James E. Mahaney, PhD
Associate Dean for Biomedical Affairs and Research
Edward Via College of Osteopathic Medicine, Virginia Campus

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Education:

1984 B.S.	Chemistry, Virginia Tech, Blacksburg, VA Matriculated September 1980, Graduated May 1984 1982-3, gas chromatography undergraduate research with Harold McNair, Ph.D. 1983-4, flame ionization spectrometry undergraduate research with Gary Long, Ph.D.
1989 Ph.D.	Chemistry, University of Virginia, Charlottesville, VA Matriculated August 1984, Graduated May 1989 Advisor: Charles M. Grisham, Ph.D. Area of specialization: physical biochemistry Dissertation: "EPR Studies of Spin Labeled ATPases"

Post-doctoral Education:

1989 - 1993	Postdoctoral Associate, Department of Biochemistry University of Minnesota Medical School Advisor: David D. Thomas Areas of specialization: membrane biophysics and ion transport systems

Professional Experience:

1993 - 1994	Research Assistant Professor, Department of Biochemistry University of Minnesota Medical School
1994 - 2000	Assistant Professor, Department of Biochemistry West Virginia University School of Medicine Courses: Graduate Program: Cell and Molecular Biochemistry (course director), Advanced Enzymology (course director), Journal Club. Dental Program: Biochemistry
2000 - 2003	Associate Professor with Tenure, Department of Biochemistry West Virginia University School of Medicine Courses: Graduate Program: Cell and Molecular Biochemistry (course director), Advanced Enzymology (course director), Journal Club. Dental Program: Biochemistry
2003 - 2008	Associate Professor and Discipline Leader for Biochemistry Edward Via College of Osteopathic Medicine (VCOM) Courses: Medical Biochemistry, Medical Physiology, Medical Nutrition
2008 -	Associate Dean for Biomedical Affairs and Research and Chair Biomedical Sciences Edward Via College of Osteopathic Medicine-VA Campus Department Administration, Faculty Oversight, Budget Management. Courses: Medical Biochemistry (course director), Post-Bac Biochemistry (course director)
2014 -	Full Professor, Edward Via College of Osteopathic Medicine, VA Campus

Courses: Medical Biochemistry (course director), Post-Baccalaureate Biochemistry (course director), Cardiovascular Physiology, Biochemical Nutrition

Honors and Awards:

1986 - 1987	Research Fellowship, University of Virginia Department of Chemistry
1988	NIH Training Grant, National Biomedical ESR Center, Medical College of Wisconsin
1990 - 1992	Postdoctoral Fellowship, American Heart Association, MN Affiliate
2000 - 2003	Established Investigator Award, National American Heart Association
2004	VCOM Biomedical Educator of the Year Award, Students' Choice
2004	VCOM Biomedical Educator Award, Peers' Choice
2008	VCOM Five-year Service Award
2009	VCOM Golden Apple Teaching Award, Biomedical
2012	VCOM Post Baccalaureate Golden Apple Teaching Award
2013	VCOM Ten-year Service Award
2014	VCOM Golden Apple Teaching Award, Biomedical
2018	VCOM Fifteen-year Service Award
2019	VCOM Professor of the Block, Block 1

Professional Affiliations:

1990 -	Biophysical Society (attend yearly Biophysical Society Meeting, present poster)
2008 -	American Osteopathic Association, Member
2008 -	American Association of Colleges of Osteopathic Medicine, Member
2009 -	American Heart Association Professional Member, Basic Cardiovascular Sciences Council
2012 -	American Chemical Society
2012 -	Public Responsibility in Research & Medicine, Member
2014 -	NBOME National Faculty

Service Activities, Edward Via College of Osteopathic Medicine

2009 -	Facilities Committee, Virginia Campus
2009 -	IT Committee, Virginia Campus
2009 – 2012	Admissions Committee, Virginia Campus
2010 – 2016	Library Committee, Virginia Campus
2009 – 2016	Radiation Safety Officer, Virginia Campus
2010 -	Appointment, Promotion and Tenure Committee
2010 –	Executive Curriculum Committee, VCOM wide
2010 –	Faculty Development Committee, Virginia Campus
2010 –	Biosafety Officer, Virginia Campus
2010 –	Institutional Environmental Biosafety Committee (Chair), VCOM wide
2010 -	Osteopathic Medical Network of Educational Excellence Research Committee
2011 –	Institutional Review Board member, VCOM wide
2012 – 2015	Institutional Review Board, Chair, VCOM wide
2016 -	Institutional Review Board, Co-Chair, VCOM wide
2018 -	Student Promotion Board, Virginia Campus

Service Activities, National:

1995 -	*ad hoc* Reviewer, *Biochemistry* and *Biophysical Journal*
2000 -	Reviewer, National American Heart Association, Cell Transport and Metabolism Section
2008 -	Reviewer, American Osteopathic Association, grant applications, abstracts, posters
2012	Reviewer, National American Heart Association Vascular Biology Study Section

2012 - AACOM and AOA Council for Research Directors
2013 - National Board of Osteopathic Medical Educators, National Faculty, Item Writer
2014 - Reviewer, National American Heart Association, Collaborative Science Award Section
2014 - Reviewer, National American Heart Association, Transitional Program Award Section
2015 - Reviewer, International Association of Medical Science Educators, papers, abstracts

Extramural Funding History:

National Institutes of Health, R15, "Calcium Pump Nitration and Inhibition of Calcium Transport in the Aging Heart," Mahaney, PI, 01/01/08 – 12/30/10.

Harvey-Peters Foundation, Research Grant, "Physical Mechanism of Calcium Transport Inhibition in the Aging Heart, Mahaney, P.I., 01/01/08 – 12/31/08.

National Institutes of Health, R01, "Regulation of Calcium Transport in Cardiac Muscle," T. Squier, P.I, J. Mahaney, Co-I, 04/1/01 to 02/28/07, $1,000,000 direct, $175,000 direct to Mahaney.

National Institutes of Health, R01, "3-Nitrotyrosine in Aging of Skeletal Muscle and Heart," D. Bigelow, PI, J. Mahaney, Co-I, 4/1/00 to 3/30/05, $900,000 direct, $140,000 direct to Mahaney.

National American Heart Association, Established Investigator Award, "Molecular Mechanism of Calcium Transport Regulation in the Heart," J. Mahaney, PI, 1/1/00 to 12/31/03, $270,000 direct.

American Heart Association, WV-OH Affiliate, Grant-in-Aid, "Molecular Mechanism of Calcium Transport Regulation in the Heart," Mahaney, P.I., 7/1/99 to 6/30/01, $70,000 total direct. Terminated 12/31/99 and replaced by National American Heart Association Established Investigator Award.

American Heart Association, WV-OH Affiliate, Grant-in-Aid, "Mechanism of Calcium Transport Regulation in the Heart," Mahaney, P.I., 7/1/97 to 6/30/99, $60,000 total direct.

American Heart Association, WV-OH Affiliate, Grant-in-Aid, "Molecular Mechanism of Active Sodium Transport," Mahaney, P.I., 7/1/95 to 6/30/97, $50,000 total direct

Peer- Reviewed Publications:

1. G.L. Long, W.J. Newman, G.L. Klunder, and J. E. Mahaney. 1987. The Phosphine Depression in Flame Atomic Spectrometry. *Applied Spectroscopy* 41:255-260.

2. J.E. Mahaney, J.P. Girard, and C.M. Grisham. 1990. Saturation Transfer EPR Measurements of the Rotational Motion of a Strongly Immobilized Ouabain Spin Label on Renal Na,K-ATPase. *FEBS Letters* 260:160-164. PMID: 2153581

3. T.C. Squier, J.E. Mahaney, J.J. Yin, C.-S. Lai, and J.R. Lakowicz. 1991. Resolution of Phospholipid Conformational Heterogeneity in Model Membranes by Spin-Label EPR and Frequency Domain Fluorescence Spectroscopy. *Biophys. J.* 59:654-669. PMID: 1656658

4. J.E. Mahaney, C.P. Weis, C.M. Grisham, and H. Kutchai. 1991. The Rotational Mobility of the Sarcoplasmic Reticulum Ca-ATPase is Inhibited by Antibodies Against the 53-kd Glycoprotein of the Sarcoplasmic Reticulum Membrane. *Biophys. Biochim. Acta* 1064:55-68. PMID: 1851041

5. J.E. Mahaney and D.D. Thomas. 1991. Effects of Melittin on Molecular Dynamics and Ca-ATPase Activity in Sarcoplasmic Reticulum Membranes: Electron Paramagnetic Resonance. *Biochemistry* 30:7171-7180. PMID: 1649624

6. J.E. Mahaney and C.M. Grisham. 1991. Effects of Ouabain on the Rotational Dynamics of Renal Na,K-ATPase Studied by Saturation Transfer EPR. *Biochemistry* 31:2025-2034. PMID: 1311200

7. J.E. Mahaney, J. Kleinschmidt, D. Marsh, and D.D. Thomas. 1992. Effects of Melittin on Lipid-Protein Interactions in Sarcoplasmic Reticulum Membranes. *Biophys. J.* 63:1513-1522. PMID:1336987

8. H. Kutchai, J.E. Mahaney, L.M. Geddis, and D.D. Thomas. 1994. Hexanol and Lidocaine Affect the Oligomeric State of the Ca-ATPase of Sarcoplasmic Reticulum. *Biochemistry* 33:13208-13222. PMID: 7947728

9. B. Karon, J.E. Mahaney, and D.D. Thomas. 1994. Halothane and Cyclopiazonic Acid Modulate Ca-ATPase Oligomeric State and Function in Sarcoplasmic Reticulum. *Biochemistry* 33:13928-13937. PMID: 7947799

10. J.V. Mersol, H. Kutchai, J.E. Mahaney, and D.D. Thomas. 1995. Self-Association Accompanies Inhibition of Ca-ATPase by Thapsigargin. *Biophys. J.* 68:208-215. PMID: 7711243

11. J. Voss, J.E. Mahaney, and D.D. Thomas. 1995. Mechanism of Ca-ATPase Inhibition by Melittin in Skeletal Sarcoplasmic Reticulum. *Biochemistry* 34:930-939. PMID: 7827051

12. J.E. Mahaney, J.P. Froehlich, and D.D. Thomas. 1995. Conformational Transitions of the Sarcoplasmic Reticulum Ca-ATPase Studied by Time-resolved EPR and Quench-flow Kinetics. *Biochemistry* 34:4864-4879. PMID: 7718593

13. J. Voss, J.E. Mahaney, L.R. Jones, and D.D. Thomas. 1995. Molecular Dynamics in Mouse Atrial Tumor Sarcoplasmic Reticulum. *Biophys. J.* 68:1787-1795. PMID: 7612820

14. J.H. Kleinschmidt, J.E. Mahaney, D.D. Thomas, and D. Marsh. 1997. Interaction of Bee Venom Melittin with Zwitterionic and Negatively Charged Phospholipid Bilayers: A Spin-Label Electron Spin Resonance Study. *Biophys. J.* 72:767-778. PMID: 9017202.

15. J.E. Mahaney, C. Felton, D. Taylor, W Fleming, J.Q. Kong and C. Baylis. 1998. Renal Na,K-ATPase Activity and Abundance is Decreased in Normal Mid and Late Pregnant Rats. *Am. J. Physiol*. 275:F812-F817. PMID: 9815139

16. J.E. Mahaney, A. Barlow, B. Honaker, J. Huffman, T. Muchnok. 1999. Phospholamban Reduces SERCA2a Sensitivity to Thapsigargin and Cyclopiazonic Acid. *Arch. Bioch. Biophys.* 372:408-413. PMID: 10600183

17. J.E. Mahaney, J.M. Autry, L.R. Jones. 2000. Kinetics Studies of the Cardiac Ca-ATPase Expressed in Sf21 Cells: New Insight on Ca-ATPase Regulation by Phospholamban. *Biophysical J.* 78:1306-1323. PMID: 10692318

18. S. Xaio, L. Wagner, J. Mahaney, and C. Baylis. 2001. Uremic Levels of Urea Inhibit L-Arginine Transport in Cultured Endothelial Cells. *Am. J. Physiol.*, 280:F989-F995. PMID: 11352838

19. K. Brundage, J. Mahaney, and J. Barnett. 2003 The amide class herbicide 3,4-dichloropropionanilide (DCPA) alters cell membrane fluidity. *J. Tox. Env. Health*, 66:2253-2265. PMID: 14612336

20. J. R. Waggoner, J. Huffman, B. Griffith, L. Jones and J. Mahaney. 2004. Improved expression and characterization of Ca^{2+}-ATPase and phospholamban in High-Five cells. *Prot. Exp. Purif.*, 34:56-67. PMID: 14766300

21. J.E. Mahaney, D. Thomas and J. P. Froehlich. 2004. The Time-dependent Distribution of Phosphorylated Intermediates in the Native Sarcoplasmic Reticulum Ca^{2+}-ATPase from Skeletal Muscle (SERCA1) Is Incompatible with a Simple Kinetic Model. *Biochemistry* 43:4400-4416. PMID: 15065885

22. J.E. Mahaney, R.W. Albers, J.R. Waggoner, H. C. Kutchai and J. P. Froehlich. 2005. Intermolecular Conformational Coupling And Free Energy Exchange Enhance The Catalytic Efficiency Of Cardiac Muscle SERCA2a Following The Relief Of Phospholamban Inhibition. *Biochemistry,* 44:7713-7724. PMID: 15909986

23. J.W. Waggoner, J.B. Huffman, J.P. Froehlich, and J.E. Mahaney. 2006. Phospholamban Inhibits Ca-ATPase Conformational Transitions Involving the E2 State. *Biochemistry*, 46:1999-2009. PMID: 17261028

24. H. Zhu, Z. Jia, J. Mahaney, D. Ross, H. Misra, M. Trush, and Y. Li. 2007. The highly Expressed and Inducible Endogenous NAD(P)H:Quinone Oxidoreductase 1 in Cardiovascular Cells Acts as a Potential Superoxide Scavenger. *Cardiovas. Tox.* 7:202-211. PMID: 17901563

25. Z. Jia, H., Zhu, B. R. Misra, J.E. Mahaney, Y. Li, and H. P. Misra. 2008. EPR studies on the Superoxide-Scavenging Capacity of the Nutraceutical Resveratrol. *Mol. Cell Biochem*. 313:187-194. PMID: 18409032

26. B. Chen, J.E. Mahaney, M. U. Mayer, D. J. Bigelow and T. C. Squier. 2008. Concerted but Noncooperative Activation of Nucleotide and Actuator Domains of the Ca-ATPase Upon Calcium Binding. *Biochemistry* 47:12448-12456. PMID: 18959032

27. J. E. Mahaney, D. D. Thomas, I. K. Farrance and J. P. Froehlich. 2008. Intermolecular Interactions in the Mechanism of Skeletal Muscle Sarcoplasmic Reticulum Ca^{2+}-ATPase (SERCA1): Evidence for a Tri-protomer. *Biochemistry* 47:13711-13725. PMID: 19046074

28. Froehlich, J. P., Mahaney, J. E., Keceli, G., Pavlos, C. M., Goldstein, R., Redwood, A. J., Sumbilla, C., Lee, D. I., Tocchetti, C. G., Kass, D. A., Paolocci, N., and Toscano, J. P. (2008) Phospholamban Thiols Play a Central Role in Activation of the Cardiac Muscle Sarcoplasmic Reticulum Calcium Pump by Nitroxyl. *Biochemistry* 47:13150-13152. PMID: 19053265

29. Fu, W.; Zhang, J., Fuhrer, T., Champion, H., Furukawa, K., Kato, T., Mahaney, J., Burke, B., Williams, K., Walker, K., Dixon, C., Ge, J., Shu, C., Harich, K., Dorn, H. (2011) Gd2@C79N: A Very Stable Heterofullerene Encapsulating Two Gadolinium Ions with a Magnetic Spin State of S = 15/2. *J.A.C.S.*, 133:9741-9750. PMID:21548647

30. Sivakumaran V, Stanley BA, Tocchetti CG, Ballin JD, Caceres V, Zhou L, Keceli G, Rainer PP, Lee DI, Huke S, Ziolo MT, Kranias EG, Toscano JP, Wilson GM, O'Rourke B, Kass DA, Mahaney JE, Paolocci N. (2013) HNO enhances SERCA2a activity and cardiomyocyte function by promoting redox-dependent phospholamban oligomerization. Antioxid Redox Signal. 19:1185-1197. PMID: 23919584

31. D. Maurya, A. Kumar, V. Petkov, J. Mahaney, R. Katiyar, S. Priya (2014) Local structure and piezoelectric instability in leadfree (1 _ x)BaTiO3-xA(Cu1/3Nb2/3)O3 (A ¼ Sr, Ca, Ba) solid solutions. RSC Adv. 4:1283-1292. PMID: 21548647.

32. Y. Zhu, Zhuang, L., Goodell, B., Cao, J., and J. Mahaney (2016) Iron sequestration in brown-rot fungi by oxalate and the production of reactive oxygen species (ROS). Int. Biodet. Biodeg. 109:185-190.

33. G. Keceli, A. Majumdar, C. Thorpe, J. Mahaney, N. Paolocci, and J. Toscano (2019) Nitroxyl (HNO) targets phospholamban cysteines 41 and 46 to enhance cardiac function. *J. Gen. Phys.*151:758-770. PMID: 30842219

34. Kang, L, Rashkovetsky E, Michalak K, Garner HR, Mahaney JE, Rzigalinski BA, Korol A, Nevo E, Michalak P. (2019) Genomic divergence and adaptive convergence in *Drosophila simulans* from Evolution Canyon, Israel. *Proc Natl Acad Sci USA*. 116:11839-11844. PMID: 31127048

Book Chapters and Non-Peer Reviewed Papers:

M.R. Klemens, J.M. Stewart, J.E. Mahaney, T.A. Kuntzweiler, M.C. Sattler, and C.M. Grisham. 1988. NMR and ESR Studies of Active Site Structures and Intermediate States of Kidney Na,K-ATPase and Ca-ATPase. *In* Advances in Biotechnology of Membrane Ion Transport. Vol. 51. P.L. Jørgenson and R. Verna, editors. Raven Press, New York. 107-124.

D.D.Thomas, E.M. Ostap, C.L. Berger, S.M. Lewis, P.G. Fajer, and J.E. Mahaney. 1993. Time-Resolved EPR of Muscle Protein Dynamics. *In* EMR of Paramagnetic Molecules. L.J. Berliner and J. Reuben, editors. Plenum Press, New York. pp. 323-351.

D.D. Thomas and J.E. Mahaney. 1993. Protein-Lipid Interactions in the Sarcoplasmic Reticulum Membrane. *In* Protein-Lipid Interactions. A. Watts, editor. Elsevier, Amsterdam. pp. 301-320.

J.P. Froehlich, K. Taniguchi, K. Fendler, J.E. Mahaney, D.D. Thomas, and R.W. Albers. 1997. Complex Kinetic Behavior in the Na,K- and Ca-ATPases. *Ann. New York Acad. Sci*.834:280-296.

J.P. Froehlich, E. Bamberg, D.J. Kane, R.J.Clarke, J.E. Mahaney, and R.W. Albers. 2000. Contribution of quaternary protein interactions to the mechanism of energy transduction in Na^+/K^+-ATPase. *In* Na/K-ATPase and Related ATPases. K. Taniguchi and S. Kaya, eds. Elsevier, Amsterdam. Pp. 349-356.

J.E. Mahaney, R.W. Albers, H. Kutchai, and J.P. Froehlich. 2003. Phospholamban Controls Ca^{2+} Pump Oligomerization and Intersubunit Free Energy Exchange Leading to Activation of Cardiac Muscle SERCA2a. *N. Y. Acad. Sci*, 986:1-3.

Teaching Activities:

West Virginia University School of Medicine

1995-2003	Cellular and Molecular Biochemistry, 15-20 hours lecture per year, core biochemistry class for first year graduate students. Course Coordinator from 2001-2003.
1995-2003	Student Journal Club, 4-5 hours, journal club for all graduate students in the department, teach approximately one-third of a semester every other year.
1996-2003	Advanced Protein Chemistry and Enzymology, 20-25 hours, advanced graduate level class, taught every other year. Course Coordinator 2002-2003.
1998-2003	Dental Biochemistry, 10-15 hours, one semester biochemistry class for first year dental students, taught in 1998, 1999 and 2001.

Edward Via College of Osteopathic Medicine – Virginia Campus

2003 -	Course Coordinator for Medical Biochemistry and Molecular Basis of Medical Genetics, provide 40+ hours lecture for first year medical students.
2003 -	Medical Physiology, provide 6-8 hours lecture per year for first year medical students.
2004 - 2006	Clinical Nutrition, provided 7 hours lecture per year for second year medical students
2009 -	Principles of Biochemistry for the VCOM Graduate Certificate Program, provide ~20 hours lecture, Course Director.
2018 -	Cardiovascular Physiology, 19 hours lecture for first year medical students

Laboratory:

Graduate thesis and dissertation advising, Mahaney Laboratory

Le Yan, M.S., 1998, West Virginia University School of Medicine

Jason Southall, Ph.D., 2001, West Virginia University School of Medicine
Patrick Apopa, M.S., 2002, West Virginia University School of Medicine
Jason Waggoner, Ph.D., 2004, West Virginia University School of Medicine
Vidhya Sivakumaran, Ph.D., 2010, Virginia Tech, Department of Biochemistry
Chevon Thorpe, PhD, 2012, Virginia Tech, Department of Biochemistry

Graduate student committees for other laboratories: 24 students from 1998 through 2020. Includes Virginia Tech Graduate Students in Chemistry, Biochemistry and Electrical Engineering
Graduate Student Laboratory Rotations: 26 rotation students from 1995 through 2013. Includes Virginia Tech Graduate Students in the Department of Biochemistry
Undergraduate Research Program: 17 students from 1998 through 2017. Includes Virginia Tech Undergraduate Students in Biochemistry and Biological Sciences.