A. Personal

Kacy Lynn Gordon

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B. EDUCATION

The University of Chicago, Chicago, Illinois
Ph.D. in Organismal Biology and Anatomy 2014
Dissertation: *Evolution of gene regulation in nematodes:*
Inferring complex relationships between sequence and functional evolution
Advisor: Dr. Ilya Ruvinsky

Dartmouth College, Hanover, New Hampshire 2006
A.B., *magna cum laude* with High Honors in the major of Genetics, Cell, and Developmental Biology
Honors Thesis: *Molecular insights into the evolutionary history of the Rotifera*
Advisor: Dr. Kevin Peterson

C. PROFESSIONAL EXPERIENCE

The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina July 2019-present
Assistant Professor
Department of Biology

Duke University, Durham, North Carolina 2015-2019
Ruth L. Kirschstein NRSA Postdoctoral Fellow
Advisor: Dr. David Sherwood
Department of Biology

Dartmouth College, Hanover, New Hampshire 2007-2008
Lab technician, Dr. Kevin Peterson Lab
Department of Biological Sciences

National Human Genome Research Institute, NIH, Bethesda, Maryland Summer 2005, 2006-2007
Summer Intramural Research Training Award, later Lab technician, Dr. Yingzi Yang Lab

D. HONORS

Dartmouth College, Invited Alumna Speaker, Celebrating 25 Years of Krehbiel Scholars October 2024
NSF CAREER Award, NSF Directorate for Biological Sciences 2025-2030
RJ Reynolds Foundation Junior Faculty Development Award 2022
University of North Carolina-Chapel Hill, University Teaching Award, Finalist October 2021
Ruth L. Kirschstein NRSA Postdoctoral Fellowship, NIH F32 2016-2019
National Science Foundation Graduate Research Fellowship Awarded 2010
University of Chicago Biological Sciences Divisional Teaching Award 2010
University of Chicago Developmental Biology Training Grant, Appointed 2009-2010
Christopher Reed Honors Thesis Award, Dartmouth College Department of Biological Sciences 2006

E. BIBLIOGRAPHY AND PRODUCTS OF SCHOLARSHIP

Refereed papers (currently under review)

Kinney B, Menjivar-Hernandez J, Koitz F, Grinevich D, Baselios M, Hammell CM, **Gordon KL**. FLYWCH transcription factors act in a LIN-42/Period autoregulatory loop during gonad migration in *C. elegans*. (2025) bioRxiv. https://doi.org/10.1101/2025.07.10.664215 **In revision at *Genetics*.**
-This work was performed entirely in the Gordon lab using unpublished strains from the Hammell lab.

Koitz FA, Miller CP, **Gordon KL.** Pre-dauer starvation decouples somatic from germline development with lifelong reproductive consequences in *C. elegans*. (2025) bioRxiv. https://doi.org/10.1101/2025.05.23.655783. **In revision at *Development*.**
-This work was performed entirely in the Gordon lab.

Sullivan KA, Glover JS, Zeb Q, **Gordon KL**, Engevik MA, Hartman JH. *Acinetobacter calcoaceticus* pathogenesis in *Caenorhabditis elegans* via production of a virulent secreted factor. (2025). **In revision at *Current Research in Microbial Sciences.***
-I devised and worked with a student to perform a genomic analysis of pathogenicity protein candidates.

Refereed papers

Li, X and **Gordon KL**. (2025) MIG-21 is a novel regulator of Wnt and Netrin signaling in gonad migration in *C. elegans*. PLOS Genetics 21(9): e1011866. https://doi.org/10.1371/journal.pgen.1011866
-This work was performed entirely in the Gordon lab.

Ameyaa-Sakyi A, Harris TR, Clarke CE, David R. McMullin DR, **Gordon KL**, Sherwood DR, Hartman JH, Rand AA. (2025). Human mitochondrial CYP2E1-mediated styrene metabolism increases oxidative stress and impairs antioxidant rescue in *Caenorhabditis elegans*. *Comparative Biochemistry and Physiology, Part C: Toxicology and Pharmacology*. Volume 298, 110319. https://doi.org/10.1016/j.cbpc.2025.110319
-I designed and generated transgenic *C. elegans* strains for this study.

Merritt RA*, Heaney K, Shuchi N, **Gordon KL,** Trammell SR. (2025). Mid-IR Imaging Can Detect Waste Heat Production in the Nematode *Caenorhabditis elegan*s. *Journal of Biophotonics* 18, no. 7: e202500078, https://doi.org/10.1002/jbio.202500078.
*first author is Gordon Lab M.S. student, and the work was supported by Gordon's R35 with Gordon as co-corresponding. 50% advising effort.

Singh N*, Scott K*, Proctor J, **Gordon KL**. (2025). An RNAi screen of Rab GTPase genes in *C. elegans* reveals that morphogenesis has a higher demand than stem cell niche maintenance for *rab-1* in the somatic cells of the reproductive system, *G3 Genes|Genomes|Genetics.* https://doi.org/10.1093/g3journal/jkaf085 (* indicates equally contributing authors)
-This work was performed entirely in the Gordon lab.

Gonzalez HC, Misare KR, Mendenhall TT, Wolf BJ, Mulholland PJ, **Gordon KL**, Hartman JH. Transgenic expression of human cytochrome P450 2E1 in *C. elegans* and rat PC-12 cells sensitizes to ethanol-induced behavioral and mitochondrial effects. 2024. *Biochem Biophys Res Commun.* doi: 10.1016/j.bbrc.2024.150735
-I designed and generated transgenic *C. elegans* strains for this study.

Singh N, Zhang P, Li KJ, **Gordon KL**. (2024). The Rac pathway prevents cell fragmentation in a nonprotrusively migrating leader cell during *C. elegans* gonad organogenesis. *Current Biology.* https://doi.org/10.1016/j.cub.2024.04.073 This work was performed entirely in the Gordon lab.

- **Comment in:** Pani, A. (2024). Organogenesis: How active forces maintain integrity of migrating cells under pressure. *Current Biology. https://doi.org/10.1016.j.cub.2024.06.019*

Misare KR, Ampolini EA, Gonzalez HC, Sullivan KA, Li X*, Miller C*, Sosseh B*, Dunne JB, Voelkel-Johnson C, **Gordon KL**, Hartman JH. (2023). The consequences of tetraploidy on *Caenorhabditis elegans* physiology and sensitivity to chemotherapeutics. *Sci Rep **13**, 18125. https://doi.org/10.1038/s41598-023-45225-w*
*These coauthors are Gordon Lab members. With these lab members, we characterized the gonad anatomy and developmental scaling of tetraploid worms, ~15% of the study.

Li X, Singh N, Miller C, Washington I, Sosseh B, **Gordon KL**. (2022). The *C. elegans* gonadal sheath Sh1 cells extend asymmetrically over a differentiating germ cell population in the proliferative zone *eLife.* **11**:e75497. https://doi.org/10.7554/eLife.75497 (Published in the journal era of *eLife*, not a refereed preprint.)
-This work was performed entirely in the Gordon lab.

Gordon KL. (2020). Recent advances in the genetic, anatomical, and environmental regulation of the *C. elegans* germ line progenitor zone. *J. Dev. Bio.*, 8(3), 14; https://doi.org/10.3390/jdb8030014

- Featured article, invited by Special Issue Editor Dr. Morris Maduro

Gordon KL*, Zussman JW, Li X, Martin C, Sherwood DR. (2020). Stem cell niche exit: active orientation and segregation of daughter cells by a cryptic cell outside the niche*. eLife. DOI: 10.7554/eLife.56383*.
*Corresponding author. (Published in the journal era of *eLife*, not a refereed preprint.)

- **Comment in:** Cinqin A and Cinquin O. Stem cells: More than just a pool. eLife 2020;9:e61397 DOI: 10.7554/eLife.61397

Hartman J, Richie C, **Gordon K**, Mello D, Castillo P, Zhu A, Wang Y, Hoffer B, Sherwood D, Meyer J, Harvey B. (2019). MANF deletion abrogates early larval *Caenorhabditis elegans* stress response to tunicamycin and *Pseudomonas aeruginosa*. *EJCB*. https://doi.org/10.1016/j.ejcb.2019.05.002

Gordon KL*, Linden-High LM*, Payne SG*, Pani AM, Goldstein B, Hubbard JA, Sherwood DR. (2019). Ectopic germ cells induce niche-like E-cadherin- and L1CAM-mediated cell enwrapment by body wall muscle. Current Bio. 29(5): 823-833. (* indicates equally contributing authors)

- **Comment in:** Kelley C, Cram E. Stem cells: Muscle cells enwrap escaped germline stem cells in *C. elegans*. (2019). Current Bio. 29(5) R150-R152.

Hartman, J, Smith L, **Gordon K**, Laranjeiro R, Driscoll M, Sherwood D, Meyer J. (2018). Swimming exercise and transient food deprivation in *Caenorhabditis elegans* promote mitochondrial maintenance and protect against chemical-induced mitotoxicity. Scientific Reports. 8(1): 8359. doi: 10.1038/s41598-018-26552-9

Naegeli KM, Hastie E, Wang Z, Keeley DP, **Gordon KL,** Pani AM, Kelley LC, Morrisey M, Chi Q, Goldstein B, Sherwood DR (2017). Cell invasion in vivo via rapid exocytosis of a transient endolysosome-derived membrane domain. Dev Cell. 43(4): 403–417.

Linden, LM, **Gordon KL**, Pani AM, Payne SG, Garde A, Burkholder D, Chi Q, Goldstein B, Sherwood DR (2017). Identification of regulators of germ stem cell enwrapment by its niche in *C. elegans*. Dev Biol. 429(1):271-284.

Gordon KL, Arthur RK, Ruvinsky I (2015). Phylum-level conservation of regulatory information in nematodes despite extensive non-coding sequence divergence. PLoS Genet 11(5): e1005268.

Barrière A, **Gordon KL**, Ruvinsky I (2012). Coevolution within and between regulatory loci can preserve promoter function despite evolutionary rate acceleration. PLOS Genet 8(9): e1002961.

- **Comment in**: Stower, H. Coevolution Revealed. Nat Rev Genet 13(758).

Gordon KL, Ruvinsky I (2012). Tempo and mode in evolution of transcriptional regulation. PLOS Genet 8(1): e1002432.

Barrière A*, **Gordon KL***, Ruvinsky I (2011). Distinct functional constraints partition sequence conservation in a *cis*-regulatory element. PLOS Genet 7(6): e1002095. (* indicates equally contributing authors)

Jackson DJ, Meyer NP, Seaver E, Pang K, McDougall C, Moy VN, **Gordon, KL**, Degnan BM, Martindale MQ, Burke RD, Peterson KJ. (2010). Developmental expression of COE across the metazoa supports a conserved role in neuronal cell-type specification and mesodermal development. *Development Genes and Evolution*, 220(7-8), 221-234.

Other: Refereed conference proceedings

Merrit RA*, McGinnis CL, **Gordon KL**, Trammell SR. (2023). Mid-IR imaging as a new tool to investigate waste heat production in the nematode. Proceedings Volume 12391, Label-free Biomedical Imaging and Sensing (LBIS) 2023; 1239105 (2023). Event: SPIE BiOS, 2023, San Francisco, California, United States https://doi.org/10.1117/12.2650182

*first author is Gordon Lab M.S. student, and the work was completed in the Gordon lab with Gordon as co-corresponding.

Other: Invited commentary

Gordon KL. (2021). News &Views: Fatal decision made under pressure. *Nat. Phys*. https://doi.org/10.1038/s41567-021-01239-7

Other: Invited talks while at UNC

Cramer Seminar, Dartmouth College Department of Biological Sciences	October 2024
The University of Chicago Developmental Biology Training Grant Symposium	April 2024
Biochemistry and Molecular Biology Seminar, Medical University of South Carolina	November 2023
Department of Biology Seminar, UVA	October 2023
Development Colloquium (Remote), Princeton University	April 2022
Houston Area Worm Club (Remote)	June 2021
Integrative Biology Departmental Seminar (Remote), University of Wisconsin, Madison	March 2021
Genetics, Cell, Developmental Biology Seminar (Remote), Indiana University	October 2020
Epigenetics and Stem Cell Biology Laboratory Seminar Series, NIEHS	October 2019

F. TEACHING ACTIVITIES

Courses taught:

Biology 440, Stem Cell Biology, UNC

Biol 440.001 Summer 2025 (20 students), Director of Science in Sevilla Study Abroad (Seville, Spain)
Biol 440.0001 Spring 2025 (32 students)
Biol 440.0001 Fall 2024 (31 students)
Biol 440.001 Spring 2024 (37 students)
Biol 440.001 Summer 2023 (28 students), Director of Science in Sevilla Study Abroad (Seville, Spain)
Biol 440.001 Fall 2022 (38 students)
Biol 440.001 Fall 2021 (40 students)
Biol 440.001 Fall 2020 (33 students)

Biology 205, Cell and Developmental Biology, UNC

Biology 205.006 Spring 2023 (236 students)
Biology 205.006 Spring 2022 (231 students)
Biology 205.007 Spring 2021 (231 students)
Biology 205.007 Spring 2020 (188 students)

Graduate students supervised:

Fred Koitz (Genetics and Molecular Biology, 2022 start)
Noor Singh (Genetics and Molecular Biology, 2021 start)
Xin Li (Quantitative Biology, 2021 start)

Ryan Merritt (QBio, M.S. 2024)
M.S. Thesis: Thermal Imaging provides a window into the metabolism of *C. elegans*

BBSP Rotation students: Lily McKay, Mark Hazelbaker, Sean Johnson, Karla Troncoso, Bailey DeJesus

Dissertation Committees: Jack Linehan (A. Maddox, QBio, chair), Nila Pazhayam (J. Sekelsky, GMB), Alan Edwards (P. Maddox, Biology, chair), S. Ethan Bedsole (C. Shiau, QBio, chair)

Undergraduates Honors Theses:

Kayah Takei (2025): Molecular Approaches to Understanding Wnt Signaling and Integrin Dynamics in *C. elegans* Development
Karen Li (2023): CED-12/ELMO prevents fragmentation of a non-protrusively migrating leader cell in *C. elegans*
Ryan Merritt (2022): Thermal Imaging Provides a Window Into the Metabolism of *C. elegans*

BIOL 395: Jason Menjivar-Hernandez (2023-2024), Alexi Callinicos (2024), Kayah Takei (2024-2025), Karen Li (2023-2024), Madonna Baselios (2023), Nadeem Ramadan (2020), India Washington (2021-22), Ryan Merritt (2021-22), Jayce Proctor (2022), India Washington (2022), Bintou Sosseh (2023).

BIOL 395 Sponsor by school year:

Maggie Furco, Xiaoyuan Li, Vanessa Walcott (2024-2025)
David Scott Weaver, Ava Reese, Julianna Beltz, Iris Turksonmez, Sophie Dhrolia, Shivam Patel (2023-2024)
Andrew Phan (2021-2022)
Sophie Ruth Taylor, Emily Grace Clark, Meredith Grace Chambers (2020-2021)
Work-study: Mridul Uppal (2022-2025), Bintou Sosseh (2021-2022), India Washington (2019-2021), Jada Enoch (2019).

Postdoctoral scholars

Dr. Brian Kinney (2022-2025). Current: Assistant Professor, Louisburg College, Louisburg, NC.
Dr. Kayt Scott (2021-2022). SPIRE Fellow. Current: Science writing.
Dr. Sheldon Lawrence (2020-2021). SPIRE Fellow. Current: Assistant Professor, Oxford College, Oxford, GA.

G. GRANTS

NSF CAREER Award: Stress, Recovery, Regeneration, and Resilience in Reproduction
Principal Investigator, $1,039,048, 49% research effort 2025-2030

NIGMS R35GM147704: Extreme cell growth in support of stem cell proliferation and niche exit
Principal Investigator, $1,911,070, 51% research effort 2022-2027
-3R35GM147704 Diversity Supplement for GMB student F. Koitz ($106,839) 2023-2025

RJ Reynolds Foundation Junior Faculty Development Award, Recipient, ($10,000) 2022

Ruth L. Kirschstein NRSA Postdoctoral Fellowship, NIH F32 ($114,132) 2016-2019
National Science Foundation Graduate Research Fellowship ($126,000) Awarded 2010

H. PROFESSIONAL SERVICE

Grant reviews
MRAC panel, NIGMS, NIH 2024
NSF Biology Directorate, MCB, panel not permitted to be disclosed 2022, 2024
NIH special emphasis panel Cellular, Molecular and Integrative Reproduction Study Section (Early Career Reviewer) Summer 2021
NSF special reviewer 2022

Journals reviewed for 2020-present
Nature Communications, Nature Physics, MDPI Biology, Current Biology, Developmental Biology, Scientific Reports, Molecular Biology and Evolution, Scientific Reports, Plos One

UNC-Chapel Hill Department of Biology
QBio Graduate Committee 2022-2024
Biology Chair's Advisory Committee, Assistant Professor Representative 2021-2024
VITAE Committee for targeted hires, appointed 2021-2024
Search Committee for Biology Microscopy Core Director, recruited Dr. Nat Prunet 2021/2022
Curriculum overhaul, faculty team for learning outcomes in BIOL 102A Fundamentals in MCB 2020

UNC-Chapel Hill Curriculum in Genetics and Molecular Biology 2020-present
Executive Committee, BBSP Admissions Committee

Faculty Advisor of Student Groups 2022-present
Health Link Society
Chapel Hill Alt Protein Project
Foundation for International Medical Relief of Children

Duke University Postdoctoral Association 2016-2019
President, Policy Chair
Worked with postdocs and administrators on projects related to health, dependent care, and retirement benefits for postdocs. Served on steering committee to develop professionalism guidelines for postdoc-mentor relationships.

Professional development training activities:
UNC-Chapel Hill Center for Faculty Excellence
Summer Institute on College Teaching 2023

UNC-Chapel Hill TEAM ADVANCE 2019-2020, 2022-2023
Peer Mentor Circle for Women in STEM, Leadership workshop

UNC-Chapel Hill Office of Graduate Education Mentoring Workshop November 2019
Participated in eight hours of training for graduate, undergraduate, and postdoctoral mentoring

UNC-Chapel Hill STEM Pride Safe Zone Allies Training September 2019
Participated in four-hour training session for LGBTQ+ allyship and am listed as a Safe Zone ally
https://lgbtq.unc.edu/programs/education/safe-zone-training/safe-zone-allies