Christopher S Brower, Ph.D.

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RESEARCH INTERESTS

Protein degradation and its relevance to human disease.
protein quality control systems; ribosome biogenesis; liquid-liquid phase separation; cellular stress; biochemistry, molecular and cellular biology; neurodegeneration.

PROFESSIONAL EXPERIENCE

2020-present	Associate Professor, Division of Biology, School of the Sciences, Texas Woman's University, Denton, TX
2018-present	Affiliate Faculty Member, Woodcock Institute for the Advancement of Neurocognitive Research and Applied Practice
2014-present	Member, Graduate Faculty in Biology, Texas Woman's University, Denton, TX.
2014-2020	Assistant Professor, Department of Biology, Texas Woman's University, Denton, TX
2007-2014	Staff Scientist at the California Institute of Technology, Division of Biology, Pasadena, CA.
2001-2007	NIH Postdoctoral fellow with Dr. Alexander Varshavsky at the California Institute of Technology, Division of Biology, Pasadena, CA.
1996-2001	Graduate Research Assistant with Drs. Ron and Joan Conaway, Oklahoma Medical Research Foundation, Oklahoma City, OK. University of Oklahoma Health Sciences Center, Dept. of Biochemistry and Molecular Biology, Oklahoma City, OK.
1994-1996	Senior Laboratory Technician, Oklahoma Medical Research Foundation, Program in Molecular and Cell Biology, Oklahoma City, OK.

EDUCATION

1998-2001 Ph.D., University of Oklahoma Health Sciences Center, Department of Biochemistry and Molecular Biology with Drs. Ron and Joan Conaway. Thesis title: "The Heterodimeric Elongin BC Complex"

1996-1998 M.S., University of Oklahoma Health Sciences Center, Department of Biochemistry and Molecular Biology, Oklahoma City, OK.

1990-1994 B.S., Northeastern Oklahoma State University, Department of Biology, Tahlequah, OK.

PUBLICATIONS

♯ TWU graduate students
§ TWU undergraduate students
¶ High school students working in the lab

Gordon A.R.[♯], Zumbro E.L.[♯], Guerin G.D., Sokoloski M.L., Ben-Ezra V., Brower C.S., Rigby R.B., Duplanty A.A., Both acute and consecutive days of formoterol stimulation influence myogenic, mitochondrial, and myomiR gene expression in human skeletal muscle cells. *Muscles* 2023, 2, 86-96.

Kasu Y.A.T.[♯], Arva A.[♯], Johnson J.[§], Sajan C.[§], Manzano J.[§], Hennes A.[¶], Haynes J.[¶], Brower C.S. BAG6 prevents the aggregation of neurodegeneration-associated fragments of TDP43. *iScience*. 2022 Apr 20;25(5):104273.

Arva A.[♯], Kasu Y.A.T.[♯], Duncan J.[♯], Alkhatatbeh M.A.[♯], Brower C.S. (2021). The Ligand of Ate1 is intrinsically disordered and participates in nucleolar phase separation regulated by Jumonji Domain Containing 6. *Proc. Natl. Acad. Sci. USA*. 118(1):e2015887118.

Kasu Y.A.T.[♯], Dasgupta R.[♯], Brower C.S. A fluorescence-based reporter of Arginyltransferase 1 (ATE1). *Texas Journal of Microscopy*. 2020;51(1):26-9.

Kechko O.I., Petrushanko I.Y., Brower C.S., Adzhubei A.A., Moskalev A.A., Piatkov K.I., Mitkevich V.A., Makarov A.A. (2019). Beta-amyloid induces apoptosis of neuronal cells by inhibition of the Arg/N-end rule pathway proteolytic activity. *Aging*, 11 (16), 6134-6152, doi:10.18632/aging.102177.

Kasu Y.A.T.[♯], Alemu S.[§], Lamari A.[¶], Loew N.[§], and Brower C.S. (2018) The N-termini of TAR DNA-binding protein-43 (TDP43) C-terminal fragments influence degradation, aggregation propensity and morphology *Mol. Cell. Biol.* 38(19): e00243-18. doi:10.1128/MCB.00243-18.

Wadas B., Piatkov K., Brower C., Varshavsky A. (2016) Analyzing N-terminal Arginylation Through the Use of Peptide Arrays and Degradation Assays. *J Biol Chem*. 291(40):20976-20992.

Liu Y.J., Liu C., Chang Z., Wadas B., Brower C.S., Song Z.H., Xu Z.L., Shang Y.L., Liu W.X., Wang L.N., Dong W., Varshavsky A., Hu R.G., Li W. (2016) Degradation of the Separase-cleaved Rec8, a Meiotic Cohesin Subunit, by the N-end Rule Pathway. *J Biol Chem.* 291(14):7426-7438.

Brower C.S., Rosen C.E., Jones, R.H., Wadas, B.C., Piatkov K.I., and Alexander Varshavsky (2014) Liat1, an arginyltransferase-binding protein whose evolution among primates involved changes in the numbers of its 10-residue repeats. *Proc. Natl. Acad. Sci. USA*. 111(46):E4936-45.

Brower C.S., Piatkov K., and Varshavsky A. (2013) Neurodegeneration-Associated Protein Fragments As Short-Lived Substrates of the N-End Rule Pathway. *Molecular Cell*, 50:161-71.

Piatkov K.I.*, Brower C.S.* and Alexander Varshavsky (2012) The N-end rule pathway counteracts cell death by destroying proapoptotic protein fragments. *Proc. Natl. Acad. Sci. USA.* 109:E1839-47. * equal contribution.

Brower C.S., Veiga, L., Jones, R.H., Varshavsky A. (2010) Mouse Dfa is a repressor of TATA-box promoters and interacts with the Abt1 activator of basal transcription. *J Biol Chem.* 285:17218-34.

Brower C.S. and Varshavsky A. (2009) Ablation of arginylation in the mouse N-end rule pathway: loss of fat, higher metabolic rate, damaged spermatogenesis, and neurological perturbations. *PLoS One.* 4:e7757.

Wang H., Piatkov K.I., Brower C.S., Varshavsky A. (2009) Glutamine-Specific N-Terminal Amidase, a New Enzyme and Component of the N-End Rule Pathway. *Molecular Cell.* 34:686-95.

Hu R.G., Brower C.S., Wang H., Davydov I.V., Sheng J., Zhou J., Kwon Y.T., Varshavsky A. (2006) Arginyl-transferase: specificity, putative substrates, bidirectional promoter, and splicing-derived isoforms. *J Biol Chem*. 281:32559-73.

Tomomori-Sato, C., Sato, S., Parmely, T.J., Banks, C.A., Sorokina, I., Florens, L., Zybailov, B., Washburn, M.P., Brower, C.S., Conaway, R.C., Conaway, J.W. (2004) A Mammalian Mediator Subunit that Shares Properties with *Saccharomyces cerevisiae* Mediator Subunit Cse2. *J. Biol. Chem.* 279:5846-5851.

Sato, S., Tomomori-Sato, C., Banks, C.A., Parmely, T.J., Sorokina, I., Brower, C.S., Conaway, R.C., Conaway, J.W. (2003) A mammalian homolog of Drosophila melanogaster transcriptional coactivator intersex is a subunit of the mammalian mediator complex. *J. Biol. Chem.* 278:49671-49674.

Sato, S., Tomomori-Sato, C., Banks, C.A.S., Sorokina, I., Parmely, T., Kong, S.E., Jin, J., Cai, Y., Lane, W.S., Brower, C.S., Conaway, R.C., and Conaway, J.W. (2003) Identification of Mammalian Mediator Subunits with Similarities to Yeast Mediator Subunits Srb5, Srb6, Med11, and Rox3. *J. Biol. Chem. 278*:15123-15127.

Brower, C.S., Sato, S., Tomomori-Sato, C., Kamura, T., Pause, A., Stearmen, R., Klausner, R.D., Malik, S., Lane, W.S., Sorokina, I., Roeder, R.G., Conaway, J.W., and Conaway, R.C. (2002) Mammalian Mediator Subunit mMED8 is an Elongin BC-Interacting Protein that Can Assemble with Cul2 and Rbx1 to Reconstitute a Ubiquitin Ligase. *Proc. Natl. Acad. Sci. USA* 99:10353-10358.

Conaway, R.C., Brower, C.S., and Conaway, J.W. (2002) Emerging Roles of Ubiquitin in Transcription Regulation. *Science 296*:1254-1258.

Kamura, T., Brower, C.S., Conaway, R.C., and Conaway, J.W. (2002) A Molecular Basis for Stabilization of the von Hippel-Lindau (VHL) Tumor Suppressor Protein by Components of the VHL Ubiquitin Ligase. *J. Biol. Chem.* 277:30388-30393.

Brower, C.S., Shilatifard, A., Mather, T., Kamura, T., Takagi, Y., Haque, D., Treharne, A., Foundling, S.I., Conaway, J.W., and Conaway, R.C. (1999) The elongin B ubiquitin homology domain: identification of elongin B sequences important for interaction with elongin C. *J. Biol. Chem.* 274:13629-13636.

Aso, T., Haque D., Fukudome, K., Brower, C.S., Conaway, J.W., and Conaway, R.C. (1996) A human cDNA encoding the 110 kDa subunit of RNA polymerase II transcription factor Elongin. *Gene* 168:227-278.

INVITED ORAL PRESENTATONS

1. "Pack your BAGs. Keep your nerve." 2019 Annual meeting of the International Society of Protein Termini (ISPT), (Oct 4-5, 2019) Seoul National University, South Korea
2. "N-ENDated with protein fragments" (Nov 13, 2017) Stowers Institute for Medical Research, Kansas City, MO.
3. "Degradation of aggregation-prone protein fragments associated with neurodegeneration" (Sept 11, 2017) N-term2017. Proteostasis via the N-terminus. Halle, Germany.
4. "Getting trashed: failure of cellular waste management" (Sept 26, 2016) ORSP Lightning Talks. Texas Woman's University, Denton, TX.
5. Highlighting the Work of Faculty Member - R15 NIH Grant (2016) TWU Board of Regents. Texas Woman's University, Denton, TX.
6. "Protein Degradation in Human Disease" (2016) Dept. of Natural Sciences, Northeastern State University, Tahlequah, OK.
7. "Protein Degradation in Human Disease" (2015) Dept. of Chemistry and Biochemistry, Texas Woman's University, Denton, TX.
8. "Protein Degradation in Cell Death and Neurodegeneration" (2014) Texas A&M University, Commerce, TX.
9. "The Role of Protein Degradation in Cell Death and Neurodegenerative Disease" (2013) Baylor University, Waco, TX.
10. "The role of the N-end Rule pathway in the turnover of neurotoxic and apoptotic proteins" (2013) Genentech, South San Francisco, CA.
11. "The Heterodimeric Elongin BC Complex" (2001) Harvard Medical School. Boston, MA.
12. "The Heterodimeric Elongin BC Complex" (2001) Pennsylvania State University. State College, PA.
13. "Identification and Characterization of a Novel Elongin BC-Binding Protein" (2001) Experimental Biology/ASBMB Satellite meeting. Orlando, FL.

ABSTRACTS PRESENTED

Kasu, Y.A.T., Warren, K.T., Vela, K., and Brower, C.S. The role of TDP43 fragments in neurodegeneration and their degradation by the N-end rule pathway (2016) Keystone Symposia: Common Mechanisms of Neurodegeneration. Keystone, CO.

Brower, C.S., Piatkov K., and Varshavsky, A. The Neurodegeneration-Associated Fragments of TDP43, Tau, APP, and α-Synuclein As Short-Lived Substrates of the N-End Rule Pathway (2012) Caltech Biology Retreat. Lake Arrowhead, CA.

Piatkov K., Brower, C.S., and Varshavsky, A. The N-end rule pathway counteracts cell death by destroying proapoptotic protein fragments. (2011) Caltech Biology Retreat. Lake Arrowhead, CA.

Brower, C.S., Shilatifard, A., Mather, T., Kamura, T., Takagi, Y., Haque, D., Treharne, A., Foundling, S.I., Conaway, J.W., and Conaway, R.C. The Elongin B Ubiquitin Homology Domain: An Evolutionarily Conserved Protein-Protein Interaction Module. (1998) Nucleic Acids Gordon Research Conference. Newport, RI.

Brower, C.S., Haque, D., Conaway, R.C., and Conaway, J.W. Identification and characterization of a Novel Elongin BC-Binding Protein. (2001) Graduate Research Education and Technology (GREAT) Symposium. Oklahoma City, OK.

BROWER STUDENT ABSTRACTS PRESENTED

1. Frayre P., Alkhatatbeh M., Brower C., and Na E.S., Arginyltransferase 1 (ATE1) may be involved in leptin signaling (2024) American Physiology Summit, Long Beach, CA.
2. Budhathoki K and Brower C., Using CRISPR/Cas9 to decode Liat'1 function (2024) Student Creative Arts and Research Symposium. Denton, TX
3. Dasgupta R. and Brower C., Identifying the Modulators of Protein Arginylation (2024) Student Creative Arts and Research Symposium. Denton, TX
4. Lokuso W. and Brower C., Identifying protein quality control pathways involved in the clearance of fragments associated with ALS. (2024) Student Creative Arts and Research Symposium. Denton, TX
5. Patel S., Castro K., Dasgupta R. and Brower C., Illumin*ATE1* (2024) Student Creative Arts and Research Symposium. Denton, TX
6. Lokuso W., Ramirez G., Na E. and Brower C., Examining the contribution of aggregation prone fragments in neurodegeneration. (2024) Student Creative Arts and Research Symposium. Denton, TX
7. Budhathoki K. and Brower C., Characterization of Liat1 knock-out in cells. (2023) Celebration of Science. Denton, TX
8. Lokuso W. and Brower C., Accessing Neurotoxicity: An evaluation of the impact of protein fragments in Neurodegenerative Diseases. (2023) Celebration of Science. Denton, TX
9. Dasgupta R. and Brower C., Identifying the modulators of Protein Arginylation. (2023) Student Creative Arts and Research Symposium. Denton, TX
10. Lokuso W., Ramirez G., Na E., and Brower C. Examining the role of Protein Fragments in Neurodegeneration (2023) Student Creative Arts and Research Symposium. Denton, TX
11. Frayre P., Alkhatatbeh M., Kopchenko N., Brower C., and Na E. Loss in ATE1 may affect energy metabolism through leptin. (2022) Society for Neuroscience, San Diego, CA.
12. Arva A., VegaCalderon I., Manzano J., and Brower C. Determining the effect of stress on the nucleolar protein, Liat1 (2022). Annual symposium of The Protein Society, San Francisco, CA (selected for platform presentation)
13. Dasgupta R., Kasu Y., and Brower C. Design of a CRISPR screen for modulators of protein arginlyation. (2022) Cold Spring Harbor Laboratory, Genome Engineering: CRISPR Frontiers, Cold Spring Harbor, NY.
14. Kopchenko N., Frayre P., Alkhatatbeh M., Brower, C., and Na E. Loss of ATE1 may affect energy metabolism through leptin. (2022) Southwestern Psychological Association, Baton Rouge, LA.

15. Dasgupta R. and Brower C.S. Identifying the Modulators of Arginyl Transferase 1, 3MT.
16. Arva A. and Brower C.S. Liat1 nucleolar phase separation is regulated by Jmjd6. (2021) ASBMB conference on Emerging roles of the nucleolus (*virtual*).
17. Kasu Y.A., Sajan C., Johnson J., and Brower C.S. Protein quality control and aggregation of TDP43 protein fragments (2020) Cold Spring Harbor Laboratory 11th annual meeting on Neurodegenerative Diseases: Biology & Therapeutics (*virtual*).
18. Arva A., Kasu Y., and Brower C.S. The Role of Liat1 in Phase Separation in Ribosome Biogenesis (2020) Annual meeting of the RNA society (*virtual*).
19. Arva A. and Brower C.S. Characterizing the Intrinsically Disordered Domain of LIAT1 (2019) Annual symposium of The Protein Society, Seattle, WA.
20. Kasu, A.T. and Brower C.S. BAG6 prevents the aggregation of neurodegeneration-associated protein fragments. (2019) Society for Neuroscience Annual Meeting. Chicago, IL.
21. Arva A. and Brower C.S. Bimolecular Fluorescence Complementation to Explore LIAT1 Interactions and Functions (2019) Texas Society for Microscopy. San Antonio, TX.
22. Kasu Y. and Brower C.S. Let's put this neurodegeneration business in the Bag. (2019) Student Creative Arts and Research Symposium. Denton, TX.
23. Kasu Y.A.T., Loew N., and Brower C.S. Developing a High-Throughput Screen For Modulators of the Arginylation Dependent N-end Rule Pathway (2019) Texas Society for Microscopy. San Antonio, TX.
24. Arva A., Duncan J., Kasu Y., and Brower C.S. Exploring LIAT1 interactions and function using bimolecular fluorescence complementation (2019) Student Creative Arts and Research Symposium. Denton, TX.
25. Sajan C., Alkhatatbeh M., Kasu Y., and Brower C.S. Developing a screen for protein degradation (2019) Student Creative Arts and Research Symposium. Denton, TX.
26. Johnson J., Kasu Y.A., and Brower C.S. the role of BAG6 in neurodegeneration (2019) Student Creative Arts and Research Symposium. Denton, TX.
27. Alkhatatbeh M., Sajan C., Kasu Y., Arva A., and Brower C.S. Using Bimolecular fluorescence Complementation to examine TDP43 aggregation (2019) Student Creative Arts and Research Symposium. Denton, TX.
28. Leow N., Kasu Y.A., Brower C.S. Developing a screen to identify modulators of the N-end rule pathway (2019) Student Creative Arts and Research Symposium. Denton, TX.
29. Dasgupta R., Kasu Y., and Brower C.S. A screen for modulators of the N-end rule pathway (2019) Student Creative Arts and Research Symposium. Denton, TX.
30. Alemu S., Kasu Y., and Brower C.S., Studies of human TDP43 Aggregation in Yeast (2018), National Conference on Undergraduate Research. Edmond, OK.
31. Kasu Y.A.T. and Brower C.S. Metabolism and aggregation of TDP43 C-terminal fragments (2018) Texas Society for Microscopy, Denton, TX. (2018 small grant awardee)
32. Kasu Y.A.T. and Brower C.S. Metabolism and aggregation of C-terminal fragments of TAR DNA binding protein (TDP43) (2018) Keystone Symposia: Neurodegenerative Diseases: New Insights and Therapeutic Opportunities. Keystone, CO.
33. Alkhatatbeh A., Brower C, and Kasu Y. The role of ATE1 in fat and energy metabolism. (2018) Student Creative Arts and Research Symposium. Denton, TX.
34. Alemu S. and Brower C. Do distinct C-terminal fragments of TAR DNA binding protein (TDP43) behave differently? (2018) Student Creative Arts and Research Symposium. Denton, TX.
35. Kasu Y. and Brower C. A high throughput screen for modulators of ATE1 and the N-end rule pathway. (2018) Student Creative Arts and Research Symposium. Denton, TX.
36. Lukose J., Kasu Y., and Brower C. What role does the N-terminus play in the degradation or aggregation of TDP43 C-terminal fragments? (2018) Student Creative Arts and Research Symposium. Denton, TX.

37. Alemu S., Brower C., Kasu Y. Studies of TDP43 aggregation in yeast. (2018) Student Creative Arts and Research Symposium. Denton, TX.
38. Kasu Y.A.T. and Brower C.S. Variations in the metabolism and aggregation of TDP43 fragments (2017) Annual meeting of the Society for Neuroscience. Washington, DC.
39. Duncan J.E. and Brower C.S. Liat1: The functionally uncharacterized ligand of ATE1. (2017) Student Creative Arts and Research Symposium. Denton, TX.
40. Duncan J.E. and Brower C.S. Liat1: The functionally uncharacterized ligand of ATE1. (2017) Federation of North Texas Area Universities symposium. Denton, TX.
41. Kasu Y.A.T., Warren K.T., Vela K., and Brower C.S. Understanding the effects of TDP43 C-terminal fragments (2017) Student Creative Arts and Research Symposium. Denton, TX.
42. Kasu Y.A.T., Warren K.T., Vela K., and Brower C.S. Understanding the effects of TDP43 C-terminal fragments (2017) Federation of North Texas Area Universities symposium. Denton, TX.
43. Alkhatatbeh M.A., Kasu Y.T., and Brower C.S. The role of ATE1 in fat and energy metabolism. (2017) Student Creative Arts and Research Symposium. Denton, TX.
44. Vela K. and Brower C.S. TDP43 aggregation dynamics and Neurodegeneration. (2017) Student Creative Arts and Research Symposium. Denton, TX.
45. Vela K. and Brower C.S. TDP43 aggregation dynamics and Neurodegeneration. (2017) Learn by Doing poster showcase. Denton, TX.
46. Alemu A., Warren K., and Brower C.S Using the yeast two-hybrid (Y2H) system to map the interaction of LIAT1 with LARP7 (2017) Student Creative Arts and Research Symposium. Denton, TX.
47. Duncan J.E. and Brower C.S. Liat1: A functionally uncharacterized protein and its potential involvement in transcription. (2016) Student Creative Arts and Research Symposium. Denton, TX.
48. Kasu Y.A.T., Warren K.T., Vela K., and Brower C.S. Understanding the effects of TDP43 C-terminal fragments (2016) Annual meeting of the Society for Neuroscience. San Diego, CA.
49. Duncan J.E. and Brower C.S. Liat1: A functionally uncharacterized protein and its potential involvement in transcription. (2016) Texas Genetics Society. Houston, TX.
50. Duncan J.E. and Brower C.S. Liat1: A functionally uncharacterized protein and its potential involvement in transcription. (2016) Student Creative Arts and Research Symposium. Denton, TX.
51. Nguyen T.C., Dang V.T., Warren K.T., Vela K. and Brower C.S. Characterization of TDP43 Transgenic Mice (2016) Student Creative Arts and Research Symposium. Denton, TX.
52. Kasu Y.A.T. and Brower C.S. ATE1-dependent degradation of TDP43 fragments and its role in neurodegeneration (2016) Student Creative Arts and Research Symposium. Denton, TX.
53. Prater H.P., Warren K., Nguyen T.N., and Brower C.S. Identification of Jmjd6 structural elements important for interaction with Liat-1. (2015) Student Creative Arts and Research Symposium. Denton, TX.

HONORS AND AWARDS

2024	TWU School of the Sciences Heart Award
2023	Recipient of the TWU Distinction in Scholarship Award
2021	Faculty Advisor of the Year Award
2019	Recipient of the Mary Mason Lyon Award for Distinguished Young Faculty
2019	Recipient of a TWU Summer Proposal Development Grant Program
2019-2020	Mentor in the TWU Chancellors' Research Fellows Program
2018-2019	Mentor in the TWU Chancellors' Research Fellows Program
2018	Recipient of a TWU Summer Proposal Development Grant Program
2016	Voted a "Favorite Faculty Member" by the TWU graduating class of 2016

2016-2017 Mentor in the TWU Chancellors' Research Fellows Program
2015-2016 TWU Chancellors' Research Fellow
2015 New Investigator Research Enhancement Program Award
2015 Recipient of a TWU Summer research initiative grant
2001 Graduate Research Symposium, OMRF award for oral presentation
1996-2001 OMRF Pre-doctoral Fellowship
1992-1994 Phillips Petroleum Co. Scholarship, Northeastern State University
1992-1994 Honor Roll, Northeastern State University

FUNDING

Internal

2023 Teaching and Research Grant for Equipment and Technology (TARGET) – for purchase of a cryostat. *$71,995*
2023-2024 TWU Research Enhancement Program Award, "Generation of an ATE1 reporter mouse to establish global view of protein arginylation and to identify modulators." *$15,000*
2020-2021 TWU Research Enhancement Program Award, "Liat1-mediated biomolecular condensation in the nucleolus" *$10,000*
2018-2020 TWU Research Enhancement Program Award, "Understanding the role of ATE1 in fat and energy metabolism" *$10,000*
2016-2018 TWU Research Enhancement Program Award, "The role of ATE1 in fat and energy metabolism" *$10,000*
2015 New Investigator Research Enhancement Program Award, "TDP43 Toxicity and Its Degradation by the N-end Rule Pathway to Prevent Neurodegeneration" *$10,000*
2014 New Investigator Research Enhancement Program Award, "Understanding the Role of the Protein Degradation in Neurodegeneration" *$8,000*

External

2022-2024 NIH Supplements to Promote Diversity in Health-Related Research, *$72,067*
2021-2024 National Institute of Neurological Disorders and Stroke, National Institutes of Health "Evaluating Protein Quality Control in the Toxicity of TDP43 Fragments Associated with ALS and FTD," PI: C. Brower, Award Number: R15NS095317-02A1. *$385,343*
2016-2019 National Institute of Neurological Disorders and Stroke, National Institutes of Health "Understanding the Role of TDP43 in Neurodegeneration and Its Degradation by the N-end Rule Pathway," PI: C. Brower, Award Number: R15NS095317. *$372,857*
2003-2005 National Institutes of Health, Project Number: F32GM067400 *$88,904*

SUPERVISORY AND TEACHING EXPERIENCE

Courses Taught at TWU

BIOL 4681 – Biology Seminar
BIOL 4811 – Molecular and Cellular Biology: Gene Expression Laboratory
BIOL 4813 – Molecular and Cellular Biology: Gene Expression
BIOL 4513, 5903 – Genome Editing and Medical Ethics (developed courses)
BIOL 4983 – Undergraduate Research
BIOL 5681 – Biology Seminar

BIOL 5881 – Biological Research
BIOL 5903 – Introduction to Cell Biology
BIOL 5911, 6911 – Independent Study
BIOL 6334 – Advanced Cell Biology
BIOL 6821, 6823, 6831, 6883 – Research in Molecular Biology
BIOL 6993 – Dissertation

Brower Lab Students

Dr. Yasar Arfat T Kasu - "CELLULAR RESPONSES TO THE ACCUMULATION OF NEURODEGENERATION ASSOCIATED PROTEIN FRAGMENTS", PhD defended in summer 2021

Dr. Akshaya Arva - "THE FUNCTIONAL CHARACTERIZATION OF A NOVEL PROTEIN, LIAT1", PhD defended in fall 2022.

Dr. Mosleh Alkhatatbeh - "THE ROLE OF ARGINYLTRANSFERASE 1 IN BODY WEIGHT HOMEOSTASIS", PhD defended in summer 2023

Dr. Rinki Dasgupta - "Identifying the Modulators of Protein Arginylation", PhD defended fall 2024

Winnie Lokuso, PhD student – The Role of Protein Fragments in Neurodegeneration

Kanchan Budhathoki, PhD student

Rubina Islam, MS student

Jennifer Duncan, MS student

PhD committee member

1. Jairus Reddy, "Prenylation of RhoA and Rac1 Differentially Alters Their Subcellular Localization, Activation and Signaling," PhD defended spring 2015.
2. Pallavi Upadhyay, "Effect of Estradiol on Environmental Stress Responses in Arabidopsis Thaliana", PhD defended spring 2016.
3. Isha Mehta, "Characterization, Classification, and Prediction of Functionally Linked Interfaces of Proteins Using Network Analysis", PhD defended summer 2017.
4. Remya Veettil "Polyethylene glycol copolymer nanocarriers: biocompatility, uptake and intracellular trafficking in neurons", PhD defended fall 2017.
5. Rawand Chabayta – "Effects of RhoA and Rac1 prenylation on Alzeimer's Disease proteins", PhD defended in summer 2019.
6. Sumod Sebastian – "Drug release kinetics and blood brain barrier crossing efficacy of polymer encapsulated magnetic nanocarriers", PhD defended in fall 2019.
7. Kushal Bhatt – "The role of Upstream Activating Factor in suppressing Pol II rRNA transcription in Saccharomyces cerevisia", PhD defended in fall 2019.
8. Sushila Pathak – "Functional analysis of M139, a pathogenesis factor of mouse cytomegalovirus", PhD defended in fall 2020.

9. Ryan Gordon (Dept of Kinesiology) – "INVESTIGATING THE ROLES OF MIR-206 AND MIR-486 ON SKELETAL MUSCLE GROWTH AND MYOGENESIS IN RESPONSE TO IN VITRO BETA-2 ADRENERGIC RECEPTOR STIMULATION", PhD defended spring 2021
10. Bhoomi Madhu – "THE DBL-1/TGF-β SIGNALING PATHWAY REGULATES AN ARRAY OF BEHAVIORAL, MOLECULAR, AND PHYSIOLOGICAL DEFENSES IN CAENORHABDITIS ELEGANS", PhD defended summer 2021
11. Sukhbir Kaur – "AN INTERACTION BETWEEN ESTROGEN AND SEROTONIN IN SENSORY NEURONS AS A KEY REGULATOR OF NOCICEPTION", PhD defended summer 2021
12. Titus Sombuor (Dept of Nutrition) – "ANTI-PROLIFERATIVE EFFECTS OF LENTINAN, A BETA-GLUCAN FROM SHIITAKE MUSHROOM (LENTINULA EDODES), PhD defended fall 2021
13. Mohammed Farhan Lakdawala – "IDENTIFYING AND CHARACTERIZING REGULATORS OF A BONE MORPHOGENETIC PROTEIN CELL SIGNALING PATHWAY IN CAENORHABDITIS ELEGANS", PhD defended in fall 2022.
14. Rituparna SinhaRoy – "THE RESPONSE OF CHROMATIN TO UV RADIATION IN MAMMALIAN CELLS", PhD defended in fall 2022.
15. Mengjie Cao – "NANO-BASED DRUG DELIVERY SYSTEMS: TARGETING TO CORTICOSPINAL TRACT NEURONS FOR CONTROLLED RELEASE OF THERAPEUTICS", PhD defended spring 2023
16. Daisy Cantu – "Sex Differences and the Effects of Stress on Neuroanatomical Structures Involved in Modulating Inflammatory and Orofacial Pain", PhD defended fall 2023
17. Taylor Hickman – "ESTROGEN MODULATION OF MACROPHAGES: A POTENTIAL MECHANISM UNDERLYING SEX DIFFERENCES IN OROFACIAL PAIN", PhD defended summer 2024
18. Erica Garcia – "Effect of Human Cytomegalovirus (HCMV) on Breast Cancer Cells", PhD defended summer 2024
19. Kiran Tajuddin – "Effects of Human Cytomegalovirus Encoded IL-10 (CMVIL-10) On CXCR4 Signaling", PhD defended summer 2024

MS committee member

Shuvalaxmi Dasgupta – MS degree (Spring 2018)
Bibas Basnet - MS degree (Spring 2019)
Christy Hill - MS degree (Spring 2019)
April Oxley – MS degree (Fall 2020)
Jannatul Ferdous – MS degree (Fall 2021)
Pearly Chinta – MS degree (Spring 2021)
Jannatul Ferdous – MS degree (Spring 2022)
Tho Vu – MS degree (Fall 2022)
Violet Wayman – MS degree (Fall 2022)
Abigail Kenning – MS degree (Spring 2023)
Saira Jamali – MS degree (Spring 2024)

Ongoing committee member

Hala Samara – PhD student
Chelsey Kelly – PhD student
Afnan Deebani (Univ of North Texas) – PhD student
Jamie Kimbrell – PhD student
Nadine Yasin – PhD student
Natalie Smith – MS student

Megan Morse – PhD student
Abdullah As Sabir – PhD student
Gage Connors – PhD student
MS Shabab Mehebub – PhD student
Erin Howard – MS student
Phong Tran – PhD student
Emmiley Swensen – PhD student

OTHER SCHOLARLY ACTIVITIES

Study Sections

US Department of Defense, Accelerated Aging (2024)
US Department of Defense, Amyotrophic Lateral Sclerosis Research Program (2023)
National Institutes of Health, Cell Biology, Developmental Biology and Bioengineering Panel (2022)
National Institutes of Health, Chronic Dysfunction and Integrative Neurodegeneration (2020)

Journal Reviewer

Nature Communications, Molecular and Cellular Biology, Biochemistry, Frontiers in Plant Science, Molecular Therapy, Protein and Peptide Letters, Analytical Biochemistry, Journal of Molecular and Cellular Biology

Editorial Board

Molecules and Cells (http://www.molcells.org/main.html)

2023-	Completed Certification in Mental Health First Aid
2016-2017	Participant in the TWU Active Engagement Academy
2011-2014	Mentor to Caltech undergraduate student conducting research related to post-translational protein arginylation
2010-2014	Judge at the California State Science Fair – Biochemistry and Molecular Biology – Senior Division
2010	Taught Bi23 section 01 course at Caltech entitled “Regulatory Networks in the Maintenance of Stem Cells”
2006 - 2009	Attended Caltech Project for Effective Teaching workshops
2006	Mentor to visiting scientist conducting research at Caltech to clone and characterize a novel transcriptional repressor
2005-2013	Mentor to Summer Undergraduate Research Fellows (SURF)
2005	Lecturer on the regulation of gene transcription and protein translation to Caltech students enrolled in Bi 8. Introduction to Molecular Biology; Organization and Expression of Genetic Information

COMMITTEES AND INSTITUTINAL RESPONSIBILITIES

2023-	Member of the Research, Discovery and Creative Activities Team for the TWU Strategic Plan 2028 - Momentum
2022-	Co-Chair of the Committee on Ethics, Compliance, and Resolution (ERC)
2020-	TWU School of the Sciences Peer Review Committee

2019-	Biology Faculty Review Committee
2019 -	Graduate Curriculum and Admissions Committee
2019 - 2020	Biology Faculty Search Committee
2018 -	TWU Center for Student Research (CSR), Advisory Committee
2018 - 2019	Member of the TWU Graduate Research Associate Award selection committee
2018 -2019	TWU Center for Research Design and Analysis (CRDA), Advisory Committee
2017 -	TWU Institutional Biosafety Committee
2016 - 2019	Advisor of the TWU Curatio club
2015 - 2019	Undergraduate Scholarship committee
2014 - 2019	Faculty/Student Awards committee
2016 - 2017	Biology Assistant Professor Search committee
2015 - 2017	Biology Chair search committee
2011 - 2012	Finance Committee, Children's Center at Caltech
2009 - 2011	President, Board of Trustees, Children's Center at Caltech
2008 - 2011	Member, Board of Trustees, Children's Center at Caltech
2008 - 2009	Fundraising Committee, Children's Center at Caltech (Chair)

PROFESSIONAL SOCIETY MEMBERSHIPS

American Society for Biochemistry and Molecular Biology (ASBMB)
American Association for the Advancement of Science (AAAS)
American Society for Microbiology (ASM)
Society for Neuroscience (SFN)
Sigma Xi, the Scientific Research Society
The Protein Society
International Society of Protein Termini (ISPT)