

Kaan Ihsan Eskut

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RESEARCH SUMMARY

Doctoral candidate in Biology studying genome evolution and programmed DNA elimination in sea lamprey, combining molecular genetics with bioinformatics and computational approaches. Research spans germline-restricted chromosome phylogeny, epigenetic regulation of chromatin elimination, and comparative genomics.

SKILLS & RESEARCH INTERESTS

Bioinformatics · Genome Biology · Genetics · Molecular Biology · Cancer Biology · Computational Biology

EDUCATION

University of Kentucky — Lexington, KY

Expected 05/2027

Ph.D., Biology · GPA: 4.0

Thesis: Investigating genome evolution of lamprey species and phylogeny of programmed DNA elimination; characterizing the early developmental molecular profile of sea lamprey to better understand their programmed DNA loss process.

Training focus: Molecular Genetics, Molecular Evolution, Bioinformatics, and Computational Biology.

Istanbul University — Istanbul, Türkiye

08/2020

B.S. cum laude, Molecular Biology and Genetics · GPA: 3.36

Thesis: Development of a computational pipeline to assess patterns of evolutionary conservation and divergence across the lamprey genome (DOI: 10.13140/RG.2.2.18462.15685).

Training focus: Molecular Biology, Molecular Genetics, Cancer Biology, and Bioinformatics.

Maria Curie-Skłodowska University — Lublin, Poland

12/2018 – 07/2019

Erasmus+ Exchange Program, Biology and Biotechnology · GPA: 3.93

RESEARCH & PROFESSIONAL EXPERIENCE

Graduate Teaching and Research Assistant

01/2021 – Present

University of Kentucky, Department of Biology — Lexington, KY · Full-time · PI: Dr. Jeramiah J. Smith

- Investigate genome evolution of lamprey species and the phylogeny of germline-restricted chromosomes in sea lamprey.
- Characterize the molecular mechanisms that initiate and drive programmed DNA elimination.
- Mentor undergraduate researchers in the Smith Lab, guiding project design and training in molecular and computational techniques.

Visiting Scholar

01/2020 – 03/2020

University of Kentucky, Department of Biology — Lexington, KY · Full-time · PI: Dr. Jeramiah J. Smith

- Completed bachelor's thesis research: developed a computational pipeline to assess patterns of evolutionary conservation and divergence across the lamprey genome.

Business Development Associate

03/2020 – 01/2021

PeerBie Inc. — San Francisco, CA (Remote)

- Collaborated with associates to build a customer-friendly environment and clientele for a business management application (peerbie.com).

Data Science Intern

02/2019 – 01/2020

CFA Society Istanbul — Istanbul, Türkiye · Part-time

- Processed data from investment professionals to help develop new investment strategies for startups.

IT Staff

09/2017 – 02/2019

Istanbul University — Istanbul, Türkiye · Part-time

- Maintained network systems connecting university offices and classrooms.
- Trained incoming IT department staff.

Intern Molecular Biologist

13 mo. & 3 mo.

Cukurova University College of Medicine, Medical Genetics Dept. (AGENTEM), 13 months; Istanbul University, Dept. of Molecular Biology and Genetics, 3 months — completed as part of B.S. training.

PUBLICATIONS

- Eskut, K.I.**, Scott, C., Saraceno, C. *et al.* Functional analyses of histone methyltransferases in sea lamprey embryos undergoing programmed DNA elimination. *BMC Genomics* (2026). doi:10.1186/s12864-026-13301-w
- Waldridge OM, **Eşkut Kİ**, Smith JJ, Cassone VM. Phylogeny of core molecular components of metazoan circadian clocks. *Journal of Biological Rhythms*. 2025;0(0). doi:10.1177/07487304251390623
- Kelly B, Wu CH, **Eskut KI**, McCauley E, Dhungel S, Pavlecic S, Bieghler G, Perovanovic J, Tantin D, Famulski J, Smith JJ, Kikani C. Glutamine-dependent Slc25a39–Nrf2 axis couples mitochondrial dynamics with metabolic reprogramming to establish myogenic commitment. *bioRxiv* 2025.10.02.680066. doi:10.1101/2025.10.02.680066
- Timoshevskiy VA, Timoshevskaya N, **Eşkut KI**, Rajandran K, Smith JJ. Biparental inheritance of germline-specific chromosomes in the sea lamprey and their roles in oocytes. *Proc Natl Acad Sci USA*. 2025;122(24):e2421883122. doi:10.1073/pnas.2421883122
- Timoshevskaya N, **Eşkut Kİ**, et al. An improved germline genome assembly for the sea lamprey *Petromyzon marinus* illuminates the evolution of germline-specific chromosomes. *Cell Reports*. 2023;42(3):112263. doi:10.1016/j.celrep.2023.112263

PRESENTATIONS

- Evolutionary insights from germline-specific chromosomes of lamprey and hagfish genomes. Biology of Genomes, May 6–10, 2025, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
- Programmed DNA loss and genome evolution in cyclostomes (poster). Society for Developmental Biology 82nd Annual Meeting, July 20–23, 2023, Chicago, IL.
- Cyclostome genomes: changes in form and function over eons and across development (poster). Aquatic Models of Human Disease Conference, Oct 6–10, 2022, Marine Biological Laboratory, Woods Hole, MA.

MEETING ABSTRACTS

- Bisgin A, Boga I, Eskut KI, Rencuzogullari C, Sonmezler O, Kose F. Clinical assessment of HRD scoring in relation to PARPi response in terms of statistical guidance on reporting results for CDx tests evaluation. *Journal of Clinical Oncology*. 41(16_suppl):e17597.

THESES

- Development of a computational pipeline to assess patterns of evolutionary conservation and divergence across the lamprey genome**
2020
B.S. final thesis project · University of Kentucky and Istanbul University · Scientific Director: Dr. Jeramiah J. Smith · Thesis Advisor: Dr. Andres Aravena

ADDITIONAL TRAINING

- Marine Biological Laboratory — Workshop on Molecular Evolution, 2026
Marine Biological Laboratory — Frontiers in Stem Cells & Regeneration, 2022

AWARDS & HONORS

- University of Kentucky Ribble Graduate Travel Award, Department of Biology — 2026, 2025, 2023, 2022
University of Kentucky Kuehne Award, Department of Biology — 2025
University of Kentucky Scherr Special Opportunity Award, Department of Biology — 2022
Marine Biological Laboratory SCARE Course Tuition Award, supported by the National Institutes of Health (NIH) — 2022
Childhood Cancer Association (Adana, Turkey) Travel Award — 2020

TEACHING EXPERIENCE

- BIO 520 — Bioinformatics, University of Kentucky: Fall 2025, Spring 2025, Spring 2024, Spring 2023
BIO 101 — Introduction to Biology, University of Kentucky: Fall 2024
BIO 445 — Biology of Sex, University of Kentucky: Fall 2024

PROFESSIONAL MEMBERSHIPS

Kentucky Academy of Science — Louisville, KY (11/2024 – present)

American Society of Clinical Oncology — Alexandria, VA (06/2023 – 06/2024)

VOLUNTEER EXPERIENCE & OUTREACH

Judge, 41st Annual Kentucky American Water District Science Fair — 2026

Judge, Central Kentucky Regional Science Fair — 2026, 2025

Judge, 39th Annual Kentucky American Water District Science Fair — 2024

Judge, KY INBRE Annual Research Conference (ARC24) — 2024

Judge, 37th Annual Kentucky American Water District Science Fair — 2022