

ALYSSA AURORA RODRIGUEZ

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EDUCATION AND TRAINING

- 2021 - 2025 **IRACDA Postdoctoral Research Fellow**
University of California San Diego, La Jolla, CA
Department of Cellular and Molecular Medicine
- 2016 – 2021 **Ph.D. in Biochemistry and Structural Biology**
Vanderbilt University, Nashville, TN
Department of Biological Sciences, Center for Structural Biology
- 2011 - 2015 **B.A. in Biochemistry**
University of San Diego, San Diego, CA
Department of Chemistry and Biochemistry

PROFESSIONAL EXPERIENCE

- 2025 - Present **Assistant Professor**
Biology Department, Occidental College
Los Angeles, CA
- 2021 - Present **IRACDA Postdoctoral Research Fellow**
Department of Cellular and Molecular Medicine, UC San Diego
Advisor: Kevin D. Corbett, Ph.D.
Research focus: *Architecture and function of the meiotic metazoan HORMAD chromatin binding region (CBR)*
- 2016 - 2021 **PhD Graduate student**
Department of Biological Sciences, Center for Structural Biology
Vanderbilt University
Advisor: Brandt F. Eichman, Ph.D.
Thesis: *Biochemical studies of replication-dependent DNA repair by endonuclease VIII-like 3 (NEIL3)*
- 2015 - 2016 **Associate Scientist**
Drug Delivery Experts LLC, Research and Development, San Diego, CA
Research focus: Degradation profile analysis of rare disease formulations using high performance liquid chromatography (HPLC)
- 2012-2015 **Research Assistant**
Department of Chemistry and Biochemistry
University of San Diego
Advisor: David O. De Haan, Ph.D.
Research focus: *Brown Carbon Product Identification of Hydroxyacetone-Amine Reactions, NMR Analysis; Kinetics and pH dependence of glycolaldehyde aqueous solutions of glycine, ammonium sulfate, and methylamine*

- Summer 2014 **Bridges to Doctoral Institutions Scholar**
 Department of Pharmacology and Molecular Sciences
 The Johns Hopkins University School of Medicine
 Advisor: James T. Stivers, Ph.D.
 Research focus: *Compensatory kinetic effects of the viscogen and crowding agent PEG8000 on human uracil DNA glycosylase*
- 2012-2013 **Research Assistant**
 Department of Chemistry and Biochemistry
 University of San Diego
 Advisor: Jeremy Kua, Ph.D.
 Research focus: *Co-oligomerization of Formaldehyde and Ammonia using Computational Chemistry Methods*

PUBLICATIONS

ORC ID: 0000-0001-8689-572X

Primary Research

1. **Rodriguez, A.A.**; Cirulli, A.E.; Chau, K.; Nguyen, J.; Ye, Q.; Corbett, K.D. Bipartite chromatin recognition by Hop1 from two diverged Holozoa. *Life Science Alliance*. 2025, 8 (11).
2. Gordon, S.G.; **Rodriguez, A.A.**; Gu, Y.; Corbett, K.D.; Lee, C.F.; Rog, O. The synaptonemal complex aligns meiotic chromosomes by wetting. *Science Advances*. 2025, 11 (9).
3. **Rodriguez, A.A.**; Rafla, M.A.; Welsh, H.G.; et al., Kinetics, Products, and Brown Carbon Formation by Aqueous-Phase Reactions of Glycolaldehyde with Atmospheric Amines and Ammonium Sulfate. *Journal of Physical Chemistry*. 2022, 126 (32), 5375-5385.
4. **Rodriguez, A.A.**; Wojtaszek, J.L.; Greer, B.; Haldar, T.; Gates, K.S.; Williams, R.S.; Eichman, B.F. An autoinhibitory role for the GRF zinc finger domain of DNA glycosylase NEIL3. *Journal of Biological Chemistry*. 2020, 295 (46), 15566-15575.
5. Imani Nejad, M.; Housh, K.; **Rodriguez, A.A.**; Haldar, T.; Kathe, S.; Wallace, S.; Eichman, B.F.; Gates, K. Unhooking of an interstrand cross-link at DNA fork structures by the DNA glycosylase NEIL3. *DNA Repair*. 2020, 86, 102752.
6. **Rodriguez, A.A.**; de Lorea, A.; Powelson, M.H.; Galloway, M.M.; De Haan D.O. Formaldehyde and acetaldehyde increase aqueous-phase production of imidazoles in methylglyoxal/amine mixtures: quantifying a secondary organic aerosol formation mechanism. *Environmental Science and Technology Letters*. 2017, 4, 234-239.
7. Cravens, S.L.; Schonhoft, J.D.; Rowland, M.; **Rodriguez, A.A.**; Anderson, B.G.; Stivers, J.T. Molecular crowding enhances facilitated diffusion of two human DNA glycosylases. *Nucleic Acids Research*. 2015, 43, 4087-4097.
8. Kua, J.; **Rodriguez, A.A.**; Marucci, L.N.; Galloway, M.M.; De Haan, D.O. Free Energy Map for Co-Oligomerization of Formaldehyde and Ammonia. *Journal of Physical Chemistry A*. 2015, 119, 2122-2131.

Reviews

9. Mullins, E.A.; **Rodriguez, A.A.**; Bradley, N.P.; Eichman, B.F. Emerging roles of DNA glycosylases and the base excision repair pathway. *Trends in Biochemical Sciences*. 2019, 44, 765-781.
*Featured cover article

Preprint Research

10. Meaders, J.L.; **Rodriguez, A.A.**; Variyar, S.; Park, S.; Circulli, A.E.; Oegema, K.; Corbett, K.D.; Desai, A. A chromatin-associated pool of Aurora A controls kinetochore-microtubule attachments to ensure chromosome biorientation. *bioRxiv*. 2025, doi: 10.1101/2025.10.31.685952
11. Gordon, S.G.; **Rodriguez, A.A.**; Gu, Y.; Corbett, K.D.; Lee, C.F.; Rog, O. The Synaptonemal Complex aligns Meiotic Chromosomes by Wetting. *bioRxiv*. 2024, doi: 10.1101/2024.08.07.607092

PRESENTATIONS

Invited Talks

- 2024 "Architecture and function of the meiotic metazoan Hop1 chromatin binding region (CBR)." Meiosis Gordon Research Seminar, Colby-Sawyer College.
- 2023 "Architecture and function of Hop1 in meiosis." Yo Puedo STEM Summer Bridge Program, San Diego City College.
- 2023 "Architecture and function of the meiotic metazoan Hop1 chromatin binding region (CBR)." San Diego IRACDA Annual Retreat, UC San Diego.
- 2021 "NEIL3: a DNA glycosylase enzyme with a novel autoinhibitory role to repair complex DNA lesions." University of San Diego, Department of Chemistry and Biochemistry Seminar.
- 2020 "An autoinhibitory role for the GRF domain of DNA glycosylase NEIL3." Vanderbilt Institute of Chemical Biology Student Symposium.

Poster Presentations

- 2024 "Architecture and function of the meiotic metazoan HORMAD chromatin binding region (CBR)." **Alyssa A. Rodriguez**, Alessandro Cirulli, and Kevin D. Corbett. Meiosis Gordon Research Seminar and Conference. New London, NH.
- 2023 "Architecture and function of the meiotic metazoan HORMAD chromatin binding region (CBR)." **Alyssa A. Rodriguez**, Sarah N. Ur, Carolyn Milano, Andreas Hochwagen, Eelco Tromer, and Kevin D. Corbett. 12th Salk Institute Cell Cycle Meeting. San Diego, CA.
- 2023 "Architecture and function of the meiotic metazoan HORMAD chromatin binding region (CBR)." **Alyssa A. Rodriguez**, Sarah N. Ur, Carolyn Milano, Andreas Hochwagen, Eelco Tromer, and Kevin D. Corbett. IRACDA Annual Meeting. San Antonio, TX.
- 2023 "Architecture and function of the meiotic yeast and metazoan HORMAD chromatin binding region (CBR)." **Alyssa A. Rodriguez**, Sarah N. Ur, Carolyn Milano, Andreas Hochwagen, Eelco Tromer, and Kevin D. Corbett. Biophysical Society 2023 Annual Meeting. San Diego, CA.
- 2022 "Architecture and function of the meiotic yeast and metazoan HORMAD chromatin binding region (CBR)." **Alyssa A. Rodriguez**, Sarah N. Ur, Carolyn Milano, Andreas Hochwagen, Eelco Tromer,

and Kevin D. Corbett. 2022 Meiosis Gordon Research Conference. New England, New Hampshire.

- 2021 "Investigating the basis for substrate specificity of DNA glycosylase endonuclease VIII-like 3 (NEIL3)." **Alyssa A. Rodriguez**, Jessica Wojtaszek, Briana Greer, R. Scott Williams, and Brandt F. Eichman. The Biophysical Society Virtual Annual Meeting.
- 2019 "Investigating the basis for substrate specificity of DNA glycosylase endonuclease VIII-like 3 (NEIL3)." **Alyssa A. Rodriguez**, Jessica Wojtaszek, Briana Greer, R. Scott Williams, and Brandt F. Eichman. 2019 Annual Society of Advancement of Chicanos/Hispanics and Native Americans in STEM (SACNAS) Meeting. Honolulu, Hawaii.
- 2018 "Investigation of the substrate specificity and structural details of DNA glycosylase endonuclease VIII-like 3 (NEIL3)." **Alyssa A. Rodriguez** and Brandt Eichman. Vanderbilt University Department of Biological Sciences Retreat. Nashville, Tennessee.
- 2015 "Compensatory kinetic effects of the viscogen and crowding agent PEG8000 on the reaction of human uracil DNA glycosylase." **Alyssa A. Rodriguez**, Shannen L. Cravens and James T. Stivers. 249th National American Chemistry Society Meeting. Denver, Colorado.
- 2014 "Compensatory kinetic effects of the viscogen and crowding agent PEG8000 on the reaction of human uracil DNA glycosylase." **Alyssa A. Rodriguez**, Shannen L. Cravens and James T. Stivers. 1st Annual Hopkins Career, Academic and Research Experiences for Students (C.A.R.E.S) Summer Program Symposium. Baltimore, Maryland.
- 2014 "Kinetics and pH dependence of aqueous-phase reactions of glycolaldehyde with glycine, ammonium sulfate, and methylamine." **Alyssa A. Rodriguez**, Michael Symons, Alexia De Loera, Melissa M. Galloway and David O. De Haan. Poster presentation for University of San Diego Creative Collaborations Undergraduate Research Conference. San Diego, California.
- 2013 "Kinetics and pH dependence of aqueous-phase reactions of glycolaldehyde with glycine, ammonium sulfate, and methylamine." **Alyssa A. Rodriguez**, Michael Symons, Alexia De Loera, Melissa M. Galloway and David O. De Haan. 32nd Annual American Association for Aerosol Research Conference. Portland, Oregon.
- 2013 "Formation of Hexamethylenetetramine by Aqueous Solutions of Formaldehyde and Ammonium Sulfate." **Alyssa A. Rodriguez**, David O. De Haan and Jeremy Kua. University of San Diego Creative Collaborations Undergraduate Research Conference. San Diego, CA.
- 2012 "Formation of Hexamethylenetetramine by Aqueous Solutions of Formaldehyde and Ammonium Sulfate." **Alyssa A. Rodriguez**, David O. De Haan and Jeremy Kua. American Geophysical Union Fall Meeting. San Francisco, CA.

TEACHING EXPERIENCE

- Fall 2025 **Instructor of Record**
BIO 322, Principles of Biochemistry Lecture and Lab
Occidental College
- Spring 2024, **Instructor of Record**
Fall 2023 SCI 596, Special Topics in Stem Cell Biology (*Undergraduate/graduate course*)
College of Sciences, San Diego State University

Edited syllabus and presentation slides, facilitated discussions based on primary scientific articles, held office hours, graded assignments, and assigned grades.

- Fall 2023 **Seminar Facilitator**
San Diego State University IMSD/MARC Programs, Graduate Fellowships
Facilitated seminar presentation and questions, updated content and material, implemented active learning techniques in class.
- Fall 2023 **Seminar Facilitator**
National Institute of Scientific Teaching
UC San Diego, San Diego State University, and San Diego City College
Co-facilitated 2-hour workshop on scientific teaching to faculty, staff, and students at three institutions.
- Summer 2023 **Seminar Facilitator**
UC San Diego Summer Undergraduate Research Fellowship, Research Ethics
Facilitated seminar presentation and questions, restructured seminar format, updated content and material, implemented active learning techniques in class.
- Spring 2023 **Guest Lecturer**
CHEM 100, Fundamentals of Chemistry (Undergraduate course)
Chemistry Program, San Diego City College
Created learning objectives, edited presentations slides, created study materials, created practice problems, and introduced new active learning techniques in class.
- Summer 2022 **Seminar Facilitator**
UC San Diego Summer Undergraduate Research Fellowship Journal Club
Facilitated seminar presentation and questions, restructured seminar format, updated journal article choice and material, implemented backward design and active learning techniques in class.
- Fall 2022 **Guest Lecturer**
CHEM 330, Techniques in Molecular biology (Undergraduate course)
Department of Chemistry and Biochemistry, University of San Diego
Edited presentation slides and introduced new active learning techniques in class.
- Summer 2021 **Guest Lecturer**
BSCI 2520, Biochemistry (Undergraduate course)
Department of Biological Sciences, Vanderbilt University
Edited presentation slides and introduced new active learning techniques in class.
- Spring 2020 **Teaching Assistant**
BHCM 8300, Introduction to Structural Biology (Graduate course)
Vanderbilt University
Graded homework and answered student questions.
- Fall 2017 **Teaching Assistant**
BSCI 2520, Biochemistry (Undergraduate course)
Department of Biological Sciences, Vanderbilt University
Held weekly office hours and review sessions, graded exams and quizzes.

PEDAGOGICAL TRAINING

2024	Active Learning Communities in the Molecular Life Science Workshop, Discover Biochemistry and Molecular Biology Meeting, San Antonio, Texas
2024	Center for the Improvement of Mentored Experiences in Research (CIMER), Faculty Mentor Training Program Workshop, University of California San Diego
2023	National Institute of Scientific Teaching Summer Workshop
2023	Center for the Improvement of Mentored Experiences in Research (CIMER), Faculty Mentor Training Program Workshop, University of California San Diego
2022	Certificate in Introduction to College Teaching Course, Teaching and Learning Commons, UC San Diego
2022	Malate Dehydrogenase Course Undergraduate Research Experience (CURE) Workshop Training, University of San Diego
2022	Center for the Improvement of Mentored Experiences in Research (CIMER), Faculty Mentor Training Program Workshop, University of California San Diego
2021	Certificate in College Teaching, Center for Teaching, Vanderbilt University
2020	Introduction to Evidence-Based Undergraduate STEM Teaching course by the Center for the Integration of Research, Teaching, and Learning (CIRTL) Network

MENTORING

2024-present	Emmanuel Anjeh-Undergraduate biochemistry student, USD
2023-present	Alessandro Cirulli-Undergraduate biochemistry student, UC San Diego
Summer 2023	Jesse Laird-Undergraduate biochemistry student, San Diego City College, UC San Diego SURF Program, new transfer student at UCSD
Winter 2022	Trent Gomberg-Graduate rotation student, UC San Diego PhD student
Spring 2020	Valeria Garcia Lopez- Graduate rotation student, Vanderbilt University PhD candidate
Fall 2019	Michelle Williams-IMSD mentee, PhD student
2018-2021	Ivette Perez-IMSD mentee, Postdoctoral Fellow at La Jolla Institute
Spring 2018	Sara Ramirez-IMSD mentee, PhD candidate
2014-2015	Alexia De Loria-research mentee, scientist in industry

AWARDS AND HONORS

2025	Best Mentoring Award, SD IRACDA Retreat
2024	Best Presentation Award, SD IRACDA Retreat
2024	Travel Award for Active Learning Communities in Molecular Life Sciences Workshop at Discover Biochemistry and Molecular Biology Meeting
2023	Most Inspiring Award, SD IRACDA Retreat
2022-present	Institutional Research and Academic Career Development Award (IRACDA) Postdoctoral Fellowship

2022	Carl Storm Underrepresented Minority Fellowship for Meiosis Gordon Research Conference
2022	Keynote Speaker at 14 th Annual USD McNair Recognition and Awards Luncheon
2020	Travel award for 2020 Annual SACNAS Meeting
2020	Oral Presentation Award, Vanderbilt Institute of Chemical Biology Student Symposium
2017-2021	National Science Foundation Graduate Research Fellowship Program
2017	Molecular Biophysics Training Program and Grant (2T32GM008320-29), Vanderbilt University
2016	Initiative for Maximizing Student Diversity (IMSD), Vanderbilt University
2015	The Research Excellence Award, Department of Chemistry and Biochemistry, University of San Diego
2014	McNair Scholar, TRIO Ronald E. McNair Post Baccalaureate Achievement Program
2014	Semi-Finalist, The Frank and Sara McKnight Prize in Undergraduate Biological Chemistry by University of Texas Southwestern Medical Center
2014	Dean's List First Honors, University of San Diego
2014	Bridges to Doctoral Institutions Award, University of San Diego
2014	Basic Science Institute Summer Intern, The Johns Hopkins School of Medicine
2014	Alumni Association Class of 2011 Scholar, University of San Diego
2013	Alumni Summer Research Fellowship Award, University of San Diego
2011	Trustee Scholar, University of San Diego, 4-year merit scholarship

SCIENTIFIC OUTREACH, LEADERSHIP AND SERVICE

2025	Admissions Committee for SURF Program at UC San Diego
2024	Curriculum Review Committee Member for SURF Program at UC San Diego
2024	Career Panelist, CHEM 370, Department of Chemistry and Biochemistry, Gonzaga University
2024	Undergraduate Poster Judge at Discover Biochemistry and Molecular Biology Meeting
2024	Workshop facilitator at San Diego Expanding Your Horizons Girls in STEM day, University of San Diego
2023	One-on-one Mentoring of Undergraduate Student at SACNAS National Meeting
2023	Summer Undergraduate Research Mentor for Summer Undergraduate Research Fellowship (SURF) program at UC San Diego
2023	Admission Committee Member for SURF program at UC San Diego
2023	Career Panelist, CHEM 370, Department of Chemistry and Biochemistry, Gonzaga University
2023	Judge for Undergraduate Poster Competition at Biophysical Society Meeting
2023	Volunteer at San Diego Expanding Your Horizons Girls in STEM day, University of San Diego
2022	Judge for IMSD/MARC Undergraduate Research Symposium at San Diego State University
2022	Scientific Review, Frontiers in Cell and Developmental Biology
2020	One of two student representatives on Vanderbilt Curriculum Review Committee for first year graduate curriculum in Interdisciplinary Graduate Program in Biomedical Sciences, committee included 10 faculty and staff members

2019	Vanderbilt Graduate Student Recruiter and Exhibitor at Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Conference
2019	Expanding Your Horizons Science Day for Middle and High School Female Students, Middle Tennessee State University
2018	Vanderbilt University SACNAS Chapter Outreach Committee Co-Chair
2018	Vanderbilt SACNAS Volunteer Instructor at Wright, Antioch, and Croft Middle School, Nashville After Zone Alliance (NAZA) after-school program under Conexión Américas
2018	Vanderbilt Center for Scientific Outreach Day of Discovery Volunteer LaVergne Lake Elementary STEM Day Volunteer Vanderbilt University Women in Science and Engineering (VU-WISE) Instructor
2018	Glenclyff High School Mentor-VU WISE Speed Mentoring Event
2017	Vanderbilt University Student Summer Academy Abstract and Poster Judge Center for Structural Biology Student Recruiting Day Volunteer/Tour Guide
2017	Vanderbilt Interdisciplinary Graduate Program Interview Weekend Lead Host
2017	Tennessee Women in Science Technology, Engineering and Research (TWISTER) Conference for High School Girls, Volunteer Panelist
2017	Volunteer at Room in the Inn, science workshop for homeless guests in Nashville community
2016	Science Day for Kids, Demonstration Volunteer, Vanderbilt University Vanderbilt Splash, Volunteer Teacher, Middle Tennessee
2015	American Chemical Society Student Chapter Outreach Chair, University of San Diego
2013-2014	American Chemical Society Student Chapter Secretary, University of San Diego
2012	Mentor for Expanding Your Horizons Science Day, University of San Diego

PROFESSIONAL SOCIETIES

2024-present	American Society for Biochemistry and Molecular Biology
2018-present	Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) member, 2018 Vanderbilt University Chapter Outreach Committee Co-Chair
2020-present	Biophysical Society, Young Professional member
2022-present	National Postdoctoral Association, Member

OTHER INFORMATION

Fluent in written and oral communication in Spanish and English