BIOGRAPHICAL SKETCH

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NAME: Mears, Jason A.

POSITION TITLE: Assistant Professor

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

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
Indiana University, Bloomington, IN	B.S.	1999	Biochemistry
University of Alabama at Birmingham	Ph.D.	2005	Biochemistry and Structural Biology
NIDDK, National Institutes of Health	Postdoctoral	2005-2010	Biochemistry and Structural Biology

A. Personal Statement

The central goal of my research is to investigate proteins that interact with membranes and alter their morphologies. To this end, we have focused on macromolecular complexes that regulate mitochondrial fission and fusion, because these dynamic processes have recently come to the forefront as a therapeutic target in several diseases, including neurodegeneration, cancer, and aging. A major limitation in developing new therapies is the lack of insight into the regulation of these mitochondrial remodeling complexes. To address this shortcoming, my lab has been at the leading edge of research that has characterized the functional roles of proteins in the mitochondrial fission complex. We have also provided key mechanistic insight for this process by showing that this protein machinery actively constricts membranes to drive ensuing fission. From these studies, we have developed novel in vitro assays that we use to identify the functional consequences of specific cellular perturbations that modify the fission machinery through protein and lipid interactions and altered post-translational modifications in human disease.

My scientific background combines structural, biochemical and cellular methods to characterize functional relationships in macromolecular complexes. I have ~20 years of experience in structural biology, and I have focused on membrane remodeling proteins for the past 14 years of my career. Since starting my own lab, I have focused on the main regulator of mammalian mitochondrial fission, dynamin-related protein 1 (Drp1). While core attributes of the dynamin family are preserved in Drp1, several unique features have been identified, and these differences highlight evolutionary and functional relationships within the larger protein family. In particular, my lab has identified novel protein, lipid and nucleotide interactions that regulate Drp1 self-assembly and subsequent membrane remodeling. Our group uses a variety of techniques to address fundamental questions about the mitochondrial fission complex, including cryo-electron microscopy, biophysical and biochemical methods, and cancer stem cell models. We are fortunate to have regular interactions with mitochondrial, structural and cancer biologists that continue to support our research interests. Moreover, this research environment fosters the development of young scientists, which is a critical objective in my research group. Collectively, our goal is to contribute impactful research that resolves long-standing questions about the factors that alter mitochondrial dynamics, leading to organelle dysfunction in human pathologies.

B. Positions and Honors

Positions

1995 - 1999	Undergraduate Research Assistant, Indiana University, Bloomington, IN
1999 - 2005	Graduate Research Assistant, University of Alabama at Birmingham, Birmingham, AL
2002 - 2005	Research Technician II, Georgia Institute of Technology, Atlanta, GA
2005 - 2010	Postdoctoral Fellow, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, MD

2010 - 2019	Assistant Professor, Department of Pharmacology, Case Western Reserve University School of Medicine, Cleveland, OH
2010 -	Member Faculty, Center for Mitochondrial Disease, Case Western Reserve University School of Medicine, Cleveland, OH
2010 -	Member Faculty, Cleveland Center for Membrane and Structural Biology (CCMSB), Case Western Reserve University School of Medicine, Cleveland, OH
2017 -	Member Faculty, Case Comprehensive Cancer Center (CCCC), Case Western Reserve University School of Medicine, Cleveland, OH
2019 -	Associate Professor, Department of Pharmacology, Case Western Reserve University School of Medicine, Cleveland, OH

Other Experience and Professional Memberships

2000 - 2002	Mentor, McNair Scholars Program, University of Alabama at Birmingham
2002 -	Member, *Biophysical Society (2002-)*, *American Society for Cell Biology (2006-)*, *Chesapeake Society for Microscopy (2006-2010)*, *American Society for Pharmacology and Experimental Therapeutics (2011-)*, *Microscopy Society of America (2011-)*, *Microscopy Society of Northeast Ohio (2011-)*, *American Society for Biochemistry and Molecular Biology (2015-)*
2007 - 2008	Fellows Editorial Board, NCI/CCR, National Institutes of Health
2009 -	Ad Hoc Reviewer for *J Cell Biol, PNAS, Human Molecular Genetics, J Biol Chem, Mol Biol Cell, Nucleic Acids Res, Endocrinology, Cell Biol Toxicol, PLoS Comp Biol, PLoS ONE, Antioxidants, J Clin Med, Int J Mol Sci, Molecules, Mol Biol Evol, Oxid Med Cell Longev, Curr Opin in Colloid Interface Science*, *Immunopharmacol Immunotoxicol*
2012 -	Chair of Scientific Sessions at National Meetings: Scientific Symposium: Structure of membrane-shaping proteins, Microscopy and Microanalysis Meeting, Phoenix, AZ (2012); Platform session: Protein assemblies, Biophysical Society 62nd Annual Meeting, San Francisco, CA (2018); Cryo-EM Subgroup Symposia, Biophysical Society 63rd Annual Meeting, Baltimore, MD (2019, elected)
2016 -	Ad Hoc Grant Reviewer for *National Institutes of Health, NCI Scientific Review Group (2018/05 ZCA1 SRB-K (M2)*, *2019/01 ZCA1 RTRB-U (J1)), American Heart Association (2019 Transformational Project Award), Wellcome Trust, UK* and *The Netherlands Organization for Scientific Research (NWO)*

Honors and Awards

1998	E.G. Sturdevant Summer Research Fellowship, Indiana University
2002	McKibben Young Investigator Award, UAB
2005-2010	NIDDK Nancy Nossal Fellowship Award
2012	American Heart Association SDG Award

C. Contribution to Science

1. The main focus of my research is to examine the role of (DRPs) in mitochondrial membrane fission and fusion events. Since starting my lab, my efforts have focused on molecular interactions that drive assembly of the mitochondrial fission machinery in humans. The key mediator of mitochondrial membrane fission is dynamin-related protein 1 (Drp1) in mammals. In collaboration with Dr. Oliver Daumke at the Max Delbruck Center in Berlin, we have determined key structural properties of Drp1 using X-ray and EM methods (Frohlich et al., 2013; Francy et al., 2017). My group also determined the functional roles of distinct sequence domains that regulate assembly of the fission complex and facilitate mitochondrial membrane constriction (Francy et al., 2015). In this way, we have identified the core protein machinery needed to constrict membranes, and we have characterized functional differences that occur in response to natural (i.e. alternative splicing and post-translational modifications) and artificial (i.e. site-directed mutants) sequence changes (MacDonald et al., 2014 and 2016).

a. Fröhlich, C., Grabiger, S., Schwefel, D., Faelber, K., Mears, J., Rocks, O., and Daumke, O. (2013) The crystal structure of human dynamin 1-like protein reveals an alternative oligomerization mode. *EMBO J.,* **32**:1280-92. PMID: 23584531

b. MacDonald, P.J., Stepanyants, N., Mehrotra, N., Mears, J.A., Qi, X., Sesaki, H., Ramachandran, R. (2014) A dimeric equilibrium intermediate nucleates Drp1 reassembly on mitochondrial membranes for fission. *Mol. Biol. Cell*, 25:1905-15. PMID: 24790094

c. Francy, C.A., Alvarez, F.J., Zhou, L., Ramachandran, R., Mears, J.A. (2015) The mechanoenzymatic core of dynamin-related protein 1 comprises the minimal machinery required for membrane constriction. *J. Biol. Chem*. 290: 11692-703. PMID: 25770210

d. Francy, C.A., Clinton, R.W., Fröhlich, C., Murphy, C., and Mears, J.A. (2017) Cryo-EM Studies of Drp1 Reveal Cardiolipin Interactions that Activate the Helical Oligomer. *Sci. Rep.*, 7: 10744. PMID: 28878368

2. More recently, we have incorporated additional lipid and protein factors to build on the complexity of our *in vitro* reconstitution experiments. In collaboration with Rajesh Ramachandran in the Department of Physiology and Biophysics, we have shown that cardiolipin directly interacts with Drp1 to regulate its function (Stepanyants et al., 2015). Moreover, we have identified conformational changes in Drp1 helical polymers bound to cardiolipin lipid templates that explain the augmented activity of these complexes (Francy et al., 2017). We also developed a novel lipid-tethering assay to examine Drp1 interactions with critical partner proteins at the surface of the membrane (Clinton et al., 2016; Clinton & Mears, 2017). One partner, called mitochondrial fission factor (Mff), was found to enhance Drp1 polymerization and activity by acting as a scaffold upon which a functional fission complex could assemble. This effect was modulated, in part, by cardiolipin and the multimeric states of both Mff and Drp1. Importantly; we were able to use cellular studies to validate our findings with isolated protein complexes. This combinatorial approach is essential for comparing key sequence differences that modify the core protein machinery to perform distinct roles in different eukaryotic cells.

   a. Stepanyants, N., MacDonald, P.J., Francy, C.A., Mears, J.A., Qi, X., and Ramachandran, R. (2015) Cardiolipin's propensity for phase transition and its reorganization by dynamin-related protein 1 form a basis for mitochondrial membrane fission. *Mol. Biol. Cell*. 26: 3104-16. PMID: 26157169

   b. Clinton, R.W., Francy, C.A., Ramachandran, R., Qi, X., Mears, J.A. (2016) Dynamin-related Protein 1 Oligomerization in Solution Impairs Functional Interactions with Membrane-anchored Mitochondrial Fission Factor. *J. Biol. Chem.*, 291: 478-92. PMID: 26578514

   c. Macdonald, P.J., Francy, C.A., Stepanyants, N., Lehman, L., Baglio, A., Mears, J.A., Qi, X., Ramachandran, R. (2016) Distinct Splice Variants of Dynamin-related Protein 1 Differentially Utilize Mitochondrial Fission Factor as an Effector of Cooperative GTPase Activity. *J. Biol. Chem.*, 291: 493-507. PMID: 26578513

   d. Clinton, R.W. and Mears, J.A. (2016) Using Scaffold Liposomes to Reconstitute Lipid-Proximal Protein-Protein Interactions In Vitro. *J. Vis. Exp.* 119. PMID: 28117823

3. The foundation for the work in my lab started as a post-doctoral fellow in the lab of Dr. Jenny Hinshaw at the NIH. My primary focus was on the yeast DRP, Dnm1, which controls mitochondrial fission in yeast. In collaboration with Jodi Nunnari at UC-Davis, I showed that Dnm1 polymerizes in the presence of a GTP analog and/or lipid to form large helical structures that are consistent with the measured diameters of mitochondrial constriction sites *in vivo* (Ingerman et al., 2005). Later, I determined the 3D structure of the Dnm1 helix using cryo-EM. I also found that Dnm1 polymers constrict underlying lipid bilayers upon addition of GTP. This conformational change drastically alters the lipid morphology and demonstrates that Dnm1 can impart a contractile force needed for membrane fission (Mears et al., 2011). This work provided the first evidence for how DRPs mediate membrane constriction upon GTP hydrolysis.

   a. Ingerman, E., Perkins, E.M., Marino, M., Mears, J.A., McCaffery, J.M., Hinshaw, J.E., and Nunnari, J. (2005) Dnm1 forms spirals that are structurally tailored to fit mitochondria. *J. Cell Biol.*, 170, 1021-1027. PMID: 16186251

   b. Mears, J.A., Lackner, L., Fang, S., Ingerman, E., Nunnari, J., and Hinshaw, J.E. (2011) Conformational changes in Dnm1 support a contractile mechanism for mitochondrial fission. *Nat. Struct. Mol. Biol*., **18**: 20-26. PMID: 21170049

4. The key reason that I chose to pursue my post-doctoral studies with Dr. Hinshaw was the opportunity to learn and implement biochemical and structural methods that matched the computational training I received during my graduate training (*see below*). This multi-faceted approach was used to examine the process of dynamin-mediated vesicle release during endocytosis. Dynamin is a force-generating enzyme that constricts upon GTP hydrolysis. By combining cryo-EM and x-ray structures, I was able to generate a pseudo-atomic, "corkscrew" model for dynamin-mediated membrane constriction that, for the first time, illustrated conformations changes in dynamin that promote membrane constriction (Mears et al., 2007). Later, I determined a 12-Å structure of dynamin using cryo-EM. When combined with new X-ray structures of isolated dynamin domains, an improved pseudo-atomic model for dynamin polymers was generated that identified novel protein motions that propagate within the oligomer to generate contractile force during membrane scission (Chappie et al., 2011). These results identified the conserved mechanochemical core of dynamin and have broad reaching implications for the entire family of dynamin-related proteins. These experiences and the expertise acquired made me uniquely qualified to address the functional roles of dynamin-related proteins in regulating organelle morphology when starting my own lab.

    a. Mears, J.A., Ray, P., and Hinshaw, J.E. (2007) A corkscrew model for dynamin constriction. *Structure*, 15, 1190-1202. PMID: 17937909

    b. Mears, J.A. and Hinshaw, J.E. (2008) Visualization of dynamins. *Methods in Cell Biol.*, 88, 237-256. PMID: 18617037

    c. Chappie, J.S., Mears, J.A., Fang, S., Leonard, M., Schmid, S.L., Milligan, R.A., Hinshaw, J.E., Dyda, F. (2011) A pseudo-atomic model of the dynamin polymer identifies a hydrolysis-dependent power stroke. *Cell*, **147**: 209-22. PMID: 21962517

5. I began my scientific career in the lab of Dr. Stephen Harvey, where I examined the structural relationships of highly conserved functional domains in the ribosome. By combining data from diverse experimental disciplines, I developed detailed models that described the structural basis of protein translation. This work continues to serve as a model for how evolutionary changes are accommodated in macromolecular complexes (Mears et al, 2002). In collaboration with Drs. Joachim Frank and Rajendra Agrawal at the Wadsworth Institute and Dr. Robin Gutell at the University of Texas, I identified the minimal structural features required for protein translation. I also examined conserved RNA-protein interactions that directly influence ribosome assembly using computational simulations (Stagg et al, 2003). Later, I specifically focused on mitochondrial ribosomes, as these rRNAs are drastically reduced when compared with bacterial rRNAs. This reduction is compensated for by an increase in protein content. Using RNA and protein homology modeling along with computational fitting to cryo-EM structures, I developed a model for the large subunit of the mitochondrial ribosome. This work assigned the first structures for additional protein mass of the mitochondrial ribosome. More importantly, it also illustrated how sequence alterations during the course of evolution affect functional structures within this essential cellular machinery (Mears et al, 2006). My graduate training provided outstanding research experiences in structural and computational biology that I continue to use in my lab.

    a. Mears, J.A., Cannone, J.J., Stagg, S.M., Gutell, R.R., Agrawal, R.K., and Harvey, S.C (2002) Modeling a minimal ribosome based on comparative sequence analysis. *J. Mol. Biol.*, 321, 215-234. PMID: 12144780

    b. Stagg, S.M., Mears, J.A., and Harvey, S.C. (2003) A Structural Model for the Assembly of the 30S Subunit of the Ribosome. *J. Mol. Biol.*, 328, 49-61. PMID: 12683996

    c. Mears, J.A., Stagg, S.M, and Harvey, S.C. (2005) Modeling large RNA assemblies using a reduced representation. In *Handbook of RNA Biochemistry*. Eds. Hartmann, R.K., Bindereif, A., Schon, A. and Westof, E. Wiley-VCH, Weinheim, Germany, pp. 546-559.

    d. Mears, J.A., Sharma, M.R., Gutell, R.R., McCook, A.S., Richardson, P.E., Caulfield, T.R., Agrawal, R.K., and Harvey, S.C. (2006) A structural model of the large subunit of the mammalian mitochondrial ribosome. *J. Mol. Biol.*, 358, 193-212. PMID: 16510155

Complete List of Published Work in MyBibliography:

https://www.ncbi.nlm.nih.gov/sites/myncbi/jason.mears.1/bibliography/47314900/public/?sort=date&direction=ascending

D. Research Support

Current

NIH R01 CA208516-01A1 (Mears PI) 09/01/17 – 08/31/2022
National Institutes of Health – NCI Special Emphasis Panel: Provocative Question 5
"Mitochondrial dynamics in Brain Tumor Initiating Cells"
Goal: Determine how mitochondrial fission impacts glioblastoma stem cells and whether Drp1 inhibition will sensitize glioblastoma to conventional therapies.
Role: PI

NIH R01 GM125844-01 (Mears PI) 02/01/18 – 01/31/2022
National Institutes of Health, NIGMS
"Defining Molecular Interactions that Drive Mitochondrial Fission"
Goal: Determine factors that drive and regulate assembly and function of the mitochondrial fission machinery.
Role: PI

-Supplement-
NIH 3R01 GM125844-01S1 (Mears PI) 07/01/18 – 06/30/2020
NIGMS Diversity Supplement Award for Trainee Kristy Rochon
Goal: Examine Drp1 structure and function at the molecular and cellular levels to define its role in neurodegeneration.

Recently Completed

AHA 16GRNT30950012 (Mears PI) 07/01/16 – 06/30/2018
American Heart Association – GRA Grant-in-Aid
"The molecular mechanism of mitochondrial fission"
Goal: Identify the role of mitochondrial fission in the progression of cardiovascular disease.
Role: PI

CTSC Collaborative (Mears PI) 03/01/17 – 9/30/17
Case Western Reserve University – Core Utilization Pilot Grant
"Probing the Drp1-Mff Interaction Interface Using X-ray Footprinting"
Goal: To map interactions within the mitochondrial fission machinery.

AHA 12SDG9130039 (Mears, PI) 01/01/12 – 12/31/15
American Heart Association – NCRP Scientist Development Grant
"A mechanistic study of mitochondrial fission"
Goal: Elucidate the fundamental process of mitochondrial fission as it relates to CV disease.

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: Rochon, Kristy J.

eRA COMMONS USER NAME (credential, e.g., agency login): K_ROCHON1

POSITION TITLE: PhD Candidate

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	END DATE MM/YYYY	FIELD OF STUDY
Central State University	BS	08/2015	05/2017	Biology
Central State University	BS	08/2015	05/2017	Chemistry
Case Western Reserve University	PhD	8/2017	Present	Pharmacology

A. Personal Statement

My immediate goal is to resolve the native structure of dynamin-related protein 1 (Drp1) in a pre-assembled state and in assembled, helical polymers on lipid templates that mimic the outer mitochondrial membrane (OMM). These structures will characterize the conformational changes that drive assembly of larger oligomers necessary for mitochondrial fission and will elucidate key regulatory regions of the protein that may be future therapeutic targets. My long-term research interests are focus on therapeutics and translational research in mitochondrial diseases. My academic background in both biology and chemistry has provided a strong foundation and my current field of study in Pharmacology will provide me with the background needed to achieve these goals. Additionally, I have a strong background in leadership and planning skills gained through active duty service as an officer in the United States Air Force. When I returned to school in 2014, my goal was to focus on research. Through my undergraduate experiences and the opportunities to explore different research areas in CWRU's school of medicine, I have refined that passion. Within the PhD program at CWRU, I was not content to look at translation research from the perspective of one discipline while choosing my lab. I made a conscious effort to explored research laboratories in pathology, physiology and biophysics, pharmacology, and neuroscience. Through these four research rotations I was exposed to unique perspectives needed for a wholistic approached to translational research. Additionally, I discovered a talent and passion for microscopy imaging and analysis. I joined Jason Mears' lab officially in January 2018 where I am using cryo-EM, confocal microscopy and molecular dynamic simulations to study mitochondrial dynamics.

In the same way my research can contribute to new paradigms, I'm interested in using my experiences to encourage and mentor minority students to increase diversity in biomedical research. A diversity of thought and life experiences are critical for the advancement of innovation and discovery. To that end, I have professional objectives focused on mentoring a

diverse group of the next generation scientists. Having attended a Historically Black College (HBCU), I have seen how important it is for minority students to have mentors that can encourage their academic progress by not just talking about what's possible, but showing them how to set and achieve their goals. I would like to return to Central State to reach out to the students in the natural sciences program to tell them about graduate school and help them with their strategies as they approach graduation. I'm also interested in establishing a connection with my tribe, the Menominee Nation. Through a partnership with their Tribal Education Department, outreach to the youth on the reservation could expose the next generation to biomedical science programs and careers.

B. Positions and Honors

Positions and Employment

2004 - 2008	Public Affairs Officer/Program Manager, United States Air Force
2008 - 2013	Data Analytics and Strategy Development, Dayton Development Coalition
2013 - 2017	Grant Writer
2015 - 2017	Technology Validation and Prototyping, InfiniPure

Other Experience and Professional Memberships

2000 - 2002	President, Phi Theta Kappa Honor Society, Beta Beta Psi Chapter
2015 - 2017	Member, American Chemical Society
2017 - Present	Member, Tri Beta Honor Society
2019 - Present	Member, Microscopy Society of America

Honors

2002	Leadership Award, Air Force Reserve Officer Training Corps (AFROTC)
2003	USAA Spirit Award, AFROTC
2004	Distinguished Graduate, AFROTC
2004	Cadet of the Year, AFROTC
2005	National Defense Service Medal
2005	Global War on Terrorism Service Medal
2015 - 2017	Scholarship, DoD-STEM
2016	Patterson Award, American Chemical Society
2017 - 2018	Fellowship, The Paul Berg and Harland Wood Distinguished Graduate Fellowship

C. Contribution to Science

1. **Undergraduate Research:** My undergraduate research experience included three diverse projects: At Central State University, I completed two semesters of Chemistry research on the synthesis process and the evaluation of anti-biological activity for sulfanilamide azo-dyes. As the lead student researcher on the project, I developed the process for synthesis, determined the functional group series that would be used, conducted IR and NMR analysis of the compounds, and coordinated the research plan for future semester's research as new students join the project. In my dual major, I also conducted an additional research project for Biology, focused on the feasibility of establishing bioreactors in rural India. The study abroad assessed the required amount of biomass needed to power small rural villages and the anticipated methane yields. Data was shared with researchers at the University of

Bangalore in India. Through a ten-week summer internship at the University of Cincinnati, I was mentored by Prof. George Stan and contributed by studying computational models of biological nanomachines in mediated protein unfolding. Through my contribution, I obtained novel results on the impact of crowding on Clp-mediated protein unfolding. This internship culminated in an invitation for a poster presentation and abstract publication at the 2016 Annual Biomedical Research Conference for Minority Students (ABRCMS).

   a. Rochon K, Javidialesaadi A, Stan G. Effect of Crowding of Tandem Substrates in Protein Unfolding and Translocation Mediated by Clp Biological Nanomachines. Annual Biomedical Research Conference for Minority Students; 2016 November, Tampa, FL. (abstract and poster presentation)

2. **Graduate Research**: My research rotations at CWRU allowed for the exploration of a variety of neurodegenerative disorders in the context of different research questions. First, I worked in Dr. Qingzhong Kong's lab in the Pathology department where my primary goal was to find an antibody that could detect the N1 fragment of the human prion protein (PrP). I completed a series of experiments which evaluated four antibodies, identifying one with the potential for further testing and experimentation. In Dr. Rajesh Ramachandran's lab in the Physiology and Biophysics department I successfully transfected three variants of Drp1 for characterization. One variant expressed high levels of GTPase activity, which was unexpected and will be studied further in the lab. This variant was also carried over into the pharmacology rotation. Finally, in Dr. Bruce Trapp's lab in Neuroscience at the Cleveland Clinic I studied the mechanisms of neuronal degeneration in Multiple Sclerosis (MS) and documented novel evidence of cases in which neurodegeneration occurred absent of demyelination. Additionally, I was able to characterize the location of axonal swelling in MRI regions of interest. The results will be further characterized and images I obtained are planned to appear in a future publication. Since joining Jason Mears lab, I have resolved a sub-20 Å structure of both wild type Drp1 (WT) and a Drp1 mutant which yields an assembly defective dimer. When compared to the crystal structure, our EM structures demonstrate a shift in conformation of the GTPase domains. These results suggest that the GTPase domain may be in an inhibited state that shields the stalk from forming intermolecular contact. Additionally, I have resolved mid-resolution structures of the Drp1 tetramer, and Drp1 polymers on phosphatidic acid (PA) and cardiolipin (CL) lipid templates. Initial results of the single-particle structures were presented at the 2019 Microscopy and Microanalysis Meeting where my poster won first place for graduate student presentations in the biological sciences track.

   a. Rochon, K and Mears, JA**.** Determining the Solution Structure of the Drp1 and its Role in the Assembly of the Mitochondrial Fission Machinery. Annual Microscopy and Microanalysis Meeting, 2019 August, Portland, OR. (SZhort paper published in the meeting proceedings and poster presentation)

3. **Current Funding Source:** NIH diversity supplement, PA-18-586 "Research Supplements to Promote Diversity in Health-Related Research."

4. **Citizenship:** U.S. citizen.

D. Additional Information: Research Support and/or Scholastic Performance

Scholastic Performance (Official Transcripts Attached)

YEAR	COURSE TITLE	GRADE
	CLARK STATE COMMUNITY COLLEGE	
2014	General Physics I	A
2014	General Chemistry I	A
2014	Pre Calculus	A
2014	Microbiology	A
2014	General Chemistry II	A
2014	Biology I	A
2014	Organic Chemistry I	A
2014	Racial and Cultural Minorities	A
2015	Biology II	A
2015	Calculus I	B
2015	Anatomy and Physiology I	A
2015	Organic Chemistry II	B
2015	Anatomy and Physiology II	A
2015	Calculus II	B
	CENTRAL STATE UNIVERSITY	
2015	Ecology	A
2015	Biochemistry	A
2015	University Physics I	A
2015	Chemistry Undergraduate Research I	A
2015	Biology Seminar: The Science of Climate Change	A
2016	Toxinology	A
2016	Quantitative Analysis	A
2016	University Physics II	A
2016	Biology Undergraduate Research in India	A
2016	Selected Topics in Biology in India	A
2016	Molecular Genetics	A
2016	Zoology	A
2016	Plant Biology	A
2016	Physical Chemistry I	B
2016	Selected Topics in Chemistry	A
2016	Integrated Concepts of Chemistry	A
2017	Molecular Cell Biology	A
2017	Chemistry Seminar: Being a Professional Scientist	A
2017	Physical Chemistry II	A
2017	Chemistry Undergraduate Research II	A
	CASE WESTERN RESERVE UNIVERSITY	
2017	Biostatistics	A
2017	Molecular Biology	A
2017	Cell Biology	B
2017	Nobel Prize Winners Since You Were Born	A
2017	Research Rotations	P

YEAR	COURSE TITLE	GRADE
2018	Being a Professional Scientist	P
2018	Principles of Neural Science	A
2018	Principles of Pharmacology I	B
2018	Pharmacology Seminar Series	A
2018	Independent Study & Research	P
2018	Principles of Pharmacology II	B
2018	Pharmacology Seminar Series	A
2018	Independent Study & Research	P
2019	Protein Biophysics	B
2019	Pharmacology Seminar Series	A
2019	Independent Study & Research	P
2019	Dissertation Ph.D.	S

GRE (9-27-2016)
Verbal: 159; 82nd percentile
Quantitative: 155; 59th percentile
Analytical/Writing Assessment: 4.5; 82nd percentile