Curriculum Vitae

Rajiv C. McCoy

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3400 N. Charles St.
Mudd Hall 144
Baltimore, MD 21218 USA

Phone: 410-516-0942
Email: rajiv.mccoy@jhu.edu
URL: http://mccoy-lab.org

Professional experience

2025–Present	Associate Professor
2018–2025	Assistant Professor
	Department of Biology
	Johns Hopkins University, Baltimore, MD
2015–2018	Postdoctoral Fellow
	Advisor: Joshua Akey
2017–2018	Department of Ecology and Evolutionary Biology
	Princeton University, Princeton, NJ
2015–2017	Department of Genome Sciences
	University of Washington, Seattle, WA

Education

2015	PhD in Biology Stanford University, Stanford, CA Advisors: Dmitri Petrov & Carol Boggs
2010	BS in Biology; Ecosystem Science and Policy, *summa cum laude* University of Miami, Coral Gables, FL

Affiliations

SECONDARY APPOINTMENTS

2026–Present	Department of Genetic Medicine, Johns Hopkins University
2024–Present	Department of Earth and Planetary Sciences, Johns Hopkins University

GRADUATE PROGRAMS

2022–Present	Faculty Preceptor, Predoctoral Training Program in Human Genetics and Genomics, Johns Hopkins School of Medicine
2018–Present	Training Faculty, Predoctoral Training Program in Cell, Molecular, Developmental Biology and Biophysics (CMDB), Johns Hopkins University

CENTERS AND INSTITUTES

2025–Present	Member, Data Science and Artificial Intelligence Institute, Johns Hopkins University
2024–Present	Member, Institute for Data Intensive Engineering and Science, Johns Hopkins University
2023–Present	Member, Epigenome Sciences Cluster, Johns Hopkins University

2022–Present	Member, Center for Computational Biology, Johns Hopkins University

Awards

Awards since starting faculty position:

2025 & 2022	Discovery Award, Johns Hopkins University
2024	Catalyst Award, Johns Hopkins University
2024	Graduate Education Award, CMDB Graduate Program, Johns Hopkins University
2021–2023	Technology Fellowship, Center for Educational Resources, Johns Hopkins University

Awards prior to starting faculty position:

2015–2017	Genome Training Grant (NIH/NHGRI T32), U. of Washington, Dept. of Genome Sciences
2015	Epstein Trainee Award for Excellence in Human Genetics Research – Finalist, ASHG
2014	Office of Graduate Education Travel Award, Stanford University
2013 & 2012	Excellence in Teaching Award, Stanford University, Department of Biology
2012	Rosemary Grant Award, Society for the Study of Evolution
2012	Arthropod Genomics Consortium i5K Workshop Fellowship Award
2010–2013	Stanford University Graduate Fellowship in Science & Engineering
2010	Phi Beta Kappa Society
2010	Abess Center for Ecosystem Science and Policy Award, University of Miami

Research support

Active

2025–2028	NSF DBI 2504115 Infrastructure Innovation for Biological Research; Standard Grant Role: Co-I PI: Liliana Florea, Johns Hopkins University Title: "Characterizing transposable element contributions to the transcriptome with evidence-based and inferential methods" Total award: $875,379; Total award to McCoy Lab: $147,841
2025–2029	NIH/NCI R01CA292812 Research Project Grant Program Role: Co-I PI: Mary Armanios, Johns Hopkins University Title: "Cancer genetics of long telomere syndromes" Total award: $3,872,849; Total award to McCoy Lab: $55,475
2025–2027	Johns Hopkins University Discovery Award Role: PI Co-PIs: Yumi Kim and Philip Jordan, Johns Hopkins University Title: "Combining statistical and experimental genetics to understand the basis of variation in human fertility" Total award: $150,000; Total award to McCoy Lab: $50,000

2024–2026 Johns Hopkins University Catalyst Award
Role: PI
Title: “Genomic sources of variability in human embryonic aneuploidy”
Total award: $75,000

2023–2028 NIH/NICHD R01HD091331
Research Project Grant Program
Role: Co-I
PI: Karen Schindler, Rutgers University
Title: “Understanding genetic risk for aneuploid conception”
Total award: $2,474,125; Total award to JHU / McCoy Lab: $55,928

2019–2029 NIH/NIGMS R35GM133747
Maximizing Investigators’ Research Award
Role: PI
Title: “Functional and fitness consequences of human genetic variation”
Total award: $4,186,700 ($427,965 per year)

Completed

2023–2025 NIH OT2OD034190
Cloud Platform Interoperability Program
Role: Co-I
PI: Michael Schatz, Johns Hopkins University
Title: “AnVIL/Velsera-CGC interoperability project to study the genetic and transcriptomic contributions towards Hispanic colorectal cancer health disparities”
Total award to JHU: *$786,221; Total award to McCoy Lab: *$335,752
*Original award; budget subsequently reduced due to change in NIH funding priorities; Dispersed award to McCoy Lab: $54,603

2022–2024 Johns Hopkins University Discovery Award
Role: PI
Co-PIs: Alexis Battle and Winston Timp, Johns Hopkins University
Title: “A high-resolution view of human gene expression and splicing diversity with single-molecule long-read sequencing”
Total award: $100,000; Total award to McCoy Lab: $35,069

Publications

Google Scholar | ORCiD

* denotes co-first authors
† denotes co-corresponding authors
§ denotes lab members or rotation students

Publications since starting faculty position:

Research articles (peer reviewed; 10 as corresponding author [gray], 21 as co-author)

2026 ㉛ Das, A., §Biddanda, A., **McCoy, R. C.**, Schatz, M. C. Assembling unmapped reads reveals hidden variation in South Asian genomes. *Nature Communications*: in press.

2026 ㉚ *§Carioscia, S. A., *§Biddanda, A., §Starostik, M. R., Tang, X., Hoffmann, E. R., Demko, Z. P., **McCoy, R. C.** Common variation in meiosis genes shapes human recombination and aneuploidy risk. *Nature*, *651*: 651, 146–153.

2025 ㉙ §Yang, Q., §Carioscia, S. A., §Isada, M., **McCoy, R. C.** Approximate Bayesian computation supports a high incidence of chromosomal mosaicism in blastocyst-stage human embryos. *Genetics*, *231*(2): iyaf149.

2025 ㉘ McDaniel, J. H., Patel, V., Olson, N. D., He, H. J., He, Z., Cole, K. D., Schmitt, A., Sikkink, K., Sedlazeck, F. J., Doddapaneni, H., Jhangiani, S. N., Muzny, D. M., Gingras, M. C., Mehta, H., Paulin, L. F., Hastie, A. R., Yu, H. C., Weigman, V., Rojas, A., Kennedy, K., Remington, J., Gonzalez, I., Sudkamp, M., Wiseman, K., Lajoie, B. R., Levy, S., Jain, M., Akeson, S., Narzisi, G., Steinsnyder, Z., Reeves, C., Shelton, J., Kingan, S. B., Lambert, C., Bayabyan, P., Wenger, A. M., McLaughlin, I. J., Adamson, A., Kingsley, C., Wescott, M., Kim, Y., Paten, B., Park, J., Violich, I., Miga, K. H., Gardner, J., McNulty, B., Rosen, G., **McCoy, R. C.**, Brundu, F., Sayyari, E., Scheffler, K., Truong, S., Catreux, S., Hannah, L. C., Lipson, D., Benjamin, H., Iremadze, N., Soifer, I., Eacker, S., Wood, M., Cross, E., Husar, G., Gross, S., Vernich, M., Kolmogorov, M., Ahmad, T., Keskus, A., Bryant, A., Thibaud-Nissen, F., Trow, J., Proszynski, J., Hirschberg, J. W., Ryon, K., Mason, C. E., Wagner, J., Xiao, C., Liss, A. S., Zook, J. M. Development and extensive sequencing of a broadly-consented Genome in a Bottle matched tumor-normal pair for somatic benchmarks. *Scientific Data*, *12*: 1195.

2025 ㉗ Wang, D., Cearlock, A., Lane, K., Jan, I., **McCoy, R. C.**, Yang, M. (2025), Chromosomal instability in human trophoblast stem cells and placentas. *Nature Communications*, *16*: 3918.

2025 ㉖ Yoo, D., Rhie, A., Hebbar, P., Antonacci, F., Logsdon, G. A., Solar, S. J., Antipov, D., Pickett, B. D., Safonova, Y., Montinaro, F., Luo, Y., Malukiewicz, J., Storer, J. M., Lin, J., Sequeira, A. N., Mangan, R. J., Hickey, G., Anez, G. M., Balachandran, P., Bankevich, A., Beck, C. R., §Biddanda, A., Borchers, M., Bouffard, G. G., Brannan, E., Brooks, S. Y., Carbone, L., Carrel, L., Chan, A. P., Crawford, J., Diekhans, M., Engelbrecht, E., Feschotte, C., Formenti, G., Garcia, G. H., de Gennaro, L., Gilbert, D., Green, R. E., Guarracino, A., Gupta, I., Haddad, D., Han, J., Harris, R. S., Hartley, G. A., Harvey, W. T., Hiller, M., Hoekzema, K., Houck, M. L., Jeong, H., Kamali, K., Kellis, M., Kille, B., Lee, C., Lee, Y., Lees, W., Lewis, A. P., Li, Q., Loftus, M., Loh, Y. H. E., Loucks, H., Ma, J., Mao, Y., Martinez, J. F. I., Masterson, P., **McCoy, R. C.**, McGrath, B., McKinney, S., Meyer, B. S., Miga, K. H., Mohanty, S. K., Munson, K. M., Pal, K., Pennell, M., Pevzner, P. A., Porubsky, D., Potapova, T., Ringeling, F. R., Rocha, J. L., Ryder, O. A., Sacco, S., Saha, S., Sasaki, T., Schatz, M. C., Schork, N. J., Shanks, C., Smeds, L., Son, D. R., Steiner, C., Sweeten, A. P., §Tassia, M. G., Thibaud-Nissen, F., Torres-Gonzalez, E., Trivedi, M., Wei, W., Wertz, J., Yang, M., Zhang, P., Zhang, S., Zhang, Y., Zhang, Z., Zhao, S. A., Zhu, Y., Jarvis, E. D., Gerton, J. L., Rivas-Gonzalez, I., Paten, B., Szpiech, Z. A., Huber, C. D., Lenz, T. L., Konkel, M. K., Yi, S. V., Canzar, S., Watson, C. T., Sudmant, P. H., Molloy, E., Garrison, E., Lowe, C. B., Ventura, M., O'Neill, R. J., Koren, S., Makova, K. D., Phillippy, A. M. Eichler, E. E. (2025), Complete sequencing of ape genomes. *Nature*, *641*: 401-418.

2025 ㉕ Liang, S., Ren, T., Zhang, J., He, J., Wang, X., Jiang, X., He, Y., **McCoy, R. C.**, Fu, Q., Akey, J. M., Mao, Y., Chen, L. (2025), A refined analysis of Neanderthal-introgressed sequences in modern humans with a complete reference genome. *Genome Biology*, *26*: 32.

2024 ㉔ §Taylor, D. J., Chhetri, S. B., §Tassia, M. G., §Biddanda, A., §Yan, S. M., Wojcik, G. L., Battle, A., **McCoy, R. C.** (2024), Sources of gene expression variation in a globally diverse human cohort. *Nature*, *632*: 122–130.

Also see editorial: §Taylor, D. J., §Yan, S. M. (2024), A broader view of the diversity of human gene expression. *Nature*.

2024 ㉓ Xiang, G., He, X., Giardine, B. M., §Weaver, K. J., §Taylor, D. J., **McCoy, R. C.**, Jansen, C., Keller, C. A., Wixom, A., Cockburn, A., Miller, A., Qi, Q., He, Y., Li, Y., Lichtenberg, J., Heuston, E. F., Anderson, S. M., Luan, J., Vermunt, M. W., Yue, F., Sauria, M. E. G., Schatz., M. C., Taylor, J., Gottgens, B., Hughes, J. R., Higgs, D. R., Weiss, M. J., Cheng, Y., Blobel, G. A., Bodine, D., Zhang, Y., Li, Q., Mahony, S., Hardison, R. C. (2024), Interspecies regulatory landscapes and elements revealed by novel joint systematic integration of human and mouse blood cell epigenomes. *Genome Research*, *34*: 1089-1105.

2024 ㉒ Makova, K. D., Pickett, B. D., Harris, R. S., Hartley, G. A., Cechova, M., Pal, K., Nurk, S., Yoo, D., Li, Q., Hebbar, P., McGrath, B. C., Antonacci, F., Aubel, M., §Biddanda, A., Borchers, M., Bomberg, E., Bouffard, G. G., Brooks, S. Y., Carbone, L., Carrel, L., Carroll, A., Chang, P. C., Chin, C. S., Cook, D. E., Craig, S. J. C., de Gennaro, L., Diekhans, M., Dutra, A., Garcia, G. H., Grady, P. G. S., Green, R. E., Haddad, D., Hallast, P., Harvey, W. T., Hickey, G., Hillis, D. A., Hoyt, S. J., Jeong, H., Kamali, K., Kosakovsky Pond, S. L., LaPolice, T. M., Lee, C., Lewis, A. P., Loh, Y. E., Masterson, P., **McCoy, R. C.**, Medvedev, P., Miga, K. H., Munson, K. M., Pak, E., Paten, B., Pinto, B. J., Potapova, T., Rhie, A., Rocha, J. L., Ryabov, F., Ryder, O. A., Sacco, S., Shafin, K., Shepelev, V. A., Slon, V., Solar, S. J., Storer, J. M., Sudmant, P. H., Sweetalana, Sweeten, A., §Tassia, M. G., Thibaud-Nissen, F., Ventura, M., Wilson, M. A., Young, A. C., Zeng, H., Zhang, X., Szpiech, Z. A., Huber, C. D., Gerton, J. L., Yi, S. V., Schatz, M. C., Alexandrov, I. A., Koren, S., O'Neill, R. J., Eichler, E., Phillippy, A. M. (2024), The complete sequence and comparative analysis of ape sex chromosomes. *Nature*, *630*: 401–411.

2024 ㉑ Hadyniak, S. E., Eldred, K. C., Brenerman, B., Hussey, K. A., **McCoy, R. C.**, Sauria, M. E. G., Kuchenbeker, J. A., Neitz, M., Neitz, J., Taylor, J., Johnston, R. J. (2024), Retinoic acid signaling regulates spatiotemporal specification of human green and red cones. *PLoS Biology*, *22*(1): e3002464.

2024 ⑳ §Ariad, D., Madjunkova, S., Madjunkov, M., Chen, S., Abramov, R., Librach, C., **McCoy, R. C.** (2023). Aberrant landscapes of maternal meiotic crossovers contribute to aneuploidies in human embryos. *Genome Research*, *34*: 70-84.

2023 ⑲ Sun, S., Aboelenain, M., §Ariad, D., Haywood, M. E., Wageman, C. R., Duke, M., Bag, A., Viotti, M., Katz-Jaffe, M., **McCoy, R. C.**, Schindler, K., Xing, J. (2023), Identifying risk variants for embryo aneuploidy using ultra-low coverage whole-genome sequencing from preimplantation genetic testing. *American Journal of Human Genetics*, *110*(12): 2092–2102.

2023 ⑱ **McCoy, R. C.**, Summers, M. C., McCollin, A., Ottolini, C. S., Ahuja, K., Handyside, A. H. (2023), Meiotic and mitotic aneuploidies drive arrest of in vitro fertilized human preimplantation embryos. *Genome Medicine*, *15*: 77.

2023 ⑰ *Rhie, A., *Nurk, S., *Cechova, M., *Hoyt, S., *§Taylor, Da., Altemose, N., Hook, P. W., Koren, S., Rautiainen, M., Alexandrov, I. A., McNulty, B. M., Bzikadze, A. V., Chen, N.-C., Chin, C.-S. Diekhans, M., Formenti, G., Flicek, P., ..., **McCoy, R. C.** (44/81), ..., Eichler, E. E., O'Neill, R., Schatz, M. C., Miga, K. H., Makova, K. D., Phillippy, A. M. (2023), The complete sequence of a human Y chromosome. *Nature*, *621*(7978): 344-354.

2023 ⑯ Yang, X., Wang, X., Zou, Y., Zhang, S., Xia, M., Vollger, M. R., Chen, N.-C., §Taylor, D. J., Harvey, W. T., Logsdon, G. A., Meng, D., Shi, J., **McCoy, R. C.**, Schatz, M. C., Li, W., Eichler, E. E., Lu, Q., Mao, Y. (2023), Characterization of large-scale genomic differences in the first complete human genome. *Genome Biology*, *24*(1): 157.

2023 ⑮ Giraldo, D., Rankin-Turner, S., Corver, A., Tauxe, G. M., Gao, A. L., Jackson, D. M., Simubali, L., Book, C., Stevenson, J. C., Thuma, P. E., **McCoy, R. C.**, Gordus, A., Mburu, M. M., Simulundu, E., McMeniman, C. J. (2023), Human scent guides mosquito thermotaxis and host selection under naturalistic conditions. *Current Biology*, *33*(12): 2367-2382.e7.

2023 ⑭ *DeBoy, E. A., *§Tassia, M. G., Schratz, K. E., §Yan, S. M., Cosner, Z. L., McNally, E. J., Gable, D. L., Xiang, Z., Lombard, D. B., Antonarakis, E. S., Gocke, C. D., **McCoy, R. C.**, Armanios, M. (2023), Familial clonal hematopoiesis in a long telomere syndrome. *New England Journal of Medicine*, *388*(26): 2422-2433.

Also see editorial: Vassiliou, G. (2023), Telomere length and clonal hematopoiesis. *New England Journal of Medicine*, *388*(26): 2481-2484.

2022 ⓭ *§Carioscia, S. A., *§Weaver, K. J., §Bortvin, A. N., §Pan, H., §Ariad, D., Bell, A. D., **McCoy, R. C.** (2022), A method for low-coverage single-gamete sequence analysis demonstrates adherence to Mendel's first law across a large sample of human sperm. *eLife*, *11*: e76383.

2022 ⑫ Griffin, D. K., Brezina, P. R., Tobler, K., Silvestri, G., **McCoy, R. C.**, Anchan, R., Benner, A., Cutting, G. R., Kearns, W. G. (2022), The human embryonic genome is karyotypically complex, with chromosomally abnormal cells preferentially located away from the developing fetus. *Human Reproduction*, *38*(1): 180-188.

2022 ⓫ *Aganezov, S., *§Yan, S. M., *Soto, D. C., *Kirsche, M., *Zarate, S., Avdeyev, P., §Taylor, D. J., Shafin, K., Shumate, A., Xiao, C., Wagner, J., McDaniel, J., Olson, N. D., Sauria, M. E. G., Vollger, M. R., Meredith, M., Martin, S., Koren, S., Rosenfeld, J. A., Paten, B., Layer, R., Chin, C., Sedlazeck, F. J., Hansen, N. F., Miller, D. E., Phillippy, A., Miga, K., † **McCoy, R. C.**, † Dennis, M. Y., † Zook, J. M., † Schatz, M. C. (2022), A complete reference genome improves analysis of human genetic variation. *Science*, *376*(6588): eabl3533.

2022 ⑩ Nurk, S., Koren, S., Rhie, A., Rautiainen, M., Bzikadze, A. V., Mikheenko, A., Vollger, M. R., Altemose, N., Uralsky, L., Gershman, A., Aganezov, S., Hoyt, S. J., Diekhans, M., Logsdon, G. A., Alonge, M., Antonarakis, S. E., Borchers, M., Bouffard, G. G., Brooks, S. Y., ..., §Yan, S. M., ..., **McCoy, R. C.** (89/99), ..., Eichler, E. E., Miga, K. H., Phillippy, A. M. (2022), The complete sequence of a human genome. *Science*, *376*(6588): eabj6987.

2021 ❾ §Ariad, D., §Yan, S. M., Victor, A. R., Barnes, F. L., Zouves, C. G., Viotti, M., **McCoy, R. C.** (2021), Haplotype-aware inference of human chromosome abnormalities. *Proceedings of the National Academy of Sciences USA*, *118*(46): e2109307118.

2021 ❽ §Yan, S. M., Sherman, R. M., §Taylor, D. J., §Nair, D. R., §Bortvin, A. N., Schatz, M. C., **McCoy, R. C.** (2021), Local adaptation and archaic introgression shape global diversity at human structural variant loci. *eLife*, *10*, e67615.

2021 ⑦ Ranallo-Benavidez, T. R., Lemmon, Z. H., Soyk, S., Aganezov, S. Salerno, W. J., **McCoy, R. C.**, Lippman, Z. B., Schatz, M. C., Sedlazeck, F. J. (2021), SVCollector: Optimized sample selection for cost-efficient long-read population sequencing. *Genome Research*, *31*(5): 910-918.

2020 ❻ §Starostik, M. R., Sosina, O. A., **McCoy, R. C.** (2020), Single-cell analysis of human embryos reveals diverse patterns of aneuploidy and mosaicism. *Genome Research*, *30*(6): 814-825.

2020 ⑤ Tyc, K. M., **McCoy, R. C.**, Schindler, K., Xing, J. (2020), Mathematical modeling of human oocyte aneuploidy. *Proceedings of the National Academy of Sciences USA*, *117*(19): 10455-10464.

2020 ④ Sharma, R., Singh, P., **McCoy, R. C.**, Lenz, S. M., Donovan, K., Ochoa, M. T., Estrada-Garcia, I., Silva-Miranda, M., Jurado-Santa Cruz, F., Balagon, M. F., Stryjewska, B., Scollard, D. M., Pena, M. T., Lahiri, R., Williams, D. L., Truman, R. W., Adams, L. B. (2020), Isolation of *Mycobacterium lepromatosis* and development of molecular diagnostic assays to distinguish *M. leprae* and *M. lepromatosis*. *Clinical Infectious Diseases*, *71*(8): e262-e269.

2019 ③ Gruhn, J. R., Zielinska, A., Shukla, V., ..., **McCoy, R. C.** (23/28), ..., Hoffmann, E. R. (2019), Chromosome errors in human eggs shape natural fertility over reproductive lifespan. *Science*, *365*(6460): 1466-1469.

2019 ② Victor, A. R., Tyndall, J. C., Brake, A. J., Lepkowski, L. T., Murphy, A., Griffin, D. K., **McCoy, R. C.**, Barnes, F. L., Zouves, C. G., Viotti, M. (2019), One hundred mosaic embryos transferred prospectively in a single clinic: exploring when and why they result in normal pregnancies. *Fertility & Sterility*, *111*(2): 280-293.

2019 ① Victor, A. R., Griffin, D. K., Brake, A. J., Tyndall, J. C., Murphy, A., Lepkowsky, L. T., Lal, A., Zouves, C. G., Barnes, F. L., **McCoy, R. C.**, Viotti, M. (2019), Assessment of aneuploidy concordance between clinical trophectoderm biopsy and blastocyst. *Human Reproduction*, *34*(1): 181-192.

REVIEW ARTICLES (PEER REVIEWED; 3 as corresponding author [gray], 5 as co-author)

2025 ⑧ *Moya, N., *§Yan, S. M., † **McCoy, R. C.**, † Andersen, E. C. (2025), The long and short of hyperdivergent regions. *Trends in Genetics*, *41*(4): 303-314.

2024 ⑦ §Taylor, D. J., Eizenga, J. M., Li, Q., Das, A., Jenike, K. M., Kenny, E. E., Miga, K. H., †Monlong, J., †**McCoy, R. C.**, †Paten, B., †Schatz, M. C. (2024), Beyond the Human Genome Project: The Age of Complete Human Genome Sequences and Pangenome References. *Annual Review of Genomics and Human Genetics*, *25*: 77-104.

2023 ⑥ Muter, J., Lynch, V. J., **McCoy, R. C.**, Brosens, J. J. (2023), Human embryo implantation. *Development*, *150*(10): dev201507.

2022 ⑤ Brosens, J. J., Bennett, P. R., Abrahams, V., Ramhorst, R., Coomarasamy, A., Quenby, S., Lucas, E. S., **McCoy, R. C.** (2022), Maternal selection of human embryos in early gestation: insights from recurrent miscarriage. *Seminars in Cell and Developmental Biology*, *131*: 14-24.

2021 ④ Quenby, S., Gallos, I. D., Dhillon-Smith, R. K., Podesek, M., Stephenson, M. D., Fisher, J., Brosens, J., Brewin, J., Ramhorst, R., Lucas, E. S., **McCoy, R. C.**, Anderson, R., Daher, S., Regan, L., Al-Memar, M., Bourne, T., MacIntyre, D. A., Rai, R., Christiansen, O. B., Sugiura-Ogasawara, M., Odendaal, J., Devall, A. J., Bennett, P. R., Petrou, S., Coomarasamy, A. (2021), Miscarriage matters: the epidemiological, physical, psychological, and economic costs of early pregnancy loss. *The Lancet*, *397*(10285): 1658-1667.

2021 ③ Levy, B., Hoffmann, E. R., **McCoy, R. C.**, Grati, F. R. (2021), Chromosomal mosaicism: origins and clinical implications in preimplantation and prenatal diagnosis. *Prenatal Diagnosis*, *41*(5): 631-641.

2021 ② Wartosch, L., Schindler, K., Schuh, M., Gruhn, J. R., Hoffmann, E. R., **McCoy, R. C.**, Xing, J. (2021), Origins and mechanisms leading to aneuploidy in human eggs. *Prenatal Diagnosis*, *41*(5), 620-630.

2020 ① §Yan, S. M., **McCoy, R. C.** (2020), Archaic hominin genomics provides a window into gene expression evolution. *Current Opinion in Genetics & Development*, *62*: 44-49.

EDITORIALS AND COMMENTARIES (2 as corresponding author [gray], 2 as co-author)

2024 ④ §Carioscia, S., **McCoy, R. C.** (2024), A rare genetic variant biases maternal meiotic recombination toward risk of pregnancy loss. *Nature Structural & Molecular Biology*, *31*:

584–585.

2021 ③ Viotti, M., **McCoy, R. C.**, Griffin, D. K., Spinella, F., Greco, E., Madjunkov, M., Madjunkova, S., Librach, C. L., Victor, A. R., Barnes, F. L., Zouves, C. G. (2021), Let the data do the talking: the need to consider mosaicism during embryo selection. *Fertility & Sterility*, *116*(5): 1212-1219.

2019 ② §Yan, S. M., **McCoy, R. C.** (2019), Functional divergence among hominins. *Nature Ecology & Evolution*, *3*(11): 1507-1508.

2019 ① **McCoy, R. C.**, Kort, J. D. (2019), Quantifying the transcriptional impacts of aneuploidy in human blastocysts. *Fertility & Sterility*, *111*(5): 888-889.

Articles under review (1 as corresponding author [gray], 2 as co-author)

- ③ Cechova, M., Potapova, T. A., Rechtsteiner, A., Hickey, G., Serra Mari, R., Mastoras, M., Menendez, J., Poláková, N., Hebbar, P., Ryabov, F., Loucks, H., Groot, A., Pavlík, T., Asri, M., Dong, S., §Yan, S. M., Lucas, J. K., Solar, S. J., Borchers, M., Mattingly, M., McKinney, S., Krátká, M., Mikhailova, C., Hanák, O., Saha, S. T., Xu, E., Antipov, D., Koren, S., Eizenga, J. M., McNulty, B., Gardner, J. M. V., Hillaker, T., Violich, I., Markovic, C., Kruglyak, S., Levy, S., Wolf, T., Mitchell, M. W., Scheinfeldt, L., Alexandrov, I. A., **McCoy, R. C.**, Paten, B., Phillippy, A. M., Zook, J. M., Gerton, J. L., Fulton, R. S., Stitziel, N. O., Wang, T., Marschall, T., Greider, C. W., Miga, K. H. Complete genomes of a multi-generational pedigree to expand studies of genetic and epigenetic inheritance. *bioRxiv*: 2025.12.14.693655.
- ② Lalli, J. L., §Bortvin, A. N., † **McCoy, R. C.**, † Werling, D. M. A T2T-CHM13 recombination map and globally diverse haplotype reference panel improves phasing and imputation. *bioRxiv*: 2025.02.24.639687.
- ① DeGorter, M. K., Goddard, P. C., Karakoc, E., Kundu, S., §Yan, S. M., Nachun, D., Abell, N., Aguirre, M., Carstensen, T., Chen, Z., Durrant, M., Dwaracherla, V. R., Feng, K., Gloudemans, M. J., Hunter, N., Moorthy, M. P. S., Pomilla, C., Rodrigues, K. B., Smith, C., Smith, K. S., Ungar, R. A., Balliu, B., Fellay, J., Flicek, P., McLaren, P. J., Henn, B., **McCoy, R. C.**, Sugden, L., Kundaje, A., Sandu, M. S., Gurdasani, D., Montgomery, S. B. Transcriptomics and chromatin accessibility in multiple African population samples. *bioRxiv*: 2023.11.04.564839.

Publications prior to starting faculty position:

2018 Tucci, S., Vohr, S. H., **McCoy, R. C.**, Vernot, B, Robinson, M., Barbieri, C., Fu, W., Purnomo, G. A., Sudoyo, H., Barbujani, G., Visscher, P. M., Akey, J. M., Green, R. E. (2018), Evolutionary history and adaptation of a human pygmy population of Flores Island, Indonesia. *Science*, *361*(6401): 511-516.

2018 Press, M. O., **McCoy, R. C.**, Hall, A. N., Akey, J. M., Queitsch, C. (2018), Short tandem repeats with massive variation and functional consequences across strains of *Arabidopsis thaliana*. *Genome Research*, *28*(8): 1169-1178.

2018 ***McCoy, R. C.**, *Newnham, L. J., Ottolini, C. S., Hoffmann, E. R., Chatzimeletiou, K., Cornejo, O. E., Zhan, Q., Zaninovic, N., Rosenwaks, Z., Petrov, D. A., Demko, Z. P., Sigurjonsson, S., Handyside, A. H. (2018), Tripolar chromosome segregation drives the association between maternal genotype at variants spanning *PLK4* and aneuploidy in human preimplantation embryos. *Human Molecular Genetics*, *27*(14): 2573-2585.

2018 Kort, J. D., **McCoy, R. C.**, Demko, Z. P., Lathi, R. B. (2018), Are blastocyst aneuploidy rates different between fertile and infertile populations? *Journal of Assisted Reproduction and Genetics*, *35*(3): 403-408.

2017 **McCoy, R. C.** (2017), Mosaicism in preimplantation human embryos: when chromosomal abnormalities are the norm. *Trends in Genetics*, *33*(7): 448-463.

2017 **McCoy, R. C.**, Akey, J. M. (2017), Selection plays the hand it was dealt: evidence that human adaptation commonly targets standing genetic variation. *Genome Biology*, *18*(1): 139.

2017 Adashi, E. Y., **McCoy, R. C.** (2017), Technology versus biology: the limits of pre-implantation genetic screening. *EMBO Reports*, *18*(5): 670-672.

2017 **McCoy, R. C.**, Wakefield, J., Akey, J. M. (2017), Impacts of Neanderthal-introgressed sequences on the landscape of human gene expression. *Cell*, *168*(5): 916-927.e12.

2016 Vernot, B., Tucci, S., Kelso, J., Schraiber, J. G., Wolf, A. B., Gittelman, R. M., Dannemann, M., Grote, S., **McCoy, R. C.**, Norton, H., Scheinfeldt, L. B., Merriwether, D. A., Koki, G., Friedlaender, J. S., Wakefield, J., Pääbo, S., Akey, J. M. (2016), Excavating Neandertal and Denisovan DNA from the genomes of Melanesian individuals. *Science*, *352*(6282): 235–239.

2016 **McCoy, R. C.**, Akey, J. M. (2016), Patterns of deleterious variation between human populations reveal an unbalanced load. *Proceedings of the National Academy of Sciences USA*, *113*(4): 809–811.

2016 Demko, Z. P., Simon, A. L., **McCoy, R. C.**, Petrov, D. A., Rabinowitz, M. (2016), Effects of maternal age on euploidy in a large cohort of embryos analyzed with 24 chromosome single nucleotide polymorphism-based preimplantation genetic screening. *Fertility & Sterility*, *105*(5): 1307-1313.

2015 **McCoy, R. C.**, Demko, Z., Ryan, A., Banjevic, M., Hill, M., Sigurjonsson, S., Rabinowitz, M., Petrov, D. A. (2015), Evidence of selection against complex mitotic-origin aneuploidy during preimplantation development. *PLoS Genetics*, *11*(10): e1005601.

2015 **McCoy, R. C.**, Demko, Z., Ryan, A., Banjevic, M., Hill, M., Sigurjonsson, S., Rabinowitz, M., Fraser, H. B., Petrov, D. A. (2015), Common variants spanning *PLK4* are associated with mitotic-origin aneuploidy in human embryos. *Science*, *348*(6231): 235-238.

Also see editorial: Vohr, S. H., Green, R. E. (2015), Aneuploidy and mother's genes. *Science*, *348*(6231): 180-181.

2014 Ahola, V., Lehtonen, R., Somervou, P., ..., **McCoy, R. C.** (18/45) , ..., Hanski, I. (2014), The Glanville fritillary genome retains an ancient karyotype and reveals selective chromosomal fusions in Lepidoptera. *Nature Communications*, *5*: 4737.

2014 **McCoy, R. C.**, Taylor, R., Blauwkamp, T. A., Kelley, J. L., Kertesz, M., Pushkarev, D., Petrov, D. A., Fiston-Lavier, A. S. (2014), Illumina TruSeq synthetic long reads empower *de novo* assembly and resolve complex, highly repetitive transposable elements. *PLoS ONE*, *9*(9): e106689.

2014 **McCoy, R. C.**, Garud, N. R., Kelley, J. L., Boggs, C. L., Petrov, D. A. (2014), Genomic inference accurately predicts the timing and severity of a recent bottleneck in a non-model insect population. *Molecular Ecology*, *23*(1): 136-150.

Patents

2025 Ariad, D., **McCoy, R. C.**, Viotti, M. Methods and related aspects for analyzing chromosome number status. US Patent #12,322,509.

Oral presentations

‡	denotes presentations postponed or cancelled due to COVID-19 or personal reasons
#	denotes plenary or keynote presentations

Oral presentations since starting faculty position:

Invited oral presentations (55)

Spring 2027	Department of Molecular and Cell Biology, University of California, Berkeley, CA
2026	Department of Genetics, University of Alabama at Birmingham, Birmingham, AB (Online)
2026	Interurban Clinical Club, Baltimore, MD
2026	Center for Human Reproduction / Foundation for Reproductive Medicine Grand Rounds, New York, NY
2026	Center for Computational Molecular Biology, Brown University, Providence, RI
2026	Department of Human Genetics, University of Utah, Salt Lake City, UT
2025	Key Aspects of Reproductive Medicine, Interdisciplinary Clinical Association for Reproductive Medicine, Moscow, Russia (Online)
2025	Department of Human Genetics, University of Michigan, Ann Arbor, MI
2025	Artificial Intelligence and the Study of Life Symposium, Johns Hopkins University, Baltimore, MD
2025	#Annual International Conference on Preimplantation Genetics (PGDIS), Leuven, Belgium
2025	Biological Anthropology Colloquium Series, Department of Anthropology, Yale University, New Haven, CT
2024	Ctr. for Theoretical and Evolutionary Genetics, Univ. of California, Berkeley, CA (Online)
2024	Lieber Institute for Brain Development, Maltz Research Laboratories, Baltimore, MD
2024	Consequences of Aneuploidy Meeting, Federation of American Societies for Experimental Biology, Melbourne, FL
2024	Center for Genetic Epidemiology, University of Southern California, CA (Online)
2024	Department of Genome Sciences, University of Washington, Seattle, WA
2024	Biology of Genomes, Cold Spring Harbor Laboratory, NY
2024	Department of Genetics, University of Pennsylvania, Philadelphia, PA
2024	Department of Molecular Biology and Genetics, Johns Hopkins Univ., Baltimore, MD
2024	Human Genome Sequencing Center, Baylor College of Medicine, Houston, TX (Online)
2023	World Congress on Controversies in Preconception, Preimplantation and Prenatal Genetic Diagnosis, Online
2023	International IVF Initiative (i3) Webinar, Online
2023	‡Origins of Human Aneuploidy Meeting, Florence, Italy
2023	#National Association of Biology Teachers Conference, Baltimore, MD
2023	Johns Hopkins University Graduate Program in Cell, Molecular, Developmental Biology, and Biophysics Retreat, Hershey, PA
2023	Statistical Genetics Working Group, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD (Online)
2023	Department of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN
2023	Joint audience of the Department of Cellular and Molecular Medicine, University of

	Copenhagen & ReproUnion, Copenhagen, Denmark
2023	Globe Institute, University of Copenhagen, Denmark
2023	Max Planck Institute for Evolutionary Biology, Plön, Germany
2023	Annual International Conference on Preimplantation Genetics (PGDIS), Paris, France
2023	Department Colloquium, Department of Biology, Johns Hopkins University
2022	Origins of Human Aneuploidy Meeting, Paris, France
2022	Department of Genetic Medicine, Johns Hopkins School of Medicine, Baltimore, MD
2022	Joint Didactic Session, Reproductive Endocrinology & Infertility / Medical Genetics Fellowship Program, Johns Hopkins School of Medicine, Baltimore, MD
2022	Maimon M. Cohen Genetics Colloquium, Greater Baltimore Medical Center, Towson, MD (Online)
2021	Cell Bio Virtual, American Society of Cell Biology / European Molecular Biology Organization, Online
2021	Howard and Georgeanna Jones Endowed Symposium on Assisted Reproductive Technology, Annual Meeting of the American Society for Reproductive Medicine, Baltimore, MD
2021	Origins of Human Aneuploidy Meeting, Online
2021	Division of Biomedical Sciences, Warwick Medical School, Coventry, United Kingdom (Online)
2021	Center for Reproductive Medicine, Weill Medical College of Cornell University (Online), New York, NY
2020	Zouves Foundation for Reproductive Medicine, Foster City, CA (Online)
2020	World Congress on Controversies in Obstetrics, Gynecology and Infertility, Online
2020	[‡]Department of Molecular and Cellular Biology, Harvard University, Cambridge, MA
2020	Origins of Human Aneuploidy Meeting, Online
2020	Department of Embryology, Carnegie Institution, Baltimore, MD
2020	Computational Biology Department, Carnegie Mellon University, Pittsburgh, PA
2020	CReATe Fertility Centre, Toronto, Canada
2019	Annual Conference of the Foundation for Reproductive Medicine, New York, NY
2019	Origins of Human Aneuploidy Meeting, Paris, France
2019	Department of Genetics, Rutgers University, Piscataway, NJ
2019	Department of Biology, Catholic University, Washington, DC
2018	Annual Conference of the Foundation for Reproductive Medicine, New York, NY
2018	Genomics & Bioinf. Symposium, Johns Hopkins University, Baltimore, MD
2018	Johns Hopkins University Graduate Program in Cell, Molecular, Developmental Biology, and Biophysics Retreat, Rocky Gap State Park, MD
2018	Origins of Human Aneuploidy Meeting, Toronto, Canada

Contributed oral presentations (5)

2024	[#]Annual Meeting of the American Society of Human Genetics, Denver, CO
2022	Annual Meeting of the American Society of Human Genetics, Los Angeles, CA
2022	[#]Annual Meeting of the American Society for Reproductive Medicine, Anaheim, CA (presented by co-author, Michael Summers, due to scheduling conflict with ASHG)

2021	Chromatin, Chromosomes, and Epigenomes Workshop, Johns Hopkins University, Baltimore, MD (Online)
2019	Annual Meeting of the American Society of Human Genetics, Houston, TX

Senior authorship of trainee oral presentations (25)

2025	Tassia, M.G., American Soc. of Hematology (Abstract Achievement Award), Orlando, FL
2025	Starostik, M.R., Industry Workshop, American Society of Human Genetics, Boston, MA
2025	Carioscia, S. A., Mutations in Time and Space, Broad Institute, Cambridge, MA
2025	Biddanda, A., Origins of Human Aneuploidy Meeting, Leuven, Belgium
2024	Carioscia, S. A., Chromatin, Chromsosomes, and Epigenomes Workshop, Johns Hopkins University, Baltimore, MD
2024	Carioscia, S. A., JHU CMDB Program Retreat, Fairfield, PA
2024	Tassia, M. G., Biology of Genomes, Cold Spring Harbor Laboratory, NY
2024	Carioscia, S. A., Biology of Genomes, Cold Spring Harbor Laboratory, NY
2023	Tassia, M. G., SMBE Satellite Meeting on Mechanisms of Cellular Evolution, Tempe, AZ
2023	Biddanda, A., Annual Meeting of the Am. Society of Human Genetics, Washington, DC
2023	Taylor, D. J., Center for Bioinf. and Comp. Biology, Univ. of Maryland, College Park, MD
2022	Yan, S. M., JHU CMDB Program Retreat, Harpers Ferry, VA
2022	Yan, S. M., Telomere-to-Telomere Face-to-Face, Santa Cruz, CA
2022	Taylor, D. J., Telomere-to-Telomere Face-to-Face, Santa Cruz, CA
2022	Yan, S. M., Advances in Genome Biology and Technology (AGBT), Orlando, FL
2022	Tassia, M. G., Evolution, Cleveland, OH (Online)
2022	Ariad, D., Biology of Genomes, Cold Spring Harbor Laboratory, NY
2021	Yan, S. M., *eLife* Virtual Symposium on Evolutionary Medicine (Online)
2021	Zarate, S., Annual Meeting of the American Society of Human Genetics (Online)
2021	Ariad, D., Genomics *&* Bioinf. Symposium, Johns Hopkins University (Online)
2021	Ariad, D., RECOMB-Genetics Satellite Meeting (Online)
2021	Yan, S. M., Biology of Genomes, Cold Spring Harbor Laboratory (Online)
2020	Yan, S. M., Annual Meeting of the American Society of Human Genetics (Online)
2020	‡Yan, S. M., Society for Molecular Biology *&* Evolution, Québec City, Canada
2019	Seyedian, A., RECOMB-Genetics Satellite Mtg., George Wash. Univ., Washington, DC

Oral presentations prior to starting faculty position:

2017	Marabou Symposium on Nutrition and Human Development, Stockholm, Sweden
2017	Origins of Human Aneuploidy Meeting, Barcelona, Spain
2017	Annual International Conference on Preimplantation Genetics (PGDIS), Valencia, Spain
2017	Department of Genomes Sciences / Computational Molecular Biology Program Combi Seminar, University of Washington, Seattle, WA
2016	Genotype-Tissue Expression (GTEx) Project Community Meeting, Stanford, CA
2015	Annual Meeting of the American Society of Human Genetics, Baltimore, MD

2014 Illumina Long-Reads Applications Symposium, University of California, Davis, CA
2014 Presentation to Management Team at Natera, Inc., San Carlos, CA
2014 Bay Area Population Genomics Meeting, University of California, Davis, CA

Poster presentations

Poster presentations since starting faculty position:

Poster presentations as presenting author (5)

2025 Annual Meeting of the American Society of Human Genetics (Reviewers' Choice Abstract Award), Boston, MA
2023 Annual Meeting of the American Society of Human Genetics, Washington, DC
2020 ‡Society for Molecular Biology & Evolution, Québec City, Canada
2020 ‡The Allied Genetics Conference, Genetics Society of America
2019 Society for Molecular Biology & Evolution, Manchester, England

Senior authorship of trainee poster presentations (37)

2025 Biddanda, A., Annual Meeting of the American Society of Human Genetics, Boston, MA
2025 Starostik, M. R., Annual Meeting of the American Society of Human Genetics, Boston, MA
2025 Carioscia, S. A., Biology of Genomes, Cold Spring Harbor Laboratory, NY
2025 Tassia, M. A., Mutations in Time and Space, Broad Institute, Cambridge, MA
2024 Yang, Q., DREAMS Symposium, Hopkins Office of Undergraduate Research, Johns Hopkins University, Baltimore, MD
2024 Yang, Q., Chromatin, Chromsosomes, and Epigenomes Workshop, Johns Hopkins University, Baltimore, MD
2024 Biddanda, A., Maryland Genetics, Epidemiology, and Medicine (MD-GEM) Research Day, Johns Hopkins University, Baltimore, MD
2024 Carioscia, S. A., Maryland Genetics, Epidemiology, and Medicine (MD-GEM) Research Day, Johns Hopkins University, Baltimore, MD
2024 Bortvin, A. N., Biology of Genomes, Cold Spring Harbor Laboratory, NY
2024 Biddanda, A., Biology of Genomes, Cold Spring Harbor Laboratory, NY
2024 Yan, S. M., Biology of Genomes, Cold Spring Harbor Laboratory, NY
2024 Taylor, D. J., The Allied Genetics Conference, Genetics Soc. of America, Washington, DC
2024 Yang, Q., The Allied Genetics Conference, Genetics Society of America, Washington, DC
2024 Carioscia, S. A., The Allied Genet. Conference, Genet. Soc. of America, Washington, DC
2023 Taylor, D. J., Annual Mtg. of the American Society of Human Genetics, Washington, DC
2023 Tassia, M. G., Annual Mtg. of the American Society of Human Genetics, Washington, DC
2023 Carioscia, S., Annual Mtg. of the American Society of Human Genetics, Washington, DC
2023 Yan, S. M., Annual Meeting of the American Society of Human Genetics, Washington, DC
2023 Tassia, M. G., Society for Molecular Biology & Evolution (Online)

2023	Yan, S. M., Society for Molecular Biology & Evolution (Online)
2022	Ariad, D., RECOMB, La Jolla, CA
2022	Taylor, D. J., Biology of Genomes, Cold Spring Harbor Laboratory, NY
2021	Weaver, K. J., RegSys COSI, International Society for Computational Biology / European Conference on Computational Biology (Online)
2021	Ariad, D., RECOMB (Online)
2021	Ariad, D., Annual Meeting of the American Society of Human Genetics (Online)
2021	Carioscia, S. A., Genomics & Bioinf. Symposium, Johns Hopkins University (Online)
2021	*Weaver, K. J., *Bortvin, A. N., Genomics & Bioinformatics Symposium, Johns Hopkins University (Online)
2021	*Carioscia, S. A., *Weaver, K. J., Biology of Genomes, Cold Spring Harbor Lab. (Online)
2021	Ariad, D., Biology of Genomes, Cold Spring Harbor Laboratory (Online)
2020	Ariad, D., Annual Meeting of the American Society of Human Genetics (Online)
2020	Taylor, D. J., Annual Meeting of the American Society of Human Genetics (Online)
2020	Yan, S. M., The Allied Genetics Conference, Genetics Society of America (Online)
2020	Carioscia, S. A., The Allied Genetics Conference, Genetics Society of America (Online)
2019	Yan, S. M., Genomics & Bioinf. Symposium, Johns Hopkins University, Baltimore, MD
2019	Carioscia, S. A., Genomics & Bioinf. Symposium, Johns Hopkins Univ., Baltimore, MD
2019	Yan, S .M., Society for Molecular Biology & Evolution, Manchester, England
2018	Farney, S., Genomics & Bioinf. Symposium, Johns Hopkins University, Baltimore, MD

Poster presentations prior to starting faculty position:

2017	Annual Meeting of the American Society of Human Genetics (Reviewers' Choice Abstract Award), Orlando, FL
2017	NHGRI Annual Training and Career Development Meeting, St. Louis, MO
2016	Annual Meeting of the American Society of Human Genetics, Vancouver, Canada
2016	NHGRI Annual Training and Career Development Meeting, Bethesda, MD
2014	Bay Area Population Genomics Meeting, University of California, Davis, CA
2014	Stanford Biosciences Student Association Poster Session, Stanford, CA
2014	Society for Molecular Biology & Evolution, San Juan, Puerto Rico [1/2]
2014	Society for Molecular Biology & Evolution, San Juan, Puerto Rico [2/2]
2014	Ctr. for Computational, Evolutionary, and Human Genomics Symposium, Palo Alto, CA
2013	Bay Area Population Genomics Meeting, Stanford, CA
2013	Annual Meeting of the Society for Integrative & Comparative Biology, San Francisco, CA
2012	Arthropod Genomics Symposium, Kansas City, MO
2012	Joint Congress on Evolutionary Biology, Ottawa, Canada

Research mentoring

Research mentoring since starting faculty position:

Postdoctorate (3 current, 1 graduated)

2024–Present Margaret Starostik, Postdoctoral Fellow, Johns Hopkins University

2023–Present Arjun Biddanda, Postdoctoral Fellow, Johns Hopkins University
2024–2026 Lalor Foundation Fellowship, Total award: $110,000

2022–Present Michael Tassia, Postdoctoral Fellow, Johns Hopkins University
2024–2026 NIH Training Program in Hematology (T32)

2024–2026 American Society of Hematology Fellowship, Total award: $100,000

2020–2022 Daniel Ariad, Postdoctoral Fellow, Johns Hopkins University
Current position: Senior Data Scientist, PrognomiQ, Inc., San Mateo, CA

Graduate thesis (4 current, 5 graduated)

2025–Present Joshua Bauman, PhD Student in CMDB, Johns Hopkins University

2025–Present Sukriti Gupta, Masters of Science Student in Data Science, Johns Hopkins University

2024–Present Betty Huang, PhD Student in CMDB, Johns Hopkins University

2021–Present Andrew Bortvin, PhD Candidate in CMDB, Johns Hopkins University
2025–2026 JHU Dissertation Prize Fellowship
2024–2025 JHU Dean's Teaching Fellowship, Total award: $21,212

2020–2025 Sara Carioscia, PhD Candidate in CMDB, Johns Hopkins University
2025 Stephen and Carolyn Oppenheimer Thesis Award, CMDB
2025 Harold M. Weintraub Award Nominee, CMDB
2021–2026 NSF Graduate Research Fellowship, DGE1746891, Total award: $138,000
2021–2022 JHU Ctr. for Teaching Excellence and Innovation Technology Fellowship,
Total award: $5500; Award to S. Carioscia: $2000
Current position: Data Scientist, Valo Health

2020–2024 Dylan Taylor, PhD Candidate in CMDB, Johns Hopkins University
2025 Stephen and Carolyn Oppenheimer Thesis Award, CMDB
2024 Harold M. Weintraub Award Nominee, CMDB
2023–2024 NIH/NHGRI NRSA Predoctoral Fellowship, F31HG012900, Total award: $95,388
2021–2022 JHU Ctr. for Teaching Excellence and Innovation Technology Fellowship,
Total award: $5500; Award to D. Taylor: $2000
Current position: Bioinformatics Scientist, Zephyr AI

2019–2024 Stephanie Yan, PhD Candidate in CMDB, Johns Hopkins University
2024 Stephen and Carolyn Oppenheimer Thesis Award, CMDB
2022–2024 NIH/NHGRI NRSA Predoctoral Fellowship, F31HG012495, Total award: $94,446
2021–2023 JHU Ctr. for Teaching Excellence and Innovation Technology Fellowship,
Total award: $5500; Award to S. Yan: $2000
Current position: Scientist, Genomics, Plc.

2020–2023 Kathryn Isaac (Weaver), PhD Candidate in CMDB, Johns Hopkins University
2023 Stephen and Carolyn Oppenheimer Thesis Award, CMDB
2022–2023 JHU Dean's Teaching Fellowship, Total award: $19,664
2021–2023 JHU Ctr. for Teaching Excellence and Innovation Technology Fellowship,
Total award: $5500; Award to K. Isaac: $2000

	Current position: Postdoc, Fred Hutchinson Cancer Center, Seattle, WA
2018–2020	Arta Seyedian, Masters of Science Student in Bioinformatics, Johns Hopkins University Current position: Bioinformatician, Center for Single Cell Biology, Children's Hospital of Philadelphia, Philadelphia, PA

Graduate qualifying project (2 graduated)

2024–2025	Arun Das, PhD Candidate in Computer Science (Qualifying Project), Johns Hopkins University
2021	Taher Mun, PhD Candidate in Computer Science (Qualifying Project), Johns Hopkins University Current position: Senior Bioinformatics Scientist, Illumina, Inc.

Graduate rotation (36)

2018–Present	Rotation students in CMDB, Johns Hopkins University: Anirudh Seshadri (2026), Graydon Moorhead (2025), Carsten Hoeke (2025), Rose Runyan (2025), Brooke Weingard (2025), Olivia Choi (2025), Colina Qiao (2025), Tabor Roderiques (2025), Francesca Battelli (2024), Xingyu Chen (2024), Izabella Mastroianni (2024), Joshua Bauman (2024), Maya Mastronardo (2024), Jake Galvin (2024), Betty Huang (2024), Catherine Rogers (2023), David Bass (2023), Catherine Brown (2023), Emily Shen (2023), Tye Chicha (2023), Jack Dorman (2023), Calvin Runnels (2023), Matthew Isada (2022), Joshua Schultz (2022), Bradley Olinger (2022), Rylee Genner (2021), Sadhana Chidambaran (2021), Catherine Henderson (2021), Robyn Styx (2021), Radhika Jangi (2021), Andrew Bortvin (2020), Simon Zhang (2020), Sara Debic (2020), Natalie Murphy (2019), Sara Carioscia (2019), Dylan Taylor (2019), Stephanie Yan (2018), Margaret Starostik (2018), Katie Farney (2018)
2023–Present	Rotation students in Human Genetics, Johns Hopkins University: J. Noah Workman (2023)

Undergraduate (2 current, 11 former/graduated)

2026–Present	Lana Cheng, Bachelor of Science Student in Biology and Applied Mathematics, Johns Hopkins University
2023–Present	Angela Yang, Bachelor of Science Student in Biology and Computer Science, Johns Hopkins University
2024–2026	Provost's Undergraduate Research Award, Total award: $6000
2024–2025	Sukriti Gupta, Bachelor of Science Student in Biology and Applied Mathematics, Johns Hopkins University
2024	Ameena Beg, Bachelor of Science Student in Biology, Johns Hopkins University
2022–2024	Hao Pan, Bachelor of Science Student in Biology and Applied Mathematics, Johns Hopkins University
2022–2023	Anika Misra, Bachelor of Science Student in Biology and Computer Science, Johns Hopkins University
2023	Emma Smith, Research Experience for Undergraduates (REU) Student from The College of Wooster, Johns Hopkins University
2020–2023	Divya Nair, Bachelor of Science Student in Biology, Johns Hopkins University
2022	Katherine Gilbert, Research Experience for Undergraduates (REU) Student from Wesleyan

University, Johns Hopkins University

2018–2020	Joel Espinoza, Bachelor of Science Student in Biology, Johns Hopkins University
2019–2020	Peter Huang, Bachelor of Science Student in Biology, Johns Hopkins University
2019–2020	Nicholas Parente, Bachelor of Science Student in Applied Mathematics & Statistics and Computer Science, Johns Hopkins University
2018	Vincent Huang, Bachelor of Science Student in Biology, Johns Hopkins University

High school (3)

2022–2023	Cosima Billotte Bermudez, Ingenuity Project, Baltimore Polytechnic Institute, Baltimore, MD
2020–2021	Miles Fancher, Ingenuity Project, Baltimore Polytechnic Institute, Baltimore, MD
2020–2021	Aram Zaprosyan, Ingenuity Project, Baltimore Polytechnic Institute, Baltimore, MD

Research mentoring prior to starting faculty position:

2014–2015	Jack McGregor, Undergraduate Senior Honors Thesis (Co-Advised), Stanford University

Teaching

Teaching experience since starting faculty position:

Courses as instructor of record (∼40 hours/year)

2020–Present	Quantitative Biology Lab (AS.020.617, Fall; graduate; 20-30 students; ∼12 hours/year; co-instructors: Frederick Tan, Michael Sauria), Johns Hopkins University
2020–Present	Quantitative Biology Bootcamp (AS.020.607, Fall; graduate; 20-30 students; ∼12 hours/year; co-instructors: Frederick Tan, Michael Sauria), Johns Hopkins University
*2020-Present	Human Genome Variation Computational Lab (AS.020.321, Spring; undergraduate; 10-20 students; ∼13 hours/year), Johns Hopkins University; *KSAS teaching leave in 2022
*2020-Present	Human Genome Variation (AS.020.319, Spring; undergraduate; 30-40 students; ∼3 hours/year; co-instructor: Kyle Cunningham), Johns Hopkins University; *KSAS teaching leave in 2022

Guest lectures (∼7 hours/year)

2025–2026	Advanced Topics in Human Genetics (ME.710.700, Spring; graduate; 12 students; 3 hours), Johns Hopkins University
2021–2025	Genetics (AS.020.303, Spring; undergraduate; 300-400 students; 1.5 hours), Johns Hopkins University
2021–2025	Biology of Disease (AS.020.314, Fall; undergraduate; 100-200 students; 2.5 hours), Johns Hopkins University
2019, 2022	Human Genome Variation (AS.020.319, Spring; undergraduate; 30-40 students; 3 hours), Johns Hopkins University

2018–2019	Guest Instructor, Quantitative Biology Bootcamp (AS.020.607, Fall; graduate; 20-30 students; 3 hours), Johns Hopkins University

Workshops

2019	Participant, Best Practices in University Teaching Workshop, Johns Hopkins University

Teaching experience prior to starting faculty position:

2017–2018	Science Teaching Experience for Postdocs (STEP) Program, University of Washington
2017	Participant, Undergraduate Faculty Genetics Education Workshop, American Society of Human Genetics
2014	Teaching Assistant Mentor, Department of Biology, Stanford University
2013 & 2011	Teaching Assistant: Ecology, Evolution, and Plant Biology, Stanford University
2013 & 2012	Biocore Explorations Course Instructor, Department of Biology, Stanford University
2012	Teaching Assistant: Conservation Biology, Stanford University
2010	Undergraduate Workshop Leader: Evolution and Biodiversity, University of Miami
2009–2010	Peer Tutor, Camner Academic Resource Center, University of Miami

Academic, community, & university service

Service activities since starting faculty position:

Doctoral thesis committees (20)

2026–Present	Matthew Isada, CMDB, Johns Hopkins University
2025–Present	Jake Galvin, CMDB, Johns Hopkins University
2025–Present	Lance O'Connor, CMDB, Johns Hopkins University
2025–Present	Maya Mastronardo, CMDB, Johns Hopkins University
2025–Present	Samuel Fridell, CMDB, Johns Hopkins University
2024–Present	Megan Miller, Earth and Planetary Sciences, Johns Hopkins University
2024–Present	Theresa Mai, CMDB, Johns Hopkins University
2024–Present	Catherine Brown, CMDB, Johns Hopkins University
2024–Present	Darren Boydston, CMDB, NIH Graduate Partnership Program, Johns Hopkins University
2023–Present	Calvin Runnels, CMDB, Johns Hopkins University
2022–Present	Catherine Henderson, CMDB, Johns Hopkins University
2022–Present	Radhika Jangi, CMDB, Johns Hopkins University
2021–Present	Dylan Sucich, CMDB, NIH Graduate Partnership Program, Johns Hopkins University
2023–2025	Rylee Genner, CMDB, NIH Graduate Partnership Program, Johns Hopkins University
2023–2025	Nicolas Moya, CMDB, Johns Hopkins University
2023–2024	Bradley Olinger, CMDB, NIH Graduate Partnership Program, Johns Hopkins University
2021–2024	Danielle Nicklas, Pathobiology, Johns Hopkins University
2020–2024	Margaret Starostik, CMDB, Johns Hopkins University
2020–2023	Jeremiah Miller, CMDB, Johns Hopkins University

2020–2021	T. Rhyker Ranallo-Benavidez, Biomedical Engineering, Johns Hopkins University

Graduate board oral examination committees (21)

July 2026	Zoe Rudnick, Biomedical Engineering, Johns Hopkins University
2025	April Kim, Computer Science, Johns Hopkins University
2025	Kavya Vaddadi, Computer Science, Johns Hopkins University
2025	Stephen Hwang, Cross-Disciplinary Biology (XDBio), Johns Hopkins University
2025	Daniel Rabizadeh, Human Genetics and Genomics, Johns Hopkins University
2025	Jamie Moore, Biomedical Engineering, Johns Hopkins University
2024	Zitong He, Computer Science, Johns Hopkins University
2024	Bohan Ni, Computer Science, Johns Hopkins University
2023	Jessica Bonnie, Computer Science, Johns Hopkins University
2023	Bailey Spiegelberg, Human Genetics and Genomics, Johns Hopkins University
2023	Luke Morina, Biomedical Engineering, Johns Hopkins University
2022	Matthew Isada, CMDB, Johns Hopkins University
2022	Arun Das, Computer Science, Johns Hopkins University
2022	Christian Wesselborg, CMDB, Johns Hopkins University
2022	Samantha Zarate, Computer Science, Johns Hopkins University
2021	Radhika Jangi, CMDB, Johns Hopkins University
2021	Sadhana Chidambaran, CMDB, Johns Hopkins University
2021	Xiangning Chen, CMDB, Johns Hopkins University
2021	Katie Farney, CMDB, NIH Graduate Partnership Program, Johns Hopkins University
2021	Catherine Henderson, CMDB, Johns Hopkins University
2021	Nae-Chyun Chen, Computer Science, Johns Hopkins University

Department qualifying examination committees (1)

2026	Megan Miller, Earth and Planetary Sciences, Johns Hopkins University

University and departmental service

2026–Present	Chair, Committee for Department Chair Selection, Department of Biology, Johns Hopkins University
2025–Present	Undergraduate Mentoring Committee, Department of Biology, Johns Hopkins University
2023–Present	Ruh Chih Huang Colloquium Series Organizer, Department of Biology, Johns Hopkins University
2022–Present	CMDB Admissions Committee, Johns Hopkins University
2022–Present	Graduate Curriculum Committee, Department of Biology, Johns Hopkins University
2020–Present	Undergraduate Curriculum Committee, Department of Biology, Johns Hopkins University
2019–Present	CMDB Awards Committee, Johns Hopkins University
2023–2024	Search Committee for Open Rank and Open Research Topic Position, Department of

	Biology, Johns Hopkins University
2021–2023	Diversity Advocate and Member, Search Committee for Computational Genomics, Department of Biology, Johns Hopkins University
2022	Faculty Focus Group Panelist, External Review of Research Compliance Program, Johns Hopkins University
2021	Biology Futures Committee, Department of Biology, Johns Hopkins University

Academic and professional organizations

2024–Present	Awards Committee, American Society of Human Genetics
2021–2024	Co-Chair, Origins of Human Aneuploidy Research Consortium

Conferences

2021–Present	Organizing Committee, Origins of Human Aneuploidy Meeting, Online
2024	Session Co-Chair, Complex Traits and Genomic Medicine, Biology of Genomes, Cold Spring Harbor Laboratory, NY
2019	Pre-Conference Workshop Chair, Annual Conference of the Foundation for Reproductive Medicine, New York, NY
2019	Session Moderator, Reproductive Fitness - The Genetics of Infertility, 69th Annual Meeting of the American Society of Human Genetics, Houston, TX

Journal peer review

2024–Present	Editorial Board Member, *Journal of Assisted Reproduction & Genetics*
2013–Present	Ad Hoc Reviewer, *American Journal of Human Genetics*, *American Journal of Obstetrics & Gynecology*, *BioData Mining*, *Bioinformatics*, *BMC Biology*, *Cell Genomics*, *Cell Proliferation*, *Current Urology*, *Development*, *eLife*, *G3*, *Genes*, *Genetics*, *Genome Biology*, *Genome Biology and Evolution*, *Genome Research*, *Human Reproduction*, *Journal of Assisted Reproduction & Genetics*, *Journal of Biogeography*, *Journal of Heredity*, *Journal of Ovarian Research*, *Molecular Biology and Evolution*, *Molecular Ecology*, *Nature*, *Nature Communications*, *Nature Ecology & Evolution*, *Nature Medicine*, *Nature Structural & Molecular Biology*, *PLoS Biology*, *PLoS Genetics*, *PLoS One*, *Prenatal Diagnosis*, *Proceedings of the National Academy of Sciences U.S.A.*, *Proceedings of the Royal Society B*, *Reproduction*, *Science*, *Science Advances*

Grant and conference review

2026	Ad Hoc Panelist, Maximizing Investigators' Research Award Special Emphasis Panel, Center for Scientific Review, National Institutes of Health
2024, *2026*	Ad Hoc Panelist, Maximizing Investigators' Research Award A Study Section (MRAA), Center for Scientific Review, National Institutes of Health
2022–2024, 2026	Ad Hoc Reviewer, Annual Meeting of the European Society of Human Reproduction and Embryology
2025–2026	Ad Hoc Reviewer, Office of Undergraduate Research, Scholarly, and Creative Activity, Johns Hopkins University

2025–2026	Ad Hoc Reviewer, Research Foundation Flanders (FWO)
2023, 2026	Ad Hoc Reviewer, Discovery and Catalyst Awards, Johns Hopkins University
2023–2026	Ad Hoc Reviewer, Provost's Undergraduate Research Award, Johns Hopkins University
2022, 2024	Outside Reviewer, Israel Science Foundation
2022	College of Expert Reviewers, European Science Foundation
2022	Ad Hoc Reviewer, Kleberg Foundation Scholars Program Internal Competition, Office of Foundation Relations, Johns Hopkins University
2022	Outside Reviewer, Medical Research Council, United Kingdom Research and Innovation
2022	Ad Hoc Reviewer, NHGRI Genomic Data Science Analysis, Visualization, and Informatics Lab-space (AnVIL) Cloud Credits Continued Program (AC3)
2021	Outside Reviewer, Independent Research Fund Denmark, Danish Agency for Higher Education and Science
2018–2019, 2021	Outside Reviewer, Biological Anthropology Program, National Science Foundation

Education, volunteering, & outreach

2018, 2021–*2026*	Mock F31 Panelist, Communicating Science (020.619, Spring), Johns Hopkins University
2020, 2024	Representative of JHU CMDB, NIH Graduate & Professional School Fair, Bethesda, MD
2024	Speaker, Faculty Salon Career Mentorship Series, Department of Biology, Johns Hopkins University
2024	Keynote Speaker, Northeast District 2 Annual Convention, TriBeta Biological Honors Society, Johns Hopkins University
2022–2024	Virtual Training Program Mentor, Society for Molecular Biology and Evolution
2023	Judge, Postdoctoral Conference Poster Session (Online), Johns Hopkins University
2023	Co-author, Cloud-based modules for interactive exploration of human genomic variation, https://mccoy-lab.github.io/hgv_modules/
2023	South Asian Students at Hopkins Faculty Panelist, Johns Hopkins University
2022	Ingenuity Speaker Series, Baltimore Polytechnic Institute, Baltimore, MD
2020	Visiting Fellow in Biology Assessment, AP Higher Education, The College Board
2019	Undergraduate Mentor, Society for Molecular Biology & Evolution, Manchester, England
2018–2019	Senior Project Mentor, School Without Walls, Washington, DC
2018	Bioethics Panelist, Biology Club, Univ. of Maryland, Baltimore County, Catonsville, MD

Service activities prior to starting faculty position:

2018 & 2017	Education Outreach Volunteer, University Prep Middle School, Seattle, WA
2018	Judge, NWABR Middle School Essay Contest, Seattle, WA
2017	Session Moderator, Detection and Interpretation of Structural Variation, 67th Annual Meeting of the American Society of Human Genetics, Orlando, FL
2017	Invited Speaker, Emerald City Rotary, Seattle, WA
2016	Volunteer, University of Washington Paws-On Science, Pacific Science Center, Seattle, WA
2016	Invited Speaker, Open Mic Science, Treehouse Cafe, Bainbridge Island, WA

2014	AP Biology E-mentor, Arroyo High School, San Lorenzo, CA
2012–2013	Copy Editor, *Six Degrees: The Stanford Journal of Human Rights*
2012	Judge, Synopsys Silicon Valley Science and Technology Championship, San Jose, CA
2012	PhD Interview Visit Committee, Department of Biology, Stanford University
2011	New PhD Student Orientation Committee, Department of Biology, Stanford University

Selected media

Selected media coverage since starting faculty position:

2026	Lius, A. Genetic basis of aneuploidy, which often causes pregnancy loss, revealed. *The Scientist*.
2026	Rosen, J. Study reveals genetic factors influencing pregnancy loss. *Johns Hopkins University Hub*.
2026	Anderson, A. Meiotic gene variants linked to recombination, pregnancy loss-related aneuploidy. *GenomeWeb*.
2025	Rentz, A. Human genome sequencing powers personalized, precision medicine. *Johns Hopkins University Hub*.
2024	Anderson, A. Gene expression, underlying genetic variation profiled in diverse human populations. *GenomeWeb*.
2024	Candanosa, R. M. New study addresses long-standing diversity bias in human genetics. *Johns Hopkins University Hub*.
2024	Jiménez, G. Many pregnancy losses are caused by errors in cell division. *Scientific American*.
2023	Zhu, V. Study on chromosomal abnormalities sheds light on in early embryo development in human reproduction and IVF. *The Johns Hopkins News-Letter*.
2023	Marshall, M. Why the human genome was never completed. *BBC*.
2023	Rogers, M. A. Researchers assemble the first complete sequence of a human Y chromosome. *NHGRI Press Release*.
2023	Candanosa, R. M. Male sex chromosome, missing piece in human genome, finally decoded. *Johns Hopkins University Hub*.
2022	Kolata, G. Link between long telomeres and long life is a tall tale, study finds. *The New York Times*.
2022	Contie, V. Long telomeres may heighten cancer risks. *NIH Research Matters*.
2022	Park, A. The human genome is finally fully sequenced. *TIME*.
2022	Browne, E. Genome defined as human genetic blueprint fully sequenced for first time. *Newsweek*.
2022	Yeung, E. Hopkins team plays a role in sequencing complete human genome. *The Johns Hopkins News-Letter*.
2022	Rieland, R. Johns Hopkins scientists contribute to the first complete sequence of human genome. *Johns Hopkins University Hub*.
2021	Zimmer, C. Scientists finish the human genome at last. *The New York Times*.
2020	Aneuploidy common in early-stage human embryos, single-cell RNA-seq study reveals. *GenomeWeb*.

2020	Donovan, D. Abnormal cells in embryos might not prevent IVF success. *Johns Hopkins University Hub*.

Selected media coverage prior to starting faculty position:

2018	Boissoneault, L. A new genetic study suggests modern Flores island pygmies and ancient hobbits are unrelated. *Smithsonian Magazine*.
2018	Davidson, A. Small height evolved twice on 'Hobbit' island of Flores. *BBC*.
2018	Zimmer, C. Bodies keep shrinking on this island, and scientists aren't sure why. *The New York Times*.
2017	What Neanderthal DNA is doing to your genome (video). *SciShow*.
2017	Panko, B. How ancient Neanderthal DNA still influences our genes today. *Smithsonian Magazine*.
2015	Schindler, K. A scrambled mess. *The Scientist*.