CURRICULUM VITAE

Robert Gilkerson, Ph.D., MB (ASCP)[CM]

Departments of Biology and Clinical Laboratory Sciences
The University of Texas Rio Grande Valley
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I. Personal data

Citizenship: USA

Date and place of birth: February 5, 1975, Springfield, MO

Current position: Associate professor

II. Education

Doctor of Philosophy in Biology, 2002
University of Oregon, Eugene, OR.

Bachelor of Arts in Biology, 1997
Hamline University, St. Paul, MN

III. Professional experience

Associate Professor (with tenure), Departments of Biology and Clinical Laboratory Sciences, The University of Texas Rio Grande Valley, Edinburg, TX, Sept. 2018-present.

Assistant Professor, Departments of Biology and Clinical Laboratory Sciences, The University of Texas Rio Grande Valley, Edinburg, TX, Sept. 2015-Aug. 2018.

Assistant Professor, Departments of Biology and Clinical Laboratory Sciences, University of Texas-Pan American, Edinburg, TX, Aug. 2012- Aug. 2015.

Associate Research Scientist, Laboratory of Eric A. Schon, Ph.D.
Department of Neurology, College of Physicians and Surgeons
Columbia University, Jan. 2006 – Jul. 2012.

Postdoctoral Research Scientist, Laboratory of Eric A. Schon, Ph.D.

Department of Neurology, College of Physicians and Surgeons
Columbia University, Jan. 2003- Dec. 2005.

Research Assistant, Laboratory of Roderick A. Capaldi, Ph.D.
Department of Biology and Institute of Molecular Biology
University of Oregon, 1998-2002.

IV. Publications

Gilkerson, R.[1] 2018. "A disturbance in the force: Cellular stress sensing by the mitochondrial network." Antioxidants 7 (10).

Garcia, I.; Innis-Whitehouse, W.; Lopez, A.; Keniry, M.; Gilkerson, R.[1] 2018. "Oxidative insults differentially impact mitochondrial fission/fusion dynamics in cultured mammalian cells." Redox Rep. 23 (1): 160-167.

Akia, M.; Salinas, N.; Rodriguez, C.; Gilkerson, R.; Materon, L.; Lozano, K. 2018. "Texas sour orange juice used in scaffolds for tissue engineering." Membranes 8 (3).

Vazquez, N.; Marks, R.; Sanchez, L.; Martinez, E.; Fanniel, V.; Lopez, A.; Salinas, A.; Flores, I.; Hirschmann, J.; Gilkerson, R.; Schuenzel, E.; Dearth, R.; Innis-Whitehouse, W.; Keniry, M. 2018. "CRISPR Genome Editing in DNA Repair Deficient Cancer Cells." BMC Mol. Biol. 19:3.

Baylon, K.; Rodriguez-Camarillo, P.; Elias-Zuniga, A.; Gilkerson, R.; Lozano, K. 2017. "Past, present, and future of surgical meshes: a review." Membranes 7 (3).

Cremar, L.; Gutierrez, J.; Rodriguez, C.; Materon, L.; Gilkerson, R.; Lozano, K. 2018. "Development of antimicrobial chitosan based nanofiber dressings for wound healing applications". Nanomed. J. 5 (1): 6-14.

Jones, E.*; Gaytan, N.*; Garcia, I.; Herrera, A.; Ramos, M.; Agarwala, D.; Rana, M.; Innis-Whitehouse, W.; Schuenzel, E.; Gilkerson, R.[1] 2017. "A threshold of transmembrane potential is required for mitochondrial dynamic balance mediated by DRP1 and OMA1." Cell. Mol. Life Sci. 74(7): 1347-1363.

Garcia, I.; Jones, E.; Ramos, M.; Innis-Whitehouse, W.; Gilkerson, R.[1] 2017. "The little big genome: The organization of mitochondrial DNA." Front. Biosci. 22: 710-721.

Gilkerson, R.[1] 2016. "Mitochondrial DNA damage and loss in diabetes." Diabetes/Metabolism Research and Reviews. 32(7): 672-674.

Herrera, A.; Garcia, I.; Gaytan, N.; Maldonado, A.; Gilkerson, R.[1] 2015. "Endangered species: the loss of mitochondrial DNA as a pathogenic mechanism in human disease." Front. Biosci. 7: 109-124.

Xu, F.; Weng, B.; Materon, L.; Gilkerson, R.; Lozano, K. 2014. "Large scale production of a ternary composite nanofiber membrane for wound dressing applications." J. Bioact. Compat. Polymers. 29(6): 646-660.

Xu, F.; Weng, B.; Gilkerson, R.; Materon, L. A.; Lozano, K. 2015. "Development of tannic acid/chitosan/pullulan composite nanofibers from aqueous solution for potential applications as wound dressing." Carbohydrate Polymers. 115: 16-24.

Gilkerson, R., Materon, L. 2014 "Two roads converging: mitochondria and inflammatory signaling." J. Clin. Immunol. Immunother. 1(1): 1-6.

Gilkerson, R.[1]; Bravo, L.; Gaytan, N.; Garcia, I.; Herrera, A.; Maldonado, A.; Quintanilla, B. 2013. "The mitochondrial nucleoid: Integrating mitochondrial DNA into cellular homeostasis." Cold Spring Harb. Perspect. Biol. (5)5: a001080.

Klionsky, D. J. et al. (Gilkerson, R. author # 85). 2012. Guidelines for the use and interpretation of assays for monitoring autophagy in higher eukaryotes. Autophagy 8 (4): 445-554.

De Vries, R. L.; Gilkerson, R.W.; Przedborski, S.; Schon E. A. 2012 Mitophagy in cells carrying mtDNA mutations: being sick is not enough. Autophagy. 8 (4): 699-700.

Gilkerson, R. W.; De Vries, R.; Lebot, P.; Wikstrom, J.; Torgyekes, E.; Shirihai, O.; Przedborski, S.; Schon, E. A. 2012. Mitochondrial autophagy in cells with mtDNA mutations results from the synergistic loss of transmembrane potential and mTORC1 inhibition. Hum. Mol. Genet. 21 (5): 978-90.

Quinzii, C. M.; Lopez, L.C.; Gilkerson, R. W.; Area, E.; Naini, A.; Lagier-Tourenne, C.; Rahman, S.; Schuelke, M.; Carrozzo, R.; Salviati, L.; Navas, P.; Koenig, M.; DiMauro, S.; Hirano, M. 2010. ROS production and oxidative stress correlate with the level of Coenzyme Q10 deficiency in different models of CoQ10 deficiency. FASEB J. 24 (10): 3733-43 .

Schon, E. A.; DiMauro, S.; Hirano, M.; Gilkerson, R. W. 2010. Prospects for therapy of mitochondrial disease. Trends Mol. Med. 16 (6): 269-76.

Schon, E. A.; Gilkerson, R. W.[1] 2010. Functional complementation of mitochondrial DNAs: mobilizing mitochondrial genetics against dysfunction. Biochim. Biophys. Acta. 1800 (3): 245-9.

Gilkerson, R. W.[1] 2009. Mitochondrial DNA nucleoids determine mitochondrial genetics and dysfunction. Int. J. Biochem. Cell Biol. 41 (10): 1899-906.

Gilkerson, R. W.; Schon, E. A. 2008. Nucleoid autonomy: an underlying mechanism of genetics with therapeutic potential. Commun. & Integr. Biol. 1 (1): 34-36.

Gilkerson, R. W.; Schon, E. A.; Hernandez, E.; Davidson, M. M. 2008. Mitochondrial nucleoids maintain genetic autonomy but allow for functional complementation. J. Cell Biol. 181: 1117-1128 (see cover; also, see commentary by Leslie, M. 2008. J. Cell Biol. 181: 1043).

Santra, S.; Gilkerson, R.; Davidson, M.; Schon, E. 2004. Ketogenic treatment rescues mitochondrial dysfunction in a cultured cell system by shifting mitochondrial DNA heteroplasmy. Ann. Neurol. 56: 662-669.

Gilkerson, R.*; Rossignol, R.*; Aggeler, R.; Remington, S. J.; Capaldi, R. A. 2004. Energy substrate modulates mitochondrial structure and oxidative capacity in cancer cells. Cancer Research 64: 985-993.

Gilkerson, R. W.; Selker, J. M. L.; Capaldi R. A. 2003. The cristal membrane is the principal site of oxidative phosphorylation. FEBS Lett. 546 (2-3): 355-8.

Gilkerson, R. W.*; Murray, J. G.*; Capaldi, R. A. 2002. Quantitative proteomics: the copy number of pyruvate dehydrogenase is more than 10^2-fold lower than that of Complex III in human mitochondria. FEBS Lett. 529 (2-3): 173-8.

Capaldi, R. A.; Aggeler, R.; Gilkerson, R.; Hanson, G.; Knowles, M.; Marcus, A.; Margineantu, D.; Marusich, M.; Murray, J.; Oglesbee, D.; Rossignol, R. 2002. A replicating module as the unit of mitochondrial structure and function. Biochim. Biophys. Acta 1555: 192-195.

Gilkerson, R. W.; Margineantu, D. H.; Capaldi, R. A.; Selker, J. M. L. 2000. Mitochondrial DNA depletion causes morphological changes in the mitochondrial reticulum of cultured human cells. FEBS Lett. 474 (1):1-4.

*These authors contributed equally.

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V. Grants

Pending:

National Institutes of Health 2SC3GM1166609-05, "Interaction of mitochondrial fusion and transmembrane potential in diabetic cardiovascular damage." Principal investigator: Robert Gilkerson. Project role: Planning and writing of the grant, generation of data, administration of grant funds. $435,900

United States Department of Agriculture GRANT12856992 Hispanic-Serving Institutions Education Grants, "Providing Research Experiential Learning Opportunities In Animal And Biological Sciences (PREPLABS)." Principal Investigator: Robert Gilkerson. Project role: Planning and writing of the grant, coordination of multiple Hispanic-serving institutions to provide mentored student research experience to increase access to research careers. $1,000,000.

Current:

National Institutes of Health 5SC3GM1166609, "Interaction of mitochondrial fusion and transmembrane potential in diabetic cardiovascular damage." Principal investigator: Robert Gilkerson. Project role: Planning and writing of the grant, generation of data, administration of grant funds. $435,900

National Science Foundation PREM 1523577, "UTRGV-UMN partnership for fostering innovation by bridging excellence in research and student success." Co-principal investigator: Robert Gilkerson. Project (1 of 5): "Homeostasis of cultured mammalian cells in a nanofiber environment." $285,000 (of $1,662,980 total, Principal investigator: Karen Lozano).

United States Department of Agriculture 2015-38422-24061 Hispanic-Serving Institutions Education Grants, "STEP 2 USDA Research Success." Principal Investigator: Robert Gilkerson. Project role: Planning and writing of the grant, coordination of multiple Hispanic-serving institutions to provide mentored student research experience to increase access to research careers. $1,000,000.

Previous:

Diabetes Action Research and Education Foundation, "Mitochondrial damage and insulin resistance: preventive therapeutics and clinical biomarkers." Principal investigator: Robert Gilkerson. Project role: Planning and writing of the grant, generation of data, administration of grant funds. Mar. 2015- Dec. 2015.

Diabetes Action Research and Education Foundation, "Loss of mitochondrial DNA as an early indicator of insulin resistance in Type 2 diabetes." Principal investigator: Robert Gilkerson. Project role: Planning and writing of the grant, generation of data, administration of grant funds. Jan. 2014 – Dec. 2014.

Undergraduate Research Initiative (URI), University of Texas-Pan American. "Interaction of mammalian cultured cells in a forcespinning nanofiber environment." Principal investigator: Robert Gilkerson. Apr. 2015- Aug. 2015.

Faculty Research Council Grant, University of Texas-Pan American. "A pilot study of mitochondrial DNA and associated proteins as biomarkers of Type 2 diabetes in the Rio Grande Valley." Principal investigator: Robert Gilkerson. Project role: Planning and writing of the grant, generation of data, administration of grant funds.

University of Texas-Pan American, laboratory startup funds. Principal investigator: Robert Gilkerson. Aug. 2012- June 2015.

NIH Program Project Competitive Renewal Mitochondrial Encephalomyopathies and Mental Retardation. Project 2 (of 3 total within the Program Project): "Therapeutic approaches in cell models of mitochondrial disease" Principal Investigator: Eric A. Schon, Ph.D. Co-Investigator: Robert W. Gilkerson, Ph.D. Postdoctoral Research Fellow: Edina Torgyekes, M.D. Project role: Contribution of data, participation in planning and writing of the grant application. This project is a combination of the projects of Drs. Schon and Gilkerson as P.I. and Co-Investigator, respectively.

Muscular Dystrophy Association Research Grant, "Pharmacological approaches to treat human mitochondrial diseases." Principal Investigator: Eric A. Schon, Ph.D. Research Personnel: Robert W. Gilkerson, Ph.D., Paul Yang, Ph.D. Project role: Contribution of data regarding treatment methods for mtDNA-derived mitochondrial disease, as opposed to nuclear-derived mitochondrial disease (Dr. Yang), participation in writing of the grant application.

Awardee, Muscular Dystrophy Association Development Grant 3869, "MtDNA nucleoids: organization and dynamics." Principal Investigator: Robert W. Gilkerson, Ph.D. Salary, supplies, and equipment support for postdoctoral

studies of molecular mechanisms of mtDNA organization and inheritance. Jan. 2005 - Jan. 2008. Project role: Generation of data, planning and writing of the grant, administration of grant funds, yearly progress reports.

NIH Program Project Competitive Renewal, Mitochondrial Encephalomyopathies and Mental Retardation. Project 2 (of 3 total): "Therapeutic approaches in models of mitochondrial disease" Principal Investigator: Eric A. Schon, Ph.D. 2004-2009. Project role: Contribution of data demonstrating the effectiveness of ketogenic treatment in restoring mitochondrial protein synthesis and function in cells carrying high levels of mtDNA mutations.

VI. Awards and honors

Recognized among faculty receiving major external awards, UTRGV Faculty Excellence Awards, May 5, 2016.

Scientific Reviewer, Department of Defense Congressionally Directed Medical Research Programs (CDMRP) May 2015-present.

Certified as a Technologist in Molecular Biology (MB), American Society of Clinical Pathology, October 2014.

Managing Editor, Frontiers in Bioscience. Appointed February 2013.

Editorial Board Member, Journal of Cell Biology and Cell Metabolism. Appointed May 2014.

Editorial Board Member, Dataset Papers in Biology. Appointed August 2012.

Editorial Board Member, ISRN Cell Biology. Appointed July 2011.

Appointee, NIH Institutional Training Grant, Institute of Molecular Biology, University of Oregon, 2000-2002.

Departmental honors in biology, Hamline University 1997.

VII. Intellectual property

"Usage of meltspun polyolefin fine fibers for skin regeneration and mesh implantation." Lozano, K.; Gilkerson, R.; Quinones, K. L. B. U.S. Provisional Patent Application, Serial No. 62/303,202. Submitted March 31, 2016.

"Treatment of mitochondrial disease via increased mitochondrial fusion using mdivi-1", Eric A. Schon and Robert W. Gilkerson, Invention Report and

Record Form, Science & Technology Ventures, Office of the General Counsel, Columbia University. Submitted Oct. 15, 2012.

"Treatment of mitochondrial disease via inducers of autophagy", Eric A. Schon and Robert W. Gilkerson, Invention Report and Record Form, Science & Technology Ventures, Office of the General Counsel, Columbia University. Submitted Oct. 15, 2012.

"Pharmacological method for treatment of mitochondrial diseases", Eric A. Schon and Robert W. Gilkerson, Invention Report and Record Form, Science & Technology Ventures, Office of the General Counsel, Columbia University. Submitted Nov. 19, 2008.

"A method to shift mitochondrial DNA heteroplasmy in mammalian cells and tissues ", Eric A. Schon, Sumana Santra, Robert W. Gilkerson, Giovanni Manfredi. Invention Report and Record Form, Science & Technology Ventures, Office of the General Counsel, Columbia University. Submitted January 15, 2004.

VIII. Abstracts and seminars

Garcia, I.; Innis-Whitehouse, W.; Lopez, A.; Keniry, M.; Gilkerson, R.[1] 2018. "Oxidative insults differentially impact mitochondrial fission/fusion dynamics in cultured mammalian cells." American Society for Cell Biology/EMBO Meeting, San Diego, CA, Dec. 8-12, 2018.

Gilkerson, R.[1] Jones, E.; Garcia, I.; Ramos, M.; Innis-Whitehouse, W. "Interaction of mitochondrial fission/fusion dynamics and transmembrane potential in glycolytic versus oxidative cell settings." Keystone Symposium on Mitochondria, Metabolism, and Heart, Santa Fe, NM, May 8-12, 2017.

Persans, M.; Stanko, R.; Nelson, S.; Keniry, M., Murray, K.; Mendoza, N., Gilkerson, R.[1]; "STEP 2 USDA Research Success: Mentored research increasing student access to STEM careers". USDA Hispanic-Serving Institutions Grants Program, Albuquerque, NM, Feb. 16-18, 2015.

Ramos, M.; Jones, E.; Garcia, I.; Innis-Whitehouse, W. Gilkerson, R.[1]. "Mitochondrial fission/fusion requires a strict threshold of transmembrane potential". SACNAS National Diversity in STEM Conference, Long Beach, CA, October 13-15, 2016.

Garcia, E.; Baylon, K.; Rodriguez, A.; Lozano, K.; Gilkerson, R.[1] "TNF-α induces mitochondrial fragmentation in nanofiber-grown 3T3 fibroblasts". SACNAS National Diversity in STEM Conference, Long Beach, CA, October 13-15, 2016.

Gilkerson, R.[1] Jones, E.; Garcia, I.; Ramos, M.; Innis-Whitehouse, W. "Mitochondrial dynamic balance is mediated by a threshold of transmembrane potential." Keystone Symposium on New Therapeutics for Diabetes and Obesity, La Jolla, CA, Apr. 17-20, 2016.

Gilkerson, R.[1]; Stanko, R.; Persans, M.; Nelson, S.; Murray, K.; Mendoza, N. "STEP 2 USDA Research Success: Science, Technology and Environmental Programs to USDA Research Success". USDA Hispanic-Serving Institutions Grants Program, Washington, DC, Dec. 7-9, 2015.

Ramos, M.; Gilkerson, R.[1] "Resveratrol increases mitochondrial fusion in cultured mammalian cells. " Annual Biomedical Research Conference for Minority Students, Seattle, WA, Nov. 11-14, 2015.

Gaytan, N.; Jones, E.; Garcia, I.; Herrera, A.; Innis-Whitehouse, W.; Gilkerson, R.[1] "Mitochondrial fusion requires a minimum threshold of transmembrane potential." Keystone Symposium on Mitochondria, Metabolism, and Heart Failure, Santa Fe, NM, Jan. 27-Feb. 1, 2015.

Gilkerson, R. "Balancing mitochondrial structure and bioenergetic function: mechanisms and translational applications." Invited seminar, University of Texas-Brownsville, Brownsville, TX, Nov. 14, 2014.

Garcia, I.; Innis-Whitehouse, W.; Gilkerson, R.[1] "Oxidative insults cause loss of mitochondrial transmembrane potential and organellar fusion." Annual Biomedical Research Conference for Minority Students, San Antonio, TX, Nov. 12-15, 2014.

Jones, E.; Gaytan, N.; Innis-Whitehouse, W.; Gilkerson, R.[1] "Mitochondrial fusion requires a threshold level of transmembrane potential." Annual Biomedical Research Conference for Minority Students, San Antonio, TX, Nov. 12-15, 2014.

Gaytan, N.; Jones, E.; Innis-Whitehouse, W.; Gilkerson, R.[1] "Decreased mitochondrial transmembrane potential causes loss of mitochondrial fusion, even during inhibition of fission." Annual Biomedical Research Conference for Minority Students, San Antonio, TX, Nov. 12-15, 2014.

Gilkerson, R. "Exploring the role of mitochondria in diabetes and metabolic disease." Seminar, MORE Health@UTPA, University of Texas- Pan American, Edinburg, TX, April 27, 2013.

Gilkerson, R. "Mitochondrial DNA dynamics in cellular homeostasis." Invited seminar as a candidate for Assistant Professor, University of Texas- Pan

American, Edinburg, TX, March 19, 2012. Selected for position, offer accepted.

Gilkerson, R. W. "Activating quality control in cells carrying mtDNA mutations: Towards therapeutic mitophagy." Presentation, Treatment of Mitochondrial Disease- now and in the future- Conference 2011, Bethesda, MD, October 21, 2011.

Gilkerson, R.W. "Autophagy: a therapeutic strategy for mitochondrial disease." Seminar, Department of Neurology Grand Rounds, Columbia University, November 25, 2009.

Quinzii, C. M., López, L., Gilkerson, R. W., Dorado, B., Coku, J., Naini, A., Lagier-Tourenne, C., Tazir, M., Rahman, S., Schuelke, M., Carrozzo, R., Santorelli, F., Salviati, L., Koenig, M., DiMauro, S., Hirano, M. ROS production, oxidative stress, and cell death correlate with the level of CoQ10 deficiency in fibroblast models of CoQ10 deficiency. Abstract, American Academy of Neurology Annual Meeting, 2010.

Gilkerson, R. W. "The mitochondrial nucleoid: A molecular mechanism of human disease and potential therapy." Invited seminar as a candidate for Applications Scientist, Seahorse Bioscience, North Billerica, MA. April 29, 2009.

Gilkerson, R. W.; Schon, E. A.; Hernandez, E.; Davidson, M. M. Mitochondrial nucleoids are maintained faithfully, but allow for transcomplementation. 7th European Meeting on Mitochondrial Pathology, 2008.

Gilkerson, R. W. "Why is The Rate of MtDNA Recombination So Low?" Seminar, Department of Genetics & Development Annual Retreat, Columbia University, Sept. 29, 2007.

Gilkerson, R.W. "Keeping The Faith: Segregation and Inheritance of Human Mitochondrial DNA Nucleoids." Seminar, Department of Neurology Grand Rounds, Columbia University, Feb. 14, 2007.

Gilkerson, R.W. "Segregation and inheritance of human mitochondrial DNA nucleoids." Seminar, Motor Neuron Center, Columbia University, June 28, 2006.

Rossignol, R., Gilkerson, R., Aggeler, R., Yamagata, K., Remington, S. J., Capaldi, R. A. Energy substrate modulates mitochondrial structure and oxidative capacity in cancer cells. 13th European Bioenergetics Conference, 2004.

Gilkerson, R. W., Davidson, M., Schon, E. A. Organization of mtDNA heteroplasmy examined by in situ hybridization. 6th European Meeting on Mitochondrial Pathology, 2004.

Schon, E., Santra, S., Gilkerson, R., Davidson, M. Ketogenic treatment reduces the proportion of mutated mitochondrial DNAs. 6th European Meeting on Mitochondrial Pathology, 2004.

De Groof, A., Lim, Y., Gilkerson, R., Bhattacharjee, M., Figurski, D., Schon, E. Exploring the use of the bacterial conjugation system to deliver DNA to the mitochondria. 6th European Meeting on Mitochondrial Pathology, 2004.

Selker, J. M. L., Snyder, K., Gilkerson, R. W., Rossignol, R., Capaldi, R. A. Mitochondrial internal structure correlated with respiratory activity in cultured human cells. Microsc. Microanal. 8 (Suppl. 2), 2002.

IX. Teaching experience

Instructor, BIOL 2401 Anatomy & Physiology I. Department of Biology, The University of Texas Rio Grande Valley, Edinburg, TX.

Instructor, BIOL 2402 Anatomy & Physiology II. Department of Biology, The University of Texas Rio Grande Valley, Edinburg, TX.

Instructor, CLSC 6305 Molecular Diagnostics. Department of Clinical Laboratory Sciences, The University of Texas Rio Grande Valley, Edinburg, TX.

Instructor, BIOL 2403 Anatomy & Physiology I. Department of Biology, University of Texas-Pan American, Edinburg, TX.

Instructor, BIOL 2404 Anatomy & Physiology II. Department of Biology, University of Texas-Pan American, Edinburg, TX.

Instructor, CLSC 4315 Advanced Immunology and Molecular Methods. Department of Clinical Laboratory Sciences, University of Texas-Pan American, Edinburg, TX.

Instructor, CLSC 2429 Clinical Microbiology. Department of Clinical Laboratory Sciences, University of Texas-Pan American, Edinburg, TX.

Instructor, HRP 2303 Medical Terminology (Online), Spring semester, 2013. Department of Clinical Laboratory Sciences, University of Texas-Pan American, Edinburg, TX.

Grand Rounds seminars, Department of Neurology, Columbia University.

Individual laboratory and microscopy instruction/training of fellows and graduate students, Columbia University.

Teaching assistant, General Biology I: Cells (BI 211). Fall 1998 and Fall 1999. Cell and molecular biology for non-majors. Responsibilities: Lecturing and instruction of laboratory section, assistance with lecture section and test development, help sessions/office hours, test administration and grading.

Teaching assistant, Foundations I: Genetics and Evolution (BI 261). Winter 1998. Core genetics course for biology majors. Responsibilities: Assistance in laboratory instruction, help sessions/office hours, test administration and grading.

Teaching assistant, non-majors biology, Hamline University, Fall 1996 (as part of Teaching College Biology, see below). Responsibilities: Assistance in laboratory instruction and lecturing, test administration and grading.

Teaching development classes

Seminar in Biology Education (BI 507), University of Oregon, Winter 1998.

Teaching College Biology (BIOL 379), Hamline University, Fall 1996.

X. University service

Committee service:

Member, Development Committee for Ph.D. Program in Cellular, Molecular and Biomedical Sciences, The University of Texas Rio Grande Valley, Edinburg, TX.

BIOL 2401/2402 Textbook Adoption committee, Department of Biology, The University of Texas Rio Grande Valley, Edinburg, TX.

Member, Search Committee for Interim Chair, Department of Biology, The University of Texas Rio Grande Valley.

Member, Central Curricular Authority Committee, School of Medicine, The University of Texas Rio Grande Valley.

Member, Search Committee for Director of the South Texas Diabetes and Obesity Institute, University of Texas-Pan American, Edinburg, TX.

Co-chair (with Dr. Jameela Banu), College of Health Sciences and Human Services Research Committee, University of Texas-Pan American, Edinburg, TX.

Co-chair (with Dr. Robert Faraji), College of Health Sciences and Human Services Research Committee, University of Texas-Pan American, Edinburg, TX.

Departmental representative, College of Health Sciences and Human Services Research Committee, University of Texas-Pan American, Edinburg, TX.

Annual Review Committee, Department of Clinical Laboratory Sciences, University of Texas- Pan American, Edinburg, TX.

Health Profession Advising Committee, Department of Biology, University of Texas-Pan American, Edinburg, TX.

Publicity Committee, Department of Biology, University of Texas-Pan American, Edinburg, TX.

BIOL 2403/2404 Textbook Adoption committee, Department of Biology, University of Texas-Pan American, Edinburg, TX.

Other service and development:

Mentor, UTRGV High Scholars Program, Summer 2016.

Mentor, Rio Grande Valley Summer Science Internship Program, Summer 2013, 2014.

Mentor, HHMI Summer Science Internship Program, Summer 2013, 2014.

Participant, Second-Year Faculty Support Program, University of Texas-Pan American, Edinburg, TX.

Participant, First-Year Faculty Support Program, University of Texas-Pan American, Edinburg, TX.

Panelist, "What Can I Do To Improve Health In the Valley?", VISTA Summit: Health. Nov. 28, 2012. University of Texas-Pan American, Edinburg, TX.

Participant, "Developing Successful Mentor Relationships" Workshop for Graduate Faculty & Students, Office of Graduate Studies, Nov. 30, 2012.

XI. Scientific/technical skills

Scientific writing and presentation.
Peer review: Review of manuscripts and non-governmental grant submissions, as well as a doctoral dissertation, from investigators in the field of mitochondrial genetics, biochemistry and cell biology (as both Associate Research Scientist and Postdoctoral Research Assistant).
Fluorescence microscopy
    Fluorescence *in situ* hybridization
    Immunocytochemistry
    Histochemistry
    Vital staining
Electron microscopy
    Conventional and Cryoultramicrotomy
    Immunogold labeling (acrylic and cryosection)
    Negative stain imaging
Image analysis
Human cell culture
    Cell fusion
    Enucleation
    MtDNA depletion
Transgenic expression (lentiviral- and transient liposome-mediated)
Polymerase chain reaction (three-primer, long-distance, conventional)
Protein analysis (SDS-PAGE, Western blotting, ^{35}S-methionine labeling)
Southern blotting
Southwestern blotting
Flow cytometry
Immunomagnetic separation/isolation
Molecular cloning
Ultracentrifugation