ROBERT L. UNCKLESS
Professor

Department of Molecular Biosciences
4055 Haworth Hall
University of Kansas
Lawrence, KS 66045

Phone: (785) 864-1679
Email: unckless@ku.edu
Website: uncklesslab.com
ORCID, Google Scholar, NCBI Bibliography

EDUCATION

2011	Ph.D.	Biology, University of Rochester (John Jaenike and H. Allen Orr advisors)
2008	M.S.	Biology, University of Rochester (John Jaenike and H. Allen Orr advisors)
2005	M.S.	Biology, State University of New York, College at Brockport (Joe Makarewicz advisor)
1999	M.S.	Science Education, Cornell University (Carol Conroy advisor)
1997	B.S.	Education, Cornell University

SCIENTIFIC POSITIONS

9/2026-	Affiliate Member, National Institute for Theory and Mathematics in Biology, Chicago, IL
8/2026-	Professor, Department of Molecular Biosciences, University of Kansas, Lawrence, KS
8/2021-	Associate Professor, Department of Molecular Biosciences, University of Kansas, Lawrence, KS
8/2021-	Director, University of Kansas, Center for Genomics, University of Kansas, Lawrence, KS
8/2016-8/2021	Assistant Professor, Department of Molecular Biosciences, University of Kansas, Lawrence, KS
8/2011-7/2016	Postdoctoral Research Associate (Brian Lazzaro and Andy Clark), Cornell University, Ithaca, NY
3/2011-7/2011	Postdoctoral Research Associate (John Jaenike and H. Allen Orr), University of Rochester, Rochester, NY

CURRENT GRANT SUPPORT

NIH – R03AI193975 06/01/2026-05/31/2028
Role: PI $147,000
A CRISPR screen for Drosophila DNA viral immunity

NSF – 2515959 09/01/2024-08/31/2028
Role: co-PI $1,000,000
Determining how the evolution of the coronavirus macrodomain contributes to its biochemical and virological functions.

NSF – 2421689 09/01/2024-08/31/2028
Role: co-PI $1,867,605
EDGE CMT: The genomic basis of male fitness variation in wild population of Drosophila

NSF – 2330095 03/01/2024-02/28/2028
Role: PI $1,300,000
The genetic basis of divergence in immune defense between species

NIH – IP#00172434 02/01/2023-01/31/2027
Role: Senior Personnel $3,022,150
A Resource for the Genetic Dissection of Complex Traits

University of Kansas 09/01/2022-08/31/2027
Role: PI $3,000,000
KU Center for Genomics Research Rising: Growing KU's Interdisciplinary Strength in Genomics

NSF – CAREER 2047052 02/01/2021-02/31/2027
Role: PI $1,050,000
CAREER: The genetic mechanisms of sex-ratio meiotic drive and resistance

PUBLICATIONS

Submitted manuscripts and preprints:

Roy, N and **RL Unckless**. Fly Viral Atlas: A single-nucleus transcriptomic atlas of RNA viruses and transposable elements (TEs) in *Drosophila melanogaster*. *bioRxiv:* Doi: 10.64898/2026.06.28.735102. (in revision at *PLOS Genetics*)

Kelly KP, AR Navyashree, S Ranganathan, A Madan, S Marschall, RL **Unckless**, A Rajan. Atg8 orchestrates stress-responsive chromatin programs across immunity and metabolism. *bioRxiv:* 2026.05.22.727304. Doi: 10.64898/2026.05.22.727304.

Gupta A and **RL Unckless**. 2024. Pathogenicity across variation in microbial virulence and host resistance. *bioRxiv* 2024.10.02.616271.

Unckless, RL. 2023 Meiotic drive, postzygotic isolation, and the Snowball Effect. *bioRxiv*: 2023-2011. (in revision at *Genetics*)

Unckless, RL, PA Lansdon and BD Ackley. 2020. A comparative analysis of *Caenorhabditis* and *Drosophila* transcriptional changes in response to pathogen infection. *bioRXiv.* Doi: 10.1101/2020.03.04.977595.

Research publications since KU faculty appointment:

Roy, N and **RL Unckless**. 2026. Persistent viral infection in the Drosophila fat body is associated with immune activation at the single cell level. *BMC Genomics*. Doi: 10.1186/s12864-026-12902-9.

Presgraves, D, … (25 total authors), **RL Unckless.** 2026. The Evolutionary Genomics of Meiotic Drive. *Molecular Biology and Evolution 43(2):*msag020*.* Doi: 10.1093/molbev/msag020.

Ridges JT, J Bladen, **RL Unckless,** N Phadnis. 2026. Drive, suppression, and escape from suppression of a selfish chromosome. *Proceedings of the Royal Society B.* 293 (2063): 20252766. Doi: 10.1098/rspb.2025.2766.

Mulkey KM, T Adewumi and **RL Unckless.** 2026. Specificity of *Drosophila innubila* Nudivirus Infection in Drosophila Cell Culture. *Virology:* 613:110709. Doi: 10.1016/j.virol.2025.110709.

Erlenbach T, RMR Gawryluk, SJ Perlman, **RL Unckless**, KA Dyer. 2025. Comparative Genomics of the Testacea Group of Drosophila Reveals Introgression and Variation in Chromosome Size and Structure. *Genome Biology and Evolution:* 17: evaf225. Doi: 10.1093/gbe/evaf225.

Schedl ME, KM Mulkey and **RL Unckless.** 2026. The study of the *Drosophila innubila* Nudivirus in cells and flies. *Virology:* 110790*.* Doi: 10.1016/j.virol.2026.110790.

Brady, MJ, A Gupta, JI Gent, KW Swentowsky, **RL Unckless** and RK Dawe. 2025. Conflicting kinesin-14s in a single chromosomal drive haplotype. *Genetics:* iyaf091*.* Doi: 10.1093/genetics/iyaf091.

Clark, N, CT Hittinger, H Li-Byarlay, A Rokas, T Sackton and **RL Unckless.** 2025. Integrating Intermediate Traits in Phylogenetic Genotype- to-Phenotype Studies. *Integrative and Comparative Biology*: icaf037. Doi: 10.1093/icb/icaf037.

Mullinax SR, Darby AM, Gupta A, Chan P, Smith BR and **Unckless RL**. 2025. A suite of selective pressures supports the maintenance of alleles of a Drosophila immune peptide. *eLife* 12:RP90638.

Perlmutter JI, Schedl ME and **Unckless RL**. 2025. Wolbachia enhances the survival of Drosophila infected with fungal pathogens. bioRxiv**:** 2023-2009. *BMC Biology* 23, 42.

Zakerzade R, Chang CH, Chatla K, Krishnapura A, Appiah SP, Zhang J, **Unckless RL**, *et al*. 2025. Diversification and recurrent adaptation of the synaptonemal complex in Drosophila. *PLOS Genetics* 21(1): e1011549.

Gupta A and **Unckless RL** 2024. Autosomal suppression of sex-ratio meiotic drive influences the dynamics of X and Y chromosome coevolution. *Journal of Heredity* 115(6): 660–671.

Hernandez JFL, Rubinstein BY, **Unckless RL** and Zanders SE. 2024. Modeling the evolution of *Schizosaccharomyces pombe* populations with multiple killer meiotic drivers. *Genes*|*Genomes*|*Genetics* 14(9): jkae142.

Perlmutter JI, Chapman JR, Wilkinson MC, Nevarez-Saenz I, and **Unckless RL**. 2024. A single amino acid polymorphism in natural Metchnikowin alleles of Drosophila results in systemic immunity and life history tradeoffs. *PLoS Genetics* 20(3): e1011155.

Vertacnik KL, Herrig DK, Godfrey RK, Hill T, Geib SM, **Unckless RL**, *et al.*. 2023. Evolution of five environmentally responsive gene families in a pine-feeding sawfly, Neodiprion lecontei (Hymenoptera: Diprionidae). Ecology and Evolution 13**:** e10506.

Alhammad YM, Parthasarathy S, Ghimire S, Kerr CM, O'Connor JJ, Pfannenstiel J, Chanda D, Miller DA, Baumlin M, Salath M, **Unckless RL**, Zuniga S, Enjuanes L, More S, Channappanavar R, Fehr AR. 2023. SARS-CoV-2 Mac1 is required for IFN antagonism and efficient virus replication in cell culture and in mice. *PNAS* 120: e2302083120.

Schedl ME, Nguyen NH, **Unckless RL** and Perlmutter JI. 2023. Maintenance and Evaluation of Wolbachia Male-Killers of Dipterans, pp. 29-53 in *Wolbachia: Methods and Protocols*. Springer US New York, NY.

Smith BR, Patch KB, Gupta, Knoles EM, **Unckless RL**. 2023. The genetic basis of variation in immune defense against *Lysinibacillus fusiformis* infection in *Drosophila melanogaster*. *PLoS Pathogens*: 19(8): e1010934. Doi: 10.1371/journal.ppat.1010934.

Ma W, Knoles EM, Patch KB, Shoaib MM, and **Unckless RL**. 2022. Hoisted with his own petard: How sex-ratio meiotic drive in Drosophila affinis creates resistance alleles that limit its spread. *Journal of Evolutionary Biology:* 35:1765-1776. (doi: 10.1111/jeb.14077).

Meisel, RP, Asgari D, Schlamp F, and **Unckless RL**, 2022. Induction and inhibition of Drosophila X chromosome gene expression are both impeded by the dosage compensation complex. *G3: jkac165.* (doi: 10.1093/g3journal/jkac165).

Ochs, ME, McWhirter RM, **Unckless RL**, Miller III DM, Lundquist EA. 2021. *Caenorhabditis elegans* ETR-1/CELF has broad effects on the muscle cell transcriptome, including genes that regulate translation and neuroblast migration. *BMC Genomics:* 23:13. (doi: 10.1186/s12864-021-08217-6).

Hill, T, **Unckless RL** and Perlmutter JI. 2021. Positive selection and horizontal gene transfer in the genome of a male-killing *Wolbachia*. *Molecular Biology and Evolution:* 39: msab303. (doi: 10.1093/molbev/msab303).

Hill, T, Rosales-Stephens HL and **Unckless RL**. 2021. Rapid divergence of the copulation proteins in the *Drosophila dunni* group is associated with hybrid post-mating-prezygotic incompatibilities. *G3:* 11:jkab050. (doi: 10.1093/g3journal/jkab050).

Hill T, and **Unckless RL**. 2021. Adaptation, ancestral variation and gene flow in a 'Sky Island' *Drosophila* species. *Molecular Ecology:* 30: 83-99.

Hill T, and **Unckless RL**. 2020. Recurrent evolution of high virulence in isolated populations of a DNA virus. *eLife*: e58931.

Price TAR, Windbichler N, **Unckless RL** …(19 total authors). 2020. Resistance to natural and synthetic gene drive systems. *Journal of Evolutionary Biology:* 33:1345-1360.

Nunez MAB, Sabbarini IM, Eide IM, **Unckless RL** and Zanders SE. 2020. Atypical meiosis can be adaptive in outcrossed *S. pombe* due to *wtf* meiotic drivers. *eLife*: 9:e57936.

Chapman, JR, Dowell MA, Chan R and **Unckless RL.** 2020. The genetic basis of natural variation in *Drosophila melanogaster* immune defence against *Enterococcus faecalis*. *Genes*: 11:234.

Unckless, RL and Orr HA. 2020. The population genetics of evolutionary rescue in diploids: X chromosomal vs. autosomal rescue. *The American Naturalist*: 195: 561-568.

Hill, T and **RL Unckless**. 2019. A deep learning approach for detecting copy number variation in next generation sequencing. *G3: Genes, Genomes, Genetics* 9: 3575-3582.

Hanson, MA, B Lemaitre, and **RL Unckless.** 2019. Dynamic evolution of antimicrobial peptides underscores trade-offs between immunity and ecological fitness. *Frontiers in immunology* 10: 2620.

Chapman, JR, T Hill and **RL Unckless.** 2019. Balancing selection drives the maintenance of genetic variation in *Drosophila* antimicrobial peptides. *Genome Biology and Evolution.* 11: 2691-2701.

Benomar, S, KC Evans, **RL Unckless** and JR Chandler. 2019. Efflux pumps in Chromobacterium species increase antibiotic resistance and promote survival in a co-culture competition model. *Applied and environmental microbiology* 85: e00908.

Lea, JK and **RL Unckless**. 2019. An assessment of the immune costs associated with meiotic drive chromosomes in Drosophila. *Proceedings of the Royal Society B*. 286: 20191534.

Perlmutter, JI, **RL Unckless**, SR Bordenstein, DP LePage, J Metcalf, T Hill, J Martinez, FM Jiggins, SR Bordenstein. 2018. The phage gene *wmk* is a candidate for male killing by a bacterial endosymbiont. *PLoS Pathogens* 15: e1007936.

Zanders, SE, and **RL Unckless**. 2019. How meiotic drivers selfishly drive infertility. *Current Biology* 29: R512-R520.

Duxbury EM, Day JP, Maria Vespasiani D, Thüringer Y, Tolosana I, Smith SC, Tagliaferri L, Kamacioglu A, Lindsley I, Love L, **Unckless RL**, Jiggins FM, Longdon B. 2019.Host-pathogen coevolution increases genetic variation in susceptibility to infection. *Elife* 8: e46440.

Hill T, Koseva BS, **Unckless RL**. 2019. The genome of Drosophila innubila reveals lineage-specific patterns of selection in immune genes. *Mol Biol Evol.* 36: 1405-1417.

Pieper, KE, **RL Unckless** and KA Dyer. 2018. A fast-evolving X-linked duplication of *importin-alpha2* is overexpressed in *sex-ratio* drive in *Drosophila neotestaca*. Molecular Ecology 27: 5165-5179. doi: 10.1111/mec.14928.

Smith, BR and **RL Unckless.** 2018. Draft genome of Lysinibacillus fusiformis Strain Juneja, a laboratory-derived pathogen of Drosophila melanogaster. *Genome Announcements* 6(5), e01571-17. doi:10.1128/genomeA.01571-17.

Hill, T and **RL Unckless**. 2018. The dynamic evolution of the *Drosophila innubila* Nudivirus. *Infection, Genetics and Evolution* 57: 151-157. doi:10.1016/j.meegid.2017.11.013.

Ahmed-Braimah, YH, **RL Unckless** and AG Clark. 2017. Evolutionary dynamics of male reproductive genes in the *Drosophila virilis* subgroup *G3: Genes, Genomes, Genetics*. 7: 3145-3155. doi: 10.1534/g3.117.1136.

Hill, T and **RL Unckless.** 2017. Baculovirus molecular evolution via gene turnover and recurrent positive selection of key genes. *Journal of Virology* 91: e01319-17. doi: 10.1128/JVI.01319-17.

Unckless, RL, AG Clark and PW Messer. 2017. Evolution of resistance against CRISPR/Cas9 gene drive. *Genetics* 205:827-841. doi: 10.1534/genetics.116.197285. (Highlighted article, Journal Cover, covered in Nature, Quanta and Nova magazines)

Akhund-Zade, J, AO Bergland, SO Crowe and **RL Unckless**. 2017. The genetic basis of natural variation in Drosophila (Diptera: Drosophilidae) virgin egg retention. *Journal of Insect Science* 17: 1-9. doi: 10.1093/jisesa/iew094.

Lindholm, AK, … **RL Unckless**, *et al.* (22 authors). 2016. The ecology and evolutionary dynamics of meiotic drive. *Trends in Ecology and Evolution* 31:315-326. doi:10.1016/j.tree.2016.02.001.

Research publications from prior to arrival at KU:

Unckless, RL and BP Lazzaro. 2016. The potential for adaptive maintenance of diversity in insect antimicrobial peptides. *Philisophical Transactions of the Royal Society B* 371:20150291. doi: 10.1098/rstb.2015.0291.

Unckless, RL, VM Howick and BP Lazzaro. 2016. Convergent balancing selection on an antimicrobial peptide in *Drosophila*. *Current Biology* 26:257-262. Doi: 10.1016/j.cub.2015.11.063. (F1000 recommended)

Unckless, RL and AG Clark. 2015. Driven to extinction: on the probability of evolutionary rescue from sex-ratio meiotic drive. bioRxiv doi: http://dx.doi.org/10.1101/018820.

Unckless, RL, PW Messer T Connallon and AG Clark. 2015. Modeling the Manipulation of Natural Populations by the Mutagenic Chain Reaction. *Genetics* 201:425-431. doi: 10.1534/genetics.115.177592. (Highlighted article) (F1000 recommended)

Unckless, RL, SM Rottschaefer and BP Lazzaro. 2015. The Complex Contributions of Genetics and Nutrition to Immunity in Drosophila melanogaster. *PLoS Genet* 11: e1005030. doi:10.1371/journal.pgen.1005030.

Unckless, RL, SM Rottschaefer and BP Lazzaro. 2015. A genome-wide association study for nutritional indices in *Drosophila. Genes, Genomes and Genetics* 5:417-425. doi: 10.1534/g3.114.016477.

Unckless, RL, AM Larracuente and AG Clark. 2015. Sex-ratio meiotic drive and Y-linked resistance in *Drosophila affinis. Genetics* 199:831-840. doi:10.1534/genetics.114.173948.

Orr, HA and **RL Unckless**. 2014. The population genetics of evolutionary rescue. *PLoS Genetics* 10(8): e104551.

Unckless, RL and AG Clark. 2014. Sex-ratio meiotic drive and interspecific competition. *Journal of Evolutionary Biology* 27(8): 1513-1521.

Unckless, RL and J Jaenike. 2012. Maintenance of a male-killing Wolbachia in Drosophila innubila by male-killing dependent and male-killing independent mechanisms. *Evolution* 66(3):678-689.

Unckless, RL. 2011**.** The potential role of the X chromosome in the emergence of male-killing from mutualistic endosymbionts. *Journal of Theoretical Biology* 291: 99-104.

Unckless, RL. 2011. A DNA virus of *Drosophila*. *PLoS ONE* 6: e26564.

Jaenike J, **RL Unckless**, SN Cockburn, LM Boelio, and SJ Perlman. 2010. Adaptive evolution via symbiosis: recent spread of a defensive symbiont in *Drosophila*. *Science* 329: 212-215. (F1000 recommended)

Unckless, RL and HA Orr. 2009. The population genetics of adaptation: multiple substitutions on a smooth fitness landscape. *Genetics* 183: 1079-1086.

Jaenike J, JK Stahlhut, LM Boelio and **RL Unckless**. 2009. Association between *Wolbachia* and *Spiroplasma* within *Drosophila neotestacea*: an emerging symbiotic mutualism. *Molecular Ecology* 19: 414-425.

Unckless, RL and JK Herren. 2009. Population genetics of sexually antagonistic mitochondrial mutants under inbreeding. *Journal of Theoretical Biology* 260: 132-136.

Unckless, RL, LM Boelio, JK Herren and J Jaenike. 2009. *Wolbachia* as populations within individual insects: causes and consequences of density variation in natural populations. *Proceedings of the Royal Society B* 276: 2805-2811.

Unckless, RL, LM Boelio, C Cornish and KA Dyer. 2008. Isolation and characterization of 30 polymorphic microsatellite loci from the mycophagous fly *Drosophila innubila*. *Molecular Ecology Research* 8: 939-942.

Unckless, RL and HA Orr. 2009. Dobzhansky-Muller incompatibilities and adaptation to a shared environment. *Heredity* 102: 214-217.

Orr, HA and **RL Unckless**. 2008. Population extinction and the genetics of adaptation. *American Naturalist* 172: 160-169.

Unckless, RL and J Makarewicz. 2007. The impact of nutrient loading from Canada Geese (*Branta canadensis*) on water quality, a mesocosm approach. *Hydrobiologia* 586: 391-401.

PRESENTATIONS

Invited seminars (extramural): ***denotes national meetings; ***denotes international meetings*

Unckless RL. 2026. Evolutionary and genomic causes and consequences of meiotic drive. Invited seminar at Kansas State University, Manhattan, KS.

Unckless RL. 2026. The race to adapt to meiotic drivers. Invited speaker at NITMB Internal Conflicts and Organismal Adaptation Workshop, Chicago, IL.***

Unckless RL. 2026. Evolutionary and genomic causes and consequences of meiotic drive. Invited seminar at Dartmouth University, Hanover, NH.

Unckless RL. 2025. Evolutionary and genomic causes and consequences of meiotic drive. Invited seminar at University of Central Missouri, Warrensburg, MO.

Unckless RL. 2024. Evolutionary and genomic causes and consequences of meiotic drive. Invited seminar at the University of Houston, Houston, TX.

Unckless RL. 2025. Evolution of the *Drosophila innubila* Nudivirus in the wild and in the lab. Invited Talk at the Ecological Immunology Workshop in Berlin, Germany.***

Gupta A and **Unckless RL.** 2025. Evolutionary history of two X chromosome meiotic drivers in *Drosophila affinis*. Talk at the 2025 Evolution Conference, Athens, GA.**

Gupta A and **Unckless RL.** 2025. Evolutionary history of two X chromosome meiotic drivers in *Drosophila affinis*. Platform talk the 2025 Drosophila Research Conference, San Diego, CA.**

Unckless RL. 2024. Evolutionary and genomic causes and consequences of meiotic drive. Invited seminar at the University of Houston, Houston, TX.

Unckless RL. 2024. Evolutionary and genomic causes and consequences of meiotic drive. Invited seminar at the University of Georgia, Athens, GA.

Unckless RL. 2024. How conflict within and between genomes shapes genomes and drives evolution. Invited seminar at the Ohio State University, Columbus, OH.

Unckless RL. 2024. Evolutionary and genomic causes and consequences of meiotic drive. Invited seminar at the University of Liverpool, Liverpool, UK.***

Unckless RL. 2024. The genetic basis of divergence in immune defense between *Drosophila* species. Invited speaker at the 7th Model Hosts Conference in Heraklion, Greece.***

Unckless RL. 2024. Recharacterization of a B chromosome in *Drosophila putrida.* Invited seminar at the European Society for Evolutionary Biology Special Topics Networks: Internal Conflicts and Organismal Adaptation, Remote.***

Unckless RL. 2024. Recharacterization of a B chromosome in *Drosophila putrida.* Conference talk at Third Joint Congress on Evolutionary Biology, Montreal, Quebec, CA.***

Gupta A and **Unckless RL**. 2024. Coevolution of dual meiotic drivers in *D. affinis.* Conference talk at Third Joint Congress on Evolutionary Biology, Montreal, Quebec, CA.***

Gupta, A and **Unckless RL**. 2024. Coevolution of dual meiotic drivers in *D. affinis*. Conference talk at the European Society for Evolutionary Biology Special Topics Networks: Internal Conflicts and Organismal Adaptation Symposium, Groningen, Netherlands.***

Unckless, RL. 2023. Pleiotropy and the maintenance of genetic variation in Drosophila immune genes. Invited seminar, University of Basel, Basel, Switzerland. November 6th, 2023.***

Unckless, RL. 2023. The genetic basis of divergence in immune defense between species. Evolution Conference, Albuquerque, New Mexico. June 22nd, 2023. (refereed – but all applicants get talks) **

Unckless, RL. 2023. Sex-ratio meiotic drive in *Drosophila affinis*. Genomic consequences of meiotic drive workshop, Arolla, Switzerland, June 12th, 2023. (invited, but I was an organizer) ***

Unckless, RL. 2023. Viral infection dynamics at single cell resolution. Nexus Informatics Conference, Kansas City, MO, April 21st, 2023. (invited)

Unckless, RL. 2022. Why is genetic variation maintained in antimicrobial peptides? 6th International Conference on Model Hosts, Rhodes, Greece, October 3rd, 2022. (invited) ***

Unckless, RL. 2022. Can genetic conflict select for aneuploidy? American Genetics Association Presidential Symposium, Bainbridge, WA. July 25th, 2022. (invited)

Unckless, RL. 2021. Recurrent evolution of a virulent viral haplotype in a Drosophila/DNA virus system. American Society of Virology Conference Platform Talk (Remote). July 21, 2021.

Unckless, RL. 2021. Recurrent evolution of a virulent viral haplotype in a Drosophila/DNA virus system. Departmental Seminar (Remote) at Penn State University Department of Biology. April 6, 2021.

Unckless, RL. 2020. The causes of balancing selection on immunity genes: from populations to molecular interactions. Departmental seminar at Kansas State University, Manhattan, KS.

Unckless, RL. 2020. Recurrent evolution of a virulent viral haplotype in a Drosophila/DNA virus system. Talk at the 2020 Kansas INBRE Symposium, Wichita, KS.

Unckless, RL. 2019. The genetic basis of immune divergence between species. Talk at the 2019 UNVEIL Symposium, Lincoln, NE.

Unckless, RL. 2019. The causes of balancing selection on immunity genes: from populations to molecular interactions. Departmental seminar at the University of Montana, Missoula, Montana, February 2019.

Unckless, RL. 2019. The causes of balancing selection on immunity genes: from populations to molecular interactions. Departmental seminar at the University of Toronto, Toronto, Ontario, Canada, January 2019.

Hill, T and **RL Unckless.** 2019. Host-virus co-evolution in *Drosophila innubila*. Midwest Population Genetics Meeting, Minneapolis, MN. *won best talk by a postdoc

Chapman, JR and **RL Unckless.** 2019. Machine learning AMPs up: Discovery and validation of new antimicrobial peptides in *Drosophila melanogaster*. Midwest Population Genetics Meeting, Minneapolis, MN.

Hill, T and **RL Unckless.** 2019. Host-virus co-evolution in *Drosophila innubila* highlights non-RNAi pathways as key to antiviral response. Platform talk at the 2019 *Drosophila* Research Conference, Dallas, Texas. **

Darby, AM, SR Mullinax and **RL Unckless.** 2019. Tradeoffs between immune defense and resistance to environmental stress at a single amino acid polymorphism. Platform talk at the 2019 *Drosophila* Research Conference, Dallas, Texas. **

Unckless, RL. 2018. The causes of balancing selection on immunity genes: from populations to molecular interactions. Departmental seminar at the University of Nebraska, Lincoln, Nebraska, September 2018.

Unckless, RL. 2018. Mechanistic convergence in genetic conflict across species. Speaker. Midwest Population Genetics Meetings, St. Paul, Minnesota.

Unckless, RL. 2018. The landscape of resistance to natural and synthetic drive systems. Arolla Gene Drive Resistance Workshop, Arolla, Switzerland. Plenary speaker. ***

Hill, T and **RL Unckless**. Antiviral genes are not rapidly evolving in Drosophila innubila. SMBE Satellite Meeting: Evolution of the Cell in Deer Valley, Utah, May 2018. **

Chapman, JR and **RL Unckless**. 2017. Balancing selection is pervasive in *Drosophila* antimicrobial peptides. Ecological Immunology Workshop, Blossin, Germany. ***

Hill, T and **RL Unckless**. 2017. Adaptation of Baculoviruses and Nudiviruses in Drosophila and other arthropods. Society for Molecular Biology and Evolution Meeting, Austin, TX. **

Unckless, RL. 2017. Adaptation of Nucleopolyhedroviruses in *Drosophila* and other arthropods. Entomological Society of America's North Central Branch Meeting. Invited Speaker. Indianapolis, IN.

Unckless, RL. 2017. Balancing Selection and Convergence in Insect AMPs and/or the Role of Gene Duplication in AMP Evolution. Gordon Research Conference. Invited Speaker. Pasedena, CA. ***

Unckless, RL. 2016. Convergence and balancing selection in insect antimicrobial peptides. Department of Biochemistry and Molecular Biophysics, Manhattan, Kansas.

Unckless, RL. 2016. Convergent evolution of insect antimicrobial peptides. Invited Speaker. AMP2016 international symposium on antimicrobial peptides, Montpellier, France. ***

HONORS AND DISTINCTIONS

2020 Genetics Society of America Editors' Choice Spotlight Article in Genes|Genomes|Genetics in 2020

2018 Genetics Society of America Editors' Choice Award for an outstanding Population & Evolutionary Genetics article published in GENETICS in 2017

PROFESSIONAL SERVICE

- NIH Review Panel, MRAA Panel (2026)
- Ad-hoc reviewer for Keck Foundation proposal (2026)
- Co-organized (and secured funding for) *Kansas Regional Drosophila Meeting* in Lawrence, Kansas, USA, September 2026
- Promotion and tenure letters: 2022, 2026
- Hamilton Award Judge – Evolution 2025 (judged 10 talks)
- Rosemary Grant Award Reviewer – Society for the Study of Evolution – 2023, 2025, 2026 (reviewed 5-10 proposals)
- Co-organizer (and secured funding for) – Evolutionary Biochemistry of Insect Antimicrobial Peptides, Houston, TX (2025, ~100 attendees)
- Lead organizer – GSA Population, Evolutionary and Quantitative Genetics Conference, Asilomar, CA (2026, 461 attendees)
- Reviewer – Society for the Study of Evolution RC Lewontin Early Career Award (2024, ~6 awards)
- Associate Editor for *PLoS Genetics,* 2024-; *PLoS Pathogens,* 2024-; *Evolution,* 2020-2024
- Co-organized (and secured funding for) *Genomic Consequences of Meiotic Drive* workshop in Arolla, Switzerland, 2023.
- Madison and Lila Self Graduate Fellowship Trustee, 2023-
- Director, KU Center for Genomics, 2021-
    - Plan seminar series (both postdocs and outside speakers) and serve as host for speakers
    - Oversee postdoctoral fellowship
    - Oversee annual symposium planning (~200 people)
    - Plan social events
    - Budgeting
    - Plan large grant submissions
- Co-chaired Immunity and Microbiome platform session at the 2021 (remote) Drosophila Research Conference.

- NSF review panelist, February 2021, January 2023, May 2024
- Associate Editor for *Evolution* journal (2021-2024)
- Guest editor for *mBio, PLoS Genetics, PLoS Pathogens*
- Organized "Graduate Admissions Workshop" designed to provide undergraduate students from historically underrepresented groups with information and assistance with the graduate admissions process (October 2020, 2021, 2022, 2023).
- Organized regional meeting, "Great Plains Genetic Conflict Meeting" (~30 attendees from four states), Lawrence, KS (2020).
- Co-chaired and organized workshop, "Intro to the *Drosophila* microbiome: how can I control the microbiome in my research?" at the Drosophila Research Conference, Dallas, TX (2019).
- Genetics Society of America (GSA) working group for benefits of GSA membership (2018).
- Emceed GSA *Drosophila* Genetics Research Conference Science Slam (2018).

Manuscript reviews: (since arrival at KU)

American Naturalist, BMC Genomics, Ecology Letters, eLife, Evolution, Evolutionary Applications, Frontiers in Ecology and Evolutionary Biology, Frontiers in Immunology, Genetics, Heredity, Insect Biochemistry and Molecular Biology, Journal of Evolutionary Biology, Journal of Responsible Innovation, Molecular Biology and Evolution, PLoS Biology, PLoS Genetics, PLoS Pathogens, PLoS ONE, Proceedings of the National Academy of Sciences, Proceedings of the Royal Society B, Research Square, Royal Society: Open Science, Science, Scientific Reports, Virus Evolution.

University service:
- Department Strategic Planning Committee – 2023-present
- Genomics Search Committee – Fall 2023
- KU Office of Research Limited Submissions Review Panel – 2023-2024
- Genomics Search Committee Chair – Fall 2021/Fall 2022
- Immunology Faculty Search Committee – Spring 2020/Fall 2021
- Wrote department statement on Diversity, Equity and Inclusion – Fall 2018/Spring 2019
- KU Postdoctoral Association seminar on the transition from postdoc to academia. November 2018
  Gave a talk over lunch about job searches, negotiating, getting started
- Department Graduate Student Recruiting Committee (appointed). Chair. Molecular Biosciences. 2018-2024
  Worked to improve recruitment of graduate students (especially from underrepresented groups): developed welcome packet, worked on website redesign, organized Graduate Admissions Workshop (see above), led an effort to directly contact promising students and had several of those students apply and enroll at KU.
- Department Social Committee (appointed). Member. Molecular Biosciences. Fall 2017-present
  Organize faculty and student social events (trivia night, happy hour, etc.)
- KU Undergraduate Honors Thesis Evaluation Committee. Spring 2018
- Hosted speakers for departmental seminars (12 total). 2016-2019
- Free State Fly Group. Organizer. Molecular Biosciences and EEB. August 2016 – Present

Outreach:

2025-2026	Worked with high school group to isolate, identify, sequence and analyze genomes of microbes
September 2025	Hosted a seminar for local farmers to learn about microscopy
February 2020	Hosted Girl Scout troop in lab
May 2014	Organized guest scientist panel for 1st grade class Dr. Walter Cooper Academy, Rochester, NY
February 2013	Guest scientist for 1st grade class World of Inquiry School, Rochester, NY

TEACHING AND MENTORING:

Undergraduate teaching:

Fall 2026: BIOL350 – Principles of Genetics
(350 students, 4 credits, 100% effort)
Spring 2026: BIOL424 – Pathogen Hunters
(20 students, 1 credit, 100% effort)
Fall 2025: BIOL350 – Principles of Genetics
(250 students, 4 credits, 100% effort)
Fall 2023: BIOL350 – Principles of Genetics
(252 students, 4 credits, 100% effort)
Fall 2022: BIOL350 – Principles of Genetics
(215 students, 4 credits, 100% effort)
Fall 2021: BIOL350 – Principles of Genetics
(187 students, 4 credits, 100% effort)
Fall 2020: BIOL350 – Principles of Genetics
(256 students, 4 credits, 50% effort)
BIOL599 – Senior Seminar in Molecular, Cell and Developmental Biology
(19 students, 1 credit, 100% effort)
Fall 2019: BIOL350 – Principles of Genetics
(203 students, 4 credits, 50% effort, instructor evaluation = 4.53/5)
Fall 2018: BIOL350 – Principles of Genetics
(191 students, 4 credits, 50% effort, instructor evaluation = 4.25/5)
Fall 2017: BIOL350 – Principles of Genetics
(190 students, 4 credits, 50% effort, instructor evaluation = 4.01/5)

Graduate teaching:

Spring 2026: BIOL905 – Advanced Molecular Genetics
(10 students, 1 credit, 100% effort)
Spring 2025: BIOL905 – Advanced Molecular Genetics
(11 students, 1 credit, 100% effort)
Spring 2024: BIOL905 – Advanced Molecular Genetics
(10 students, 1 credit, 100% effort)
Spring 2023: BIOL905 – Advanced Molecular Genetics
(9 students, 1 credit, 100% effort)
Spring 2022: BIOL905 – Advanced Molecular Genetics
(19 students, 1 credit, 100% effort)
Spring 2021: BIOL905 – Advanced Molecular Genetics
(19 students, 1 credit, 100% effort)
Spring 2020: BIOL905 – Advanced Molecular Genetics
(19 students, 1 credit, 100% effort)
Spring 2019: BIOL905 – Advanced Molecular Genetics
(19 students, 1 credit, 100% effort)

Mentoring:

Postdocs: Dr. Tom Hill (August 2016-October 2020) Now Bioinformatics Analyst at Axle Informatics
Dr. Joanne Chapman (January 2017-February 2020) Now Senior Scientist at Environmental Science and Research (New Zealand)
Dr. Wen-Jaun Ma (August 2020-2022) Now faculty at Free University Brussels, Belgium
Dr. Jessamyn Perlmutter (March 2020-August 2025) Starting Assistant Professor in Fall 2025 at University of Viriginia
Dr. Paul Ginsberg (August 2022-August 2024) Now faculty at Ottawa University, Kansas
Dr. Camila Beraldo (August 2025-present)
Dr. Wendy Aquino Nunez (December 2026-present)

Graduate students:
Sarah R. Mullinax PhD (March 2017-August 2022) Now Consulting Safety Officer at Safety Partners, Inc.
University of Kansas Self Graduate Fellow (2017-present)

University of Kansas University Graduate Fellow (2016-2017)
Kent Mulkey PhD (August 2019-May 2025) Now faculty at Ottawa University, Kansas
Nilanjan Roy PhD (March 2022-July 2026) Now a postdoc at Children's Mercy Hospital
Maggie Schedl MS (August 2022-May 2024) Now Next Generation Sequencing Research and Development Scientist at Fulgent Genomics, Culver City, CA
Taylor Conway MS (August 2022-July 2026) Now staff scientist at Children's Mercy Hospital, Kansas City, MO
NSF GRFP (2023-present)

Kervens Accilien (March 2021-present)
Anjali Gupta (July 2022-present)
Taiye Adewumi (March 2024-present)
Tessa Eads (March 2026-present)

Undergraduates with authorship on published work:

Abby Lewis (August 2024-May 2026)
Aylar Aturdyyeva (January 2021-May 2023)
Ngoc Huan Nguyen (August 2022-May 2023)
Emma Knoles (May 2020-May 2023)
Murtaza Shoaib (May 2021-August 2022)
Emma Knoles (August 2021-May 2022)
Alyssa Lynn Rosales-Stephens, Emerging Scholar (August 2018-March 2020)
Patrick Chan (Spring 2020)
Maureen Dowell (January 2017-July 2018)
Rosanna Chan (January 2017-May 2018)