

# SIDDHARTH S. GOPALAN

## Curriculum Vitae

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### Department of Biology | University of Texas at Arlington

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## Professional Positions

### Graduate Research Assistant

University of Texas at Arlington, TX

September 2020 - Present

## Education

### Doctor of Philosophy (Ph.D.) candidate in Quantitative Biology

*Dissertation title: Cellular mechanisms underlying snake venom expression diversity and the roles of cis-regulatory element variation*

University of Texas at Arlington, TX

Advisor: Dr. Todd Castoe

September 2020 - Present

### Bachelor of Science (B.Sc.) in Genome Biology (cGPA: 3.97/4.00)

University of Toronto, ON Canada

Advisors: Dr. Belinda Chang, Dr. Luke Mahler

Additional Major: Ecology and Evolutionary Biology

April 2020

## Publications

1. Westfall A.K., **S.S. Gopalan**, J.C. Kay, T.S. Tippetts, M.B. Cervantes, K. Lackey, S.M. Chowdhury, M.W. Pellegrino, and T.A. Castoe. Single-cell resolution of intestinal regeneration in pythons without crypts illuminates conserved vertebrate regenerative mechanisms. 2024. ***Proceedings of the National Academy of Sciences***.
2. **Gopalan, S.S.**, B.W. Perry, Y.Z. Francioli, D.R. Schield, H.D. Guss, J.M. Bernstein, K. Ballard, C.F. Smith, A.J. Saviola, R.H. Adams, S.P. Mackessy, and T.A. Castoe. Diverse gene regulatory mechanisms alter rattlesnake venom gene expression at fine evolutionary scales. 2024. ***Genome Biology and Evolution***.
3. Westfall, A.K.\*, **Gopalan, S.S.\***, B.W. Perry, R.H. Adams, A.J. Saviola, S.P. Mackessy, and T.A. Castoe. Single-cell heterogeneity in snake venom expression is hardwired by co-option of regulators from progressively activated pathways. 2023. ***Genome Biology and Evolution***. [\*joint first authors]
4. Schield, D.R., B.W. Perry, R.H. Adams, M.L. Holding, Z.L. Nikolakis, **S.S. Gopalan**, C.F. Smith, J.M. Parker, J.M. Meik, S.P. Mackessy, and T.A. Castoe. The roles of balancing selection and recombination in the evolution of rattlesnake venom. 2022. ***Nature Ecology and Evolution***.
5. **Gopalan, S.S.**, B.W. Perry, D.R. Schield, C.F. Smith, S.P. Mackessy, T.A. Castoe. Origins, genomic structure and copy number variation of snake venom myotoxins. 2022. ***Toxicon***.

6. Perry, B.W., **S.S Gopalan**, G.I.M. Pasquesi, D.R. Schield, A.K. Westfall, C.F. Smith, I. Koludarov, P.T. Chippindale, M.K. Pellegrino, E.B. Chuong, S.P. Mackessy, T.A. Castoe. 2022. Snake venom gene expression is coordinated by novel regulatory architecture and the integration of multiple co-opted vertebrate pathways. **Genome Research**.

## Media Coverage

- 2024 Our article Gopalan et al. 2024 in *Genome Biology and Evolution* was selected for a highlight article by editors: <https://doi.org/10.1093/gbe/evae137>
- 2022 Press coverage of our paper Schield et al. 2022 in *Nature Ecology and Evolution* from **CU** and **UTA** outlets and in popular science outlets including **Yahoo! News, Foreign Affairs New Zealand, Technology.Org, EurekAlert, Bioengineer.Org, and National Science Foundation Research News**, and others.
- 2022 Press coverage of our work in Perry et al. 2022 in *Genome Research*, including news stories from **UTA** outlets (UTA Newsletter, Coll. Of Science Newsletter), and popular science news outlets including **ScienceDaily, GenomeWeb, Nature World News, Phys.org, Thinking Port, Swift Telecast, Technology Networks, Mirage**, and others.

## Presentations and Published Abstracts

- 2024 **Gopalan, S.S**, S.N Smith, B.W. Perry, Y.Z Francioli, S.R Kerwin, C.F. Smith, R.H Adams, A.J. Saviola, S.P. Mackessy, and T.A. Castoe. Who needs CRISPR: integrating fine-scale evolutionary variation and cellular variation to test hypotheses for gene regulatory network function. 3<sup>rd</sup> Joint Congress on Evolutionary Biology, Montreal, Canada.
- 2023 **Gopalan, S.S**, A.K. Westfall, B.W. Perry, S.P. Mackessy, and T.A. Castoe. Identifying regulatory interactions within the snake venom gland using single-cell sequencing methods. Phi Sigma Graduate Conference, Arlington, TX.
- 2022 Perry, B.W, **S.S. Gopalan**, G.I.M. Pasquesi, D.R. Schield, A.K. Westfall, C.F. Smith, I. Koludarov, P.T. Chippindale, M.W. Pellegrino, E.B. Chuong, S.P. Mackessy, and T.A. Castoe. The evolutionary origins of snake venom gene regulatory architecture. Joint Evolution Meeting 2022. Cleveland, OH.
- 2021 Vogel, D., A. Mukkala, [and 124 others including **S.S Gopalan**]. HERON: Demonstrating a Novel Biological Platform for Small Satellite Missions. Small Satellite Conference. Logan, UT.

## Awards and Funding

- 2023 1<sup>st</sup> place talk – Biology Graduate Research Conference, University of Texas, Arlington (**\$500 USD**)
- 2020 Graduate Teaching Fellowship – University of Texas, Arlington (~**\$24,000 USD/year**, 5 years)
- 2020 University of Toronto FAS Top Doctoral Fellowship (~**\$26,300 CAD/year**, 4 years; *declined*)
- 2020 NSERC CGS-M (**\$17,500 CAD**; *declined*)
- 2020 NSERC Undergraduate Student Research Award (**\$5,625 CAD**)
- 2019 University of Toronto Excellence Award (**\$6,000 CAD**)
- 2018 New College In-Course Scholarship (**\$1,500 CAD**)
- 2017 New College In-Course Scholarship (**\$1,500 CAD**)
- 2016 University of Toronto President's Entrance Scholarship (**\$2,000 CAD**)

## ***Invited Peer Reviews***

***BMC Genomics (1), Journal of Heredity (1)***

## ***Student Advising and Training***

As a Ph.D. student, I assisted Dr. Todd Castoe in the training of two new Ph.D. students (**Kaas Ballard** and **Claire Kim**); advising them on computational analyses and training them in wet-lab techniques for their semi-independent research projects. Their research has been presented at scientific conferences and will lead to both of their first publications in the lab. Similarly, I also advised one new post-doctoral trainee (**Sierra Smith**) in computational and laboratory methods.

## ***Teaching Experience***

**Graduate Teaching Assistant** September 2020 – May 2023

University of Texas, Arlington

Laboratory section instructor for undergraduate courses **Cell and Molecular Biology** (BIOL 1441) and **Evolution and Ecology** (BIOL 1442).

## ***Professional References***

**Dr. Todd Castoe** – Ph.D. advisor

Professor – Department of Biology

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**Dr. Luke Frishkoff** – undergraduate advisor; Ph.D. committee member

Assistant Professor – Department of Biology

University of Texas, Arlington

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**Dr. Mark Pellegrino** – Ph.D. committee member

Associate Professor – Department of Biology

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