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# mophys

# MISSOURI PHYSIOLOGICAL SOCIETY An independent chapter of APS

# Quarterly mophys newsletter

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# **Meeting Summary**

mophys held its 2023 annual meeting on September 30 at St. Louis University Health Science campus. Physiologists from around the

state were treated to a rich program that included both physiology teaching and physiology research. This year's enriched meeting format including not only a keynote talk by John Thyfault, Ph.D., but also several post-doctoral talks, graduate student flash talks, and a pair of talks from experienced physiology teaching professors. In addition, undergraduate students, graduate students, and post-doctoral fellows provided a phenomenal collection of physiology posters that gave attendees from around the state a glimpse into the

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tremendous variety of research going on in Missouri. If that's not enough, the food was great. We all went away enriched. If you want to remember the fun time you had at the meeting (or the fun time you missed), be sure to check out the meeting pictures on our website (<u>https://mophys.org/mophys-2023-pictures</u>). As the meeting closed, President Darla Tharp, Ph.D. passed the microphone to incoming president Kyle McCommis, Ph.D. who promises another exciting year of physiology in Missouri.

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# mophys 2023 poster awards

Posters at mophys 2023 were judged on the overall clarity and organization, the scientific merit, and oral presentation of the data. There were a total of 3 categories depending on the academic level of the student/trainee.

#### Category 1

Undergraduates & 1st year graduates



1. Winner Vaishnavi Srirama



2. Winner Jessica Michael



3. Winner Amy Keilholz

#### Category 2

#### 2nd & 3rd year graduate/professional students



1. Winner Hope Welters



2. Winner Avantika Jain



3. Winner Natalia Schneider

#### Category 3

4th year grad/professional students & post-docs



1. Winner Ammar Mahmood



2. Winner David Johnson



3. Winner Yoko Wang

# **Congratulations to all the winners!**

And for those who wonder about Darla being in every picture: No, she did not win in all the categories ;-).

# **Call for nominations**

This is the last call to submit your (self-)nominations for president elect and the junior science representative position. We will accept new nominations until the end of this month (October 31st). Just send an email to <u>nominations@mophys.org</u>.

The ballot for voting will go out by email to all mophys members beginning of November. If your membership has lapsed, now is the time to renew and exercise your right to vote your executive committee as a full member of mophys (<u>click here to renew</u>).

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# **News from MO schools**

# ATSU A.T. Still University

# Medical Physiology/Pharmacology teaching, Achievements, and Conferences at ATSU-KCOM.

First year medical students at KCOM just started the Medical Pharmacology I & Physiology I block. The first semester focuses on the basics; like homeostasis, signal transduction, fluids & ionic basis, and muscle function & autonomics. In Pharm, students will learn pharmacological principles and focus on antibiotics. This will require lots of studying, so good luck to everyone!

Congratulations to Hope Welters and Jax Ramsey, 3rd semester medical students at KCOM, to their accomplishments at mophys! Hope received the first price for Poster presentation in the category for graduate students. Jax was selected for a flash talk presentation.

The 15th Annual Interdisciplinary Biomedical Research Symposium (IBRS) is coming up soon. It features oral and poster presentations of research studies by

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ATSU graduate students, faculty, and staff, StillPOPTI resident physicians, undergraduate students from Truman State University and other biomedical researchers and students. The keynote speaker will be Dennis Black, MD, the James Dustin Buckman professor of pediatrics and professor of physiology at the University of Tennessee Health Science Center (UTHSC) in Memphis. Dr. Black also serves as scientific director of the Children's Foundation Research Institute of Memphis, as well as vice president for research for Le Bonheur Children's Hospital (LBCH) and vice chair for research for the Department of Pediatrics. We are looking forward to his presentation!

# MISSOURI S&

**Physiology continues to grow at Missouri S&T.** The biological sciences department is <u>hiring a new chair</u> and is looking for someone who can grow the department in biomedical sciences. Additionally, Schrenk Hall, which houses the department, is <u>currently under renovation</u>. This will modernize classrooms and teaching labs for physiology related classes, as well as update physiology based research labs. Combining medicine with S&T's reputation for engineering, a <u>new biomedical engineering program</u> was approved by the University of Missouri Board of Curators and will start admitting students in Fall '24.



**Exercise Physiology Program Gains New Space and Majors.** University of Health Sciences and Pharmacy continues to grow their undergraduate programs. The flagship Pharmaceutical Sciences program remains strong and this year the Biomedical Science major and Exercise Physiology major had increased enrollments. Both of these majors have a physiology emphasis! The Exercise Physiology teaching lab is located in renovated space for students to apply their skills using brand new equipment. Other teaching news: Medical Physiology, a first semester course for Pharmacy year 1 students, is instituting 2nd attempts for Exams throughout the semester. Students must complete the required homework quiz, attend all class periods, and fill out review sheets prior to the exam. All students participating have earned a higher score on the 2nd exam attempt (with different questions), which is completed within one week of the first exam.



# SAINT LOUIS UNIVERSITY

SCHOOL OF MEDICINE

**Multiple Physiology meetings in St. Louis this fall!** We had a great time hosting mophys 2023, and we hope you enjoyed the meeting as much as we did! Thanks to all of the meeting organizers, and all the presenters and attendees for making it a wonderful celebration of physiology research and teaching from across our state! Saint Louis University's Institute for Translational Neuroscience, in conjunction with Washington University and the University of Health Sciences and Pharmacy also recently hosted the "St. Louis Translational Pain Research Forum" September 22-23. Highlights were the Keynote address provided by Dr. Walter Koroshetz, M.D., Director of the NINDS Institute of NIH. The Saint Louis University Institute for Translational Neuroscience is also hosting its inaugural research symposium known as "NeuroDay 2023" on November 3, 2023. The keynote speaker is Dr. Catherine Cahill, Ph.D. from UCLA. More information about this meeting can be found at: <a href="https://www.slu.edu/research/institute-for-translational-neuroscience/news/index.php">https://www.slu.edu/research/institute-for-translational-neuroscience/news/index.php</a>



Our alumni go on to do great scientific work! Sarah Connolly (TSU grad, 2019) recently gave our Biology Department Seminar where she reported on her ground-breaking EM work to elucidate the molecular structure of Caveolins within the plasma membrane. Caveolins are peripheral membrane proteins implicated in lipid rafts and membrane bending within a variety of cell types and cellular contexts, predominantly through endocytosis. They interact extensively with Cavins and a growing list of other membrane molecules. However, Caveolin structure in vivo is not well understood. During her recent talk, Sarah described her use of both single molecule cyro-EM and EM tomography during her PhD at the University of Michigan to discover that 11 Caveolin 1 molecules oligomerize in both artificial and E. coli membranes. Her images describe how human Caveolin 1 orients and interacts with each other. At the same time, she showed the similarities and differences between several evolutionarily-related Caveolin homologues, providing interesting hypotheses about conserved structurefunction relationships. Most of this work was recently published (https://www.science.org/doi/10.1126/sciadv.abn7232), in case you're interested in learning more!



#### MU researcher helps boost immune system memory against influenza.

When humans or animals get infected, the body's immune system tries to not only clear the infection but also build up a memory of the pathogen that caused it. So, when the pathogen comes around again for possible reinfection, the body has an army of memory T cells that can recognize and destroy it. These T cells are a critical part of immunological memory, and an important component of efficient vaccines. In a recent study, researchers found that by manipulating one molecular signaling pathway in the T cells that participate in clearing influenza virus in the lungs, the strength and longevity of immunological memory produced can be improved.

#### **Researchers Find Male and Female Immune Systems Get Trained**

Differently in Response to Infections. Researchers from the University of Missouri School of Medicine have uncovered a sex-based variance in the trained immune memory response to infection in mice that might translate to humans. The researchers found that female mice were more vulnerable to opportunistic infection from a bacterial pathogen to which they had previously been exposed when progesterone levels were naturally elevated as part of their reproductive cycle. To understand why the immune systems of female and male mice responded differently to a bacterial pathogen, the researchers examined whether the reproductive cycle affected immune training. They found that elevated progesterone levels correlated with lower trained immune responses. To test this more fully, the researchers gave the female mice progesterone blockers and found that their trained immune response was subsequently enhanced. In addition to further study to understand how and why progesterone specifically influences trained immune responses in mice, the researchers pointed out that because mice have shorter estrous cycles than the human menstrual cycle, further research is needed to understand how sex hormones might affect human immune training.



#### UNIVERSITY OF MISSOURI-KANSAS CITY

#### Faculty of UMKC Biological and Biomedical Sciences Division have:

**1.** Three grants funded:

-> NSF – Aaron Reed; \$265,000 for Enhancing Mathematical Models to Investigate the Influences of Climate Change on Zoonotic Spillover

-> 'Dbr1 inhibitors: A novel drug treatment for the neurodegenerative disease ALS'

-> Frontier Trailblazer Pilot Award – Tom Menees; \$25,000 through the University of Kansas entitled: 'Dbr1 inhibitors: A novel drug treatment for the neurodegenerative disease ALS'

-> **NIH – Dr. Theodore White; 3.96 million** to study the effects of climate change on fungal infection rates in US.

- **2.** Eight new grant submissions
- **3.** Seven publications
- 4. Variety of talks and poster presentations.

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mophys will promote your local meetings, achievements, and other news to a chapter-wide audience. Just send us some basic information and we will display it on the mophys website and include it in the mophys newsletters. This is a great way to draw more attention to your school and your science!

All it takes is an email to: contact@mophys.org

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# A message from the mophys committees

# Communications committee:

The communication committee is looking for new members that are excited to help with designing various content on the mophys website and the quarterly newsletter. Individual tasks may be posting of important news from MO schools in our news section, general upkeep of various website sections (ambassadors, committee members, MO meetings), or design of the newsletter section.

Interested individuals should send an email to <u>contact@mophys.org</u>. Involvement in one of our mophys committees is a great way for professional activity and help further physiology in Missouri!

Follow us on Twitter <u>@Mo\_Phys</u> and on Instagram <u>@missouriphysiologicalsociety</u>!

### Annual meeting committee:

Thank you to all who attended the 2023 mophys meeting at St. Louis University. It was a wonderful meeting, and we are so thankful for the MO scientists who were able to spend the day with us. To see pictures of the meeting use the following link:

#### mophys 2023 pictures

We look forward to seeing you Fall 2024 for our next mophys meeting!

# Membership committee:

Thus far, in 2023, we have a total of 145 members! The membership committee continues to recruit and expand the membership base to provide MO great connections and opportunities, but we need your help! Please spread the news of mophys to your friends and colleagues and let them know there are several ways to get involved, including volunteer and conference opportunities.

Membership options: <u>click here</u> email: <u>membership@mophys.org</u>

# Nominations committee:

Welcome to Dr. Fenglian Xu who joins us as an Ambassador at Saint Louis University's "north campus" and to Drs. Keith and Lara DeRuisseau who join us as Ambassadors and the first members from the University of Health Science and Pharmacy (UHSP) in St. Louis. All Ambassadors help to spread the word about mophys at their institutions and increase membership and participation. These ambassadors also comprise the Nominations committee to either nominate or encourage self-nomination for any of our open mophys officer positions. This coming year we will need to elect a new President-Elect, as well as a Junior Scientist position that serves on the mophys Executive Committee. Look for an email voting ballot for these positions to arrive soon! Please contact <u>nominations@mophys.org</u> for nominations.

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# mophys spotlight



Dr. Keith DeRuisseau arrived at the University of Health Sciences & Pharmacy in Saint Louis (UHSP) in the summer of 2022 to join the newly established program in Exercise Physiology. Dr. DeRuisseau came from Syracuse University, where he served as a faculty member in the Exercise Science program for 16 years and Department Chair for the last three years. Research conducted in his lab centers around two primary interests, skeletal muscle and iron metabolism. The focus of his current NIH funded work at UHSP is to study iron metabolism in Ts65Dn mice, which is a mouse model of Down syndrome.

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# Publications from mophys members

Here are the recent publications from our mophys members:

 Jacob DW, Morgenthaler LD, Harper JL, Limberg JK. The forearm vascular response to sympathetic activation is attenuated in female, but not male, participants following acute intermittent hypoxia. J Appl Physiol (1985) 135: 352–361, 2023. doi: <u>10.1152/japplphysiol.00760.2022</u>.

- Schweitzer GG, Ditzenberger GL, Hughey CC, Finck BN, Martino MR, Pacak CA, Byrne BJ, Cade WT. Elevated liver glycogenolysis mediates higher blood glucose during acute exercise in Barth syndrome. PLoS One 18: e0290832, 2023. doi: <u>10.1371/journal.pone.0290832</u>.
- Ulbricht RJ, Rivas CA, Marino H, Snyder E, James D, Makhloufi J, Johnson N, Zimmerman S, Wang J. Sex-specific effect of P2Y2 purinergic receptor on glucose metabolism during acute inflammation. Front Endocrinol (Lausanne) 14: 1248139, 2023. doi: <u>10.3389/fendo.2023.1248139</u>.
- Badran M, Puech C, Barrow MB, Runion AR, Gozal D. Solriamfetol enhances wakefulness and improves cognition and anxiety in a murine model of OSA. Sleep Med 107: 89–99, 2023. doi: <u>10.1016/j.sleep.2023.04.007</u>.
- Norton CE, Shaw RL, Segal SS. Differential Effects of High Fat Diets on Resilience to H2O2-Induced Cell Death in Mouse Cerebral Arteries: Role for Processed Carbohydrates. Antioxidants 12: 1433, 2023. doi: <u>10.3390/antiox12071433</u>.
- Crandall CL, Wu Y, Kailash KA, Bersi MR, Halabi CM, Wagenseil JE. Changes in transmural mass transport correlate with ascending thoracic aortic aneurysm diameter in a fibulin-4 E57K knockin mouse model. Am J Physiol Heart Circ Physiol 325: H113–H124, 2023. doi: 10.1152/ajpheart.00036.2023.
- Yang N-D, Mellor RL, Hermanstyne TO, Nerbonne JM. Effects of NALCN-Encoded Na+ Leak Currents on the Repetitive Firing Properties of SCN Neurons Depend on K+-Driven Rhythmic Changes in Input Resistance. J Neurosci 43: 5132–5141, 2023. doi: <u>10.1523/JNEUROSCI.0182-23.2023</u>.
- Kendell A, Limback K, Lester DK, Rogers RS, Creamer BA, Dennis JF. Student perceptions of remote versus on-campus gross anatomy laboratories during COVID-19. Anat Sci Educ: 1935-9780, 2023. doi: <u>10.1002/ase.2320</u>
- Lowenstein ED, Ruffault P-L, Misios A, Osman KL, Li H, Greenberg RS, Thompson R, Song K, Dietrich S, Li X, Vladimirov N, Woehler A, Brunet J-F, Zampieri N, Kühn R, Liberles SD, Jia S, Lewin GR, Rajewsky N, Lever TE, Birchmeier C. Prox2 and Runx3 vagal sensory neurons regulate esophageal motility. Neuron 111: 2184-2200.e7, 2023. doi: 10.1016/j.neuron.2023.04.025.

- Skinner WM, Petersen NT, Unger B, Tang S, Tabarsi E, Lamm J, Jalalian L, Smith J, Bertholet AM, Xu K, Kirichok Y, Lishko PV. Mitochondrial uncouplers impair human sperm motility without altering ATP content<sup>†</sup>. Biol Reprod 109: 192–203, 2023. doi: <u>10.1093/biolre/ioad064</u>.
- Badran M, Joseph V. Sleep apnea and diet-induced obesity-the female advantage on the spotlight. Sleep 46: zsad174, 2023. doi: <u>10.1093/sleep/zsad174</u>.
- Amaral-Silva L, Santin JM. Molecular profiling of CO2/pH-sensitive neurons in the locus coeruleus of bullfrogs reveals overlapping noradrenergic and glutamatergic cell identity. Comp Biochem Physiol A Mol Integr Physiol 283: 111453, 2023. doi: <u>10.1016/j.cbpa.2023.111453</u>.
- Viteri JA, Schulz DJ. Motor neurons within a network use cell-type specific feedback mechanisms to constrain relationships among ion channel mRNAs. J Neurophysiol 130: 569–584, 2023. doi: 10.1152/jn.00098.2023.
- Baynard T, Griffith GJ, Wee SO, McMillan NJ, Bollaert RE, Motl RW, Fernhall B. Home-based exercise improves subclinical atherosclerosis marker in multiple sclerosis. Mult Scler Relat Disord 79: 105002, 2023. doi: 10.1016/j.msard.2023.105002.
- Saunders SE, Santin JM. Activation of respiratory-related bursting in an isolated medullary section from adult bullfrogs. J Exp Biol 226: jeb245951, 2023. doi: <u>10.1242/jeb.245951</u>.
- Badran M, Puech C, Barrow MB, Runion AR, Gozal D. Recovery Mimicking "Ideal" CPAP Adherence Does Not Improve Wakefulness or Cognition in Chronic Murine Models of OSA: Effect of Wake-Promoting Agents. Arch Bronconeumol: 1579-2129, 2023. doi: <u>10.1016/j.arbres.2023.09.007</u>.
- Davis MJ, Castorena-Gonzalez JA, Zawieja SD. Electric field stimulation unmasks a subtle role for T-type calcium channels in regulating lymphatic contraction. Sci Rep 13: 15862, 2023. doi: <u>10.1038/s41598-023-42877-6</u>.
- Haffner V, Nourian Z, Boerman EM, Lambert MD, Hanft LM, Krenz M, Baines CP, Duan D, McDonald KS, Domeier TL. Calcium handling dysfunction and cardiac damage following acute ventricular preload challenge in the dystrophin-deficient mouse heart. Am J Physiol Heart Circ Physiol: 1522-1539, 2023. doi: <u>10.1152/ajpheart.00265.2023</u>
- Syed-Abdul MM, Moore MP, Wheeler AA, Ganga RR, Diaz-Arias A, Petroski GF, Rector RS, Ibdah JA, Parks EJ. Isotope labeling and biochemical assessment of liver-TAG in patients with different levels of

histologically-graded liver disease. J Nutr: 1541-6100, 2023. doi: <u>10.1016/j.tjnut.2023.09.018.</u>

- Bromet BA, Blackwell NP, Abokefa N, Freudenberger P, Blatt RL, Brow RK, Semon JA. The angiogenic potential of pH-neutral borophosphate bioactive glasses. J Biomed Mater Res A 111: 1554–1564, 2023. doi: <u>10.1002/jbm.a.37553</u>.
- Powell W, Song X, Mohamed Y, Walsh D, Parks EJ, McMahon TM, Khan M, Waitman LR. Medications and conditions associated with weight loss in patients prescribed semaglutide based on real-world data. Obesity (Silver Spring) 31: 2482–2492, 2023. doi: <u>10.1002/oby.23859</u>.
- Ruyle BC, Lima-Silveira L, Martinez D, Cummings KJ, Heesch CM, Kline DD, Hasser EM. Paraventricular nucleus projections to the nucleus tractus solitarii are essential for full expression of hypoxia-induced peripheral chemoreflex responses. J Physiol 601: 4309–4336, 2023. doi: 10.1113/JP284907.
- Maloney A, Mengesteab S, Kallas N, Bennett M, Kanaley JA. Sleep restriction by sleep timing late night or early wake: The impact on physical activity and dietary intake in adults. Appetite 189: 106996, 2023. doi: <u>10.1016/j.appet.2023.106996</u>.
- Foote CA, Ramirez-Perez FI, Smith JA, Ghiarone T, Morales-Quinones M, McMillan NJ, Augenreich MA, Power G, Burr K, Aroor A, Bender SB. Manrique-Acevedo С. Padilla J. Martinez-Lemus LA. Neuraminidase inhibition improves endothelial function in diabetic Heart Circ Physiol: mice. Am J Physiol 1522-1539. 2023. doi: 10.1152/ajpheart.00337.2023.
- Perike S, Gonzalez-Gonzalez FJ, Abu-Taha I, Damen FW, Hanft LM, Lizama KS, Aboonabi A, Capote AE, Aguilar-Sanchez Y, Levin B, Han Z, Sridhar A, Grand J, Martin J, Akar JG, Warren CM, John Solaro R, Ong S-G, Darbar D, McDonald KS, Goergen CJ, Wolska BM, Dobrev D, Wehrens XHT, McCauley MD. PPP1R12C Promotes Atrial Hypocontractility in Atrial Fibrillation. Circ Res 133: 758–771, 2023. doi: 10.1161/CIRCRESAHA.123.322516.

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# **Open positions in Missouri**

Here are the academic position that are currently open in Missouri. If you wish to announce open positions at your institution to a Missouriwide audience, send us an email with detailed information to <u>contact@mophys.org</u>.

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### Assistant-Associate Professor of Biochemistry Kirksville College of Osteopathic Medicine

The Department of Biochemistry of ATSU Kirksville College of Osteopathic Medicine invites applications for a tenure-track Assistant-Associate Professor position. Ideal candidates will have a Ph.D. or equivalent and a minimum of 2 years of postdoctoral training and teaching experience. The successful candidate will be expected to develop/continue an independent research program with potential to attract extramural funding and will be able to supervise graduate students. This position will include teaching biochemistry medical, dental, and graduate level students. Position details are described here. Qualified and interested persons should submit current curriculum vitae, a statement of their teaching philosophy, a statement of their research goals, and contact information for 3-4 professional references. Electronic submission of all materials should be directed to <u>hr@atsu.edu</u>. Review of applications will begin November 15, 2023 and continue until the position is filled. Expected start date is on or before July 1, 2015. ATSU is an Equal Opportunity Employer and does not discriminate on the basis of race, color, religion, national origin, sex, gender, sexual orientation, age or disability.

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# Chair of Biological Sciences at Missouri University of Science and Technology

The biological sciences department is hiring a new chair and is looking for someone who can grow the department in biomedical sciences. Detailed information can be found <u>here</u>.

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#### R. K. Vitek Endowed Chair in Biochemistry at Missouri S&T

The Department of Chemistry at the Missouri University of Science and Technology invites applications for the position of Richard K.Vitek/FCR Endowed Chair in Biochemistry. Detailed information can be found <u>here</u>.

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### Biochemistry & Molecular Biology, Tenure-Track Assistant, Associate or Full Professor at Saint Louis University

The Doisy Research Center is looking for an Associate or Full Professor in Biochemistry & Molecular Biology. Detailed information can be found <u>here</u>.

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# Assistant Professor - Pharmacology and Physiology at Saint Louis University

This tenure track position, Assistant/Associate Professor Position in Pharmacology and Physiology at Saint Louis University School of Medicine, has a focus on Endocrinology and Metabolism. Detailed information can be found <u>here</u>.

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# **Upcoming Meetings at a Glance:**

- Nov. 3, 2023 Neuroday 2023 (Saint Louis, MO)
- Nov. 11, 2023 IBRS (Kirksville, MO)

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• Apr. 4-7, 2023

APS Summit (Long Beach, CA)

Click here for full details.

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President: Darla L. Tharp, Ph.D.President elect: Kyle McCommis, Ph.D.Secretary: Tim D. Ostrowski, Ph.D.Treasurer: Jeffrey R. Henegar, Ph.D.Early Sci. Rep.: Haley Anderson, M.S.Past president: David D. Kline, Ph.D.

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