

Curriculum Vitae
Sean L. Beckwith, Ph.D.

Dept. of Biochemistry & Molecular Biology
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CV Prepared: August 2023

EDUCATION

- April 2018 **Ph.D.** from Stanford University, Stanford, CA
Department of Biology – Cell, Molecular and Organismal Biology Ph.D. program
Advisor: Dr. Ashby Morrison
Committee: Dr. Tim Stearns, Dr. Or Gozani, Dr. Joe Lipsick, Dr. Gavin Sherlock (*Chair*)
Dissertation Title: “Genetic interaction mapping identifies the INO80 chromatin remodeler as a key metabolic regulator in yeast”
- June 2012 **B.A.** from Carleton College, Northfield, MN
Magna Cum Laude; Biology Major, Biochemistry Minor

ACADEMIC POSITIONS

- 2018 - present **Postdoctoral Research Fellow** with Dr. David Garfinkel, University of Georgia (UGA)
2018 **Lecturer**, Department of Biological Sciences, San Jose State University
2012 - 2018 **Doctoral Student** with Dr. Ashby Morrison, Stanford University
Summer 2011 **Summer Undergraduate Research Fellow** with Dr. Mary Lou Guerinot, Dartmouth College
Summer 2010 **Summer Undergraduate Research Fellow** with Dr. Michael Buszczak, University of Texas Southwestern Medical Center

FELLOWSHIPS & AWARDS

Teaching Awards

- 2015 **Excellence in Teaching Award** – Stanford Biosciences, Stanford University
Awarded to two students annually “whose teaching distinguishes them as valued contributors to the School of Medicine and Biosciences community”.
- 2014 **Excellence in Teaching Award** – Department of Biology, Stanford University
Awarded to top 20% of TAs in department each year. Award received for teaching Bio 44X.
- 2013 **Excellence in Teaching Award** – Department of Biology, Stanford University
Awarded to top 20% of TAs in department each year. Award received for teaching Bio 44X.

Research Fellowships

- 2020-2022 **NIH F32 Ruth L. Kirschstein National Research Service Award (NRSA)**
National Institutes of Health / National Institute of General Medical Sciences
F32, GM139247 “Retrotransposon virus-like particle assembly”
Principal Investigator: Sean Beckwith | Sponsor: David Garfinkel
Total costs: \$133,872
Fellowship funds provided: salary, research equipment and reagents, conference travel
Goal: This project combines genetic, biochemical, and microscopy approaches to characterize a novel disordered prion-like domain within the retrovirus-like transposon Ty1, transforming our understanding of retroelement life cycles and potentially defining a new class of antiretroviral drug targets.
- 2015-2016 **Stanford Genome Training Program**
The SGTP is an NIH-funded (T32) training program for nominated students in genomics
- 2012-2015 **Stanford Graduate Fellowship**
The SGF Science and Engineering 3-year full fellowship is awarded on a nomination basis to a limited number of students annually

- 2014 **National Science Foundation Graduate Research Fellowship Program** – Honorable Mention
 2011 **Summer Undergraduate Research Fellowship**, Dartmouth College
 2010 **Summer Undergraduate Research Fellowship**, University of Texas Southwestern Medical Center

Additional Awards

- 2022 **Postdoctoral Scholar Domestic and Foreign Travel Award** – Office of Postdoctoral Affairs, UGA
 Awarded for presentation at CSHL Retroviruses Meeting
 2021 **Professional Development Support Fund Award** – Postdoctoral Association, UGA
 Awarded for presentation at CSHL Transposable Elements Meeting

PUBLICATIONS

ORCID: [0000-0001-6559-1030](https://orcid.org/0000-0001-6559-1030)

= co-first author | student co-authors underlined

Beckwith S, Nomberg E, Newman A, Taylor J, Guerrero-Ferreira R, Garfinkel D. An interchangeable prion-like domain is required for Ty1 retrotransposition. *Proceedings of the National Academy of Sciences*. **2023**.
doi.org/10.1073/pnas.2303358120.

Media: Lesage P, Maxwell P. A prion-like domain in Gag capsid protein drives retrotransposon particle assembly and mobility. *Proceedings of the National Academy of Sciences*. **2023**.
doi.org/10.1073/pnas.2311419120. (Commentary invited by the editors)
[Blog post](#) on Saccharomyces Genome Database & Alliance of Genome Resources [blog](#)
 Department [press release](#)
[Lay summary](#) on Kudos

Cottee M[#], **Beckwith S[#]**, Letham S, Kim S, Young G, Stoye J, Garfinkel D, Taylor A. Structure of a Ty1 Restriction Factor Reveals the Molecular Basis of Transposition Copy Number Control. *Nature Communications*. **2021**.
[doi:10.1038/s41467-021-25849-0](https://doi.org/10.1038/s41467-021-25849-0).

Beckwith S, Schwartz E, Garcia-Nieto P, King A, Gowans G, Wong K, Yao W, Eckley T, Paraschuk A, Peltan E, Lee L, Morrison A. The INO80 Chromatin Remodeler Sustains Metabolic Stability by Promoting TOR Signaling and Regulating Histone Acetylation. *PLOS Genetics*. **2018**. [doi:10.1371/journal.pgen.1007216](https://doi.org/10.1371/journal.pgen.1007216).

Zhou C[#], Johnson S[#], Lee L, Longhurst A, **Beckwith S**, Johnson M, Morrison A, Narlikar G. The Yeast INO80 Complex Operates as a Tunable DNA Length-Sensitive Switch to Regulate Nucleosome Sliding. *Molecular Cell*. **2018**.
[doi:10.1016/j.molcel.2018.01.028](https://doi.org/10.1016/j.molcel.2018.01.028).

Yao W[#], King D[#], **Beckwith S**, Gowans G, Yen K, Zhou C, Morrison A. The INO80 Complex Requires the Arp5-Ies6 Subcomplex for Chromatin-Remodeling and Metabolic Regulation. *Molecular and Cellular Biology*. **2016**.
[doi:10.1128/MCB.00801-15](https://doi.org/10.1128/MCB.00801-15).

Yao W, **Beckwith S**, Zheng T, Young T, Dinh V, Ranjan A, Morrison A. Assembly of the Arp5 Subunit Involved in Distinct INO80 Chromatin-Remodeling Activities. *The Journal of Biological Chemistry*. **2015**.
[doi:10.1074/jbc.M115.674887](https://doi.org/10.1074/jbc.M115.674887).

TEACHING & MENTORING EXPERIENCE

Courses / Instructor of Record

- Fall 2023 FYOS 1001: Jumping for Joy: The Science and the Scientists of Jumping Genes, UGA
 Prepared and taught freshman seminar course on transposons, focusing on the lives and discoveries of Barbara McClintock, Jennifer Doudna, and others, highlighting scientists from underrepresented groups. Co-taught with Dr. David Garfinkel
 Winter 2018 BIOL 119: Neurogenetics, San Jose State University
 Prepared and taught an upper-division undergraduate cellular and molecular neuroscience course

Fall 2016 BIO 296: TA Training in Biology, Stanford University
Taught curriculum on pedagogical techniques for graduate teaching assistants teaching undergraduate biology courses

Courses / Teaching Assistantships

Fall 2015 BIO 168: Explorations in Stem Cell Biology, Stanford University
Co-developed curriculum and assessments, responsibilities included grading, office hours

Winter 2014 BIO 44X: Core Molecular Biology Laboratory, Stanford University
Lab instruction of undergraduates, responsibilities included grading, office hours

Winter 2013 BIO 44X: Core Molecular Biology Laboratory, Stanford University
Lab instruction of undergraduates, responsibilities included grading, office hours

Fall 2011 BIO 350: Evolution, Carleton College
Responsible for grading student assignments

Fall 2010 CS 111: Introduction to Computer Science, Carleton College
Responsible for grading student assignments

Courses / Guest Lectures

Oct 2019 BCMB 3100: Introduction to Biochemistry and Molecular Biology, UGA
Prepared and delivered guest lecture on primary literature of metabolic pathways

April 2017 BIOL 135A: Eukaryotic Cell and Molecular Biology I, San Jose State University
Prepared and delivered guest lecture on CRISPR and genome organization

Nov 2015 BIO 110/210: Chromatin Regulation of the Genome, Stanford University
Prepared and delivered two guest lectures on chromatin structure and current experimental methodologies and led discussion of primary literature

Research Mentorship

2023-present Emma Walker, undergraduate student, UGA

2022-2023 Abigail Newman, undergraduate student, UGA
• Work led to authorship on publication in *PNAS*. Produced written research report.

2021-2022 Armoni Mayes, post-baccalaureate scholar in PREP program (NIH R25 funded), UGA
• Currently a Ph.D. student at Drexel University. Presented oral presentation at UGA, produced written research report.

2021-2022 Emily Nomberg, undergraduate student, continued as research technician, UGA
• Work led to authorship on publication in *PNAS*. Produced written research report.

2019-2021 Sarah Kim, undergraduate student, continued as research technician, UGA
• Work led to authorship on publication in *Nature Communications*. Presented poster at UGA, produced written research report.

2019-2020 Kristin Prewitt, undergraduate student, UGA
• April 2019: Awarded “Best Undergraduate Poster”, Southeastern Regional Yeast Meeting, Atlanta, GA. Presented poster at UGA as well, produced written research report.

Fall 2018 Nick Anglin, graduate rotation student, UGA

2015-2017 Tessa Eckley, undergraduate student, Stanford University
• Work led to authorship on publication in *PLOS Genetics*. Presented poster presentation at Stanford, produced written research report. I supervised honors thesis.

Fall 2017 Ka Man Wong, graduate rotation student, Stanford University
• Work led to authorship on publication in *PLOS Genetics*.

Fall 2014 Laura Lee, graduate rotation student, Stanford University
• Work led to authorship on publication in *PLOS Genetics*.

Summer 2014 Ahmi Dhuna, summer high school student – Stanford Institutes of Medicine Summer Research Program
• Presented poster and oral presentations at Stanford, produced written research report.

Academic & Teaching Mentorship

2020-2023 Mentor for Peach State Louis Stokes Alliance for Minority Participation
• Alexandria Jefferson (2021 undergraduate mentee) currently a Ph.D. student in MIT Biology program

2016-2017 Chair of Stanford Biology Department TA Mentorship Program

2016 Mentor for Stanford Biology Department TA Mentorship Program

2013-2016 Mentor for Stanford Biosciences Student Association
2014-2015 Mentor for Stanford Biology Department First Year Mentorship Program

PROFESSIONAL DEVELOPMENT

Fellowship Programs

2017 **Preparing Future Professors Fellow**, Faculty mentor at San Jose State University: Dr. Miri VanHoven
Semester-long shadowing program to experience faculty life at partner institution, paired with weekly practicum at Stanford with readings on topics in higher education

2016-2017 **Mentors in Teaching Fellow**, Stanford University
Develop skills as an advanced teaching assistant with mentoring role in departmental teaching community

Pedagogy Courses

Spring 2019 PBIO 8010: Seminar in Teaching Biology, UGA
Spring 2017 VPTL 231: Preparing for Faculty Careers, Stanford University

Selected Workshop and Seminars

(CTL: Center for Teaching & Learning; VPTL: Vice Provost for Teaching & Learning)

Nov 2022 "Picture a Scientist" documentary discussion, Biochemistry & Molecular Biology Dept, UGA
Jan 2020 Safe Space Training, UGA Pride Center
Apr 2019 Science's Identity Crisis: Contextualizing the Replication Crisis with Undergraduate Students, UGA CTL
Jan 2019 Choosing Multiple Choice, UGA CTL
Nov 2018 Universal Design for Learning, UGA CTL
Oct 2018 Do my students get it? Integrating Formative Assessment into Teaching Practice, UGA CTL
May 2017 Integrating Active Learning into Lectures to Maximize Learning, Kimberly Tanner, Stanford University
Mar 2017 SEA-PHAGES: An Integrated Research-Education Community Promoting Student Inclusion and Persistence, Graham Hatfull, Stanford University

Dec 2016 Designing an Effective Syllabus, Stanford VPTL
Oct 2016 Inclusive Teaching and Learning, Stanford VPTL
May 2016 The Effective Use of Visual Aids in the Classroom, Stanford VPTL
Nov 2015 Teaching by Asking: The Power of Well-Crafted Questions, Stanford VPTL

CONFERENCE PRESENTATIONS

Conference Talks

Oct 2022 Cold Spring Harbor Laboratory Transposable Elements Meeting; Cold Spring Harbor, NY
May 2022 Cold Spring Harbor Laboratory Retroviruses Meeting; Cold Spring Harbor, NY
April 2022 Southeastern Regional Yeast Meeting; Vanderbilt University (virtual)
Aug 2021 The Mobile Genome: Genetic and Physiological Impacts of Transposable Elements; EMBO (virtual)
April 2021 Southeastern Regional Yeast Meeting; Vanderbilt University (virtual)

Conference Posters

Aug 2022 Yeast Genetics Meeting; Los Angeles, CA
Oct 2020 Cold Spring Harbor Laboratory Transposable Elements Meeting; CSHL (virtual)
Aug 2019 Mobile Genetic Elements Conference; Woods Hole, MA
Mar 2017 Stanford Chromosome Dynamics and Genome Maintenance Symposium; Stanford, CA
May 2016 Gordon Research Conference: Chromatin Structure and Function; Les Diablerets, Switzerland
April 2016 NHGRI Research Training and Career Development Annual Meeting; Bethesda, MD
Sept 2014 Stanford Department of Biology Annual Retreat; Santa Cruz, CA
Sept 2013 Stanford Department of Biology Annual Retreat; Monterey, CA
Oct 2011 Sigma Xi Math and Science Poster Session; Carleton College, Northfield, MN
Aug 2011 New Hampshire-IDeA Network of Biological Research Excellence Conference; Whitefield, NH
Aug 2010 Summer Undergraduate Research Fellows Poster Session; Dallas, TX

PUBLIC & PROFESSIONAL SERVICE

Professional Service

- 2018-present **Reviewer** for: *Nature Communications, EMBO Journal, Molecular Biology & Evolution, PLOS Genetics, Scientific Reports, Viruses, Bio-protocol*
- 2022 **Session Co-Chair:** “Genetic networks of complex traits”, Yeast Genetics Meeting, Los Angeles, CA
- 2020-present **Advocates for Anti-Racism in Life Sciences**, UGA – Member
AARLS works to create a welcoming environment for academics of color, increase BIPoC and NBPoC representation in all sectors of academia, and encourage mentorship of students of color
[AARLS website](#)
- 2016-2017 **Vice Provost for Teaching and Learning Biology Department Liaison**, Stanford University
Serve as liaison between the Biology Department graduate teaching community and the Vice Provost for Teaching and Learning at Stanford
- 2016-2017 **Graduate Teaching Consultant**, Vice Provost for Teaching and Learning, Stanford University
Facilitate small group midterm evaluations, provide video consultations, run microteaching sessions, and other services that enhance and enrich the teaching experiences of graduate teaching assistants at Stanford
- 2015-2017 **Steering Committee Member of Stanford Medicine Teaching and Mentoring Academy**, Stanford University
- 2015 **Graduate Admissions and Recruiting Committee** – Department of Biology, Stanford University
- 2014-2015 **Chair of Department of Biology Graduate Student Seminar Series**, Stanford University
- 2011-2012 **Co-Founder and Chair of Biology Department Journal Club**, Carleton College

Professional Society Memberships

Genetics Society of America
Sigma Xi

Community Science Engagement

- 2021-2022 **Externship on Careers in Biomedicine** – Panelist (virtual)
Career panel for current Carleton College students on “Post-graduate and Academic Careers in Biomedical Research”
- 2019-2020 **Georgia Science and Engineering Fair** – Judge, Athens, GA
Score high school science fair contestants’ oral presentations
- 2019-2022 **Georgia Junior Science & Humanities Symposium** – Paper Reader, Athens, GA
Review and score research papers
- 2018-19, 21 **Oconee County Science Fair** – Review Committee, Athens, GA
Review science fair project proposals
- 2013-2015 **ScienceBus** – Volunteer, Stanford University
Science tutoring program for East Palo Alto elementary school students
- 2013, 2015 **Stanford Splash** – Volunteer, Stanford University
University student-taught enrichment classes for middle and high school students