Curriculum Vitae of	Department:	Date:
Jacob “Jake” A. Greenberg	Academic Communities	September 13th, 2024

Educational History

B.A., 2012, The University of New Mexico, Albuquerque, NM 87131, Chemistry.

B.S., 2012, The University of New Mexico, Albuquerque, NM 87131, Biology.

Ph.D., 2017, The University of Colorado: Boulder, Boulder, CO 80309, Chemistry.

Dissertation: “Design, Synthesis, and Testing of Inhibitors of the Polymyxin Resistance Pathway Enzyme ArnA to Defeat Pseudomonas Drug Resistance in Cystic Fibrosis, and the Conversion of Esters into Acid Chlorides Using Thionyl Chloride.”

Dissertation Advisors: Dr. Tarek Sammakia and Dr. Marcelo Sousa

Employment History

Lecturer III and Principal Investigator Fall 2023 – present, Academic Communities, University College, University of New Mexico, Albuquerque, New Mexico 87131.

Temporary Part-time Faculty, Fall 2023 – present, Honors College, University of New Mexico, Albuquerque, New Mexico 87131.

Temporary Part-time Faculty, Fall 2021 - present, Department of Chemistry and Chemical Biology, University of New Mexico, Albuquerque, New Mexico 87131.

Temporary Part-time Faculty, Fall 2022- Summer 2023, Academic Communities, University College, University of New Mexico, Albuquerque, New Mexico 87131.

Tutor and Instructor, Fall 2018- Fall 2023, Guo Group Consulting, 188 Grand St, Suite #305, New York City, NY 10013.

Lecturer B, Fall 2017- Fall 2019, California State Polytechnic University Humboldt (formerly\Humboldt State University) Arcata CA, 95521.

Professional Recognition, Honors, etc.

Faculty Mentored Research Award, Fall 2024

Fostering Research Expansion in the Social Sciences and Humanities FRESSH 2024 cohort

Student Experience Project Fellow, UNM, 2024 cohort

Nomination for Lecturer of the Year, 2024, UNM Center for Teaching and Learning

Key-Note speaker, California State Polytechnic University Humboldt convocation Spring 2019, Student-voted faculty speaker

Fellowships

NSF-Alliances for Graduate Education and the Professoriate (AGEP) Scholar, 2014

NSF- Graduate Research Fellowship Program (GRFP) Fellow 2013-17

NIH-CU Boulder Molecular Biophysics Training Grant Affiliate, 2013-15

NIH- Intramural National Institute of Allergy and Infectious Diseases Research Opportunities (INRO) Scholar, 2010

NIH- Minority Access to Research Careers (MARC) Scholar, 2009-11

Teaching Philosophy

Student-centered teaching is a topic that I have extreme passion for. Learning how to become a better student is a lifelong skill that can always be improved upon, and it goes far beyond the classroom. I love being a student and will always consider myself a lifelong learner. I want my students to feel the same way about their education. Since beginning teaching in 2008, I have fundamentally changed how I teach. When I began, I taught how I was instructed: lecture style, no group work, no collaboration, no extra credit, and 4 exams determining our fate. I have since recognized the many opportunities for growth in my teaching, and I have implemented a student-centered and trauma-informed curriculum into my teaching.

My teaching style is always evolving, but I have taken on a few central pillars: 1. Encourage independent exploration, 2. Never claiming to be an infallible expert, 3. Cooperative learning strategies, and 4. Allowing mistakes without penalty. I always encourage students to find resources to help problem solve instead of depending on me for answers. This involves assigning outside investigation homework that requires research as I guide students through the process. As the classroom "expert" it is easy to tell the students how to solve problems, but another issue entirely is whether the students learn from simply being told. To combat this, I employ a flipped classroom or student-driven discussions when possible, and I thoroughly enjoy it when the students present work that teaches me something new as well. Experience has taught me that a student coming to the answer on their own is far more useful for knowledge retention than simply dictating an answer. I teach the FYEX 1010 Foundational Math course at UNM and we employed an emporium-style classroom, which can be described as making a transition from the "sage of the stage" to a "tutor in the trenches," where most of the time is spent working 1-on-1 with students who need the help. The emporium model, with self-driven learning, has proven that students retain math knowledge better compared to a traditional style classroom. This style of teaching has shown me that equity is possible in the mathematics classroom, and now I see that meeting students where they are can be achieved in smaller, emporium-style classes where a growth mindset is emphasized.

Research Statement

My research currently is centered broadly around student success in higher education, and this topic can take hold in a variety of facets. The more my team and I dive into the literature the more we see how broad this topic can be. Currently, there are 11 students, most of whom are undergraduates, actively researching in the group, each with a unique project aimed at making the student experience better. Diversity is an important part of any research group and the team I have assembled represents the UNM population and, thus, many different traditionally under-represented groups.

As a Foundational Math (FM) Lecturer, my research began with the assessment of the course I was hired to teach. In 2015, we began to utilize a trauma-informed curriculum in tandem with an AI platform to teach the FM course, and since implementing the pass rates significantly increased compared to the 4 years before. This project will be extended to surveying students for their attitudes in math and relating that to their GPA, and subsequent performances in higher-level math courses. We are also assessing the population that utilizes FM's unique incomplete pathway to extend the class by several weeks to complete the course. We have found that over 8 years, 6% (242) of students enrolled in FM (37attempt the incomplete pathway and 5% (171) have successfully used this pathway. This saved student scholarships and contributed to the first-year retention efforts. Our work is now extending to other courses and topics in general.

In addition to my FM focused research, we are interested in assessing Critical Text Analysis what factors are driving student success, and how participation in this course affects pass rates in subsequent high fail-rate courses. Food insecurity is a major issue for college students, but we don't know how much this affects First-Year students or international students on campus. We are designing an experiment to determine how free food in the classroom impacts attendance and GPA. Administration being able to communicate effectively with students has a major impact on enrollment, and we are designing a study to determine what social media apps or websites students use to get their news information to focus communication efforts. We are also very interested in how Student Success Seminars drive retention and build community.

Service Work

The service work I have aligned myself with are the projects that are part of my core value that everyone deserves to learn as much as they desire and that should be celebrated. I am part of the 1st annual NROC Institute for Student Success Institute planning committee to be held August 6-7th 2024. Our mission is to bring open education resources to as many people as possible. I have been serving on the cross-campus pathways committee since the spring of 2023 and was voted to be co-chair for the 2023-25 academic years. Our mission is to bridge UNM's main campus to the Health Sciences Center located on UNM's North campus. This traditionally has been a large barrier for pre-health students to transition to the Health Science campus.

Celebrating success is a huge part of who I am as a person. Convocation and Commencement ceremonies are full of joy, everyone there is happy to be there, and I thrive on this energy. I shared this little piece of my personality with Dr. Nancy Middlebrook, the university secretary, and she invited me to serve as a Marshal beginning the Spring of 2023. I serve as a reviewer with the Faculty Research and Development Office to be a reviewer for limited competition grants. I serve as a reviewer for the International Journal of High School Research. I am a firm believer that High School should prepare a student well for higher education, however, I know this is not always the case. To celebrate the students that have gone above and beyond I am happy to serve as a reviewer for this journal, and I am always impressed with the level of research. I also volunteer at the McNair and UROC undergraduate symposium. I am always impressed by the level of research, and it is a small way to give back to the undergraduate programs that were key to my own success at UNM.

Articles in Peer-Reviewed Journals

8. Lorraine Deck, Jacob A. Greenberg, Lisa J. Whalen, David L. Vander Jagt, Robert E. Royer. Synthesis of Naphthoic Acids as Potential Anticancer Agents. *Synlett.* 2019. Vol. 30, Issue 1, Pg. 104-108.

7. Robert Walder, Marc-Andre LeBlanc, William Van Patten, Devin T. Edwards, Jacob A. Greenberg, Ayush Adhikari, Stephen Okoniewski, Ruby May Sullan, David Rabuka, Marcelo C. Sousa, Thomas T. Perkins. Rapid Characterization of a mechanically labile α-helical Protein Enabled by Efficient Site-Specific Bioconjugation. *The Journal of the American Chemical Society.* 2017. Vol. 139 Issue 29, Pg. 9867-9875.

6. Jacob A. Greenberg and Tarek Sammakia. The Conversion of *tert*-Butyl Esters to Acid Chlorides using Thionyl Chloride. *Journal of Organic Chemistry*. 2017, Vol. *82* Issue. 6, Pg. 3245–3251.

5. Yasushi Ogasawara, Benjamin J. Yackley, Jacob A. Greenberg, Sneza Rogelj, Charles E Melançon. Expanding our Understanding of Sequence-Function Relationships of Type II Polyketide Biosynthetic Gene Clusters: Bioinformatics-Guided Identification of Frankiamicin A from Frankia sp. EAN1pec. PLoS ONE. 2015, 10(4):e0121505. doi:10.1371/journal.pone.0121505.

4. Lujan, Daniel A., Jacob A. Greenberg, Angela S. Hung, Mark A. DiMenna, Bruce V. Hofkin. Evaluation of Seasonal Feeding Patterns of West Nile Virus Vectors in Bernalillo County, New Mexico, United States: Implications for Disease Transmission. *Journal of Medical Entomology*. 2014, Vol. 51 Issue 1, Pg. 264-268.

3. Lorraine M. Deck, Jacob A. Greenberg, Taylor S. Busby, Elizabeth R. Bright, Lisa J. Whalen, David L. Vander Jagt, Robert E. Royer. Synthesis of naphthalene and indene precursors to naphthoic and indenoic acids. *Tetrahedron Letters.* 2013, Vol. 54, Issue 45, Pg. 6015-6018.

2. Jacob A. Greenberg, Daniel A. Lujan, Mark A. DiMenna, Helen J. Wearing, Bruce V. Hofkin. Bloodmeal Identification of *Aedes vexans* and *Culex quinquefasciatus* in Bernalillo County, New Mexico. *Journal of Insect Science.* 2013, Vol. 13, Article 75, Pg. 1-12.

1. Jacob A. Greenberg, Mark A. DiMenna, Ben Hanelt, Bruce V. Hofkin. Analysis of Post-Blood Meal Flight Distances in Mosquitoes Utilizing Zoo Animal Blood Meals. *Journal of Vector Ecology.* 2012, Vol. 37 No. 1. Pg. 83-89.

Works in Progress

3. Audrey J. Lee, Solomon Gbara, Kenneth Oravetz, Cash A. Clifton, Phung Tran, and Jacob A. Greenberg. Analysis of Incomplete Pathway Demographics in Developmental Math Reveals Inequity for Hispanic Women. *In preparation for submission to the Journal of Research on Educational Effectiveness. 2024.*

2. Maryjo Armas, Phung Tran, Cash A. Clifton, Kenneth Oravetz, Audrey J. Lee and Jacob A. Greenberg. "How the Emporium Style Classroom and Trauma Informed Curriculum Drive Student Success at a Minority Serving Institution." *In preparation for submission to the Journal of Higher Education. 2024.*

1. Audrey J. Lee, Solomon Gbara, Phung Tran, Cash A. Clifton, Kenneth Oravetz, and Jacob A. Greenberg. A Unique Incomplete Pathway Promotes Students' Success and Retention for Developmental Math Students. *In preparation for submission to Future of Educational Research. 2024.*

Patent:

Frankiamicin A Compositions and Methods; Number: 10,010,558; Inventors - Charles Melancon, Pamela Hall, Jacob A. Greenberg, Yasushi Ogasawara.

Contributed (un-refereed) Abstracts and/or Oral Presentations at Professional Meetings

10. Trauma Informed Curriculum:101 and the Success of Foundational Math at UNM. Armas, M., Gbara, S. and Greenberg, J. NROC Institute for Student Success, Albuquerque, NM; August 2024

9. UNM's Greenberg Student Research Group Overview. Clifton, C.A. and **Greenberg, J.A.** NM Higher Ed Assessment & Retention (NMHEAR) State Conference, Albuquerque; February 2024

8. Assessment and Student Research in UNM's FYEX Program. Armas, M., Gbara, S., Clifton, C.A., and **Greenberg, J.A.**, NM Higher Ed Assessment & Retention (NMHEAR) State Conference, Albuquerque, NM; 2024

7. Foundational Math: A Deep Dive into Pass Rates, Retention, and Persistence. **Greenberg, J.A.** UNM Academic Communities Institute. Albuquerque, NM; 2023

6. NMR Analysis of Tree Bark Char with and Without Accelerants: A Look into the Future of Forest Fire Ecology. Kennely, C. and **Greenberg J.A.** Society of American Foresters. Olympia, WA. 2020.

5. Removal of Organic Contaminants from Freshwater Diatom Populations for SEM identification. Kristian, N., **Greenberg, J.A.**, and Hemphill-Haley, E. North American Diatom Symposium, San Diego, CA. 2019.

4. Greenberg, J.A., Sammakia, T., and Sousa, M.C. ArnA Inhibitors to Defeat Pseudomonas Antibiotic Resistance in Cystic Fibrosis. Colorado Clinical and Translational Sciences Institute Annual Symposium, Denver, CO; 2014.

3. Assessment of West Nile Virus Vectors in Bernalillo County, New Mexico, USA: Implications for Disease Transmission. **Greenberg, J.A.**, DiMenna, M.A., and Hofkin, B.V. American Society of Tropical Medicine and Hygiene, Atlanta, GA; 2010.

2. Mosquito Feeding Patterns in Bernalillo County New Mexico: Implications for the Transmission of West Nile Virus. **Greenberg, J.A.**, DiMenna, M.A., and Hofkin, B.V. Society for the Advancement of Chicanos and Native Americans in Science, National Conference. Anaheim, CA; 2010.

1. Mosquito Feeding Patterns in Bernalillo County New Mexico: Implications for the Transmission of West Nile Virus. **Greenberg, J.A.**, DiMenna, M.A., and Hofkin, B.V. Society for the Advancement of Chicanos and Native Americans in Science National Conference, Dallas, TX 2009.

Research Funding

"Faculty Mentored Research Award" The UNM Office of the Vice President for Research (OVPR) and the Undergraduate Research, Arts and Design Network (URAD), Dr. Jake Greenberg, PI, $2,500

"Student Success Research Group in University College" University College funding, Dr. Jake Greenberg, PI, Spring 2024, $500

"Equity Analytics of First-Year students at the University of New Mexico" Provost's office seed funding, Dr. Jake Greenberg, PI; 2023-2024; $4,000

Graduate Student Mentorship

1. Soham Sen. Summer 2024. "Social Media habits of UNM students and the Influence of Social Media on Election Decisions"

Post-Baccalaureate Student Mentorship

1. Edward Donham-Stradling. Summer 2024-present "Development of PCR screening for vector-borne diseases in Bernalillo County NM"

McNair Scholar Advisement

1. Maryjo Armas. Fall 2022-Fall 2024. "Analysis of Foundational Math pass rates and student attitudes and outcomes at UNM utilizing Trauma informed curriculum and computer assisted learning."

Bachelor's Honors Advisement

1. Nathaniel Kristian. Fall 2018- Spring 2019. "Procedural Development for the Removal of Organic Contaminants from Freshwater Diatom Populations for SEM Species Identification." (Humboldt State Polytechnic University)

Undergraduate Student Mentoring (non-Honor's project advisement):

12. Muhammad Saaed, Fall 2024 – present "Red or Green: The development of new lab techniques for the isolation and characterization of pigments by UV/VIS Spectroscopy"

11. Jasmine Bebo, Fall 2024 – present "Pathogen screening for Ticks in Bernalillo County and the development of multiplex primer design for qPCR pathogen detection."

10. Yerandy Hernandez, Fall 2024 – present "Comparison of the Retention and GPA of Private Versus Public High School Students in A 4-year University"

9. Diego Ruiz. Committed to begin Fall 2024- present "Survey of pre-health students prior experiences" (Co-advised with Dr. Kenwyn Craddock)

8. Maia Hizny. Spring 2024-present "Mosquito Ecology and the Emergence of *Aedes albopictus* in Central NM" (Co-advised with Dr. Kenwyn Craddock)

7. Teresa Parraz. Spring 2024-present "Gen Z use of Social Media for News Consumption"

6. Aliyah Zern. Spring 2024- present “Analysis of student retention, persistence, and GPA in the First-Year Seminar: Success Starts Here.”

5. Audrey Lee. Fall 2023-present “Analysis of student populations utilizing UNM’s Foundational Math unique incomplete policy.”

4. Felana Chee. Fall 2023–present. “Food insecurity and the effect food in the classroom has on student success.”

3. Mark Freeland. Summer 2023-present. “Fractionalization in mathematics: The impact to Native Americans”

2. Solomon Gbara. Spring 2023-present. “A comparison of grit across majors entering a Hispanic-serving R1 university.”

1. Cecelia Kennely. Fall 2018- Spring 2019. “NMR analysis of tree bark char with and without accelerants: a look into the future of forest fire ecology.” (Humboldt State Polytechnic University)

Classroom Teaching

UNM

Fall 2024
- Chemistry 495 Independant Study – 2 students
- First-Year Experience 1010 Foundational Math – 50 students
- Honors 1120 Legacy of Ancient Technology – 18 students
- Honors 499 Independant Study – 2 students
- Liberal Arts and Integrative Studies 409 Independant Study - 4 students

Summer 2024
- Chemistry 301 Organic Chemistry 1 – 41 students
- Chemistry 302 Organic Chemistry 2 – 54 students
- Liberal Arts and Integrative Studies 409 Independant Study - 1 student

Spring 2024
- First-Year Experience 1010 Foundational Math – 25 online students
- Liberal Arts and Integrative Studies 409 Independent Study – 5 students

Fall 2023
- First-Year Experience 1010 Foundational Math – 125 students
- Honors 1120 Legacy of Ancient Technology – 18 students

Summer 2023
- First-Year Experience 1010 Foundational Math – 20 online students

Spring 2023
- First-Year Experience 1010 Foundational Math – 25 students

Fall 2022
- First-Year Experience 1010 Foundational Math – 140 students

Fall 2021
- Chemistry 302 Organic Chemistry 2 – 75 students

Spring 2012
- Chemistry 302 Organic Chemistry 2, T.A. - 100 students

Fall 2011
- Chemistry 302 Organic Chemistry 2, T.A. - 40 students
- Chemistry 121 General Chemistry 1 Lab, T.A. - 20 High School students

Spring 2009
- Chemistry 122 General Chemistry 2 Lab, T.A. - 40 students

Fall 2008
- Chemistry 121 General Chemistry 1 Lab, T.A. - 40 students

California State Polytechnic University: Humboldt (Formerly Humboldt State University)

Fall 2019
- Brief Organic Chemistry – 90 students
- Brief Organic Chemistry Lab – 90 students
- General Chemistry 1 – 110 students
- General Chemistry 1 Lab – 24 students

Advanced NMR Spectroscopy Lab – 15 students

Spring 2019
Brief Organic Chemistry – 90 students
Brief Organic Chemistry Lab - 90 students
Intro Organic Chemistry – 45 students
Intro Organic Chemistry Lab - 45 students
Advanced NMR Spectroscopy Lab – 20 students

Fall 2018
Brief Organic Chemistry – 90 students
Brief Organic Chemistry Lab – 90 students
General Chemistry 2 – 110 students
General Chemistry 2 Lab – coordinator – 200 students
Advanced NMR Spectroscopy Lab - 15 students

Spring 2018
Brief Organic Chemistry – 90 students
Brief Organic Chemistry Lab – 90 students
Intro Organic Chemistry –45 students
Intro Organic Chemistry Lab – 45 students
Advanced NMR Spectroscopy Lab – 20 students

Fall 2017
Brief Organic Chemistry – 90 students
Brief Organic Chemistry Lab - 90 students
General Chemistry 2 – 110 students
General Chemistry 2 Lab Coordinator – 200 students
Advanced NMR Spectroscopy Lab – 15 students

University of Colorado: Boulder

Summer 2017
Organic Chemistry 2, T.A. - 200 students

Spring 2013
Organic Chemistry 1, T.A. - 200 students
Organic Chemistry 1 Lab, T.A. - 40 students

Fall 2012
Organic Chemistry 1 Lab, T.A. - 80 students
Organic Chemistry 1 Lab, T.A. - 80 students

Curriculum Development/Teaching Administrative Positions:

General Chemistry II and Brief Organic Chemistry Laboratory Coordinator, Humboldt State University, Fall 2017-Spring 2019. I was responsible for training and managing 2-5 TAs for each course, developing laboratories for the General Chemistry II and Brief Organic Chemistry laboratory curriculum, and writing, designing, and publishing laboratory manuals online each semester.

Service Work

Reviewer for:

University of New Mexico Limited Competition Reviewer

International Journal of High School Research Fall 2022-present

University Service:

Planning committee for UNM Faculty and Staff Undergraduate Research Symposium November 2024

Hiring Committee Director of Liberal Arts Fall 2024

Faculty Senate Athletics Council Member 2024-2027

Planning Committee for the UROC Regional Meeting to be held at University of New Mexico, Spring 2024-present

Internal Reviewer in Faculty Research and Development Office for Limited Competition Grant Proposals; Spring 2024-present

Co-Chair (responsible for record-keeping, communications, and meeting planning), Cross Campus Pathways committee, Fall 2023-Summer 2025

Volunteer for the McNair Summer Symposium 2022-present

Marshal for Convocation and Commencement Ceremonies, Spring 2023-present

Committee member, Cross Campus Pathways committee, Spring 2023

Faculty Sponsor, Cal State Humboldt Chemistry Club, Fall 2018-Fall 2019

Other Awards:

Golden Paw Certification, Online Teaching, Fall 2024, $1000

Colorado Clinical and Translational Sciences Institute Annual Symposium, 3rd place in Mentored Category: March 2015 - $300

Nomination from CU Boulder to attend the 21st annual Compact for Faculty Diversity's Institute on Teaching and Mentoring in Atlanta, Georgia: October 2014 - $1000

John S. Meeks Excellence in Teaching award, The University of Colorado: Boulder, Department of Chemistry and Biochemistry: May 2013 - $500

Diversity Fellowship, The University of Colorado, Boulder Department of Chemistry and Biochemistry: August 2012 – $5,000

Best Undergraduate Researcher Award, UNM Department of Chemistry and Chemical Biology: April 2012 - $4500

UNM Department of Chemistry and Chemical Biology: Annual research symposium: First Place in the undergraduate poster competition: August 2011 - $75

Joseph Alvin Gaudin scholarship, UNM Department of Biology: May 2011 - $2000

Dr. Thomas Whaley endowed Memorial Scholarship, UNM Department of Chemistry and Chemical Biology: May 2011 - $4500

Ann Kahn Memorial Prize in Chemistry, UNM Department of Chemistry and Chemical Biology: May 2011 - $250

Barry M. Goldwater Scholarship nominee, University of New Mexico: November 2010

Stanford School of Medicine outstanding research presentation award, Society for the Advancement of Chicanos and Native Americans in Science National Conference: October 2010 - $250

Travel scholarship, Society for the Advancement of Chicanos and Native Americans in Science National Conference: September 2010 - $1000

Best Undergraduate oral presentation, UNM Department of Biology: April 2010 - $50

Intramural National Institute of Allergy and Infectious Diseases Research Opportunities (INRO) Scholar: February 2010 - $2000

Joseph Alvin Gaudin Scholarship, Department of Biology: Spring 2009 - $1000