

Michael August Menze

Associate Professor and Assistant Chair
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Education

- 2001 Dr. rer. nat. Heinrich-Heine-University, Düsseldorf, Germany, and Johannes-Gutenberg-University Mainz, Germany.
Dissertation: Allosteric regulation in hemocyanin of the European lobster *Homarus vulgaris* (Advisors: Dr. M.K. Grieshaber and Dr. H. Decker).
Degree from Heinrich-Heine-University, Düsseldorf.
- 1997 Dipl.-Biol. Heinrich-Heine-University, Düsseldorf, Germany
Major: Zoology (Comparative Physiology).
Minors: Biochemistry, Organic Chemistry.

Professional Experience

- 2018 - current Associate Professor and Assistant Chair, Department of Biology, University of Louisville, Louisville, KY.
- 2016 - current Associate Professor, Department of Biology, University of Louisville, Louisville, KY.
- 2015 - 2016 Associate Professor, Department of Biological Sciences, Eastern Illinois University, Charleston, IL.
- 2010 - 2015 Assistant Professor, Department of Biological Sciences, Eastern Illinois University, Charleston, IL.
- 2006 - 2013 Visiting Scientist, Center for Engineering in Medicine, Shriners Burns Hospital and Massachusetts General Hospital, Harvard Medical School, Boston, MA.
- 2006 - 2013 Associate Member of the Graduate Faculty, Louisiana State University, Baton Rouge, LA.
- 2006 - 2010 Assistant Professor - Research, Department of Biological Sciences, Louisiana State University, Baton Rouge, LA.
- 2001 - 2006 Postdoctoral Researcher, Department of Biological Sciences, Louisiana State University, Baton Rouge, LA.

Grants and Awards

A1. Extramural Grants (funded)

- D.O.D. grant 'Development of Dried Blood for Prolonged Field Care in Austere Environments' (Jonathan Kopecheck, PI, Michael A. Menze, Co-PI, Brian Harbrecht, Co-I). Amount awarded (*recommended for funding*): \$994,161. *Anticipated start date September 2020 (09/2020-08/2023)*.
- NASA grant 'Evaluation of Preserved Blood for Transfusion Therapy in Reduced Gravity' (01/2019-12/2020, Michael A. Menze, PI; Jonathan Kopecheck, Co-PI; George Pantalos Co-I). Amount awarded to NASA-80NSSC18K1664: \$275,000.
- NSF-PIF grant 'A High-Precision Sonoporation System for Cell Transfection and Preservation. (08/2018-07/2021, Paula Bates, PI, Michael A. Menze, Co-PI, Jonathan Kopecheck, Co-PI). Amount awarded to PFI-1827521: \$820,502.

NIH grant 'ExCITE': An Integrated Microfluidic Device for Long-Term Preservation of Dried Red Blood Cells at Ambient Temperature' (08/2017 - 01/2019 Jonathan Kopecheck, PI; Michael A. Menze, PI, *U01HL12751*). Amount awarded: \$124,169.

Bristol Meyer-Squibb. Donation of two Thermal Activity Monitors (11/2016). Approximate value: \$20,000.

NSF grant 'RUI: A Mechanistic investigation on How the Redox Chemistry of MitoNEET Regulates Energy Homeostasis on Cellular and Molecular Levels' (09/2016 – 07/2020 Mary Konkle, PI, Michael A. Menze, Co-Pi, Nilay Chakraborty, Co-Pi). Amount awarded to *CHE160944*: \$396,360; sub-award to M.A.M.: \$129,819.

The Mindlin Foundation. "Mechanistic Investigation on How the Redox Chemistry of MitoNEET Regulates Energy Homeostasis and Contributes to Disease Progression" (01/2016 – 01/2017; Mary Konkle, PI, Michael A. Menze, Co-Pi; *MF16-US04*). Total amount awarded: \$10,000.

The Mindlin Foundation. "Life without Water, how can Organisms Survive Severe Dehydration?" (01/2016 – 05/2016; Michael A. Menze, PI, Daniel Webster, student researcher; *MF16-UMR03*). Total amount awarded: \$2,497.

NSF grant "*Collaborative Research: Mechanisms of Tolerance to Severe Water Stress in Animals*" (05/2015 - 04/2020; Michael A. Menze; PI, *IOS-1659970*, Steven Hand, PI, *IOS-1457061*). Amount awarded to *IOS-1659970*: \$173,373.

BioCision, LLC. Improving Cell Monolayer Freezing (2014). Amount awarded: \$2000.

Novartis Consumer Sciences. Donation of Thermal Activity Monitor (2013). Approximate value: \$100,000.

NSF grant "Mechanisms of Animal Desiccation Tolerance" (08/2009 – 07/2014; Steven Hand, PI, Michael Menze, Co-PI; *IOS-0920254*). Amount awarded: \$600,000.

Antarctic Expedition "*Collaborative Research: Possible Climate Induced Changes in the Distribution of *Pleuragramma antarcticum* on the Western Antarctic Peninsula Shelf*" (03/10-05/10; Jose Torres, PI, Michal Menze, Participating Faculty, *B-258-N*).

Keystone Symposium Travel Scholarship "Metabolomics: From Bioenergetics to Apoptosis", Symposium supported by National Institute of Aging (NIA) *1R13 AG027645-01* (04/2006). Amount awarded: \$1500.

A2. Extramural Grants (not funded, past 3 years)

DARPA grant 'Characterization of solid state physics phenomena in biomaterials' (Bikram Bhatia, PI, Michael A. Menze, Co-I). Total amount requested in 2019: \$250,000.

D.O.D. grant 'Dried Blood Storage at Ambient Temperatures in Austere Environments' (Jonathan Kopecheck, PI, Michael A. Menze, Co-PI). Total amount requested in 2018: \$697,863.

NIH grant Project 'Ultrasound Delivery of Trehalose to Red Blood Cells for Dry Preservation' (Jonathan Kopecheck, PI; Michael A. Menze, Co-PI). Total amount requested in 2018: \$275,000.

NSF grant "ABI Innovation: Developing computational workflow to annotate long non-coding RNAs (Uchida, PI; Michael A. Menze, Co-PI, Xian-Lian Tang, Co-PI; Eric C. Rouchka, Co-P). Total amount requested in 2017: \$1,334,934.

NSF grant 'RUI: A Mechanistic investigation on How the Redox Chemistry of MitoNEET Regulates Energy Homeostasis on Cellular and Molecular Levels'. Total amount requested in 2017: \$385,360.

B. Intramural Research Grants

- University of Louisville Innovation Grant “Development of Clinical-Scale Processing Methods for Dry Preservation of Red Blood Cells” (2019 Jonathan Kopechek, PI, Michael Menze, PI, Brian Harbrecht, PI). Amount awarded: \$60,000.
- EVPRI Internal Research Grant “Protein Structure at Critical Conditions by Real-Time and Spatially-Resolved Raman Optical Activity” (2019 Sergio Mendes, PI, Michael Menze, Co-PI). Amount awarded: \$9,776.
- Arts and Science Research and Creative Activities Grant “Mitochondria genome analysis’. (2019; Mike Perlin, PI, Michael Menze, Co-PI). Amount awarded: \$1,250.
- UofL-NSF I-Corps Award, University of Louisville, “An integrated microfluidic device for long-term preservation of dried red blood cells at ambient temperature” (08/2017 - 08/2018 Brett Janis, PI, Jonathan Kopechek, Co-PI; Michael Menze, Co-PI). Amount awarded: \$2,500.
- KBRIN NGS Pilot Project Award, University of Louisville, “Role of iron-sulfur cluster proteins in diabetes: shifting metabolism one sugar at a time” (10/2016 - 04/2017). To investigate galactose induced shifts in gene expression patterns of hepatocellular carcinoma (HepG2) cells. Approved for 360 million reads of 1 x 75 bp.
- Council on Faculty Research Grant (CFR) Award, Eastern Illinois University, “The Brain on Aging – Role of CISD1” (10/2014-7/2015; Michael Menze, PI). To investigate the role CISD1 in aging. Amount awarded: \$5,000.
- Council on Faculty Research Grant (CFR) Award, Eastern Illinois University, “Lessons for a World in Heat” (7/2014-8/2014; Michael Menze, PI). To investigate the role of seed maturation proteins in biostabilization. Amount awarded: \$4,500.
- Early Research Support Grant Award (2013), Eastern Illinois University (Michael Menze, PI). Amount awarded: \$400.
- Council on Faculty Research Grant (CFR) Award, Eastern Illinois University, “Trehalose - the Sweet Way to Preserve Cells and Tissues” (10/2013-7/2014; Michael Menze, PI). To investigate the role of trehalose on cryopreservation of hepatocyte monolayers. Amount awarded: \$4,705.
- President’s Fund for Research and Creative Activity (PFRCA) Award, Eastern Illinois University, “Mitochondrial Dysfunction and Type-2 Diabetes: Role of MitoNEET” (8/2013 – 07/2014; Mary Konkle, PI, Michael Menze, co-PI). Amount awarded: \$19,850.
- Council on Faculty Research Grant (CFR) Award, Eastern Illinois University, “Mitochondrial Dysfunctions in Type 2 Diabetes” (7/2013-8/2013; Michael Menze, PI). To investigate the role of mitochondrial bioenergetics in the development of insulin insensitivity. Amount awarded: \$4,500.
- Interdisciplinary Research in the Sciences Grant (IRIS), Eastern Illinois University, “Mitochondrial Dysfunction and Type-2 Diabetes: Role of MitoNEET” (12/2012 – 12/2013; Mary Konkle, PI, Michael Menze, PI). Amount awarded: \$5,000.
- Council on Faculty Research Grant (CFR) Award, Eastern Illinois University, “Life in hot waters: live fast die young” (7/2012-8/2012; Michael Menze, PI, Robert Colombo, PI). To investigate the role of the thermal impact on bluegill. Amount awarded: \$4,500.
- President’s Research Fund (PRF) Award, Eastern Illinois University “Role of Estrogen in Alzheimer’s Disease” (2012 - 2013; Michael Menze, PI, Britto Nathan, Co-PI). To investigate the role of the female sex hormone estrogen on mitochondrial bioenergetics. Amount awarded: \$16,780.
- Interdisciplinary Research in the Sciences Grant (IRIS), Eastern Illinois University, “Untangling Alzheimer’s Disease: Identifying Mitochondrial Protein Targets of Oxidative Stress” (12/2011 – 12/2012; Mary Konkle, PI, Michael Menze, PI, Britto Nathan, PI). Amount awarded: \$4,000.

Council on Faculty Research Grant (CFR) Award, Eastern Illinois University, “Sex and Power – the Role of Estrogen in Alzheimer’s Disease” (7/2011-8/2011; Michael Menze, PI, Britto Nathan, PI). To investigate the role of the female sex hormone estrogen on mitochondrial bioenergetics. Amount awarded: \$4,500.

Early Research Support Grant Award (2010), Eastern Illinois University (Michael Menze, PI). Amount awarded: \$378.

Council on Faculty Research grant (CFR), Eastern Illinois University, “Life without Water” (10/2010-10/2011; Michael Menze, PI). Amount awarded: \$4,000. To investigate the role of trehalose transporters in stabilization of insect cells.

C. Intramural Teaching Enhancement Grants

Redden Fund Grant Award - EIU (2015), (Michael Menze, PI). Amount awarded: \$1450.

Redden Fund Grant Award - EIU (2014), (Michael Menze, PI). Amount awarded: \$1250.

Redden Fund Grant Award - EIU (2013), (Michael Menze, PI). Amount awarded: \$1050.

Redden Fund Grant Award (2012), (Michael Menze, PI). Amount awarded: \$750.

Proposal Initiative Fund (PIF) Award, Eastern Illinois University, “Using Inquiry-based Learning Modules to Vertically Integrate Core Biological Concepts in the Biology Majors Curriculum” (08/2011-08/2012; Michael Menze, PI, Gary Bulla, PI, Robert Colombo, PI, Karen Gaines, PI, Kai Hung, PI, James Novak, PI). Amount awarded: \$7,500.

Redden Fund Grant Award - EIU (2011), (Michael Menze, PI). Amount awarded: \$1,500.

D. Awards in Research

Deans Award of Excellence in Research and Creative Activity, Eastern Illinois University, 2016.

Achievement and Contribution Award, Eastern Illinois University, 2015.

Deans Award of Excellence in Research and Creative Activity, Eastern Illinois University, 2015.

Achievement and Contribution Award, Eastern Illinois University, 2013.

Achievement and Contribution Award, Eastern Illinois University, 2011.

Deans Award of Excellence in Research and Creative Activity, Eastern Illinois University, 2011.

Deans Award of Excellence in Research and Creative Activity, Eastern Illinois University, 2010.

E. Teaching Experience

Effort allocation during 2016-2020 (UofL): ~55% teaching, ~40% research, ~5% service

Principles of Physiology (Biol465, *enrollment 150 students*), three semester credit hours (Spring 2018, Spring 2019, Spring 2020).

Unity of Life (Biol240, *enrollment 343 students*), three semester credit hours (Fall 2017, Fall 2018, Fall 2019).

Cell and Molecular Biology (Biol329, *enrollment 120 students*), three semester credit hours (Spring 2017, Fall 2017, Spring 2018, Fall 2018, Fall 2019).

Adaptation in Molecular Physiology (Biol504/692, *enrollment 48 students*), three semester credit hours (Fall 2017).

Effort allocation during 2010-2015 (EIU): ~85% teaching, ~10% research, ~5% service

Advanced Cell Physiology (BIO5400, *enrollment 24 students*), four semester credit hours (Spring 2015).

Cell and Molecular Biology (BIO3120, *2 sections per semester plus labs, enrollment 48 students*), four semester credit hours (Fall 2015, Fall 2013, Spring 2013, Fall 2012, Fall 2011, Spring 2011, Fall 2010).

Animal Physiology (BIO3520, *2 sections per semester plus labs, enrollment 48 students*), four semester credit hours (Spring 2016, Spring 2015, Spring 2014, Fall 2014, Spring 2012, Spring 2011).

Advanced Cellular and Molecular Biology (BIO4751, *enrollment 24 students*), three semester credit hours (Fall 2012).

Graduate Seminar (BIO4666), one semester credit hour (Spring 2011).

Honors Seminar (BIO4555), one semester credit hour (Spring 2011).
 Cell Death (BIO7800), three semester credit hours (Fall, 2007).
 Comparative Animal Physiology (BIO4800), guest lectures (Fall 2005, Spring 2009).
 Mitochondrial Physiology (BIO7800), guest lectures (Spring 2006, 2008).

F. Awards in Teaching

Bill Furnish Award for Excellence in Teaching of Biology Majors (Biol240; *enrollment 343 students*). Biology Department, University of Louisville, 2019.
 Faculty Favorite Nomination, University of Louisville, 2017, 2018.
 Student Government Distinguished Faculty Award, Eastern Illinois University, 2015.
 Provost's Undergraduate Research Mentor Award, Eastern Illinois University, 2014.
 College of Sciences Lida G. Wall Faculty Research Mentor and Teacher Award, Eastern Illinois University, 2013.
 College of Sciences Student Advisory Board Outstanding Faculty Teaching Award, Eastern Illinois University, 2012.

Publications and Patents

A. Patents

Konkle M.E., **Menze M.A.**, and Geldenhuys W.J. Methods of inhibiting CISD Protein-PLP complex formation. US Patent (16/448,312), *preliminary application filed 2019*.
Menze M.A., Kopecheck J., and Janis B. New method for cryopreservation of cells using ultrasound. US Patent (62/519,638) *filed 2017, pending*.
 Hand S.C. and **Menze M.A.** (2008). Preservation of cells using reversible pore formation. US Patent 7314755.

B. Peer-Reviewed Manuscripts (*Web of Science h-index: 18; Google Scholar h-index: 20, i-10 index: 30*)

Conner* S.C., Murphy E.M., Priddy MC., Moore J.T., Stivers M.S., Janis* B.R., **Menze M.A.**, DeFilipis A.P, and Kopechek J.A. (2020). Ultrasound-induced molecular delivery to erythrocytes using a microfluidics system. *Biomicrofluidics* 14, in press, [doi:10.1063/1.5144617](https://doi.org/10.1063/1.5144617)

Rashed M.Z., Belott* C.J., Janis* B.R., **Menze M.A.** and Williams S.J. (2019). New insights into anhydrobiosis using cellular dielectrophoresis-based characterization. *Biomicrofluidics* 13 (6):064113.

LeBlanc B.M., Le M.T., Janis B., **Menze M.A.**, Hand S.C. (2019). Structural properties and cellular expression of *Afr*LEA6, a Group 6 late embryogenesis abundant protein from embryos of *Artemia franciscana*. *Cell Stress Chaperones*. 24(5):979-990.

Geldenhuys W.J., Long T.E., Saralkar P., Iwasaki T., Nuñez R.R.A., Rajesh R.R., Konkle M.E., **Menze M.A.**, Pinti M.V., Hollander J.M., Hazlehurst L.A., and Robart A.R. (2019). Crystal structure of the mitochondrial protein mitoNEET bound to a benze-sulfonide ligand. *Comms. Chem.* 2: 77, DOI:10.1038/s42004-019-0172-x.

Arnett D., Quillin A., Geldenhuys W.J., **Menze M.A.**, Konkle M. (2019). 4-Hydroxynonenal and 4-oxononenal differentially bind to the redox sensor mitoNEET. *Chem. Res. Toxicol.* 32(6):977-981.

Geldenhuys W.J., Skolik R*, Konkle M.E., **Menze M.A.**, Long T.E., Robart A.R. (2019). Binding of thiazolidinediones to the endoplasmic reticulum protein nutrient-deprivation autophagy factor-1. *Bioorg. Med. Chem. Lett.* 29(7): 901-904.

Conner* S.C, Priddy MC., Stivers M.S., Murphy E.M., Janis* B.R., **Menze M.A.** and Kopechek J.A. (2019). Development of a high-performance ultrasonic flow system for cell transformation. *Proceedings of the 2018 International Symposium on Signal Processing and Information Technology (ISSPIT)*, DOI: 10.1109/ISSPIT.2018.8705103.

- Janis* B., Belott* C., and **Menze M.A.** (2018). Role of intrinsic disorder in animal desiccation tolerance. *Proteomics* 18: 1800067.
- Skolik* R.A., Konkle M.E., and **Menze MA** (2018). Calorespirometry: A powerful, noninvasive approach to investigate cellular energy metabolism. *J Vis Exp.* (135): DOI: 10.3791/57724.
- Janis* B., Uversky V.N., and **Menze M.A.** (2018). Potential functions of LEA proteins from the brine shrimp *Artemia franciscana* - anhydrobiosis meets bioinformatics. *J. Biomol. Struct. Dyn.* 36 (12): 3291-3309.
- Grimm D., Paudel* S., Altamirano L., Herrera J., Wang* M., Welker L., E. Konkle M.E., Chakraborty N., and **Menze M.A.** (2017). Modulation of cellular energetics by CISD1, galactose, and pioglitazone. *Cell Tissue Res.* 369(3):641-646.
- Solocinski* J., Osgood Q., Wang* M., Connolly A., **Menze M.A.**, and Chakraborty N (2017). Effect of Trehalose as an additive to dimethyl sulfoxide solutions on ice formation, cellular viability, and metabolism. *Cryobiology*, 75:134-143.
- Martinez E., **Menze M.A.**, and Agosta J.S. (2017). Reduced mitochondrial efficiency explains mismatched growth and metabolic rate at supraoptimal temperatures. *Physiol. Biochem. Zool.* 90(2):294-298.
- Martinez E., Porreca* A.P., Colombo R.E. and **Menze M.A.** (2016). Tradeoffs of warm adaptation in aquatic ectotherms: live fast, die young? *Comp. Biochem. Physiol. A*, 191:209-15.
- Martinez E., Hendricks* E. **Menze M.A.**, and Torres J.J. (2016). Physiological performance of warm-adapted marine ectotherms: thermal limits of mitochondrial energy transduction efficiency. *Comp. Biochem. Physiol. A*, 191:216-25.
- Bailey* T.L., Wang M., Solocinski J., Nathan B, P. Chakraborty N., and **Menze M.A.** (2015). Protective effects of osmolytes in cryopreserving adherent neuroblastoma (Neuro-2a) cells. *Cryobiology*, 71(3):472-80.
- Hand S.C. and **Menze M.A.** (2015). Molecular approaches for improving desiccation tolerance: insights from the brine shrimp *Artemia franciscana*. *Planta*, 242(2):379-88.
- Stokich B., Osgood Q., Grimm D., Moorthy S., Chakraborty N., and **Menze M.A.** (2014). Cryopreservation of hepatocyte (HepG2) cell monolayers: impact of trehalose. *Cryobiology*, 69(2):281-90.
- Boswell L., **Menze M.A.**, and Hand S.C. (2014). Group 3 LEA proteins from embryos of *Artemia franciscana*: structural properties and protective abilities during desiccation. *Physiol. Biochem. Zool.* 87(5):640-51.
- Paudel* S., and **Menze M.A.** (2014). Genetic engineering for sustainable biofuel production: a review. *Int. J. Env.* 3(2):324-344.
- Roberts M.E., Crail J.P., Laffoon M.M., Fernandez W., **Menze M.A.**, and Konkle M.E. (2013). Identification of disulfide bond formation between mitoNEET and glutamate dehydrogenase 1. *Biochemistry* 52 (50): 8969-8971.
- Martinez[#] E., **Menze[#] M.A.**, and Torres J.J. (2013). Mitochondrial energetics of benthic and pelagic Antarctic teleosts. *Mar. Biol.* 160: 2813-2823.
- Hand S.C., Patil Y., Li S., Chakraborty N., Borcar A., **Menze M.A.**, Boswell L.C., Moore D., and Toner M. (2013). Diapause and anhydrobiosis in embryos of *Artemia franciscana*: metabolic depression, LEA proteins, and water stress. *Cryobiol. Cryotech.* 59 (1): 41-46.
- Marunde M.A., Samarajeewa* D.A., Anderson* J., Li S., Hand S.C., and **Menze M.A.** (2013). Improved tolerance to salt and water stress in *Drosophila melanogaster* cells conferred by late embryogenesis abundant protein. *J. Insect. Physiol.* 59: 377-386.
- Borcar A., **Menze M.A.**, Toner M., and Hand S.C. (2013). Cobalt chloride does not mimic the effect of hypoxia on phosphorylation of pyruvate dehydrogenase in mammalian cells. *Cell. Tissue Res.* 351(1):99-106.

- Li S., Chakraborty N., Borcar A., **Menze M.A.**, Toner M., Hand S.C. (2012). Late embryogenesis abundant proteins protect human hepatoma cells during acute desiccation. *Proc. Natl. Acad. Sci. U. S. A.* 109 (51): 20859-64.
- Podrabsky J.E., **Menze M.A.**, and Hand S.C. (2012). Long-term survival of anoxia despite rapid ATP decline in embryos of the annual killifish *Austrofundulus limnaeus*. *J. Exp. Zool.* 317 (8):524-32.
- Chakraborty N., **Menze M.A.**, Heidi Elmoazzen H., Vu H., Yarmush M.L., Hand S.C., and Toner M. (2012). Trehalose transporter from African chironomid improves desiccation tolerance of Chinese hamster ovary cells. *Cryobiology* 64(2):91-6.
- Chakraborty N., **Menze M.A.**, Malsam J., Aksan A., Hand S.C., and Toner M. (2011). Cryopreservation of Spin-Dried Mammalian Cells. *PLOS* 6 (9):e24916.
- Chakraborty N., Chang A., Elmoazzen H., **Menze M.A.**, Hand S.C., Toner M. (2011). A spin-drying technique for lyopreservation of mammalian cells. *Ann Biomed Eng.* 39(5):1582-91
- Hand S.C., **Menze M.A.**, Borcar A., Patil Y., Covi J.A., Reynolds J. A, and Toner M. (2011). Metabolic restructuring during energy-limited states: insights from *Artemia franciscana* embryos and other animals. *J. Insect. Physiol.* 57(5):584-94.
- Hand S.C, **Menze M.A.**, Toner M, Boswell L., and Moore D. (2011). LEA proteins during water stress: not just for plants anymore. *Annu. Rev. Physiol.* 73 (73):115-34.
- Menze M.A.**, Chakraborty N., Banerjee M., Clavenna* M., Liu X.H., Toner M. and Hand S.C. (2010). Metabolic preconditioning of cells with AICAR-riboside: improved cryopreservation and cell-type specific impacts on energetics and proliferation. *Cryobiology* (61): 79-88.
- Chakraborty N., **Menze M.A.**, Heidi Elmoazzen H., Vu H., Hand S.C., and Toner M. (2010). Choline chloride improves the desiccation tolerance of Chinese Hamster Ovary cells. *ASME SBC2010-19606*:993-994.
- Menze M.A.**, Fortner G., Nag S., and Hand S.C. (2010). Mechanisms of apoptosis in Crustacea: what conditions induce versus suppress cell death? *Apoptosis* 15 (3): 293-313.
- Menze M.A.**, and Hand S.C. (2009). How do animal mitochondria tolerate water stress? *Commun. Integr. Biol.* 2 (5): 428-430.
- Menze M.A.**, Boswell L., Toner M. and Hand S.C. (2009). Occurrence of mitochondrial-targeted late embryogenesis abundant (LEA) gene in animals increases organelle resistance to water stress. *J. Biol. Chem.* 284 (16): 10714-10719.
- Pott A., **Menze M.A.**, and Grieshaber M.K. (2009). Thermodynamics of effector binding to hemocyanin: influence of temperature. *Arch. Biochem. Biophys.* 483 (1): 37-44.
- He X., Fowler A., **Menze M.A.**, Hand S.C. and Toner M. (2008). Desiccation kinetics and biothermodynamics of glass forming trehalose solutions in thin films. *Ann. Biomed. Eng.* 36: 1428-39.
- Hand S.C and **Menze M.A.** (2008). Mitochondria under energy-limited states: mechanism that blunt the signaling of cell death. *J. Exp. Biol.* 211: 1829-1840.
- Menze M.A.** and Hand S.C. (2007). Caspase activity during cell stasis: avoidance of apoptosis in an invertebrate extremophile, *Artemia franciscana*. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 292: R2039-R2047.
- Hand S.C, Jones D., **Menze M.A.** and Witt T.L. (2007). Life without water: expression of plant LEA genes by an anhydrobiotic arthropod. *J. Exp. Zool.* 307 (A): 62–66.
- Elliott G., Cusick J., Liu X.H., **Menze M.A.**, Vincent J., Witt T., Hand S. and Toner M. (2006). Trehalose uptake through P2X₇ purinergic channels provides desiccation protection. *Cryobiology* 52 (1): 114-127.
- Buchanan S.S., **Menze M.A.**, Hand S.C., Pyatt D.W. and Carpenter J. (2005). Cryopreservation of human hematopoietic stem and progenitor cells loaded with trehalose: transient permeabilization via the adenosine triphosphate-dependent P₂Z receptor channel. *Cell Preserv. Tech.* 3 (4): 212-222.

- Liu X.H., Akasan A., **Menze M.A.**, Hand S.C. and Toner M. (2005). Trehalose loading through the mitochondrial permeability transition pore enhances desiccation tolerance in rat liver mitochondria. *Biochim. Biophys. Acta.* 1717 (1): 21–26.
- Menze M.A.**, Hellmann N., Decker H. and Grieshaber M.K. (2005). Allosteric models for multimeric proteins: Oxygen-linked effector binding in hemocyanin. *Biochemistry* 44 (30): 10328-10338.
- Menze M.A.**, Hutchinson K., Laborde S.M. and Hand S.C. (2005). Mitochondrial permeability transition in the crustacean *Artemia franciscana*: Absence of a Ca²⁺-regulated pore in the face of profound calcium storage. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 289 (1): R68-R76.
- Menze M.A.**, Clavenna M. and Hand S.C. (2005). Depression of cell metabolism and proliferation by membrane permeable and impermeable modulators: Role for AMP:ATP ratio. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 288 (2): R501-R510.
- Menze M.**, Hellmann N., Decker H. and Grieshaber M.K. (2001). Binding of urate and caffeine to hemocyanin analyzed by isothermal titration calorimetry. *J. Exp. Biol.* 204: 1033-1038.
- Menze M.A.**, Hellmann N., Decker H. and Grieshaber M.K. (2000). Binding of urate and caffeine to hemocyanin of the lobster *Homarus vulgaris* as studied by isothermal titration calorimetry. *Biochemistry* 39 (35): 10806-10811.

*graduate student researcher, undergraduate student researcher underlined.

#authors contributed equally

C. Book Chapters

- Hand S.C. and **Menze M.A.** Desiccation stress. In: Encyclopedia of tide pools and rocky shores, edited by Denny M.W. and Gaines S.D., University of California Press, Berkeley, 2007, pp. 173-177.
- Menze M.A.** Perspectives in Zoophysiology. In: Höhepunkte der Zoologischen Forschung, edited by Waegele J.W., Basilisken-Press, Marburg, 2007, pp. 243-249.
- Menze M.A.** Analyse der Regulation von Haemocyanin durch Urat beim europäischen Hummer (*Homarus vulgaris*), Berichte aus der Biologie, Shaker Verlag, Aachen, 2001.

Presentations

A. Oral Papers and Invited Seminars

- Menze M.A.** Sea Monkeys and Wood Frogs – Game Changers for Human Health?! Presented at Rhode Island College, RI, 2019.
- Menze M.A.** Anhydrobiosis: Phase Transitions, Strategies and Applications. Presented at the Eastern Illinois University, IL, 2019.
- Menze M.A.** Phase Transitions in Animal Anhydrobiosis. Presented at the RIKEN Institute, Tokyo, Japan, 2019.
- Ragsdale A.K., Miller K., Colombo R.E., **Menze M.A.**, and Schrey A.W. DNA Methylation is Altered in Bluegill Sunfish as Consequence of Anthropogenic Thermal Stress. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB), Tampa, FL, 2019.
- Janis* B., Janis* S., Yavuzcetin O., Solocinski* J., Chakraborty N., and **Menze M.A.** Liquid-Liquid Phase Behavior of a Crustacean Late Embryogenesis Abundant Protein. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB), Tampa, FL, 2019.
- Belott* C.J and **Menze M.A.** Membraneless Organelles in Desiccation Tolerance: A New Phase in Physiology. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB), Tampa, FL, 2019.

- Rashed M.Z., Belott C., **Menze M.A.**, and Williams S. "Dielectrophoresis Based Characterization of LEA Proteins". Presented at the 2019 International Symposium on Electrokinetics (ELKIN), Massachusetts Institute of Technology (MIT), Boston, MA.
- Murphy E.M., Priddy M.C., Janis B.R., **Menze M.A.**, Kopecheck J.A. "Correlation of Cavitation Activity with Ultrasound-enhanced Delivery of Compounds to Erythrocytes Ex Vivo," presentation at the 175th meeting of the Acoustical Society of America, Minneapolis, MN, USA. *Journal of the Acoustical Society of America*, 143:1861, 2018.
- Murphy E.M., Priddy M.C., Janis B.R. **Menze M.A.**, Kopechek J.A., "Ultrasound-enhanced Molecular Delivery to Red Blood Cells in a Microfluidic System for Dry Storage," presentation at the Kentucky Nanotechnology and Additive Manufacturing Symposium, Louisville, KY, 2018.
- Centner C.S., Murphy E.M., Stivers C.M., Burns M.S., Priddy M.C., Janis B.R., **Menze M.A.**, Kopechek JA, "Development of a High-Performance Ultrasonic Flow System for Cell Transformation," oral presentation at the 2018 IEEE International Symposium on Signal Processing and Information Technology (ISSPIT), Louisville, KY, 2018.
- Menze M.A.** Biomimetics and Anhydrobiosis. Presented at Seminar Series of the Department of Integrative Biology, University of California Berkeley, Berkeley, CA, 2018.
- Menze M.A.** Lessons from nature: biomedical applications. Presented at the Bioengineering Seminar Series, Speed School of Engineering University of Louisville, 2017.
- Menze M.A.** Group I LEA protein ameliorates inhibition of mitochondrial respiration in *Drosophila* Kc167 cells. Presented at the annual Mitochondrial Physiology (MIP) meeting, Obergurgl, Austria, 2013.
- Fernandez* W., Nathan B., and **Menze M.A.** Decline in mitochondrial respiration in post-ovariectomy mice is ameliorated by beta-estradiol treatment. Presented at the annual National Conferences on Undergraduate Research (NCUR). La Crosse, WI, 2013.
- Marunde* M., and **Menze M.A.** Late Embryogenesis Abundant Protein Improves Mitochondrial Function under Salt and Water Stress. Presented at the annual National Conferences on Undergraduate Research (NCUR). La Crosse, WI, 2013.
- Hendricks E., Nathan B., and **Menze M.A.** Improving mitochondrial bioenergetics in an Alzheimer's mouse model via estrogen therapy. Presented at the annual meeting of the Illinois State Academy of Science. Jacksonville, IL, 2013.
- Samarajeewa D.A., Thiruni A.*, Hand S.C., and **Menze M.A.** Life without water: intracellular expression of Late Embryogenesis Abundant (LEA) protein increases dehydration tolerance of eukaryotic cells. Presented at the annual meeting of the Illinois State Academy of Science. Galesburg, IL, 2012.
- Marunde M.*, Shumin S., Hand S.C., and **Menze M.A.** Life without water: do Late Embryogenesis Abundant (LEA) proteins preserve mitochondrial functions? Presented at the annual Honors Council of the Illinois Region (HCIR) Student Conference. Joliet, IL 2012.
- Fernandez W*., Elmuti L.*, and **Menze MA.** Mechanism of in vitro β -estradiol bioenergetic effects in synaptic and non-synaptic mitochondria using an apoE deficient mouse model. Presented at the annual National Conferences on Undergraduate Research (NCUR). Ogden, UT 2012.
- Marunde M*., Shumin S., Hand S.C., and **Menze M.A.** Late embryogenesis abundant protein ameliorates inhibition of mitochondrial respiration. Presented at the annual SICB meeting. Charleston, SC 2012.
- Anderson, J.M., Harder* A., Hand S.C., Chakraborty N., and **Menze M.A.** "Protective mechanisms against water stress evaluated in insect cells". Presented at the annual SICB meeting. Charleston, SC 2012.
- Anderson, J.M., Hand S.C., and **Menze M.A.** Water stress in insect cells. Presented at the annual meeting of the Illinois State Academy of Science. Charleston, IL, 2011.

- Menze M.A.** "Mitochondrial calcium import, signaling, and ER cross-talk". Presented at the Mitochondrial Physiology Society MIP *Summer School*. Baton Rouge, LA, 2009.
- Menze M.A.** and Hellmann N. "Allosteric models for multimeric proteins: oxygen-linked effector binding in hemocyanin". Presented at the International Congress of Respiratory Biology. Bonn, Germany, 2006.
- Menze M.A.** and Hand S.C. "Lessons in apoptosis from an invertebrate extremophile: Embryos of *Artemia franciscana*". Presented at the annual SICB meeting. Orlando, FL, USA, 2006.
- Menze M.A.**, Hellmann N., Decker H. and Grieshaber M.K. "Direct investigation of effector binding to the respiratory pigment hemocyanin". Presented at the DZG annual main meeting. Osnabrück, Germany 2001.
- Menze M.A.**, Hellmann N., Decker H. and Grieshaber M.K. "ITC analysis of urate and caffeine binding to hemocyanin of the lobster *Homarus vulgaris*: influence of pH". Presented at the SEB annual main meeting. Exeter, UK, 2000.

*student researcher.

B. Posters Presented

- Center C.S., Priddy M.C., Moore J.T., Bates P.J., **Menze M.A.**, and Kopechek J.A. "Effect of Acoustofluidic Flow Velocity on Intracellular Molecular Delivery," poster presentation at the Biomedical Engineering Society Annual Meeting, Philadelphia, PA, 2019.
- Kunk* C., Kruger* J., **Menze M.A.**, and Konkle M. Characterization of the PLP-dependent functions of CISD proteins. Presented at the annual meeting of American Chemical Society (ACS), Orlando, FL, 2019.
- Martinez E., **Menze M.A.**, and Agosta S.L. The Hungry Caterpillar: Linking Mitochondrial Energetics and Life History Traits as a Function of Temperature in *Manduca sexta*. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB), Tampa, FL, 2019.
- Tyler* B., and **Menze M.A.** Two Late Embryogenesis Abundant Proteins do not Protect LDH Enzyme Activity During Desiccation in Cell Lysates. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB), Tampa, FL, 2019.
- Murphy* E.M., Priddy M.C. Janis* B.R., **Menze M.A.**, and Kopechek J.A., "Ultrasound-enhanced Molecular Delivery to Red Blood Cells in a Microfluidic System for Dry Storage," poster presentation at the Biomedical Engineering Society Annual Meeting, Atlanta, GA, 2018.
- Skolik* R.A., Nnatubeugo C., Rosiek E., Konkle M., Chakraborty N., and **Menze MA.** NEET Energetics: CDGSH Proteins Play Fundamental Roles in Cellular Bioenergetics. Presented at the annual meeting of the American Society for Cell (ASCB) Biology. Philadelphia, PA, 2018.
- Conner* S.C, Priddy MC., Stivers M.S., Murphy* E.M., Janis* B., **Menze M.A.** and Kopechek, J.A. Development of a High-Performance Ultrasonic Flow System for Cell Transformation. Presented at the 2018 International Symposium on Signal Processing and Information Technology (ISSPIT), Louisville, KY.
- Janis* B., Priddy MC., Murphy* E.M., Kopechek J.A., and **Menze M.A.** Dry-preservation of red blood cells. Presented at the annual meeting of the American Association of Blood Banks (AABB), Boston, MA, 2018. – **Received AABB Top 1% Poster Award.**
- Janis* B., and **Menze M.A.** Conformational plasticity of late embryogenesis abundant (LEA) proteins. Presented at the annual meeting of the Protein Society, Boston, MA, 2018.
- Skolik* R., Geldenhys W., Konkle M., and **Menze M.A.** CISD2: an unnoticed regulator of mitochondrial performance? Presented at the annual meeting of the Protein Society, Boston, MA, 2018.

- Konkle M.E., Meenagh K., Skolik* R.A., Guan R., **Menze, M.A.**, and Geldenhuys, W. "Characterization of the Binding Partners of MitoNEET." *The American Chemical Society*. New Orleans, LA.
- Gurung* S. and **Menze M.A.** A polypeptide from the brine shrimp *Artemia franciscana* is related to plant seed maturation proteins and protects lactate dehydrogenase during freezing and desiccation. Presented at the annual meeting of the American Physiology Society (APJ), San Diego, CA, 2018.
- Priddy MC., Murphy* E.M., Janis* B.R., **Menze M.A.** and Kopechek J.A. Correlation of cavitation activity with ultrasound-enhanced delivery of compounds to erythrocytes ex vivo. Presented at the annual meeting of the Acoustical Society of America (ASA), Minneapolis, MN, 2018.
- Janis* B., Priddy MC., Murphy* E.M., Kopechek, J.A., and **Menze M.A.** Dry-preserved red blood cells for transfusion in far-forward settings. Presented at the annual Military Health System Research Symposium. Kissimmee, FL, 2018.
- Napier R., Cadle* B., Skolik* R.A., Konkle M.E., and **Menze, M.A.** "Binding of ligands to Mitochondrial CISD proteins". The 32nd Protein Society Annual Symposium. Boston, MA.
- Skolik* R.A., Guan R., Konkle M., and **Menze MA.** Fluorescence spectroscopy reveals two types of binding sites for endogenous ligands in CISD proteins. Presented at the annual meeting of the American Society for Cell (ASCB) Biology. Philadelphia, PA, 2017.
- Janis* B., Uversky V., and **Menze M.A.** A computational analysis of LEA proteins from *Artemia franciscana*. Presented at the annual meeting of the Protein Society. Montreal, Canada, 2017.
- Karim* F., Yordanov Y.S, and **Menze, M.A.** Expression, purification, and characterization of an intrinsically disordered Late Embryogenesis Abundant (LEA) protein from *Artemia franciscana* utilizing *Escherichia coli* and *Nicotiana tabacum*. Presented at the annual meeting of the American Society for Pharmacology and Experimental Therapeutics (ASPET). Chicago, IL, 2017.
- Belott* C., Skolik* R., and **Menze, M.A.** LEA proteins protect *Drosophila melanogaster* cells during prolonged periods of desiccation and osmotic stress. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). New Orleans, LA, 2017.
- Janis B.*, Janis, S.*, Tippery N., Yavuzcetin O., Chakraborty N., Wong. M, and **Menze, M.A.** Impact of group 3 LEA proteins on cellular structure during desiccation. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). New Orleans, LA, 2017.
- Skolik R.A*, Webster* D., and **Menze, M.A.** LEA proteins provide protection to cells and enzymes during water stress. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). Portland, OR, 2016.
- Janis B.R.*, Hand, S.C., and **Menze, M.A.** A computational analysis of LEA proteins from *Artemia franciscana*. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). Portland, OR, 2016.
- Islam K.N.*, Belott* C.J., Constantinescu* D., Wiegand A., and **Menze, MA.** Concurrent expression of group 3 and 6 LEA proteins using multicistronic vector constructs in *Drosophila melanogaster* Kc167 cells. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). Portland, OR, 2016.
- Grimm* D.F., Altamirano* L, Paudel* S., Welker* L., Herrera* J., Konkle M., and **Menze M.A.** Effects of pioglitazone on liver cell bioenergetics. Presented at the annual meeting of the American Society for Cell Biology (ASCB), Philadelphia, PA, 2014.
- Paudel S., Welker L., Nathan B.P., Konkle M. and **Menze MA.** D-galactose decreases mitoNEET (CISD1) levels in HepG2 cells. Presented at the annual meeting of the American Society for Cell Biology (ASCB), Philadelphia, PA, 2014.

- Laffoon* M., **Menze M.A.** and Konkle M. Chemical modification of mitoNEET. Presented at the annual meeting of the Protein Society, San Diego, CA, 2014.
- Banister* S., Woodruff* M., Paige* B., **Menze M.A.** and Konkle M. Determining the effects of mitoNEET on cellular dehydrogenase activity. Presented at the annual meeting of the Protein Society, San Diego, CA, 2014.
- Hendricks E., Nathan B., and **Menze M.A.** Estrogen treatment dramatically increases respiration in Alzheimer's disease model. Presented at the annual meeting of the American Society for the Advancement in Sciences (AAAS), Chicago, IL, 2014.
- Stokich* B. and **Menze M.A.** Biomimetic approaches in cryopreservation. Presented at the annual meeting of the American Society for the Advancement in Sciences (AAAS), Chicago, IL, 2014.
- Ferry* N., Laffoon* M.M., Konkle M., and **Menze M.A.** MitoNEET: reduction in insulin resistance through ameliorated oxidative stress? Presented at the annual meeting of the American Society for Cell Biology (ASCB), New Orleans, LA, 2013.
- Hendricks E., Nathan B., and **Menze M.A.** Bioenergetics of permeabilized and intact nerve cell terminals in ApoE deficient and wild-type mice. Presented at the annual Mitochondrial Physiology (MIP) meeting, Obergurgl, Austria, 2013.
- Crail* J.P., Roberts M.E., Fernandez* W., **Menze M.A.**, and Konkle M.E. Characterizing protein binding partners of mitoNEET. Presented at the annual meeting of the American Chemical Society (ACS), Indianapolis, IN, 2013.
- Osgood* Q., Chakraborty N., Stokich* B., and **Menze M.A.** Novel protein acts as cryoprotectant for embryonic kidney cell monolayers. Presented at the annual meeting of the Biomedical Engineering Society (BMES), Seattle, WA, 2013.
- Stokich* B., Schreyer B., Osgood* Q., Chakraborty N., Thompson M., and **Menze M.A.** Trehalose incubation improves cryopreservation of hepatoma cell monolayers. Presented at the annual meeting of the Biomedical Engineering Society (BMES), Seattle, WA, 2013.
- Fernandez* W., Erbacher* L., Konkle M., and **Menze M.A.** Examining the role of estrogen and oxidative damage in Alzheimer's Disease. Council on Undergraduate Research (CUR) *Poster on the Hill* event: to highlight undergraduate research to U.S. Senators and Representatives on Capitol Hill. Washington, DC, 2013.
- Martinez E., **Menze M.A.**, and Torres J.J. Mitochondrial energetics of benthic and pelagic Antarctic teleosts. Presented at the annual meeting of the American Society of Limnology and Oceanography, New Orleans, LA, 2013.
- Ferry* N., Roland* F., Konkle M., and **Menze M.A.** Type-2 Diabetes: Does mitoNEET Impact mitochondrial functions by multiple mechanisms? Presented at the annual meeting of the Illinois State Academy of Science. Jacksonville, IL, 2013.
- Tofte* A., Nathan B., and **Menze M.A.** Mitochondrial bioenergetics in response to estrogen therapy. Presented at the annual meeting of the Illinois State Academy of Science. Jacksonville, IL, 2013.
- Ferry* N., Roland* F., Konkle M., and **Menze M.A.** Type-2 Diabetes: Does mitoNEET impact mitochondrial functions by multiple mechanisms? Presented at the annual National Conferences on Undergraduate Research (NCUR). La Crosse, WI, 2013.
- Fernandez W.*., Nathan B., and **Menze M.A.** Decline in mitochondrial respiration in post-ovariectomy mice is ameliorated by beta-estradiol treatment. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). San Francisco, CA, 2013.
- Samarajeewa D., Harder* A., Toner M., Chakraborty N., and **Menze M.A.** Intracellular ice nucleation protein reduces cryogenic injury in eukaryotic cells. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). San Francisco, CA, 2013.

- Camp* N., Martinez E., Phillips* C., Procerra A., Torres J., Colombo R., and **Menze M.A.** Life in hot waters: live fast and die young. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). San Francisco, CA, 2013.
- Marunde M.*, Nguyen M.A., Hand S.C., and **Menze M.A.** Late Embryogenesis Abundant protein improves mitochondrial function under salt and water stress. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). San Francisco, CA, 2013.
- Erbacher* L, Fernandez* W, **Menze M.A.**, and Konkle M. Targeting Alzheimer's: discovering mitochondrial protein targets of oxidative stress. Presented at the annual meeting of Protein Society. San Diego, CA, 2012.
- Harder* A., Samarajeewa D., Toner M., Chakraborty N., and **Menze M.A.** Intracellular ice nucleation protein reduces cryogenic injury in eukaryotic cells. Presented at the Annual Meeting of the Biomedical Engineering Society (BMES). Atlanta, GA, 2012.
- Harder* A., Toner M., Chakraborty N., and **Menze M.A.** Intracellular ice nucleation protein reduces cryogenic injury in eukaryotic cells. Presented at the Annual Meeting of the Illinois State Academy of Science. Galesburg, IL, 2012.
- Fernandez W*, Nathan B., Konkle M., and **Menze M.A.** Effects of estrogen on mitochondrial function in ApoE-deficient mice. Presented at the annual meeting of the Society for Integrative and Comparative Biology (SICB). Charleston, SC, 2012.
- Martinez-Rivera E., **Menze M.A.**, Hand S.C., and Torres J.J. Life in constant cold: mitochondrial bioenergetics in Teleostei species from the Southern Ocean. Presented at the annual meeting of the American Society for Oceanography and Limnology. San Juan, Puerto Rico, 2011.
- Chakraborty N., **Menze M.A.**, Elmoazzen H., Hand S.C. and Toner M. Choline chloride improves the desiccation tolerance of Chinese hamster ovary cells. Presented at the Summer Bioengineering Conference (SBC). Naples, FL, 2010.
- Chakraborty N., **Menze M.A.**, Hand S.C., and Toner M. A spin drying technique for dry preservation of mammalian cells. Presented at the annual Biomedical Engineering Society (BMES) meeting. Austin, TX, 2010.
- Moorthy S., **Menze M.A.** and Hand S.C. Engineering freeze tolerance in human hepatoma cells: role of trehalose and LEA proteins. Poster session at the Summer Undergraduate Research Forum (SURF) in corporation with the Howard Hughes Medical Institute (HHMI). Baton Rouge, LA, USA, 2009.
- Patil Y.N., **Menze M.A.** and Hand S.C. Arrest of aerobic metabolism in *Artemia franciscana* embryos during diapause. Presented at the annual Society for Comparative and Integrative Biology (SICB) meeting. Boston, MA, USA, 2009.
- Boswell L.C., **Menze M.A.** and Hand S.C. Isolation and characterization of AMP-activated protein kinase from embryos of *Artemia franciscana*. Presented at the annual SICB meeting. Boston, MA, USA, 2009.
- Menze M.A.** and Hand S.C. Lessons in Apoptosis from the extremophile *Artemia franciscana*. Poster session at the 64th Harden Conference. Ambleside, UK, 2007.
- Witt T.L., **Menze M.A.** and Hand S.C. Isolation and characterization of AMP-activated protein kinase from embryos of *Artemia franciscana*. Presented at the annual SICB meeting. Orlando, FL, USA, 2006.
- Menze M.A.** and Hand S.C. Lessons in apoptosis from a non-model invertebrate species: Caspase-9 of *Artemia franciscana* is refractory to cytochrome c, inhibited by GTP and activated by Ca^{2+} . Keystone Symposia, Metabolomics: From bioenergetics to apoptosis, Snowbird, UT, 2006.
- Menze M.A.**, Hutchinson K., Laborde S. and Hand S.C. Mitochondrial permeability transition in an invertebrate: Absence of a calcium-regulated pore in the face of profound calcium

storage. Presented at the 4th conference on Mitochondrial Physiology-*MIP*. Schröcken, Austria, 2005.

Menze M.A., Hutchinson K. and Hand S.C. Lack of calcium induced mitochondrial permeability transition in *Artemia franciscana* during early development. Presented at the annual SICB meeting. San Diego, CA, USA, 2005.

Menze M.A., Hellmann N., Decker H., Grieshaber M.K. Effector binding of oxygenated and deoxygenated hemocyanin of the lobster *Homarus vulgaris*. Presented at the 48th annual meeting of the Biophysical Society, Baltimore, MD, USA, 2004.

Menze M.A. and Hand S.C. Modification of AMP/ATP ratios in mammalian cells to modify metabolic activity. Presented at the annual SICB meeting. New Orleans, LA, USA, 2003.

Menze, M.A., Hellmann N., Decker H. and Grieshaber M.K. Direct investigation of effector binding to the respiratory pigment hemocyanin. Presented at the 52nd. Mosbacher Kolloquium, Mosbach, Germany, 2001.

Menze M.A., Hellmann N., Decker H. and Grieshaber M.K. ITC-Analysis of urate and caffeine binding to hemocyanin of the lobster *Homarus vulgaris*: Influence of pH. Presented at the 44th annual meeting of the Biophysical Society, New Orleans, LA, USA, 2000.

Menze M.A., Hellmann N., Decker H. and Grieshaber M.K. Comparison of ligand binding behaviors in hemocyanin of *Homarus vulgaris* as determined by ITC or UC. Presented at the 43rd annual meeting of the Biophysical Society, Baltimore, MA, 1999.

Menze M.A., Hellmann N., Decker H. and Grieshaber M.K. Comparison of ligand binding behaviors in hemocyanin. Presented at the 2nd International Conference on Applications of Biocalorimetry (ICAB), Halle, Germany, 1999.

**student researcher.*

Student Awards and Grants Mentored

A. Undergraduate Research, Scholarship, and Creative Activities (URSCA) Awards – EIU Honors College

Robert Skolik and Daniel Webster (Summer, 2015). Anhydrobiosis (\$3000).

Robert Skolik and David Constantinescu (Spring, 2015). Protein involvement in water-stress tolerance (\$500).

David Constantinescu (Summer, 2014). Understanding water crystallization at low temperature (\$3000).

Clinton Belott (Spring, 2013). Synergistic cancer treatment (\$500).

Ben Poznic (Fall, 2013). Taking the heat: the possible role of LEA proteins in preventing cell suicide in genetically-engineered human kidney cells (\$500).

Nicolas Ferry (Summer, 2013). Type-2 diabetes: does mitoNEET impact mitochondria and catalase functions by multiple mechanisms? (\$3000).

Blake Stokich (Summer, 2013). Improving long-term storage of mammalian cells. (\$3000).

William Fernandez (Fall, 2012). Role of apolipoprotein E in Alzheimer's disease (\$500).

Nathan Camp (Fall, 2012). Life in hot waters: live fast die young (\$500).

Matthew Marunde (Summer, 2012). Lessons learned from nature: can we engineer life without water? (\$3000).

Matthew Marunde (Spring 2011). Life without water: do late embryogenesis abundant (LEA) proteins preserve mitochondrial functions? (\$500).

William Fernandez and Lena Elmuti (Summer, 2011). Sex and power: does estrogen control energy production in Alzheimer's disease? (\$3000).

Aa. Summer Research Opportunities Program – UofL University wide

Jensen Smith (Summer 2019) - \$3,500 Jensen Smith; \$500 Michael A. Menze

B. Biological Sciences Undergraduate Research Grants – EIU Biology Department

Clinton Belott (Fall, 2013). Synergistic cancer treatment.
 David Grimm (Fall, 2013). The effects of pioglitazone on mitochondrial bioenergetics.
 Blake Stokich (Fall, 2013). Cryopreservation of hepatocyte monolayers.
 Kevin Stanley (Spring, 2013). Role of succinate dehydrogenase in Alzheimer's disease.
 Blake Stokich (Spring, 2013). Improving long-term storage of mammalian cells.
 Austin Tofte (Fall, 2012). Impact of estrogen on mitochondrial bioenergetics.
 Nicolas Ferry (Fall, 2012). Type-2 diabetes: functions of mitoNEET.
 Christopher Phillips (Fall, 2012). Impact of thermal effluent on blue gill in Lake Coffeen.
 Mathew Marunde (Spring, 2012). Impact of group one LEA proteins on desiccation tolerance and bioenergetics of Kc167 cells.
 Minh Ha Nguyen (Spring, 2012). Heat shock promoter controlled expression of a group 5 LEA protein.
 Avril Harder (Spring, 2012). Does Intracellular Ice Nucleation Protein reduces cryogenic injury in insect cells?
 Jenna Slaughter (Spring, 2011). Impact of heat shock on *Artemia franciscana* embryos.
 Mathew Marunde (Spring, 2011). Oxygen consumption of transgenic *Drosophila melanogaster* cell lines.
 Thiruni Adikari (Spring, 2011). Impact of transgenic LEA protein expression on desiccation tolerance of Kc167 cells.
 Mitchell Cronk (Spring, 2011). Assessing insect cell proliferation via alamarBlue reduction.

C. Scholars in Undergraduate Research (SURE) Award - EIU College of Sciences

Clinton Belott (2015), David Grimm (2015), Blake Stokich (2015), Ben Poznic (2014), Nicolas Ferry (2014), Blake Stokich (2014), Matthew Marunde (2013), William Fernandez (2013), Matthew Marunde (2012), William Fernandez (2012).

D. Graduate Student Investigator (GSI) Award - EIU College of Sciences

Sudip Paudel (2015), Trisha Bailey (2015), Erick Hendricks (2014), Sudip Paudel (2014), Erick Hendricks (2013), Dilini Samarajeewa (2013), Dilini Samarajeewa (2012), John Anderson (2011).

E. Graduate School Research and Creative Activity Grant

Sudip Paudel (2015), Trisha Bailey (2015), Sudip Paudel (2014), Dilini Samarajeewa (2013), Erick Hendricks (2013), Dilini Samarajeewa (2012), John Anderson (2012), John Anderson (2011).

F. Williams Travel Award

Sudip Paudel (2014), Eric Hendricks (2013), Dilini Samarajeewa (2013), Jon Anderson (2012).

G. College of Sciences Travel Grant

David Grimm (2014), Sudip Paudel (2014), Blake Stokich (2013), William Fernandez (2013), Matthew Marunde (2013).

H. Other Student Awards and Honors

Top Undergraduate Poster award at the 2019 UofL Poster Competition – Scot Jensen
 Top Poster award at the 2018 AABB meeting – Brett Janis
 EIU Graduate School Distinguished Master Thesis Award (2013) – Eric Hendricks (\$500)
 Outstanding International Student Award (2014) - Sudip Paudel.
 Award of Honorable Mention at the 2014 AAAS Student Poster Competition, Chicago 2014 - Erick Hendricks and Austin Tofte.
 Distinguished Senior Award (2013) - William Fernandez.
 Provost Research Assistantship (2013) - Erick Hendricks (\$9,000).
 Outstanding International Student Award (2013) - Dilini Samarajeewa.

Illinois State Academy of Sciences Cell, Molecular, and Developmental Biology Division

Outstanding Presentation Award (2013) - Erick Hendricks (\$125).

Annie Weller Scholarship (2013) - Alyssa Walser (\$400).

Distinguished Graduate Student Award for the MSNS program (2013) - Alyssa Walser.

EIU Graduate School Distinguished Master Thesis Award (2013) - John Anderson (\$500).

Illinois State Academy of Sciences Cell, Molecular, and Developmental Biology Division

Outstanding Presentation Award (2011) - John Anderson (\$250).

I. Graduate Students Mentored

PhD candidates

David Grimm (2019 – present), Ladan Adabashi (2018 – 2020), Brett Janis (2016 – present),

Clinton Belott (2016 – present), Robert Skolik (2016 – present).

Masters Students

Fazlul Karim (2015 – 2017), Shankar Gurung (2015 – 2017), Brett Janis (2015 – 2016), Clinton

Belott (2015 – 2016), Kazi Islam (2014 – 2016), Trisha Bailey (2013 – 2015), Sudip Paudel

(2013 – 2015), Alyssa Walser (2011 – 2013), Eric Hendricks (2012 – 2014), Dilini Samarajeewa

(2011 – 2013), John Anderson (2010 – 2012).

J. Undergraduate Students Mentored

Caleb He (2020 – present), Thompson Spencer (2019 – present), Ethan Mills (2019 – present),

Mustafa Almosawi (2019 – present), Collin Noud (2019 – present), Scott Bui (2019 – present),

Benjamin Wenyuan (2018 – present), Charles Elder (2018 – present), Jensen Smith (2018 –

present), Jumin Kim (2017 – present), Tryphena Sithu (2017 – present), Nikhil Warriar (2018 –

2020), Benjamin Cadel (2017 – 2020), Matthew Buck (2018 – 2019), Tyler Brooks (2017 –

2019), Regina Flomo (2017 – 2018), Ryan Napier (2017 – 2020), Rebecca Guan (2016 – 2019),

David Lian (2016 – 2018), Poonum Haldekar (2017 – 2018), Jessica Nygyn (2017 – 2018),

Dakota Manzanales (2016 – 2017), Daniel Webster (2014 – 2016), Austin Wigand (2014 –

2016), Robert Skolik (2013 – 2016), David Constantinescu (2013 – 2015), Leah Welker (2014 –

2015), Amechi Alozie (2013 – 2015), Clinton Belott (2013 – 2015), Jocelyn Herrera (2013 –

present), Leonardo Altamirano (2013 – 2015), David Grimm (2013 – present), Blake Stokich

(2012 – 2015), Nicolas Ferry (2012 – 2015), Ben Poznic (2012 – 2015), Willow Spencer (2012 –

2013), Austin Tofte (2012 – 2013), Kevin Stanley (2012 – 2013), Christopher Phillips (2012),

Nathan Camp (2012), Haisma Tiffany (2011 – 2012), Minh Nguyen (2011 – 2013), Avril Harder

(2011 – 2012), Mitchell Cronk (2010 – 2012), William Fernandez (2010 – 2013), Thiruni Adikari

(2010 – 2012), Matthew Marunde (2010 – 2013), Jena Slaughter (2010 – 2012), Ujwal Jain

(2010 – 2011), Kiara Mack (2010 – 2011), Suman Nag (2008 – 2010), Michael Bujol (2009 –

2010), Aryanna Amini (2009 – 2010), Grady Fortner (2008 – 2010), Shhyam Moorthy (2008 –

2010), Kailtin Walkers (2008 – 2009), Joy Norris (2006 – 2008), Phillip Gilmore, (2005 – 2008),

Alex Combe (2005 – 2006), Jill Vincent (2003 – 2005).

Service and Outreach

A. University Level

UofL IBM Partnership Leadership and Implementation Committee (2019 – present).

UofL Grand Challenges Committee (2019 – 2020).

Student Conduct Hearing Board Member (2019 – present).

Undergraduate Research Task Force (2014 – 2016).

Open Access Task Force (2014 – 2015).

Council of Graduate Studies (CGS) Committee member (2012 – 2014) and Chair (2015)

Hamand Scholar Selection Committee member (2013 – 2014).

Textbook Advisory Board member (2012 – 2014).

Electronic Learning Materials Task Force - Chair of subgroup 'supporters' (2012 - 2013).

Secretary for the local SigmaXi chapter (2011 – 2015).
Faculty Fellow (2011 - present).
Facilitator for the *E!Ureads!* program (2011 – present).
Faculty Mentor for the Jumpstart 2 G.I.V.E. program (2011 – present).

B. College Level

Think IR, Advisory Board Member (2019- present).
First Choice College of Arts & Humanities Review Board member (2012).
First Choice College of Business & Applied Sciences Review Board member (2013 - 2015).

C. Departmental Level

Faculty Search Committee (Cell Biology, 2019, Chair).
Faculty Search Committee, search for two positions (Pedagogy, 2019).
Faculty Search Committee (Part-Time Lectures and Term Positions 2019 – present, *ad hoc member*).
Assistant Chair of the Biology Department (2018 - present).
Departmental Personnel Committee (2016 – present, Chair 2020).
Departmental Diversity Committee (2016 - present).
Departmental Graduate Program Committee (2016 - 2017).
Departmental Curriculum Committee Chair (2016).
Pre-health Science Building Committee (2013).
Professional Science Masters (Biomedical) committee member (2013).
Department Application of Criteria (DAC) Committee member (2012). Chair (2013).
Grants Committee. Chair (2011 - present).
Graduate Committee member (2011 - present).
Facilities Committee member (2010).

D. Professional and Community Level

Louisville Underground Science, Holsopple Brewery, invited public talk (2019).
ACcelerate Festival at the Smithsonian Museum for American History, Washington DC. Menze M.A., Janis B., and Kopecheck J.A. Three-day presentation of “The Sweet Way to Preserve Blood”, (2019).
Public talk ‘Lessons from Nature for Blood Preservation’. Presented at the Friday Night Eat, Drink, & Do Science adult night of the Kentucky Science Center (2018).
Mentoring of Louisville Science Pathways Mentorship student Cameron Bacigalupi (2017), Olivia Hawkins (2018).
Mentoring of Gatton Academy student Callie Freeman (2017), Ringo Wyatt (2018).
Mentoring of Louisville Central High School Magnet Career Academy student Demonie Crumes (2016 – 2017).
Mentoring of high school student Molly Meister enrolled at Paris High School (2015 - 2016).
Mentoring of high school student Joe Robles enrolled at Oak Park River Forest high school in the O.P.R.F.H.S. Mentoring Program (2013 - 2014).
Science Fair Project Judge for regional competition at Lake Land College (2012 - present).
Review Editor for *Frontiers in Aquatic Physiology* (2010 - present).
Best Student Paper Judge at the Annual Meeting of the Society for Integrative and Comparative Biology (2009, 2011, 2012, 2018).
Scientific Advisor for the Mitochondrial Physiology Society, MIPboard member (2009 - present).
Member of Ph.D. Dissertation Committees: Eloy Martinez, College of Marine Sciences, University of South Florida, St. Petersburg, FL (2010 - 2013); Erica Hudson, College of Marine Sciences, University of South Florida, St. Petersburg, FL (2010 - 2012); Leaf Boswell, Department of Biological Sciences, Louisiana State University, Baton Rouge, LA (2006 - 2013).

Louisiana Junior Science and Humanities Symposium Judge (2009, 2010) and Louisiana State Science and Engineering Fair Judge. Baton Rouge, LA (2008, 2009).
Best student paper judge for the Center for BioModular Multi-Scale Systems (CBM²) colloquium. Louisiana State University, Baton Rouge, LA (2006).
Dean's Representative for Doctoral General Examination in the Department of Chemistry, Louisiana State University, Baton Rouge, LA (2009).
Local Organizer and Instructor for the Mitochondrial Physiology Society MIP Summer School (2009), Baton Rouge, LA.

E. Reviewer for Proposals

National Science Foundation Panel Member, 2017, 2018, 2020.
National Science Foundation (NSF). *Ad hoc* reviewer (2007, 2009, 2010).
U.S. Civilian Research and Development Foundation (CRDF). *Ad hoc* reviewer for the Cooperative Grants Program (CGP) Section Bioengineering (2007).

F. Reviewer for Manuscripts

Archives of Biochemistry and Biophysics (2019), *Biochemical Biophysical Acta - Proteins and Proteomics* (2006, 2008), *Biochemical Biophysical Acta - General Subjects* (2017), *Biochemistry* (2009, 2010), *Biochemistry and Cell Biology* (2007, 2009), *Biotechnology Progress* (2005, 2008), *BMC Developmental Biology* (2005, 2008), *Biophysical Journal* (2015, 2018), *Canadian Journal of Zoology* (2013), *Cell Stress and Chaperones* (2015), *Comparative Physiology and Biochemistry* (2003, 2006, 2007, 2010, 2015, 2018), *Cryobiology* (2006, 2007, 2009, 2010), *Cryoletters* (2019, 2020), *FEBS Open Bio* (2020), *Frontiers in Physiology* (2018, 2019), *Genomics* (2013), *Journal of Aquatic Physiology* (2011, 2012, 2015, 2017, 2017, 2018), *Journal of Biological Chemistry* (2011, 2012, 2015), *Journal of Crustacean Biology* (2020), *Journal of Experimental Zoology* (2009), *JoVE* (2019), *NCUR Proceedings* (2013, 2014), *PLoSone* (2015), *Proceedings of the Royal Society of London B* (2017), *Thermochimica Acta* (2005), *The Plant Cell* (2007).

Professional Societies

American Society for Cell Biology (ASCB), Biophysical Society, Mitochondrial Physiology Society (MIP), Society of Experimental Biology (SEB), Society of Integrative and Comparative Biology (SICB), SigmaXi, Illinois State Academy of Sciences (ISAS).

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