next generation of large telescopes need & benefit from new technologies
- Cooperation between scientists and engineers can improve technological developments
- Unique opportunities for science students to be involved in and learn from industrial internships

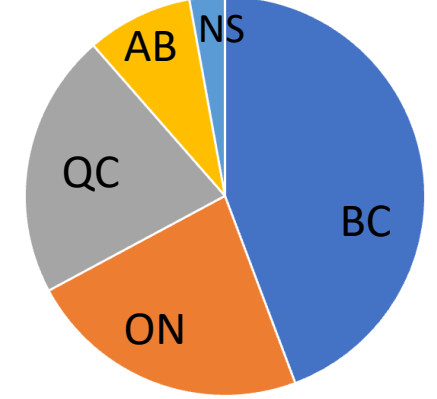
### 70 Students



### Female/Male



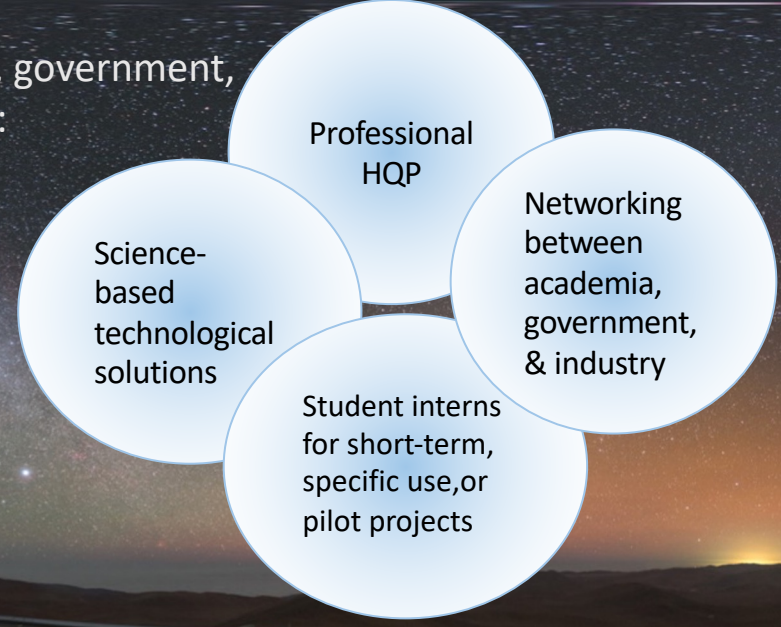
### Home Province







For the Canadian academic, government, and industrial communities:



## NSERC CREATE graduate training program on New Technologies for Canadian Observatories (NTCO)

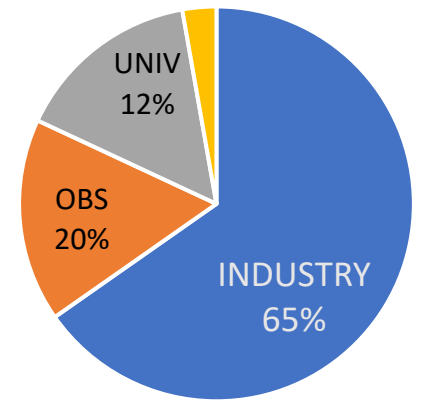
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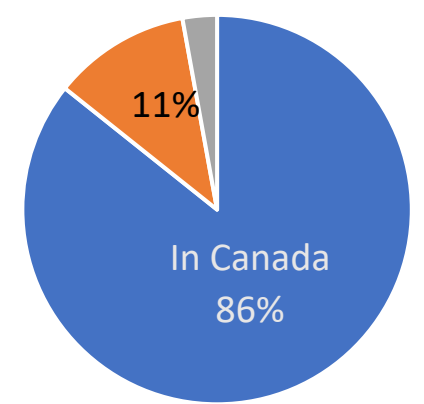
### Outcomes:

- NTCO students received a unique internship opportunity and broader supervision
- NTCO students actively participated in astronomical instrumentation or similar summer schools and multiple professional skills courses
- New partnerships were developed between Canadian industry, academia, and government

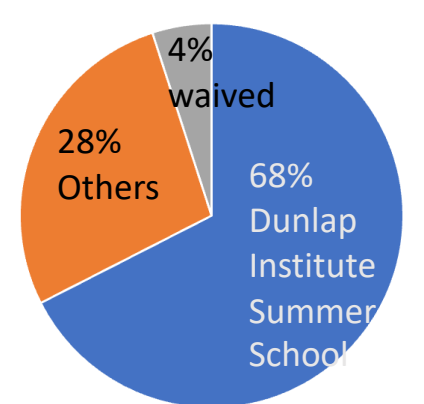
65% Industrial internships



in Canada

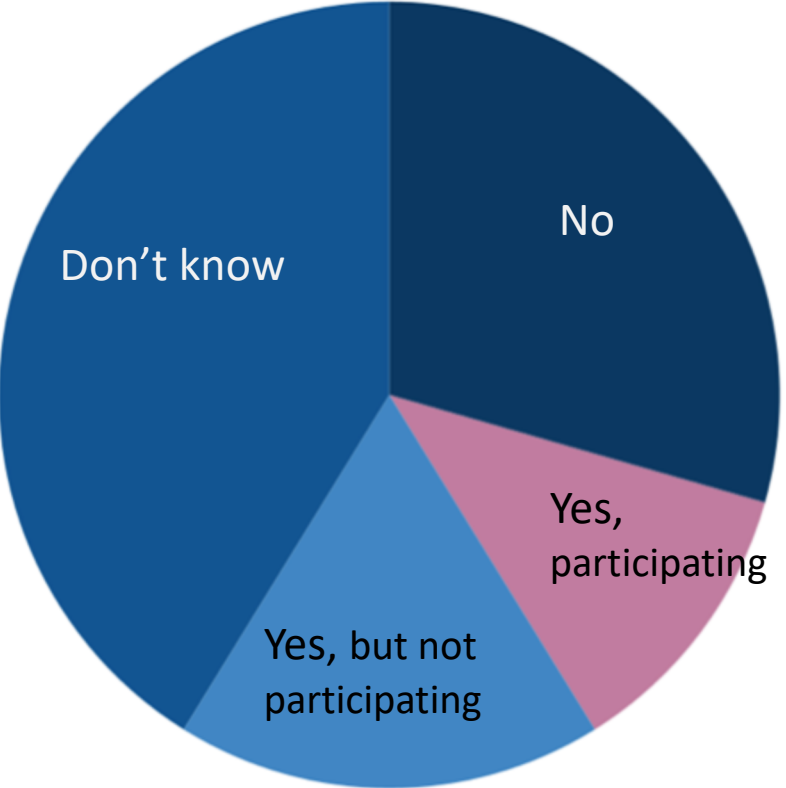


68% Dunlap Summer School

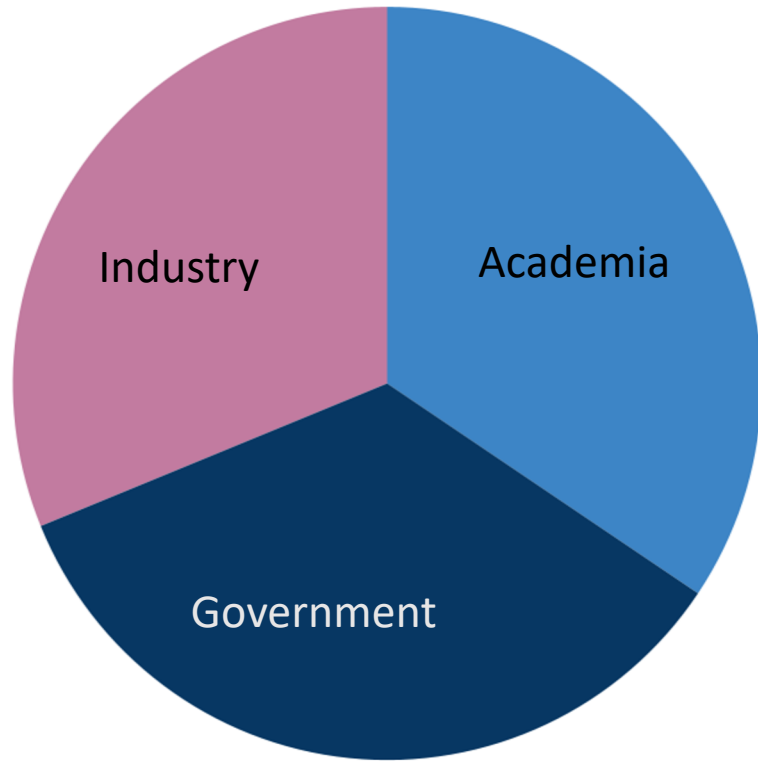


NTCO has directly benefited 70 students across Canada. Highlights from student perspectives *(thanks to Clare Higgs' survey)*

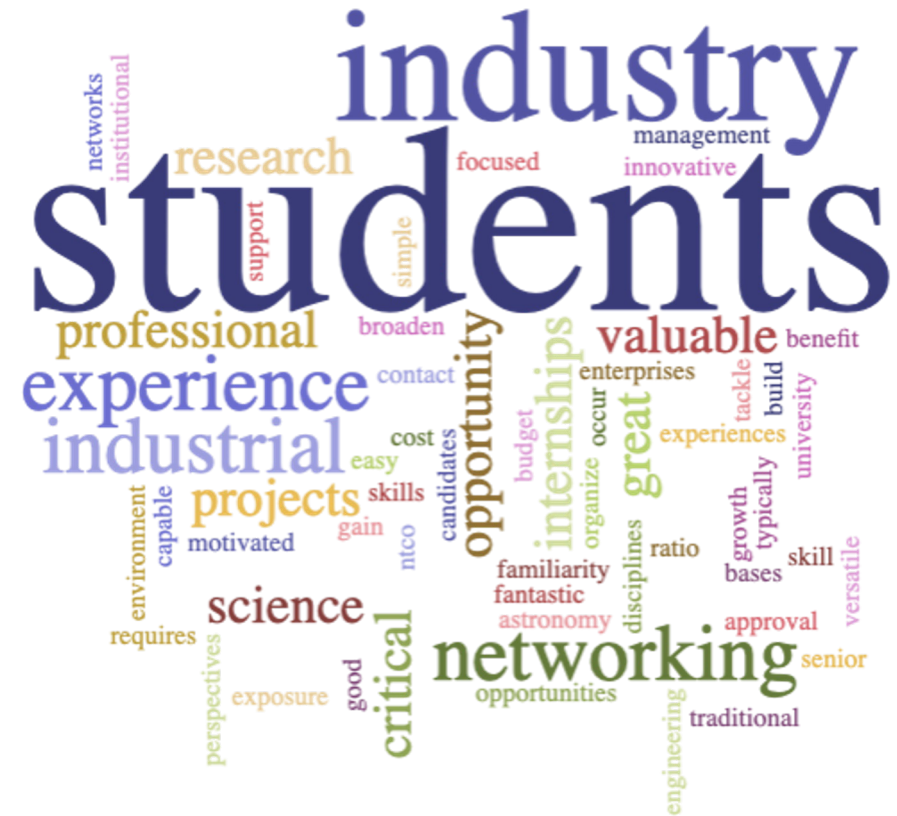
Answers from students to “is there a co-op/internship program available to you outside of NTCO?”



Nearly 200 supervisors in NTCO from academia, government, and industry



What NTCO meant to our industry partners and academic & government supervisors:



# What did we learn from the NTCO program?

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# What did we learn from the NTCO program?

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3. We learned how to organize and manage a program like this (in Canada or elsewhere)
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We will recommend to NSERC that CREATE programs like ours would significantly benefit from permitted repeats, a new program, or a new agreement with Mitacs - to build, regulate, and match students to industrial partnerships.

# What do I tell others considering a CREATE program?

1. The opportunities to work with students and researchers across Canada, in academia, government, and industry, have been unique, eye-opening, and priceless.
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3. The program rules are very strict. However, changes were made ~annually that made things easier for us. Some were things we discovered only through questions, so do keep contact with the CREATE administrators.
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5. Final personal take aways:
  - It seems like we just got this program started – there is so much more capacity in Canada.
  - Teams can do more and go farther than individuals.
  - Several Level 5/transformational leaders on this NTCO team – which has been truly inspirational.
  - SPIE meetings are great - super-interesting, extremely diverse in talents & projects, and worthwhile - but they still seem to struggle with EDI e.g., little progress in M/F in ~30 years.

# Thank you!



1. Thanks to the team

*Colin Bradley, JJ Kavelaars, Brenda Matthews, David Andersen, Luc Simard, Simon Thibault, René Doyon, Suresh Sivanandam, Bryan Gaenslar, Christine Wilson*

2. Thanks to all the program coordinators

*Jeremy!! Margaret!! Clare!! Jennie!! Tammy!!*

3. Thanks to NSERC and UVic's Astronomy Research Centre

*Physics & Astronomy, Dean of Science, VPR, VPAC*

4. Thanks to the Dunlap Institute

*for tuition & housing for so many NTCO summer students*

5. Thanks to AGM hosts

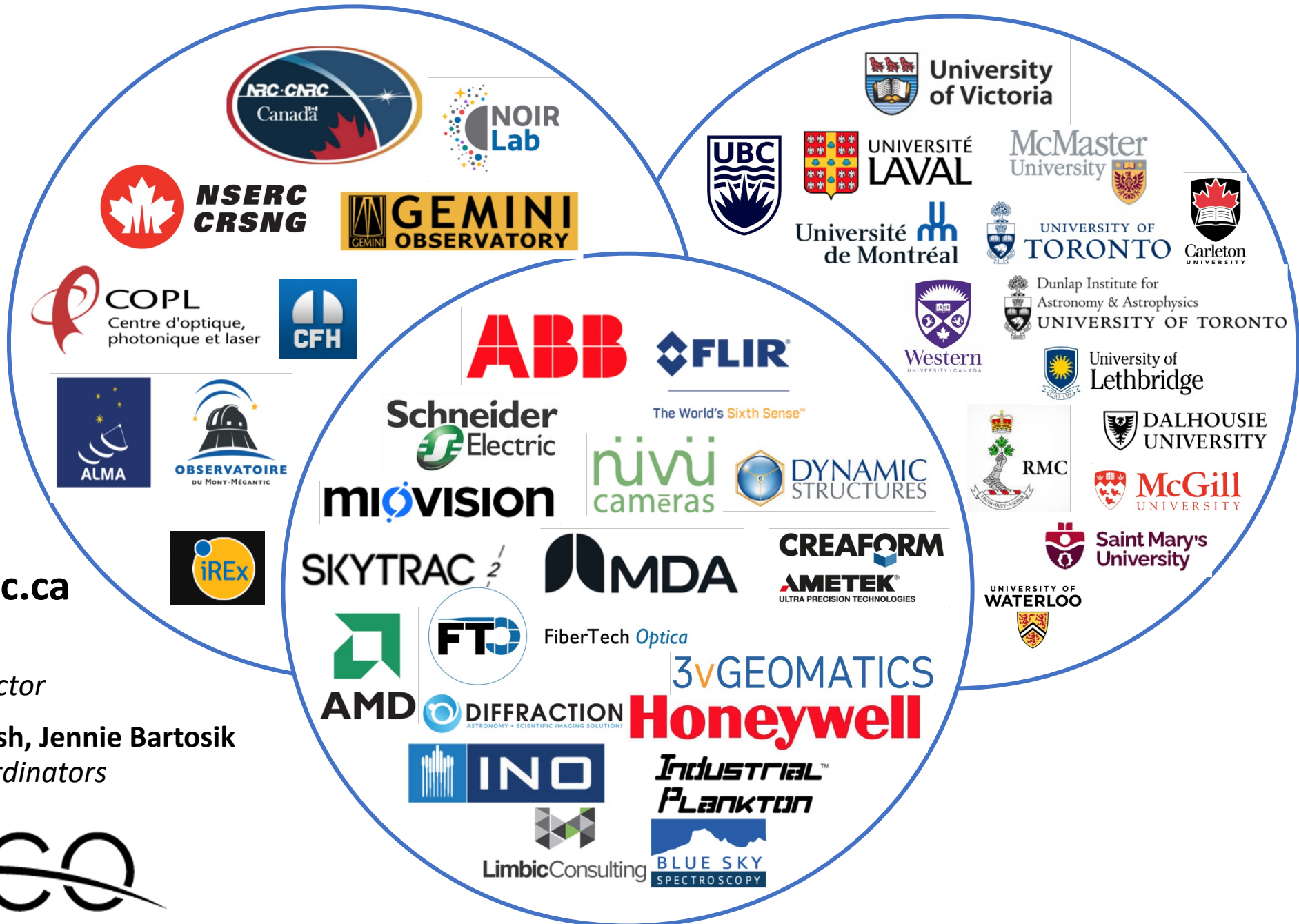
*Simon Thibault (2018), Michael Rupen (2019), René Doyon (2022), Brenda Matthews & JJ Kavelaars (2024), and especially Margaret Gwyn (2020)*

6. Thanks to our industry partners,

*special thanks to Frederic Grandmont, Neil Rowlands, Olivier Daigle, and Stephen Se who also sat on our NTCO committees.*

7. Thanks to supervisors who provided and/or guided students in this program.





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*Program Director*

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*Program Coordinators*



