



Timothy A. Crombie

Assistant Professor
Department of Biomedical
Engineering and Sciences

Florida Tech
150 W. University Blvd.,
Melbourne FL, 32901
phone: 480-529-5627

MAJOR PROFESSIONAL INTERESTS

Toxicogenomics; Evolutionary Genomics; Quantitative Genetics; Molecular Genetics

EDUCATION

2017 - 2023 Post-doctoral researcher, Northwestern University
Advisor: Dr. Erik C. Andersen

2016 - 2017 Post-doctoral researcher, University of Florida
Advisor: Dr. Chales F. Baer

2009 - 2015 Ph.D. in Biology, University of Florida
Advisor: Dr. David Julian

1999 - 2004 B.S. in Biology, Arizona State University

EMPLOYMENT

2023 - Assistant Professor, Department of Biomedical Engineering and Science,
Florida Institute of Technology

2017 - 2023 Post-doctoral researcher, Department of Molecular Biosciences at Northwestern University,
Advisor: Dr. Erik C. Andersen

2016 - 2017 Post-doctoral researcher, Department of Zoology at the University of Florida,
Advisor: Dr. Chales F. Baer

2009 - 2015 Graduate Student, Department of Zoology at the University of Florida, Advisor: Dr. David Julian

2005 - 2009 Research Technician, University of California, Santa Barbara,
Supervisor: Dr. Gretchen Hofmann

2004 - 2005 Research Technician, Arizona State University, Supervisor: Dr. Michael C. Moore

RESEARCH SUPPORT

CURRENT:

2026 - 2029 NIH/NIEHS R15 AREA Award: *Identifying the Genetic Determinants of Insecticide Response Variation to Advance Human Risk Assessment*

Role: PI

Grant: R15ES038678

Total Award Amount: \$439,974

2026 - 2027 Provost Seed Grant, Florida Institute of Technology: *Developing a genetic mapping platform to identify modifiers of Parkinson's-associated dopaminergic neurodegeneration*

Role: Co-PI

Total Award Amount: \$9,700

PENDING:

2027 - 2029 NIH/NINDS R03: *Natural genetic variation in susceptibility across C. elegans models of Parkinson's disease and tauopathy*

Role: Multiple-PI

Total Funds Requested: \$137,386

PAST:

2026 Spark Grant, Florida Institute of Technology, (PI): \$1,500

2025 Richard Lincoln Turner Scholar Award, Florida Institute of Technology, (Co-I): \$1,650

2025 Summer Research Experience Award, Burrell College of Osteopathic Medicine, (Co-I) : \$2,000

2025 Provost Seed Grant, Florida Institute of Technology: *Understanding the physiological and molecular mechanisms of impact-induced brain trauma—A synergy between biomedical engineering and science*

Role: Co-PI

Award Amount: \$12,000

2024 Richard Lincoln Turner Scholar Award, Florida Institute of Technology, (Co-I): \$1,650

2018 Postdoctoral Professional Development Travel Award, Northwestern University: \$2,000

2009 Graduate Student Research Seed Grant, University of Florida: \$4,500

AWARDS AND HONORS

2026 Featured Author, *Toxicological Sciences* Spotlight

2015 Best Graduate Student Oral Presentation, Society for Integrative and Comparative Biology

2008 Honorable Mention, NSF Graduate Research Fellowship

PUBLICATIONS

PREPRINTS:

NA

PEER-REVIEWED (Advised graduate students *):

Moya ND, Wang B, Tanny RE, Sauria MEG, O'Connor LM, Khorshidian A, McKeown R, Gosse C, Dilks CM, **Crombie TA**, et al. (2026) Population structure and punctuated genomic hyper-diversity in *Caenorhabditis briggsae*. *Mol. Biol. Evol.*, 43. DOI: <https://doi.org/10.1093/molbev/msag202>

Crombie TA, Mckeown R, Widmayer SJ, Shaver AO, Moya ND, Collins JB, Wit J, Tanny RE, Braendle C, Stevens L, Van Sluijs L, Rockman MV, Sterken MG, Félix MA, and Andersen EC (2026) Natural variation suggests candidate genes underlying *Caenorhabditis elegans* susceptibility to diverse toxicants. *Toxicol. Sci.*, 209. DOI: <https://doi.org/10.1093/toxsci/kfag019>

Crombie TA, Pamminger T, Andersen EC, and Glaberman S. (2026) High-throughput toxicity screening with *C. elegans*: Current platforms, key advantages, and future directions. *Environ. Sci. Technol.*, DOI: <https://doi.org/10.1021/acs.est.5c12562>

Wang B, Moya ND, Tanny RE, Sauria MEG, O'Connor LM, Khorshidian A, McKeown R, Stevens L, Buchanan C, **Crombie TA**, et al. (2026) Global genomic diversity of the selfing nematode *Caenorhabditis tropicalis* correlates with geography. *Genetics*, DOI: <https://doi.org/10.1093/genetics/iyag196>

Carr M*, Kratochwill C, Daly-Engel T, **Crombie TA**, van Woesik R. (2025) Geographical patterns of intraspecific genetic diversity reflect the adaptive potential of the coral *Pocillopora damicornis* species complex. *PLoS One*, 20, e0316380. DOI: <https://doi.org/10.1371/journal.pone.0316380>

- Crombie TA**, Rajaei M, Saxena AS, Johnson LM, Saber S, Tanny RE, Ponciano JM, Andersen EC, Zhou J, Baer CF (2024) Direct inference of the distribution of fitness effects of spontaneous mutations from re-combinant inbred *C. elegans* mutation accumulation lines. *Genetics* Volume 228, Issue 2. DOI: <https://doi.org/10.1093/genetics/iyae136>
- Crombie TA**, McKeown R, Moya ND, Evans KS, Widmayer SJ, LaGrassa V, Roman N, Tursunova O, Zhang G, Gibson SB, Buchanan CM, Roberto NM, Viera R, Tanny RE, Andersen EC (2024) CaeNDR, the *Caenorhabditis* Natural Diversity Resource. *Nucleic Acids Research*, 52, D850–D858. DOI: <https://doi.org/10.1093/nar/gkad887>
- Shaver AO, Wit J, Dilks CM, **Crombie TA**, Li H, Aroian RV, and Andersen EC (2023) Variation in anthelmintic responses are driven by genetic differences among diverse *C. elegans* wild strains. *PLoS Pathogens*, 19, e1011285. DOI: <https://doi.org/10.1371/journal.ppat.1011285>
- Widmayer SJ, **Crombie TA**, Nyaanga JN, Evans KS, and Andersen EC (2022) *C. elegans* toxicant responses vary among genetically diverse individuals, *Toxicology*, 479, p. 153292. DOI: <https://doi.org/10.1016/j.tox.2022.153292>
- Fox BW, Ponomarova O, Lee YU, Zhang G, Giese GE, Walker M, Roberto NM, Na H, Rodrigues PR, Curtis BJ, Kolodziej AR, **Crombie TA**, Zdraljevic S, Yilmaz LS, Andersen EC, Schroeder FC, and Walhout AJM (2022) *C. elegans* as a model for inter-individual variation in metabolism. *Nature*, 607(7919), pp. 571–577. DOI: <https://doi.org/10.1038/s41586-022-04951-3>
- Crombie TA**, Chikaturudzi C, Cook DE, and Andersen EC (2022) An automated approach to quantify chemotaxis index in *C. elegans*. *microPublication Biology*. DOI: <https://doi.org/10.17912/micropub.biology.000567>
- Crombie TA**, Battlay B, Tanny RE, Evans KS, Buchanan CM, Cook DE, Dilks CM, Stinson LA, Zdraljevic S, Zhang G, Roberto NM, Lee D, Ailion M, Hodgins KA, and Andersen EC (2022). Local adaptation and spatiotemporal patterns of genetic diversity revealed by repeated sampling of *Caenorhabditis elegans* across the Hawaiian Islands. *Molecular ecology*, 2022 Feb 15. DOI: <https://doi.org/10.1111/mec.16400>
- Crombie TA**, Tanny RE, Buchanan CM, Roberto NM, and Andersen EC (2022). A highly scalable approach to perform ecological surveys of selfing *Caenorhabditis* nematodes. *Journal of Visualized Experiments*, 2022 Mar 1. DOI: <https://doi.org/10.3791/63486>
- Di Bernardo M, **Crombie TA**, Cook DE, and Andersen EC (2021). easyFulcrum: An R package to process and analyze ecological sampling data generated using the Fulcrum mobile application. *PloS ONE*, 16, e0254293. DOI: <https://doi.org/10.1371/journal.pone.0254293>
- Rajaei M, Saxena AS, Johnson LM, Snyder MC, **Crombie TA**, Tanny RE, Andersen EC, Joyner-Matos J, and Baer CF (2021). Mutability of mononucleotide repeats, not oxidative stress, explains the discrepancy between laboratory-accumulated mutations and the natural allele-frequency spectrum in *C. elegans*. *Genome Research*. DOI: <https://doi.org/10.1101/gr.275372.121>
- Nyaanga J, **Crombie TA**, Widmayer SJ, and Andersen EC (2021). easyXpress: An R package to analyze and visualize high-throughput *C. elegans* microscopy data generated using CellProfiler. *PLoS ONE*, 2021 Oct 6; 16(10):e0254293. DOI: <https://doi.org/10.1371/journal.pone.0252000>
- Lee D, Zdraljevic S, Stevens L, Wang Y, Tanny RE, **Crombie TA**, Cook DE, Webster AK, Chirakar R, Baugh LR, Sterken M, Braendle C, Felix M-A, Rockman MV, and Andersen EC (2021). Balancing selection maintains hyper-divergent haplotypes in *C. elegans*. *Nature Ecology and Evolution*, 2021 Apr 5. DOI: <https://doi.org/10.1038/s41559-021-01435-x>
- Crombie TA**, Zdraljevic S, Cook DE, Tanny RE, Brady SC, Wang Y, Evans KS, Hahnel S, Lee D, Rodriguez BC, Zhang G, van der Zwaag J, Kiontke KC, and Andersen EC (2019). Deep sampling of Hawaiian *Caenorhabditis elegans* reveals high genetic diversity and admixture with global populations. *eLife*, 2019 Dec 3; 8. pii: e50465. DOI: <https://doi.org/10.7554/eLife.50465>

- Zdraljevic S, Fox BW, Strand O, Panda O, Tenjo FJ, Brady SC, **Crombie TA**, Doench JG, Schroeder FC, and Andersen EC (2019). Natural variation in *C. elegans* arsenic toxicity is explained by differences in branched chain amino acid metabolism. *eLife*, 8. DOI: <https://doi.org/10.7554/eLife.40260>
- Crombie TA**, Saber S, Saxena AS, Egan R, and Baer CF (2018). Head-to-head comparison of three experimental methods of quantifying competitive fitness in *C. elegans*. *PLoS ONE*, 13(10), e0201507. DOI: <https://doi.org/10.1371/journal.pone.0201507>
- Yeh SD, Saxena AS, **Crombie TA**, Feistel D, Johnson LM, Lam I, Lam J, Saber S, and Baer CF (2018). The mutational decay of male-male and hermaphrodite-hermaphrodite competitive fitness in the androdioecious nematode *C. elegans*. *Heredity*, 120, 1–12. DOI: <https://doi.org/10.1038/s41437-017-0003-8>
- Todgham AE, **Crombie TA**, and Hofmann GE (2017). The effect of temperature adaptation on the ubiquitin–proteasome pathway in notothenioid fishes. *Journal of Experimental Biology*, 220(3), 369–378. DOI: <https://doi.org/10.1242/jeb.145946>
- Crombie TA**, Tang L, Choe KP, and Julian D (2016). Inhibition of the oxidative stress response by heat stress in *Caenorhabditis elegans*. *The Journal of Experimental Biology*, 219 (Pt 14), 2201–2211. DOI: <https://doi.org/10.1242/jeb.135327>
- Vasquez MC, **Crombie TA**, and Julian D (2011). Lysosome number and size do not vary during a tidal cycle in erythrocytes of the bloodworm *Glycera dibranchiata*. *Bulletin of the Mount Desert Island Biological Laboratory*, 50: 45–47.
- Kabelik D, **Crombie TA**, and Moore MC (2008). Aggression frequency and intensity, independent of testosterone levels, relate to neural activation within the dorsolateral subdivision of the ventromedial hypothalamus in the tree lizard *Urosaurus ornatus*. *Hormones and Behavior*, 54(1), 18–27. DOI: <https://doi.org/10.1016/j.yhbeh.2007.09.022>

PROFESSIONAL PRESENTATIONS (selected since 2015, underlined = invited)

- Glaberman S, Pamminger T, Andersen EC, and **Crombie TA, 2026**. High-Throughput *C. elegans* Toxicity Screening as a 3R-Aligned Whole-Organism Platform for Chemical Prioritization. SETAC Europe 36th Annual Meeting. Maastricht, Netherlands.
- Crombie TA, 2025**. Using *C. elegans* natural diversity to uncover the genetics of environmental toxicant susceptibility. University of Florida Biology Department Seminar. Gainesville, FL.
- Crombie TA, et al., 2025**. Genetic variation in xenobiotic metabolism influences chlorfenapyr resistance in *C. elegans*. 25th International Worm Meeting. Davis, CA.
- Crombie TA, 2024**. Rare genetic variation in *C. elegans* underlies differences in resistance to the environmental toxicant chlorfenapyr. 87th Annual Florida Academy of Sciences. Southeastern University. Lakeland, FL.
- Crombie TA, 2024**. Molecular mechanisms and natural variation of environmental toxicant responses. 8th Annual Florida Worm Meeting, Florida Institute of Technology. Melbourne, FL.
- Crombie TA, 2024**. Direct inference of the distribution of fitness effects of spontaneous mutations. 51st Annual SouthEastern Population Ecology and Evolutionary Genetics Meeting. Clemson University. Clemson, SC.
- Crombie TA, et al., 2021**. Natural variation in *C. elegans* lifespan and healthspan. Chicago Area Worm Meeting (virtual).
- Crombie TA, et al., 2021**. Repeated sampling of *Caenorhabditis elegans* across the Hawaiian Islands reveals spatiotemporal patterns of genetic diversity. 23rd International *C. elegans* Conference (virtual).
- Crombie TA, et al., 2020**. Deep sampling of Hawaiian *Caenorhabditis elegans* reveals high genetic diversity and four genetically distinct groups. Evolutionary Biology of *Caenorhabditis* and other Nematodes Meeting (virtual).

- Crombie TA, et al., 2019.** Deep sampling of Hawaiian *Caenorhabditis elegans* reveals high genetic diversity and admixture with non-Hawaiian groups. 22nd International *C. elegans* Conference. Los Angeles, CA.
- Crombie TA, et al., 2019.** Massive sampling of *Caenorhabditis elegans* across the Hawaiian Islands reveals remarkable genetic diversity on the islands and admixture with globally distributed populations. Chicago Area Worm Meeting. Chicago, IL.
- Crombie TA, et al., 2018.** Nematode sampling across the Hawaiian Islands reveals niche preferences for *Caenorhabditis elegans* and a new *Caenorhabditis* species. Population, Evolutionary, and Quantitative Genetics Conference. Madison, WI.
- Crombie TA and D Julian, 2016.** Stress tolerance and molecular stress responses in *Caenorhabditis elegans*. Department of Animal Sciences. University of Florida, Gainesville, FL.
- Crombie TA and D Julian, 2015.** Heat and oxidative stress synergize to reduce survival and inhibit expression of stress response genes in the nematode *Caenorhabditis elegans*. Society for Interactive and Comparative Biology, West Palm Beach, FL.
- Crombie TA J Kim, and D Julian, 2015.** Screening for interactions among multiple stressors using response to light as a survival metric. 20th International *C. elegans* Meeting. Los Angeles, CA.
- Crombie TA J Kim, and D Julian, 2015.** The interactive effects of multiple stressors on worm performance and gene expression. Florida Worm meeting, Melbourne, FL.

PEER REVIEW Academic Journals

Comparative Biochemistry and Physiology
Genetics
Journal of Experimental Gerontology
Journal of Experimental Biology
Life
PLoS ONE
Evolutional Applications

Toxicology
Bioinformatics
Open Research
Behavioral Genetics
Genome Biology and Evolution
Molecular Biology and Evolution
Environmental Science Process and Impacts

PROFESSIONAL AFFILIATIONS AND SERVICE

Membership in Professional Societies:

2024—2026 Genetics Society of America

2024— 2026 Florida Academy of Sciences

Professional service:

2026	Meeting Organizer, Florida Worm Meeting
2026	Session chair, 89th annual Florida Academy of Sciences, Medical Sciences
2026	Poster judge, 89th annual Florida Academy of Sciences, Medical Sciences
2025	Meeting Organizer, Florida Worm Meeting
2025	Session chair, 25th International Worm Meeting, Ecology and Evolution
2025	Poster judge, 25th International Worm Meeting
2025	Poster judge, 88th annual Florida Academy of Sciences, Medical Sciences
2025	Poster judge, 9th annual Florida Worm Meeting
2024	Poster judge, 8th annual Florida Worm Meeting
2024	Poster judge, 87th annual Florida Academy of Sciences, Medical Sciences

- 2021 Poster judge, 23rd International *C. elegans* meeting
 2019 Organizational team member, Chicago Area Worm Meeting (ChAWM)

TEACHING AND ADVISING

Graduate courses taught:

- 2026 BIO5016 Laboratory Methods for Biotechnology (Fall, 12 students), FL Tech
 2026 BIO5522 Bioinformatics (Spring, 9 students), FL Tech
 2025 BIO5016 Laboratory Methods for Biotechnology (Fall, 13 students), FL Tech
 2025 BIO5522 Bioinformatics (Spring, 12 students), FL Tech
 2024 BIO5016 Laboratory Methods for Biotechnology (Fall, 24 students), FL Tech
 2024 BIO5522 Bioinformatics (Spring, 20 students), FL Tech

Undergraduate courses taught:

- 2026 BIO4102 Eukaryotic Molecular Biology (Spring, 10 students), FL Tech
 2025 BIO3230 Developmental Biology (Spring, 12 students), FL Tech
 2024 BIO4150 Bioinformatics (Spring, 3 students), FL Tech
 2015 Cross-Disciplinary Laboratory (X-lab) ISC2400L and ISC2401L, UF
 2014 Cross-Disciplinary Laboratory (X-lab) ISC2400L and ISC2401L, UF
 2013 Cross-Disciplinary Laboratory (X-lab) ISC2400L and ISC2401L, UF

K-12 advising:

- 2024 Duke Campbell, Melbourne High School
 2020 Yahya Junejo, Hinsdale Central High School
 2020 Shanthi Hegde, Lambert High School
 2018 Ethan Schonfeld, Glenbrook North High School
 2011-2016 Mentor for Student Science Training Program (SSTP), University of Florida
 2012 Abeer ElTemtamy, Spruce Creek High School
 2011 Kevin Huang, project entered in 2012 Bay Area Science Fair
Awarded 2nd place in the "Biological" category

Graduate supervision and mentoring:

PhD supervision (Committee chair in bold)

- **Brianna Wallace** (chair, 2024 - current, PhD Cell & Molecular Biology)
2026 Honors College Outstanding Teaching Assistant Award
2026 Outstanding Graduate Poster, Florida Worm Meeting
2026 Outstanding Graduate Poster, Medical Sciences Sect., Florida Academy of Science
2025 Outstanding Graduate Poster, Medical Sciences Sect., Florida Academy of Science
- Aidan Andersen (2024 - current, PhD Cell & Molecular Biology)
- Connor Butcher (2024 - current, PhD Cell & Molecular Biology)
- Geligne Franklin (2025 - current, PhD Biological Oceanography)
- Xinxing Ding (2024 - 2026, Graduated Spring 2026, PhD Cell & Molecular Biology)
- **Michaela Foley** (chair, Graduated Spring 2025, PhD Cell & Molecular Biology)
2025 Outstanding Graduate Student (BES department)
- Taylor Stanley (2024, Graduated Fall 2024, PhD Cell & Molecular Biology)

Masters thesis supervision (Committee chair in bold)

- Lila Xenakis (2025 - current, MS Marine Biology)
- Madhu Preethi Kakarla Venkata (2024 - 2025, Graduated Spring 2025, MS committee member)
- **Macy Nielander** (chair, 2024, Graduated Fall 2024, MS Cell & Molecular Biology)

Graduate research mentoring

- Emma Krantz (2025 - 2026, Graduated Spring 2026, MS Biotechnology)
- Lianie Boldus (2024 - 2026, Graduated Spring 2026, MS Biotechnology)
2026 Outstanding Poster Award (Biology Sect, Florida Academy of Science, co-author)
- Janki Bharatkumar Kshatriya (2026, Graduated Spring 2026, MS Biotechnology)
- Richardo Strachinariu (2025, Graduated Fall 2025, MS Biotechnology)
- Shiv Panchel (2025, Graduated Spring 2026, MS Biotechnology)
- Briannamarie Wallace (2024, Graduated Fall 2024, MS Biotechnology)
- Amber Marquette (2024, Graduated Fall 2024, MS Biotechnology)

Undergraduate mentoring:

Florida Institute of Technology

- Kasey Beresford (2026 - current, BS Biomedical Engineering)
- Hastings Small (2026 - current, BS Genomics & Mol Genetics)
- Kelsey Fox (2024 - current, BS Genomics & Mol Genetics & BS Marine Biology)
2026 Outstanding Undergraduate Student Award (BES Department)
2026 Outstanding Undergraduate Student Award (OEMS Department)
2026 Institutional Nominee, Barry Goldwater Scholarship, Florida Institute of Technology
2026 Florida Academy of Science Outstanding Poster Award (co-author)
2025 Campus Service Award - Bronze Recipient
2025 Richard Lincoln Turner Scholar Award
- Katie Boyd (2025 - 2026, Graduated Spring 2026, BS Biomedical Science)
- Rohan Surapaneni (2024 - 2025, Graduated Spring 2025, BS Genomics & Mol Genetics)
2025 Florida Academy of Science Outstanding Undergraduate Poster Award
- Mohammed Sheriff Sathick Batcha Hashiim (2025, Graduated Spring 2026, BS Computer Science)
- Pia Scarpino (Graduated Spring 2025, BS Genetics)
2024 Richard Lincoln Turner Scholar Award
- Olivia Troisi (Graduated Fall 2024, BS Biomedical Science)

Northwestern University

Cassia Yeo (2022 - 2023, Class of 2025), Biological Sciences Major
2022 Academic Year URG Recipient
2022 Summer URG recipient
2023 Summer URG recipient
2023 National Collegiate Undergraduate Research Award

Andrea Phung (2022 - 2023, Class of 2025), Biological Sciences Major
2022 Academic Year URG Recipient
2022 Summer URG recipient
2023 Academic Year URG Recipient

Iris Swarthout (2020 - 2021, Class of 2023), Biological Sciences Major
2020 Summer Internship Grant Program recipient
2021 Summer URG recipient

Kailyn Parham (2019 - 2021, Class of 2021), Biological Sciences Major
2019 Summer URG recipient
2020 Academic Year URG Recipient
2021 Academic Year URG Recipient

Anna Derrick (2019 - 2020, Class of 2021), Biological Sciences Major
2019 Weinberg College Summer Grant recipient

Zyneb Adewusi (2018, Class of 2018), Biological Sciences Major, Moraine Valley Community College
2018 Summer Research Opportunities Program (SROP) recipient

Yihong Hu (2018 - 2019, Class of 2021), Biological Sciences Major
2018 Program in Biological Sciences Summer Grant recipient

Chido Chikaturudzi (2017-2018, Class of 2018), BS Biological Sciences, Northeastern Illinois University

University of Florida

Anne Laird (2017, Class of 2022), University of Florida

Thomas Brenner (2013 - 2014, Class of 2016), University of Florida

Stanley David Stupski (2012 - 2014, Class of 2014), Science for Life program, University of Florida

Zachary Field (2011 - 2013, Class of 2014), University of Florida

Bo Idsardi (2011 - 2012, Class of 2012), University of Florida

Breanna Siple (2009 - 2010, Class of 2013), University of Florida