JAE YOUNG CHOI

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APPOINTMENTS

2023 **Assistant Professor**
University of Kansas, Department of Ecology and Evolutionary Biology

2016 **Postdoctoral scholar**
New York University, Department of Biology
Adviser: Michael Purugganan

EDUCATION

2015 **Ph.D. in Genetics, Genomics, and Development**
Cornell University, Department of Molecular Biology and Genetics
Adviser: Charles "Chip" Aquadro

2010 **B.Sc in Human Biology and Cell Systems Biology**
University of Toronto, Department of Cell and Systems Biology

GRANTS & AWARDS

2024–29 NIH R35GM154595. Molecular mechanisms and evolution of natural telomeric variation. **PI: Choi JY. ($1,881,098)**

2023–24 Kansas INBRE. Genetics and developmental functions of natural telomere length variation. **PI: Choi JY. ($229,500)**

2023 KU Center for genomics. Recombination rate variation and evolutionary mechanism of adaptive radiation. **PI: Choi JY. ($13,909)**

2023 AGA EECG research award. Recombination rate variation and evolutionary mechanism of adaptive radiation. **PI: Choi JY. ($6,000)**

2022–25 NSF IOS-2204729. The genetic basis of local adaptation across an island adaptive radiation. PI: Stacy E. ($1,184,175). **co-PI: Choi JY.** (**$76,622)**

PUBLICATIONS

^graduate student author
#postdoc author

27. Nguyen L^, **Choi JY**. (2025). Topsicle: a method for estimating telomere length from whole genome long-read sequencing data. Genome Biology. 26:295
26. Kumawat S#, Shametov A^, Valeeva LR, Ju Y, Martinez I, Logeswaran D, Chen H, Coughlan J, Chen J, Yuan YW, Sobel J, Koo DH, Shakirov EV, **Choi JY**. (2025) Monkeyflower (*Mimulus*) uncovers the evolutionary basis of the eukaryote telomere sequence variation. PLoS Genetics. 21(6): e1011738.
25. Yang M, White MA, Findlay GD, Vignogna RC, Apger-McGlaughon J, Clark NL, **Choi JY**, Fromme JC, Wolfner MF. (2025). Female membrane proteins regulate postmating ovulation in Drosophila melanogaster by ovulin-dependent and -independent pathways. Proceedings of the National Academy of Sciences. 122:e2508783122.

24. Goliasse M, Johary A, Platts AE, Ortner-Krause F, Edger PP, **Choi JY**, Purugganan MD, Joly-Lopez Z. (2025). Uncovering the multi-layer cis-regulatory landscape of rice via integrative nascent RNA analysis. Genome Biology. 26:1–32.

23. Kumawat S[#] and **Choi JY**. (2023). No end in sight: Mysteries of the telomeric variation in plants. American Journal of Botany. 110 (11): e16244 (*Review*).

Prior to 2023 (Before Assistant Professorship)

22. Smith EG, Hazzouri KM, **Choi JY**, Delaney P, Al-Kharafi M, Howells EJ, Aranda M, Burt JA. (2022). Signatures of selection underpinning rapid coral adaptation to the world's warmest reefs. Science Advances. 8(2): eabl7287.

21. **Choi JY**, Dai X, Alam O, Peng JZ, Rughani P, Hickey S, Harrington E, Juul S, Ayroles J, Purugganan MD, Stacy E. (2021). Selection on ancient variations drives the adaptive radiation of Metrosideros across the Hawaiian archipelago. Proceedings of the National Academy of Sciences. 118 (37): e2023801118.

20. **Choi JY**, Abdulkina LR, Yin J, Chastukhina IB, Lovell JT, Agabekian IA, Young PG, Razzaque S, Shippen DE, Juenger TE, Shakirov EV, and Purugganan MD. (2021). Natural variation in plant telomere length is associated with flowering time. The Plant Cell. 33(4):1118-1134.

19. **Choi JY**, Lye ZN, Groen SC, Dai X, Rughani P, Zaaijer S, Harrington ED, Juul S, Purugganan MD. (2020). Nanopore-based genome assembly and the evolutionary genomics of basmati rice. Genome Biology. 21:21.

18. **Choi JY**, Purugganan MD, and Stacy EA. (2020). Divergent selection and primary gene flow shape incipient speciation of a riparian tree on Hawaii Island. Molecular Biology and Evolution. 37: 695–710.

17. **Choi JY**, Lee YCG. (2020). Double-edged sword: the evolutionary consequences of the epigenetic silencing of transposable elements. PLoS Genetics. 16 (7): e1008872. (*Review*)

- Cover for PLoS Genetics July 2020 issue.

16. Groen SC, Ćalić I, Joly-Lopez Z, Platts AE, **Choi JY**, Natividad M, Dorph K, William MM, Bracken B, Cabral CLU, et al. (2020). The strength and pattern of natural selection on gene expression in rice. Nature. 578:572–576.

15. Gutaker RM, Groen SC, Bellis ES, **Choi JY**, Pires IS, Bocinsky RK, Slayton ER, Wilkins O, Castillo CC, Negrão S, et al. (2020). Genomic history and ecology of the geographic spread of rice. Nature Plants. 6:492–502.

14. Joly-Lopez Z, Platts AE, Gulko B, **Choi JY**, Groen SC, Zhong X, Siepel A, Purugganan MD. (2020). An inferred fitness consequence map of the rice genome. Nature Plants. 6:119–130.

13. Shin D, Lee S, Kim TH, Lee JH, Park J, Lee J, Lee JY, Cho LH, **Choi JY**, Lee W, et al. (2020). Natural variations at the Stay Green gene promoter control lifespan and yield in rice cultivars. Nature Communications. 11(1):1-11

12. **Choi JY**, Zaidem M, Gutaker R, Dorph K, Singh RK, and Purugganan MD. (2019). The complex geography of domestication of the African rice *Oryza glaberrima*. PLoS Genetics. 15(3): e1007414.

11. Raza Q, **Choi JY**, Li Y, O'Dowd RM, Watkins SC, Hong Y, Clark NL, and Kwiatkowski AV. (2019). Evolutionary rate covariation analysis of E-cadherin identifies Raskol as regulator of cell adhesion and actin dynamics in *Drosophila*. PLoS Genetics. 15(2): e1007720.
10. Chen L-Y, VanBuren R, Paris M, Zhou H, Zhang X, Wai CM, Yan H, Chen S, Alonge M, Ramakrishnan S, et al. (2019). The bracteatus pineapple genome and domestication of clonally propagated crops. Nature Genetics. 51: 1549–1558. [**Choi JY** is 22nd on author list]
9. **Choi JY** and Purugganan MD. (2018). Multiple origin but single domestication led to domesticated Asian rice. G3: Genes, Genomes, Genetics. 8(3) 797-803.
8. **Choi JY** and Purugganan MD. (2018). Evolutionary epigenomics of retrotransposon-mediated methylation spreading in rice. Molecular Biology and Evolution. 35(2): 365–382.
7. **Choi JY**, Platts AE, Fuller DQ, Hsing YI, Wing RA, and Purugganan MD. (2017). The rice paradox: Multiple origins but single domestication in Asian rice. Molecular Biology and Evolution. 34(4):969-979.
- Listed as *Molecular Biology and Evolution* Emerging Classics (doi.org/10.1093/molbev/msz285)
6. Meyer RS, **Choi JY**, Sanches M, Plessis A, Flowers JM, Amas J, Dorph K, Barretto A, Gross B, Fuller DQ, et al. (2016). Domestication history and geographical adaptation inferred from a SNP map of African rice. Nature Genetics. 48:1083–1088.
5. **Choi JY** and Aquadro CF. (2016). Recent and long term selection across synonymous sites in *Drosophila ananassae*. Journal of Molecular Evolution. 83(1-2):50-60.
4. **Choi JY** and Aquadro CF. (2015). Molecular evolution of *Drosophila* germline stem cell and neural stem cell regulating genes. Genome Biology and Evolution. 7(11):3097-3114.
3. **Choi JY**, Bubnell J, and Aquadro, CF. (2015). Population genomic analysis of the infectious and integrated *Wolbachia pipientis* genomes in *Drosophila ananassae.* Genome Biology and Evolution. 7(8):2362-2382.
2. **Choi JY** and Aquadro CF. (2014). The coevolutionary period of *Wolbachia piepientis* infecting *Drosophila ananassae* and its impact on the evolution of the host germline stem cell regulating genes. Molecular Biology and Evolution. 31(9):2457-2471.
1. Cutter AD and **Choi JY**. (2010). Natural selection shapes nucleotide polymorphism across the genome of the nematode *Caenorhabditis briggsae*. Genome Research. 20:1103-1111.

PREPRINTS OR PUBLICATIONS UNDER REVIEW

Dunivant TS, Ćalić I, Gilligan C, Joly-Lopez Z, **Choi JY**, Natividad M, Cabral CLU, Torres RO, Vergara G, Franks SJ, et al. 2025. Environment-dependent selection impacts heritable developmental stability and trait canalization in rice. :2025.06.13.659410. Available from: https://www.biorxiv.org/content/10.1101/2025.06.13.659410v1

MENTEES

Postdoctoral researchers

2023–present Surbhi Kumawat
2024–present Naseem Samo

Graduate students

2023–present Askhan Shametov (Ph.D.)
- R. C. Lewontin Early Award, 2024
- Mary Harkey Hall Botany Endowment Award, 2025

2024–present Linh Nguyen(Ph.D.)
- Val and Marilyn Smith Graduate Student Support Award, 2025

Undergraduate students

2023–present Joyce Cortez (Emerging Scholars Program)
- Society for the Study of Evolution: Undergraduate Diversity at Evolution, 2025

2024–present Christine Nguyen
2024 Audrey Combs (Colorado College, Summer REU)
2023-24 Kate Hirschfeld

TEACHING

Spring 2023 BIOL350: Principles of Genetics (Lecture, 156 students)
Spring 2024 BIOL350: Principles of Genetics (Lecture, 221 students)
Fall 2024 BIOL370: Introduction to Biostatistics (Lecture, 113 students)
Spring 2025 BIOL350: Principles of Genetics (Lecture, 266 students)

PRESENTATION AND INVITED LECTURE

2024 Plant Biology Seminar Series, Pennsylvania State University
2024 The Allied Genetics Conference (TAGC), Washington DC
2023 Department of Biology, Washington University at St. Louis
2023 Department of Biological Sciences, University of Missouri
2023 Division of Biology, Kansas State University

SERVICE

Departmental/University

2023 **Search committee member,** Department data scientist
2024–present **Faculty member,** KU center for genomics symposium
2024–present **Reviewer,** Undergraduate research award
2024–present **Admissions Committee Member,** Department graduate program

Workshop and symposia

2019 **Organizer,** Society for Molecular Biology and Evolution, “Evolutionary Processes and Consequences of Animal and Plant Domestication”
2017 **Organizer,** Society for Molecular Biology and Evolution, “Evolutionary Genomics of Domestication”

Reviewing

2025 **Guest Editor**, Plos Genetics
2024-2025 **Award reviewer,** Society for study of Evolution, Rosemary Grant Advanced Award
2024 **Grant panelist,** NSF–MCB Genetic Mechanisms
2023 **Grant panelist,** USDA–NIFA Physiology of Agricultural Plants
2019 **Grant *ad hoc* reviewer,** Biotechnology and Biological Sciences Research Council (BBSRC), United Kingdom
2010–present **Peer-Revieweer for:** BMC Genomics, Genome Biology and Evolution, Genome Biology, Molecular Biology and Evolution, Molecular Ecology, Nature Communications, Nature Genetics, PLoS Computational Biology, Science, Science Advances

Outreach

2019	**NYU Biology Summer Undergraduate Research Program (SURP).** Research and academic mentor for historically underrepresented undergraduate students
2016–18	**Biobus.** Teach, help, and explore biology to young students in New York City
2013–14	**Expend Your Horizons (EYH), Cornell University.** Science outreach for 7-9th grade girls
2014	**Graduate Student School Outreach Program (GRASSHOPR).**Developed and taught genetics outreach curriculum for 3rd grade students
2011	**Cornell University Field of Genes, Genetics, and Development Graduate Student Representative.**