BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Jennifer N. Cash

eRA COMMONS USER NAME (credential, e.g., agency login): cashjn

POSITION TITLE: Assistant Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Kent State University, Kent, OH	B.S.	05/2005	Zoology
University of Cincinnati, Cincinnati, OH	Ph.D.	09/2011	Structural Biology
University of Cincinnati, Cincinnati, OH	Postdoctoral	03/2012	Structural Biology
University of Michigan, Ann Arbor, MI	Postdoctoral	05/2017	Structural Biology

A. Personal Statement

Research and expertise in cryo-EM. My research program is focused on structural and biochemical studies of Rho guanine-nucleotide exchange factor (RhoGEF) signaling and regulation. My lab investigates the regulation of RhoGEFs involved in cancer progression with the goal of identifying important surfaces that may be targeted in drug discovery. My training in structural biology, protein production and purification from multiple systems, biophysical, biochemical and cell-based assays, and high-throughput screening and my track record of successfully characterizing challenging protein complexes have positioned me to develop a productive and exciting research program at UC Davis. I have over 15 years of experience in studying the structural basis of eukaryotic signal transduction mechanisms using X-ray crystallography and cryo-electron microscopy. My strong background in protein structure determination, analysis, and model building makes me well-suited to train students in structural biology methods. I became involved in co-instructing the cryo-EM course at Cold Spring Harbor Laboratory during preparation for the Spring 2023 course and will co-instruct again next year.

Qualification as a mentor. Mentoring is a high priority of mine. Since becoming an Assistant Professor at UC Davis in September 2020, I have mentored 1 high school student, 6 undergraduates, 2 junior specialists (lab technician/manager), and 2 predoctoral graduate students. My first junior specialist is now in a PhD program at the University of Michigan. I am a co-instructor for BCB 220L, which is the course that incoming first-year graduate students in our Biochemistry, Molecular, Cellular, and Developmental Biology graduate (BMCBD) program take for two academic quarters to learn about how to navigate graduate school, how to choose a lab, and skills in scientific communication. I serve on three dissertation committees, a sign that my expertise and mentorship are being sought out. I have participated in mentoring seminars and workshops including the Graduate Mentoring Initiative faculty mentoring program (7.5 hours completed) where faculty discuss common experiences, challenges, and UC Davis resources with the goal of enhancing mentoring abilities. Topics covered include aligning expectations, effective communication, addressing equity and inclusion, and enhancing mentee work-life integration. I am also a faculty trainer on the Molecular and Cellular Biology (MCB) T32 NIH Predoctoral Training Program. Thus, I am well-qualified to mentor and instruct students.

Citations supporting my expertise in cryo-EM:

1. Li, Y, **Cash, J.N.**, Tesmer, J., Cianfrocco, M. 2020. High-Throughput Cryo-EM Enabled by User-Free Preprocessing Routines. Structure 28, 858-869.
2. **Cash, J.N.**, Kearns, S., Li, Y., Cianfrocco, M. 2020. High-Resolution Cryo-EM Using Beam-Image Shift at 200keV. IUCrJ 7, 1179-1187.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2022-Present	Member, National Center for Cryo-EM Access and Training User Review Committee
2022-Present	Member, Editorial Advisory Board, Molecular Pharmacology, American Society for Pharmacology and Experimental Therapeutics
2021-Present	Review Editor, Molecular Recognition, *Frontiers in Molecular Biosciences*
2020-Present	Assistant Professor, Department of Molecular and Cellular Biology, University of California – Davis, Davis, CA
2017-2020	Research Investigator, Life Sciences Institute, University of Michigan, Ann Arbor, MI
2016-2020	Member, The American Society for Pharmacology and Experimental Therapeutics – Molecular Pharmacology Division Executive Committee
2015-2020	Member, The American Society for Pharmacology and Experimental Therapeutics
2014-2015	Member, University of Michigan Life Sciences Institute Postdoctoral Association Committee
2008-2010	Department representative, Health Sciences Graduate Association
2006-2009	Member, Graduate Awards Ceremony Committee of the Graduate Student Governance Association (served one year as secretary and two years as chair)
2005	Research Assistant, Department of Biological Sciences, Kent State University, Kent, OH

Honors

2016	Postdoctoral Best Presentation Award from the Division for Molecular Pharmacology of the American Society for Pharmacology and Experimental Therapeutics for a talk given at the Experimental Biology meeting
2015-2016	American Cancer Society Postdoctoral Fellowship
2015	Best Postdoc Talk Award at the annual University of Michigan Biological Chemistry Retreat
2015	Best Postdoc Poster Award at the annual University of Michigan Pharmacology Retreat
2010	Graduate Student Scientific Award from the Department of Molecular Genetics, Biochemistry, and Microbiology given annually for outstanding research achievements
2010	Best in Show Award from the Graduate School for an outstanding poster presentation at the university-wide Graduate Poster Forum
2010	Graduate Excellence Award for Exemplary Scholarship in Life Sciences from the Graduate Student Governance Association for exhibiting the highest degree of scholarship in life sciences
2010	Honorable Mention Poster Prize from the RCSB Protein Data Bank at the American Crystallographic Association national meeting
2008-2010	American Heart Association Predoctoral Fellowship
2005	Undergraduate Recognition Award from the Department of Biological Sciences at Kent State University for extensive involvement in undergraduate research
2005	Distinguished Student Leadership Award from the College of Arts and Sciences at Kent State University for “enthusiasm and dedication” in research and for helping fellow lab members in their research
2001-2005	Ohio Board of Regents Scholarship
2001-2005	Kent State University Founders Scholarship

C. Contributions to Science

1. Early Career: As an undergraduate, I worked in Dr. Gail Fraizer’s lab studying the expression of VEGF in prostate cancer cells, which is partially regulated by the zinc finger transcription factor WT1. I acquired several molecular biology techniques, including cell culture, qRT-PCR, and confocal microscopy. We studied the enhancement of activity of WT1 in a variety of human cell lines with varying responsiveness to an androgen analog. We also found that the commonly used *Renilla* luciferase control vector was activated in prostate cancer cells, especially those treated with an androgen analog. My work in Dr. Frazier’s lab resulted in two publications.

a. **Cash, J.N.**, Korchnak, A., Gorman, J., Tandon, Y., and Fraizer, G. 2007. VEGF transcription and mRNA stability are altered by WT1 not DDS(R384W) expression in LNCaP cells. Oncology Reports 17, 1413-1419.
b. Hanson, J., Reese, J., Gorman, J., **Cash, J.N.**, Fraizer, G. 2007. Hormone treatment enhances WT1 activation of Renilla luciferase constructs in LNCaP cells. Frontiers in Bioscience 12, 1387-1394.

2. Graduate Career: My dissertation work focused on structural and biochemical studies of myostatin, which belongs to the TGF-β family of proteins. Myostatin is a potent inhibitor of muscle growth and is therefore an attractive target for the treatment of muscle-wasting diseases such as muscular dystrophy and sarcopenia. My studies focused on understanding antagonism of myostatin by certain extracellular proteins and led to the determination of the first two molecular structures of myostatin bound to the antagonists follistatin 288 (Fst288) and follistatin-like 3 (Fstl3). One novel finding from these was how myostatin is able to signal through a non-canonical receptor–one that is not usually utilized by this class of protein. My structural analysis led to studies revealing insights into the regulation of myostatin by heparan-mediated cell surface binding and endocytosis. I also made several discoveries regarding how Fst-type molecules can specifically inhibit myostatin over most other TGF-β family proteins. A cross-comparison analysis of my complex structures with other structures of Fst-type molecules bound to the related ligand activin A led to the finding that the N-terminal domains of Fst-type molecules interact uniquely with the type I receptor binding sites of myostatin and activin A. I identified "hotspots" on myostatin that we targeted in a search for myostatin inhibitor molecules. After graduation, I stayed on in the Thompson lab for a short period of time to finish up studies and frame out publications. For example, I pinpointed domains in each Fst288 and Fstl3 that are important for specificity and affinity in binding myostatin and activin A. My research enabled us to develop a cell-based, high-throughput screen directed against a particular hotspot on myostatin that would allow us to achieve a high degree of selectivity over other TGF-β family ligands.

a. **Cash, J.N.**, Rejon, A., McPherron, A., Bernard, D., and Thompson, T. 2009. The Structure of Myostatin:Follistatin 288: Insights into Receptor Utilization and Heparin Binding. EMBO J. 28, 2662-2676.
b. **Cash, J.N.**, Angerman, E., Kattamuri, C., Nolan, K., Zhao, H., Sidis, Y., Keutmann, H., and Thompson, T. 2011. The Structure of Myostatin:Follistatin-like 3: N-terminal Domains of Follistatin-type Molecules Exhibit Alternate Modes of Binding. JBC 287, 1043-1053.
c. **Cash, J.N.**, Angerman, E., Keutmann, H., and Thompson, T. 2012. Characterization of Follistatin-Type Domains and Their Contribution to Myostatin and Activin A Antagonism. Molecular Endocrinology 26, 1167-1178.
d. **Cash, J.N.**, Angerman, E., Kirby, R., Merck, L., Seibel, W., Wortman, M., Papoian, R., Nelson, S., and Thompson, T. 2013. Development of a Small Molecule Screening Method for Inhibitors of Cellular Response to Myostatin and Activin A. Journal of Biomolecular Screening 18, 837-844.

3. Postdoctoral Career: For my postdoctoral work, I transitioned from studying an extracellular signaling pathway to an intracellular one. The Tesmer lab focuses on understanding regulation of molecules involved in G protein-coupled receptor signaling, including Rho guanine-nucleotide exchange factors (RhoGEFs). The RhoGEF P-Rex1 is strongly associated with cancer metastasis, yet the molecular details of its regulation were poorly understood. Through structure-function studies, I elucidated how P-Rex1 is activated by a key regulatory molecule, PIP_3. My studies supported that PIP_3 binding allosterically activates P-Rex1, inducing a conformational change that exposes the substrate-binding site – a model that I published in *Structure*. In 2017, I transitioned into the Cianfrocco lab to learn cutting-edge methods in cryo-EM. I went on to determine the structure of P-Rex1 bound to the activator G protein $\beta\gamma$ subunits ($G\beta\gamma$), leading to insights into how $G\beta\gamma$ activates P-Rex1 and how this complex serves as an ideal signaling scaffold at the cell membrane. This work was supported with hydrogen/deuterium exchange mass spectrometry experiments performed in collaboration with Dr. Sheng Li (UCSD) and is published in *Science Advances*. In parallel, I developed a high-throughput screen to identify small molecules that target the PIP_3-binding site and block activation of P-Rex1 by PIP_3. In collaboration with Dr. Alan Smrcka, we showed that some of these compounds inhibit adhesion of human neutrophils. In collaboration with the Deng lab, we further showed that one of these compounds inhibits neutrophil infiltration in a zebrafish model. This work is described in *Molecular Pharmacology*. Collectively, my research has helped to define molecular mechanisms of P-Rex1 regulation and pave the way for the rational design of potential anti-P-Rex1 therapeutics.

a. **Cash, J.N.**, Davis, E., and Tesmer, J. 2016. Structural and Biochemical Characterization of the Catalytic

Core of the Metastatic Factor P-Rex1 and Its Regulation by PtdIns(3,4,5)P_3. Structure 24, 730-740.

b. **Cash, J.N.**, Sharma, P., and Tesmer, J. 2019. Structural and Biochemical Characterization of the Pleckstrin Homology Domain of the RhoGEF P-Rex2 and Its Regulation by PIP_3. Journal of Structural Biology: X 1, 100001. https://doi.org/10.1016/j.yjsbx.2018.100001

c. **Cash, J.N.**, Urata, S., Li, S., Ravala, S., Avramova, L., Shost, M., Gutkind, J., Tesmer, J., and Cianfrocco, M. 2019. Cryo-electron Microscopy Structure and Analysis of the P-Rex1–G$\beta\gamma$ signaling scaffold. Science Advances 5, eaax8855.

d. **Cash, J.N.**, Chandan, N., Hsu, A., Sharma, P., Deng, Q., Smrcka, A., and Tesmer, J. 2020. Discovery of Small Molecules that Target the P-Rex1 PIP_3-binding Site and Inhibit P-Rex1-dependent Functions in Human Neutrophils. Molecular Pharmacology 97, 226-236.

Complete List of Published Work in MyBibliography:
https://www.ncbi.nlm.nih.gov/myncbi/1L9Ejwyljvs9EG/bibliography/public/

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Lauren Anderson

eRA COMMONS USER NAME (credential, e.g., agency login): LAUANDERSON

POSITION TITLE: Graduate Student Researcher

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Folsom Lake College Folsom, CA	A.A./A.S.	08/2016	05/2018	Interdisciplinary Math and Science/ Biology
University of California, Davis Davis, CA	B.S.	09/2018	06/2020	Biochemistry and Molecular Biology
University of California, Davis Davis, CA	Ph.D.	09/2020	06/2026 (Expected)	Biochemistry and Structural Biology

A. Personal Statement

My general scientific interests center around understanding how protein structure dictates protein function and how alterations to structure drive disease states. In particular, I want to uncover how cytoskeleton-associated protein structure affects organization of the cytoskeleton and cell motility. The goals of my graduate studies focus on building my skills in structural biology and biochemistry to expand my aptitude as a biologist, which fits well within the scope of this training program. These goals align with my desire to prepare for rigorous and meritorious postdoctoral training and further position myself for a career as an independent researcher. My long-term career goal is to become a principal investigator at a research university that shares my values in the training and education of young scientists with an emphasis on serving underrepresented and first-generation students.

I am a first-generation college student and community college graduate, meaning I have a non-traditional academic and research background. Historically, transfer students do not have as many research opportunities as peers who attend 4-year institutions as freshmen. However, as a community college student, I developed close relationships with professors from broad professional backgrounds in research and industry, and each semester I spent over 100+ hours in a small classroom laboratory setting where I gained ample hands-on experience with direct mentoring from professors. These experiences provided me with the initial training that prepared me to work in a research lab as an undergraduate after transferring to UC Davis. My first research experience was in the laboratory of Dr. Mark Winey where I studied microtubule inner proteins (MIPs). Through this, I became familiar with basic tools in cellular and molecular biology including cloning, fluorescent microscopy, and, above all, troubleshooting. This challenged me to intimately understand my experiments and gave me the experience I needed to become independent, lead my own project, and adapt protocols in the lab. This independence in my undergraduate research immensely strengthened my skills as a scientist. In a side project, I also helped my mentor prepare samples for cryo-electron microscopy analysis which provoked my interest in structural biology. Additionally, I took advantage of another training opportunity by volunteering in Dr. Justin Siegel's lab to learn biochemical research techniques. I learned small-scale protein production and functional assays to characterize the effect of single point mutations in beta-glucosidase. During this time, I successfully created three beta-glucosidase point mutants and characterized how the mutations change protein function and stability. Together, these two experiences helped me hone in my research interests around protein structure-function questions.

Currently, I am studying under the guidance of Dr. Jennifer Cash, an expert in the biochemical and structural analysis of guanine-nucleotide exchange factors (GEFs). Her expertise in cryo-electron microscopy (cryo-EM) and focus on understanding the structure-function relationships of this important class of cancer-

relevant signaling proteins drew me to her lab. My research presently focuses on fully resolving the molecular mechanisms behind the regulation of the RhoGEF P-Rex2. Because of my familiarity with protein structure-function questions and my exposure to structural biology as an undergraduate, I am prepared to take on this project.

B. Positions, Scientific Appointments, and Honors

Positions

2021-present Graduate Student Researcher in the lab of Dr. Jennifer Cash, Biochemistry and Structural Biology, University of California, Davis
2021, 2022 Graduate Teaching Assistant, Macromolecular Structure-Function, University of California, Davis
2018- 2020 Undergraduate Student Researcher in the lab of Dr. Mark Winey, Molecular and Cellular Biology, University of California, Davis
2019 Undergraduate Student Researcher in the lab of Dr. Justin Siegel, Biochemistry and Molecular Medicine, University of California, Davis
2018 Teaching Intern, CalTeach/MAST, Oliver Wendell Holmes Junior High School
2017- 2018 Instructor, Mathnasium, Folsom, CA

Leadership and Service Positions

2023 Assistant for Cold Spring Harbor Laboratory Cryo-electron Microscopy course, New York
2023 Co-organizer of Annual BMCDB Spring Research Summit, University of California, Davis
2022-present Student Representative to BMCDB Executive Committee, University of California, Davis
2022-present Representative, Graduate Student Association, University of California, Davis
2021-present Member, Diversity, Equity, and Inclusion Committee, University of California, Davis
2021 Co-leader of BMCDB Colloquium Mentorship Committee, University of California, Davis

Honors and Awards

2023 Sharon Gray Memorial Award, University of California, Davis; awarded to outstanding graduate student mentors and their graduate or undergraduate mentees to fund professional development activities
2022 Participant in National Center for CryoEM Access and Training (NCCAT) Single-Particle Analysis short course; *only 16 participants taken nationwide*
2021 Invited Speaker, "My Journey from CC to PhD," Research Training Initiative for Scientific Enhancement Program (RISE)/Louis Stokes Alliance for Minority Participation (LSAMP) Seminar, Fresno State University
2020 ASBMB Certification with Distinction
2020 Department Citation in Biochemistry and Molecular Biology, College of Biological Sciences, University of California, Davis
2020 Dean's List, College of Biological Sciences, Spring quarter; *requirements: must complete at least 12 units for a letter grade obtaining a GPA in the upper 16% of students registered in the same class level and college during the quarter*
2018, 2019 Seward & Clara Patterson Scholarship, University of California, Davis; awarded in recognition of academic accomplishments and potential for future achievement
2018 Sirdon Navarro Scholarship, Folsom Lake College; awarded in recognition of community service and academic achievement
2018 Honors, Folsom Lake College Term Honors, Spring 2018*; requirements: must obtain at least 3.0 GPA and enrolled in at least 12 units*
2016- 2017 Highest Honors, Folsom Lake College Term Honors Fall 2016- Spring 2017; *requirements: must obtain at least 3.5 GPA and be enrolled in at least 12 units*

Mentees Trained

2022-present Chi Phan (Undergraduate in Biochemistry and Molecular Biology, Cash Lab)
2022 Jonathan Kwok (Undergraduate in Biochemistry and Molecular Biology, Cash Lab)
2021-2022 Nikesh Thadani (Undergraduate in Genetics, Cash Lab)
2021 Jacob Wurster (Undergraduate in Biochemistry and Molecular Biology, Cash Lab)

C. Contributions to Science

1. **Undergraduate Research:** Motile cilia are composed of a microtubule axoneme made up of stable doublet microtubules. Unlike the microtubules that make up the inner network of cytoskeleton, these microtubule doublets do not exhibit dynamic instability. Likely this stability is brought about by the presence of microtubule inner proteins (MIPs) lining the luminal surfaces of the microtubules. My project in the Winey Lab was part of a larger ongoing investigation into how MIPs contribute to making stable, yet flexible, force-resisting structures like motile cilia. My research used a cellular and molecular biology perspective to determine how the domains of one MIP, Rib72A, allow the recruitment of other MIPs to the microtubule doublet to stabilize the ciliary axoneme. I created truncated mutants of Rib72A to determine which domain(s) are required to i) recruit other MIPs to the ciliary axoneme and ii) bind to the lumen of the microtubule doublet. Here, I identified that the N-terminus alone of Rib72A is sufficient to localize to the microtubule doublet.

   My time in the Winey lab resulted in three major accomplishments. The first was a paper published in the peer-reviewed journal *Molecular Biology of the Cell* in which my contribution was to quantify swim speed defects in Fap115-deficient *Tetrahymena thermophila* as part of my mentor's project. I also presented my own findings at the annual UC Davis Undergraduate Research Conference where I practiced my scientific communication skills. Additionally, in response to the COVID-19 pandemic, I maintained productivity by creating an interdisciplinary resource website for the UC Davis College of Biological Sciences called the "Aggie Tutorial Farm," where I pooled curated online resources for undergraduate and graduate students so that they could continue to expand their studies even while classrooms and labs were shut down.

   a. Fabritius A, Bayless B, Li S, Stoddard D, Heydeck W, Ebmeier C, **Anderson L**, Gunnels T, Nachiappan C, Whittall J, Old W, Agard D, Nicastro D, & Winey M. (2021). Proteomic Analysis of Microtubule Inner Proteins (MIPS) in Rib72 Null Tetrahymena Cells Reveals Functional MIPS. Molecular Biology of the Cell, 32(21). https://doi.org/10.1091/mbc.e20-12-0786. PMID: 34406789; PMCID: PMC8693976.
   b. **Anderson L**, Fabritius A, & Winey M. Structure-Function Analysis of Rib72A and Rib72B in Motile Cilia. Undergraduate Research Conference, 2020 May; Davis, CA.
   c. **Anderson L**, Wood A, Nunnari J, Patel H, Draper B, & Winey M. Interdisciplinary Tutorial Resources, UC Davis College of Biological Sciences, May 2020, https://aggietutorialfarm.faculty.ucdavis.edu/.

2. **Graduate Research:** RhoGEFs represent a large, diverse family of enzymes that frequently play roles in driving cancer progression. Historically, the field of RhoGEF regulation has exclusively focused on understanding the RhoGEF catalytic core. Thus, our understanding of RhoGEF regulation is vastly limited since the accessory domains outside of the core that constitute most of the protein and bind regulatory molecules have been largely neglected. Currently, in Dr. Jennifer Cash's lab, I am investigating P-Rex2, a RhoGEF that is frequently mutated in cancers, from a whole molecule perspective using a structural biology approach. The goal of my doctoral research is to comprehensively define the regulation of P-Rex2 using a combination of biochemical assays and cryo-electron microscopy (cryo-EM). Overall, this work will significantly advance the field of RhoGEF biology by characterizing a full-length RhoGEF through obtaining its structure, understanding how its structure and activity change with the addition of a biologically relevant inhibitor and canonical tumor suppressor (PTEN), and determining which segments of PTEN are responsible for P-Rex2 inhibition. This work supports efforts to use RhoGEFs as therapeutic targets by providing the structural data necessary to design and develop drugs that target this family of proteins. Since I began my doctoral research, I have presented my progress on several occasions where I shared my preliminary data including two posters (September 2021, June 2022) and two oral presentations (May 2022, September 2022).

   Complementing my research efforts, I have actively sought out opportunities to learn cryo-EM theory and in practical application. In addition to my training from Dr. Cash, I have completed training at the single-particle analysis (SPA) short course at the National Center for CryoEM Access and Training (NCCAT). I also initiated and co-lead a twice monthly multi-lab cryo-EM journal club throughout the academic year with the primary goal of discussing recent advances in cryo-EM to support trainee learning and a stronger community between users of the UC Davis BioEM facility. Furthermore, we

have adapted summer meetings to emphasize student learning by hosting a weekly book club to discuss the foundations of cryo-EM. As a direct result from these training opportunities, I obtained enough expertise in cryo-EM to be invited as a teaching assistant at the Cold Spring Harbor Laboratory Cryo-EM course in April 2023. Together, this demonstrates my capability to successfully undertake this research.

a. **Anderson L**, & Cash J. Using Cryo-EM and Biochemical Studies to Characterize P-Rex2 Regulation by PTEN. Biochemistry, Molecular, Cellular, and Developmental Biology Colloquium, 2021 September; Davis, CA
b. **Anderson L.** Structural Studies on P-Rex2. Spring Research Summit, 2022 May; Davis, CA
c. **Anderson L**, & Cash J. Using Model Membranes to Study P-Rex2 Activation. Gordon Research Conference: Phosphorylation and G-protein Mediated Signaling Networks, 2022 June; Southbridge, MA
d. **Anderson L**, & Cash J. Understanding P-Rex2 Regulation Using a Model Membrane. Biochemistry, Molecular, Cellular, and Developmental Biology Colloquium, Davis, CA. September 2022.

D. Scholastic Performance

Folsom Lake College and University of California, Davis grade on regular grading scales: A, B, C, D, or F. Where D- is a passing grade for undergraduate coursework and B is a passing grade for graduate coursework. S = Satisfactory in a satisfactory/ unsatisfactory class and P = Pass in a pass/ not pass class. Neither is calculated in the GPA.

YEAR	COURSE TITLE	GRADE
FOLSOM LAKE COLLEGE [UNDERGRADUATE]		
2016	Introduction to Art History	A
2016	General Chemistry I	A
2016	Advanced Composition and Critical Thinking	A
2016	Human Sexuality	A
2017	Principles of Biology	A
2017	General Chemistry II	A
2017	Calculus II	A
2017	General Physics I	A
2017	General Principles of Psychology	A
2017	Jazz History	A
2017	Principles of Zoology	B
2017	Organic Chemistry I	A
2017	Yoga	A
2018	Principles of Botany	B
2018	Organic Chemistry II	B
2018	General Physics II	A
UNIVERSITY OF CALIFORNIA, DAVIS [UNDERGRADUATE]		
2018	Structure-Function of Biomolecules	A
2018	Directed GP Study	P
2018	Teaching in Science & Math	P
2018	Computers in Technology	A+
2018	Applied Statistics for Biological Sciences	A+
2019	Genes and Gene Expression	A
2019	Genes and Gene Expression Discussion	P
2019	Bioenergetics and Metabolism	A-
2019	Physical Chemistry for Life Sciences I	A-
2019	Special Study (Undergraduate Research)	P
2019	Cell Biology	B
2019	Physical Chemistry for Life Sciences II	B+
2019	Enzymes and Receptors	B+
2019	Molecular Genetic Circuits	A+
2019	Molecular Biology and Biochemistry Laboratory	A
2019	Molecular Biology and Biochemistry (Lecture)	A
2019	Applied Bioinformatics	A
2019	Introduction to Programming	A
2019	Macromolecular Structure-Function	B-
2020	Lipids: Chemistry and Nutrition (Graduate Level)	A
2020	Advanced Molecular Biology	A
2020	Writing in Science	A
2020	Word Roots	A+
2020	Introduction to Data Structures	A+
2020	iBioSeminars	A+
2020	Developmental Genetics	A
UNIVERSITY OF CALIFORNIA, DAVIS [GRADUATE]		

YEAR	COURSE TITLE	GRADE
2020	Molecular Genetics and Genomics	A
2020	Macromolecular Structure and Interaction	A
2020	Advanced Biochemistry Lab Rotation	A+
2020	Progress in Molecular and Cellular Biology Seminar	S
2021	Cell Biology	A
2021	Developmental Biology	A
2021	Advanced Biochemistry Lab Rotation	A+
2021	Progress in Molecular and Cellular Biology Seminar	S
2021	Molecular Biology	A
2021	Graduate Reading Course	A
2021	Research	S
2021	Progress in Molecular and Cellular Biology Seminar	S
2021	Colloquium Planning	S
2021	Research	S
2021	Progress in Molecular and Cellular Biology Seminar	S
2021	Methods of Teaching: Teaching Assistantship for Macromolecular Structure-Function	S
2021	Recombinant DNA	A+
2021	Group Study for Recombinant DNA	S
2022	Research	S
2022	Progress in Molecular and Cellular Biology Seminar	S
2022	Research	S
2022	Membrane Biology	A
2022	Progress in Molecular and Cellular Biology Seminar	S
2022	Research	S
2022	Methods of Teaching: Teaching Assistantship for Macromolecular Structure-Function	S
2023	Research	S
2023	Research	S