Asma Zaidi, Ph.D.

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Academic Appointments:

2007 - present	**Associate Professor**, Department of Biochemistry, Kansas City University of Medicine and Biosciences, Kansas City, Missouri, USA
1999 - 2007	**Research Assistant Professor**, Higuchi Biosciences Center, University of Kansas, Lawrence, Kansas, USA
1996 - 1999	**Research Associate**, Department of Pharmacology and Toxicology, University of Kansas, Lawrence, Kansas, USA
1995 - 1995	**Postdoctoral Fellow**, Department of Medical Biochemistry, Federal University of Rio de Janeiro, Rio de Janeiro, BRAZIL
1993 - 1994	**Visiting Scientist**, INSERM Unit 299, Hôpital de Bicètre, Paris, FRANCE
1988 - 1991	**Senior Research Fellow**, Department of Biochemistry, Aligarh University, Aligarh, INDIA
1986 - 1988	**Junior Research Fellow**, Department of Biochemistry, Aligarh University, Aligarh, INDIA

Academic Degrees:

1991	**Doctor of Philosophy in Biochemistry** Aligarh University, Aligarh, India
1988	**Master of Philosophy in Biochemistry** Aligarh University, Aligarh, India
1985	**Master of Science in Biochemistry** Lucknow University, Lucknow, India
1983	**Bachelor of Science in Chemistry and Biology** Isabella Thoburn College, Lucknow, India

Professional Awards:

2001	Travel Award by the American Federation for Aging Research to attend Annual meeting, Madison, Wisconsin.
2000	Travel Award by the Geriatrics Society, to attend Annual Summer Training Course in Aging, Berkeley, California.
1995	Postdoctoral Fellowship by the Brazilian Research Council, Brazil.
1993	Poste Vert Fellowship by the Institute National de la Sante et de la Recherche Medicale (French Medical Council), Paris, France.
1994	Second award of the French Medical Council Fellowship.
1993	Council of Scientific and Industrial Research Postdoctoral Fellowship, India.
1986	National Education Testing Award by the University Grants Commission, India. Awarded a 5 year scholarship for graduate school.
1985	Ranked first in class in MS Biochemistry program, Lucknow University, India.
1983	Awarded the Kamala Jha Scholarship for academic excellence, BS, Isabella Thoburn College, Lucknow, India.

Professional Affiliations / Membership in Societies:

- American Association for the Advancement of Science (1995-present)
- Society for Neuroscience (1996- present)
- Society for Free Radical Biology and Medicine (2002-present)
- American Society for Neurochemistry (1997-present)
- New York Academy of Sciences (1997-2001)
- Brazilian Society of Biochemistry and Molecular Biology (1995-1996)
- French Physiological Society (1993-1994)
- French Society of Biochemistry and Molecular Biology (1993-1994)
- Society of Biological Chemists, India (1988-1992)

Publications:

1. A. Mandal, M. R. Liyanage, **A. Zaidi**, and C.K. Johnson (2007) Interchange of autoinhibitory domain conformations in plasma-membrane Ca^{2+}-ATPase-calmodulin complexes, submitted to **Protein Science.**

2. X. Wang, **A. Zaidi**, A.S. Garrett, E.K. Michaelis, and M.L. Michaelis (2007) Mechanisms of oxidative stress-induced selective neuronal vulnerability uncovered in multiple brain regions by genomic and biochemical approaches, submitted to **Genome Biology**.

3. L. Jiang, D. Fernandes, N. Mehta, J.L. Bean, M.L. Michaelis, and **A. Zaidi** (2007) Partitioning of the plasma membrane Ca^{2+}-ATPase into lipid rafts in primary neurons: Effects of cholesterol depletion, **Journal of Neurochemistry**, 102, 378-388.

4. G. Giridharan, **A. Zaidi**, M.L. Michaelis, and C. Schoneich (2007) Proteomic analysis of the aged cerebellum, **Journal of Neurochemistry,** 100, 1494-1504.

5. D. Fernandes, **A. Zaidi**, J.L. Bean, D. Hui, and M.L. Michaelis (2007) RNAi-induced silencing of the plasma membrane Ca^{2+}-ATPase 2 increase the vulnerability of neurons to stimuli that alter intracellular calcium, **Journal of Neurochemistry**, 102, 454-465.

6. A. Agbas, D. Hui, X. Wang, V. Tek, **A. Zaidi**, and E.K. Michaelis (2007) Activation of brain calcineurin (Cn) by Cu-Zn superoxide dismutase (SOD1) depends on direct SOD1-Cn protein interactions occurring in vitro and in vivo, **Biochemical Journal**, 405, 51-59.

7. A. Agbas, **A. Zaidi**, and E.K. Michaelis (2005) Decreased activity and increased aggregation of brain calcineurin during aging, **Brain Research,** 1059, 59-71.

8. G.H. Lushington, **A. Zaidi**, and M.L. Michaelis (2005) Theoretically predicted structures of plasma membrane Ca^{2+}-ATPase and their susceptibilities to oxidation, **Journal of Molecular Graphics and Modeling,** 24, 175-185.

9. K.D. Osborn, **A. Zaidi**, R.J.B. Urbauer, M.L. Michaelis, and C.K. Johnson (2005) Single-molecule characterization of the dynamics of calmodulin bound to oxidatively modified plasma membrane Ca^{2+}-ATPase, **Biochemistry,** 44, 11074-11081.

10. K.D. Osborn, R.K. Bartlett, A. Mandal, **A. Zaidi**, R.J.B. Urbauer, J.L. Urbauer, N. Galeva, T.D. Williams, and C.K. Johnson (2004) Single-molecule dynamics reveal an altered conformation for the autoinhibitory domain of plasma membrane Ca^{2+}-ATPase bound to oxidatively modified calmodulin, **Biochemistry,** 43, 12937-12944.

11. E.S. Dremina V. Sharov, K. Kumar, **A. Zaidi**, E.K. Michaelis, and C. Schoneich (2004) Antiapoptotic protein Bcl-2 interacts with and destabilizes the sarco/endoplasmic reticulum Ca-ATPase (SERCA), **Biochemical Journal** 383, 361-370.

12. K. D. Osborn, **A. Zaidi**, A. Mandal, R.J.B. Urbauer, and C.K. Johnson (2004) Single-molecule dynamics of the calcium-dependent interaction of calmodulin with the plasma membrane Ca^{2+}-ATPase, **Biophysical Journal**, 87, 1892-1899.

13. M.A. Allen, R.J. B. Urbauer, **A. Zaidi**, T. Williams, J.L. Urbauer, and C.K. Johnson (2004) Expression, purification, fluorescent labeling, and separation of double cysteine mutants of a calmodulin fusion protein for single molecule energy transfer experiments, **Analytical Biochemistry,** 325, 273 - 284.

14. **A. Zaidi,** L. Barron, V. Sharov, C. Schoneich, E.K. Michaelis, and M.L. Michaelis (2003) Oxidative inactivation of purified plasma membrane Ca^{2+}-ATPase by hydrogen peroxide and protection by calmodulin, **Biochemistry,** 42, 12001-12010.

15. N.S. Ranciat-McComb, K.S. Bland, J.L. Walsh, J. Huscenbett, L. Ramonda, M. Bechtel, **A. Zaidi,** and M.L. Michaelis (2000) Antisense oligonucleotide suppression of Na^{+}/Ca^{2+} exchange activity in primary neurons from rat brain, **Neuroscience Letters**, 294, 13-16.

16. **A. Zaidi** and M.L. Michaelis (1999) Effects of reactive oxygen species on brain synaptic plasma membrane Ca^{2+}-ATPase, **Free Radical Biology and Medicine**, 27, 810-821.

17. **A. Zaidi**, J. Gao, T.C. Squier, and M.L. Michaelis (1998) Age-related alterations in brain synaptic membrane Ca^{2+}-ATPase in F344/BNF1 rats, **Neurobiology of Aging**, 19, 487- 495.

18. J. Huscenbett, **A. Zaidi,** and M.L. Michaelis (1998) Sensitivity of the synaptic membrane Na^{+}/Ca^{2+} exchanger and the expressed NCX1 isoform to reactive oxygen species, **Biochimica et Biophysica Acta**, 1374, 34 - 46.

19. Z. Qin, **A. Zaidi,** J. Gao, A.G. Krainev, M.L. Michaelis, T.C. Squier, and D.J. Bigelow (1998) Decrease in Ca^{2+}-ATPase activity in aged synaptosomal membranes is not associated with changes in fatty acyl chain dynamics, **Mechanisms of Ageing and Development**, 105, 291 - 300.

20. **A. Zaidi**, E. Leclerc L´ Hostis, M. Marden, C. Poyart, and L. Leclerc (1995) Heme as an optical probe for studying the interactions between calmodulin and the Ca^{2+}-ATPase of the human erythrocyte membrane, **Biochimica et Biophysica Acta**, 1236, 114-118.

21. **A. Zaidi**, M. Marden, C. Poyart, and L. Leclerc (1995) Protection by lazaroids of the erythrocyte (Ca^{2+}, Mg^{2+}) - ATPase against iron induced inhibition, **European Journal of Pharmacology / Molecular Section**, 290, 133-139.

22. **A. Zaidi**, M. Tariq Khan, I. Ahmad, and M. Saleemuddin (1995) Studies on the differential morphological alterations in human and goat erythrocytes against ATP depletion and Ca^{2+}-induced stresses, **Biochemistry and Molecular Biology International**, 37, 517-526.

23. **A. Zaidi**, M. Marden, C. Poyart, and Liliane Leclerc (1995) Protection of the erythrocyte membrane Ca^{++}-ATPase against iron induced inactivation by U83836E (a vitamin E analog) in "**Sickle Cell Disease and Thalassaemias : New Trends in Therapy**" eds. Y. Beuzard, B. Lubin and J. Rosa, vol. 234, pp 517-518, John Libbey Eurotext Ltd., Montrouge, France.

24. **A. Zaidi** and M. Saleemuddin (1993) Ca^{2+} induced alterations in the activity of membrane Ca^{2+}-ATPase of human and rat erythrocytes, **Indian Journal of Biochemistry and Biophysics**, 30, 98-102.

25. **A. Zaidi** and M. Saleemuddin (1991) Goat erythrocyte calmodulin is not abnormal, **Indian Journal of Experimental Biology**, 29, 528-531.

26. M. Tariq Khan, **A. Zaidi**, and M. Saleemuddin (1990) Unusual organisation of band 3 protein in the goat red blood cells, in "**Biomembranes in Health and Disease**" eds. A.M. Kidwai, P.K. Upreti and P.K. Ray pp 7-14, Today and Tomorrow Printers and Publishers, New Delhi, India.

Abstracts Published:

1. D. Fernandes, **A. Zaidi**, J.L. Bean, D. Hui, and M.L. Michaelis (2006) RNAi-induced silencing of the plasma membrane Ca^{2+}-ATPase 2 increase the vulnerability of neurons to stimuli that alter intracellular calcium, **Free Radical Biology and Medicine**, 41, S169.

2. **A. Zaidi,** L. Jiang, J.L. Bean, and M.L. Michaelis (2006) Age-dependent decrease in synaptic membrane Ca^{2+}-ATPase occurs selectively in cholesterol rich microdomains, **Proceedings of the National IDeA Symposium of Biomedical Research Excellence**, # PP 419.

3. N.A. Galeva, L. Jiang, **A. Zaidi**, M.L. Michaelis, R.T. Dobrowsky, and T.D. Williams. (2006) Processing ESI-MSI data obtained on a Q-TOF mass spectrometer to improve the results of protein analysis, **Proceedings of the American Society for Mass Spectrometry,** Program # TP 495.

4. **A. Zaidi**, L. Jiang, and M.L. Michaelis (2005) Age-related alterations in Ca^{2+} regulatory proteins localized in neuronal raft microdomains, **Free Radical Biology and Medicine**, 39, S135.

5. X. Wang, A.S. Garrett, **A. Zaidi**, X.W. Chen, M.L. Michaelis, and E.K. Michaelis (2005) Comparative microarray study of selective neuronal vulnerability in the brain, **Free Radical Biology and Medicine**, 39, S65.

6. G. Gokulrangan, J. Kanski, **A. Zaidi**, and C. Schoneich (2005) Proteomic analysis of age-related protein nitration in rat cerebellum, **American Association for Pharmaceutical Sciences Journal,** 1102,7,52.

7. S.W. Esch, **A. Zaidi**, and T. Williams (2005) Age-related changes in rat brain sphingolipid profile by ESI-MS/MS, **Proceedings of the American Society for Mass Spectrometry,** Program # AO52889.

8. **A. Zaidi**, G. Gokulrangan, J. Kanski, M.L. Michaelis, and C. Schoneich (2004) Proteomic strategies in analysis of age-dependent oxidative modifications in brain proteins. **FASEB J**., 18, 28.21.

9. **A. Zaidi**, K.D. Osborn, R.J.B. Urbauer, M.L. Michaelis, and C.K. Johnson (2004) Single molecule dynamics of the calmodulin binding domain of oxidatively modified plasma membrane Ca^{2+}-ATPase. **Free Radical Biology and Medicine**, 37, S112.

10. M.L. Michaelis, **A. Zaidi**, S. Ansar, and R.T. Dobrowsky. (2004) Age-dependent up-regulation of brain acid-sphingomyelinase in F344/BNF1 rats. **Proceedings of the Society for Neuroscience,** 2004 Program # 1017.11.

11. **A. Zaidi**, D. Fernandes, J.L. Bean, and M.L. Michaelis (2003) Calpain, but not caspase, mediates proteolysis of neuronal plasma membrane Ca^{2+}-ATPase in superoxide-induced oxidative stress. **Free Radical Biology and Medicine**, 35, S114.

12. Agbas, **A. Zaidi**, M.L. Michaelis, E.K. Michaelis (2003) Calcineurin in aging brain: Differential expression and activity in homogenates and synaptic membranes. **Proceedings of the Society for Neuroscience,** Program # 472.10.

13. K. D. Osborn, M.K. Singh, **A. Zaidi**, and C.K. Johnson (2003) Single-molecule studies of calmodulin activation of the plasma membrane Ca^{2+}- ATPase. **Biophysical Journal,** Abstract # 590.

14. C.K. Johnson, M.K. Singh, K. D. Osborn, M.W. Allen, R.J.B. Urbauer, and **A. Zaidi** (2003) Single-molecule dynamics of target binding by calmodulin. **Biophysical Journal,** Abstract # 587.

15. **A. Zaidi**, L. Barron, C. Schoneich, and M.L. Michaelis (2002) Oxidative Modification of the plasma membrane Ca^{2+}- ATPase by H_2O_2. **Free Radical Biology and Medicine**, 33, S393.

16. **A. Zaidi**, K. Seyb, and M.L. Michaelis (2002) Effects of superoxide-induced oxidative stress on calcium transporters in primary cortical neurons. **Proceedings of the Society for Neuroscience,** Program # 343.13.

17. K. Osborn, M.K. Singh, **A. Zaidi**, R.J.B. Urbauer, C.K. Johnson (2002) Time-resolved single molecule studies on the binding dynamics of calmodulin to the plasma membrane Ca^{2+}- ATPase. **Proceedings of the American Chemistry Society** –Midwest Regional Meeting, Abstract # 180.

18. **A. Zaidi**, A.M. Cross, J.L. Bean; M.L. Michaelis (2001) Modification of synaptic plasma membrane Ca^{2+}-ATPase in ischemic injury in an animal model of global ischemia. **Stroke: A Journal of the American Heart Association**, Abstract P83.

19. M.L. Michaelis, **A. Zaidi**, R. Braceras, M. Bechtel, and E.K. Michaelis (2001) Cerebellar granule neurons and responses to oxidative stress. **Proceedings of the Society for Neuroscience**.

20. **A. Zaidi**, E. Dremina, R.T. Dobrowsky, and M.L. Michaelis (2001) Alterations in the caveolae-related domains in aging brain. **Successful Aging, Proceedings of the Annual Meeting of the American Federation for Aging Research**, #144S.

21. **A. Zaidi**, E. Dremina, J. Hansen, T. Williams, R.T. Dobrowsky, and M.L. Michaelis (2001) Alterations in the caveolae-related domains in aging brain. Second Annual Neurobiology of Aging Conference, San Diego, CA, November 8-9, p.106.

22. **A. Zaidi**, R. Seidle, A. Cross and M.L. Michaelis (2000) Primary neurons in culture as a model for aging studies: age-related alterations in the plasma membrane Ca^{2+}- ATPase. **Journal of Neurochemistry**, 73, S34B.

23. M.L. Michaelis, M. Pearson, N. McComb, D. Moore-Nichols, M. Bechtel, **A. Zaidi,** T. Robertson and E.K.Michaelis (1999) Differential sensitivity to superoxide in primary neurons. **Proceedings of the Society for Neuroscience**, 25, Abstract 736.18

24. **A. Zaidi** and M.L. Michaelis (1999) Susceptibility of synaptic membrane Ca^{2+}- ATPase to oxidative modification in stroke, **Journal of Neurochemistry**, 72, S34B.

25. **A. Zaidi** and M.L. Michaelis (1998) Sensitivity of synaptic membrane Ca^{2+}- ATPase to oxidative stress. **Journal of Neurochemistry**, 70, S26A.

26. M.L. Michaelis, L. Chung and **A. Zaidi** (1997) Age-related decreases in the activity and expression of the synaptic membrane Ca^{2+}-ATPase. **Proceedings of the Society for Neuroscience**, 23, Abstract 463.5, 1162.

27. M.L. Michaelis, J. Huschenbett and **A. Zaidi** (1996) Effects of oxidative stress on synaptic membrane Ca^{2+} transporters: Implications for brain aging. **Proceedings of the Society for Neuroscience**, volume 22, Abstract 593.4, 1494.

28. L. Leclerc**, A. Zaidi**, C. Poyart and M.C. Marden (1996) Protection by lazaroids of the erythrocyte (Ca^{2+}, Mg^{2+}) ATPase against iron-induced inhibition. **Proceedings of the International Society for Free Radical Research**, 83**.**

29. L. Leclerc, **A. Zaidi**, E. Leclerc L´Hostis, M. Marden and C. Poyart (1994) Hemin-CN: The revealing probe of the binding of calmodulin-Ca^{++}-ATPase studied by spectrofluorescence. **Archives Internationales de Physiologie, de Biochimie et de Biophysique**, 102, A94.

30. **A. Zaidi**, E. Leclerc L´Hostis, M. Marden, L. Leclerc and C. Poyart (1994) Hemin-CN: probe of the interaction of calmodulin-Ca^{++}-ATPase. **Journal of Experimental and Clinical Hematology**, 36(1) Abstract 56, page 23.

31. **A. Zaidi**, M. Marden, E. Leclerc L´Hostis, C. Poyart and L. Leclerc (1993) Study of the binding of $Ca^{2+}Mg^{2+}$ -ATPase and calmodulin by spectrofluorimetric methods. **Proceedings of the French Society of Biochemistry and Molecular Biology**, VIII 9, 156.

32. **A. Zaidi** and M. Saleemuddin (1990) Effect of calcium on the Ca^{2+}-ATPase of rat and human erythrocytes. **Proceedings of the Society of Biological Chemists** held at Udaipur, India Abstract No. BIM 18.

33. **A. Zaidi** and M. Saleemuddin (1989) Goat erythrocyte calmodulin is not abnormal. **Proceedings of the Society of Biological Chemists** held at Izzatnagar, India. Abstract No. PSF 9.

34. **A. Zaidi** and M. Saleemuddin (1988) Purification and studies on goat erythrocyte calmodulin. **Proceedings of the Society of Biological Chemists** held at New Delhi, India. Abstract No. 205.

Invited Presentations:

Kansas City University of Medicine and Biosciences, Kansas City, Kansas, “Disruption of neuronal calcium regulation: A link between brain aging and neurodegeneration” (**2007**).

Videoconference Meeting of the NIH Center of Biomedical Research Excellence, at Lawrence, Kansas with Kansas State University, Manhattan, University of Kansas Medical Center, Kansas City, and Wichita State University, Wichita “Disruption of neuronal calcium regulation: A link between brain aging and neurodegeneration” (**2007**).

Annual Meeting of the NIH Center of Biomedical Research Excellence, at Lawrence, Kansas, “Association of the Plasma Membrane Ca^{2+}-ATPase with Lipid Rafts: Implications for Brain Aging” (**2006**).

External Advisory Board Meeting of the Lipidomics Core, Kansas State University, Manhattan, Kansas, “Unraveling the Mechanisms of Brain Aging - from Neurobiology to Lipidomics” (**2005**).

Wichita State University, Wichita, Kansas, “Sensitivity of the Plasma Membrane Ca^{2+}-ATPase to Oxidative Stress - Role in Brain Aging” (**2005**).

Annual External Advisory Board Meeting of the NIH Center of Biomedical Research Excellence, University of Kansas, “Compartmentalization of Plasma Membrane Ca^{2+}-ATPase into Neuronal Lipid Rafts” (**2005**).

Annual Meeting of the Red Cell Club, Columbia, Missouri, "Oxidative Modification of the Erythrocyte Plasma Membrane Ca^{2+}-ATPase by Hydrogen Peroxide" (**2004**).

Annual External Advisory Board Meeting of the NIH Center of Biomedical Research Excellence, University of Kansas, "Compartmentalization of Neuronal Calcium Signaling in Lipid Rafts" (**2004**).

Program Project on Aging, Higuchi Biosciences Center, KU, "Identification of Potential Mechanisms Underlying the Age-dependent Decrease in PMCA Activity and Levels in SPMs from Rat (F344/BNF1) Brain" (**2002**).

Meeting of the Program Project on Aging, Higuchi Biosciences Center, University of Kansas, "Ceramide Signaling Pathway in Aging Brain: Cross-talk with Intraneuronal Calcium" (**2001**).

University of Kansas Medical Center, University of Kansas, Seminar, "Calcium Regulation in Aging Neurons" (**2000**).

Department of Chemistry, Indian Institute of Technology, Kanpur, India, "Disruption of Ca^{2+} Homeostasis in the Aging Brain" (**2000**).

Department of Pharmacology and Toxicology, University of Kansas, "Calcium Regulation in Aging Brain" (**1999**).

Department of Pharmacology and Toxicology, University of Kansas, Seminar, "The Phenomenon of Brain Aging: is Calcium the Culprit"? (**1997**).

Annual Meeting of the French Society for Biochemistry and Molecular Biology, Paris, France, **"**Study of the Binding of $Ca^{2+}Mg^{2+}$ -ATPase and Calmodulin by Spectrofluorimetric methods" (**1993**).

Annual Meeting of the Society for Biological Chemists, New Delhi, India, "Purification and studies on goat erythrocyte calmodulin" (**1988**).

Professional Workshops Attended:

- Introduction to End Note, University of Kansas, Lawrence, KS (2007)
- High Throughput Screening of Chemical Libraries, Higuchi Biosciences Center, University of Kansas, Lawrence, KS (2007)
- Protein Mass Spectrometry, Higuchi Biosciences Center, University of Kansas, Lawrence, KS (2007)
- Confocal Microscopy, Annual Meeting of the Society for Biochemistry and Molecular Biology, Boston, MA (2005)
- Excel Introduction, University of Kansas, Lawrence, KS (2005)
- Laser Capture Microdissection, University of Kansas, Lawrence, KS (2005)
- SPSS Statistics, University of Kansas, Lawrence, KS (2004)
- Deconvolution Microscopy, University of Kansas, Lawrence, KS (2004)

- Affymetrix Gene Array Technology, University of Kansas, Lawrence, KS (2003)

Supervision/Training in the Laboratory:

Visiting Scientists:

2004 - 2005	Dr. Cheryl Miller, Research Assistant Professor, University of Kansas Medical Center, University of Kansas.
2000 - 2001	Dr. Karen SantaCruz, Neuropathologist, Department of Pathology, University of Kansas Medical Center, University of Kansas.

Post-doctoral Research Associates:

2004 - 2007	Dr. Lei Jiang, Postdoctoral Fellow, Department of Pharmacology and Toxicology, University of Kansas.
2002 - 2007	Dr. Sabah Ansar, Postdoctoral Fellow, Department of Pharmacology and Toxicology, University of Kansas.
2004 - 2005	Dr. Abhijeet Mandal, Postdoctoral Fellow, Department of Chemistry, University of Kansas.

Graduate Students:

2005 - present	Roshan M.W. Liyanage, Graduate Student, Department of Chemistry, University of Kansas.
2002 - 2005	Denzyl Fernandes, Graduate Student, Department of Pharmacology and Toxicology, University of Kansas.
2002 - 2004	Ken Osborn, Graduate Student, Department of Chemistry, University of Kansas.
2003 - 2004	Alexander Garrett, Graduate Student, Department of Computer Science, University of Kansas.
2002 - 2003	Kathleen Seyb, Graduate Student, Department of Pharmacology and Toxicology, University of Kansas.
2002 - 2002	Brian Slaughter, Graduate Student, Department of Chemistry, University of Kansas.

Technical Personnel:

1999 - 2007	Jennifer L. Bean, Research Assistant, Department of Pharmacology and Toxicology, University of Kansas.

2001 - 2002 David Brooks, Technical Director, Tissue Culture and Hybridoma Laboratory, University of Kansas.

2001 - 2002 Kristy Davidson, Research Assistant, Department of Pharmacology and Toxicology, University of Kansas.

2000 - 2001 Jeremy Johnson, Research Assistant, Department of Pharmacology and Toxicology, University of Kansas.

Undergraduate Students:

2004 – 2007 Nandini Mehta, Undergraduate Student, University of Kansas.

2002 - 2002 Sarah Andrews, Visiting Summer Student, Clemson University, Clemson, South Carolina.

2000 - 2001 Adil Mir, Undergraduate Student, University of Kansas.

2000 - 2001 Claire Binci, Undergraduate Student, University of Kansas

1999 - 2001 Angela Cross, Undergraduate Student, University of Kansas.

1999 - 2001 Denise Birkholz, Undergraduate Student, University of Kansas.

1999 - 2000 Rachel Seidle, Undergraduate Student, University of Kansas.

2000 - 2000 Karyn Foster, Visiting Summer Student, Reed College, Portland, Oregon.

1997 - 1999 Marcus Asplund, Undergraduate Student, University of Kansas.

1997 - 1998 Martin Carpenter, Undergraduate Student, University of Kansas.

1997 - 1997 Roberto Iglesias, Undergraduate Student, University of Kansas.

1997 - 1997 Amethyst L. Hamlin, Visiting Summer Student, Bates College, Lewiston, Maine.

1996 - 1999 Liszu Chung, Pharm. D. Student, School of Pharmacy, University of Kansas.

Teaching:

2007 Biochemistry and Molecular Biology, Graduate Course
College of Biosciences, Kansas City University of Medicine and Biosciences
"Membrane Transport I"
"Membrane transport II"

2007 Experimental Pharmacology, Graduate Course
Department of Pharmacology and Toxicology, University of Kansas
"Calcium Regulation and Signaling in Cells" – 3 lectures (1.5 h each)

2006 Chemistry of the Nervous System, Graduate Course
Department of Pharmacology and Toxicology, University of Kansas
"Calcium Regulation and Dysregulation in the CNS" – 2 lectures (1.5 h each)

2000 Experimental Pharmacology, Graduate Course
Department of Pharmacology and Toxicology, University of Kansas
"Maintenance of Ca^{2+} Homeostasis in Neurons" – 2 lectures (1.5 h each)

Professional Service:

2007 Interviewer for evaluating students for admission to the College of Medicine, Kansas City University of Medicine and Biosciences, Kansas City, MO

2007 Faculty advisor for 7 students, College of Medicine, Kansas City University of Medicine and Biosciences, Kansas City, MO

2007 Member, Rank and Promotion Sub-committee, Faculty Senate, Kansas City University of Medicine and Biosciences, Kansas City, MO

2007 Co-chair of a workshop "Media Training 101" at the Annual Meeting of the Society for Free Radical Biology and Medicine to be held in Washington DC, Nov 14, 2007

2006 Co-chair of a workshop "Your Array of Possibilities: A Full Spectrum of Careers in Science" at the Annual Meeting of the Society for Free Radical Biology and Medicine held in Denver, Colorado, Nov 15, 2006

2006 - 2007 Member, Institutional Animal Care and Use Committee, University of Kansas

2006 - 2007 Member, Faculty Senate, University of Kansas

2006 Member, Review Committee for 5 year review for Director of Mass Spectrometry, University of Kansas

2003 - 2006 Member, Faculty Senate Research Committee, University of Kansas

2003 Member, National Scientific Advisory Committee, American Federation for Aging Research to review grant proposals

2002 Council Member, American Stroke Association.

2002 Member, Selection Committee for hiring Grant Preparation Specialist, Higuchi Biosciences Center, University of Kansas

1999 Member, Selection Committee for hiring a Research Assistant, Department of Pharmacology and Toxicology, University of Kansas

1998 - 1999 Representative of the Postdoctoral Research Associates, Department of Pharmacology and Toxicology, University of Kansas

Reviewer for Scientific Journals:

- Free Radical Biology and Medicine
- Journal of Neurochemistry
- Neurobiology of Aging
- Life Sciences

Research Awards Received:

Extramural:

- National Institute on Aging (Program Project)

Reactive Oxygen Species and Aging
$6,312,318 12/07 - 11/12
Principal Investigator - Dr. E.K. Michaelis, Department of Pharmacology and Toxicology, University of Kansas
Project 2: Age-dependent Changes in Synaptic Raft Domains and Plasma Membrane Ca^{2+} -ATPase
Project Leader - M.L. Michaelis, Department of Pharmacology and Toxicology, University of Kansas
$ 1,125,011
Role: Co-leader Project 2

- National Institute on Aging (RO1)

Proteomic Characterization of Aging Cerebellum
$ 1,250,000 9/04-8/09
Principal Investigator - Dr. C. Schoneich, Department of Pharmaceutical Chemistry, University of Kansas
Role: Co-Investigator

- Kansas City Area Life Sciences Research Development Funds

Age-dependent Changes in the Cardiac Plasma Membrane Ca^{2+}-ATPAse
$25,000 01/07 - 12/07
Role: Principal Investigator

- American Heart Association

Single-Molecule Protein Dynamics of Calcium Signaling
$ 143,500 07/04 - 06/07
Principal Investigator – Dr. C.K. Johnson, Department of Chemistry, University of Kansas
Role: Co-Investigator

- National Institute on Aging (Program Project)

Role of Reactive Oxygen in Aging
$4,200,000 05/01 - 03/06
04/06 – 03/07 (No cost extension)
Principal Investigator - Dr. E.K. Michaelis, Department of Pharmacology and Toxicology, University of Kansas
Project 4: Oxidative Stress, Aging, and Brain Ca^{2+} Transport Systems
Project Leader - M.L. Michaelis, Department of Pharmacology and Toxicology, University of Kansas
$ 573,000 05/01 - 04/07

Role: Senior Investigator

- NIH Center of Biomedical Research Excellence

Protein Structure and Function
Principal Investigator - Dr. R. Hanzlik, Department of Medicinal Chemistry, University of Kansas
Pilot Project: Trafficking of the Plasma Membrane Ca^{2+}- ATPase to Rafts
$120,000 1/04 - 6/06
$7,500 7/06-12/06 Extension
Role: Pilot Project Leader

- American Federation for Aging Research

Age-Related Alterations in the Plasma Membrane Ca^{2+}-ATPase: Role of Oxidative Stress and Ceramide Signaling
$50,000 07/00 - 06/01
Role: Principal Investigator

- American Heart Association

Effects of Ischemia-Reperfusion Injury on the Neuronal Plasma Membrane Ca^{2+}-ATPase
$70,000 07/99 - 06/01
Role: Principal Investigator

Intramural:

- Betty Jo White Award for Research

Role of Lipid Rafts in the Aggregation of Alpha Synuclein in Parkinson's Disease
$ 1500 10/07-09/08
Role: Principal Investigator

- General Research Fund

Trafficking of the Neuronal Plasma Membrane Ca^{2+}-ATPase
$10,000 07/06-06/07
Role: Principal Investigator

- J.R. and Inez Jay Funds

Proteomic Analysis of Rafts in Neuronal Plasma Membrane: Novel Approach to Study the Aging Brain
$ 45,000 07/03-06/04
Role: Principal Investigator

- Higuchi Biosciences Center

Shared Equipment Assistance Award
$ 20,000 01/03
Principal Investigator Dr. C.K. Johnson, Dept. of Chemistry, KU
Role: Co-Investigator

- Higuchi Biosciences Center

Shared Equipment Assistance Award
$ 7,000 03/00
Role: Principal Investigator

- Higuchi Biosciences Center
Research Assistance Award
$ 1,500 04/00
Role: Principal Investigator

- Higuchi Biosciences Center
Research Assistance Award
$ 1,500 12/99
Role: Principal Investigator

- Higuchi Biosciences Center
Research Assistance Award
$ 1,500 03/99
Role: Principal Investigator

Summary of Current Research Interests

Spatial and temporal control of intracellular Ca^{2+} plays a crucial role in almost all aspects of neuronal physiology, including the release of neurotransmitters, synaptic plasticity, gene expression, learning and memory formation. Disruption of neuronal Ca^{2+} homeostasis has been strongly implicated as a major contributing factor in age-related cognitive decline and increased risk for neurodegenerative disorders. Our long term goals are to delineate the mechanisms underlying the loss of calcium regulation in the aging brain with particular emphasis on the role played by the calcium pump referred to as the plasma membrane Ca^{2+}- ATPase (PMCA). The calmodulin-stimulated PMCA plays a critical role in maintaining the >10,000 - fold concentration gradient across the plasma membrane, essential for its signaling role. My laboratory is interested in understanding the:

- *Role of the PMCA in the disruption of calcium homeostasis in aged brain and in neurodegenerative disorders*
- *Effects of oxidative stress on PMCA structure and function*
- *Partitioning of PMCA into specialized plasma membrane microdomains*
- *Cellular mechanisms underlying PMCA trafficking*

A second major project in the laboratory is to examine age-dependent changes in lipid rafts, microdomains in the plasma membrane known to serve as local sites for the orchestration of a wide array of signal transduction processes, including Ca^{2+} signaling. It has recently been shown that lipid rafts are the molecular platforms responsible for the aberrant processing of proteins in neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease. Given that brain aging is the biggest risk factor for most neurodegenerative disorders, age-associated changes in neuronal rafts may likely play an important role in altered signaling and abnormal neuronal function. We are using proteomics strategies to map the neuronal raft proteome and determine age-related changes in its protein composition. Such information may provide insights into potential mechanisms underlying changes in neuronal function with increasing age and the several-fold risk that it poses for the development of neurodegenerative disorders.

We use a variety of biochemical, analytical, and cell biology techniques in our research. The most common techniques used in the laboratory are isolation of synaptic membranes and lipid rafts from rat brain tissue, protein purification, immunoblotting, ELISA, PMCA functional assays, cell culture, RNA interference, confocal microscopy, fluorescence spectroscopy, 2-dimensional differential gel electrophoresis, and mass spectrometry.