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EDUCATIONAL BACKGROUND

Pharm. D., graduated cum laude, University of Georgia, May 2008.
Licensed pharmacist, Georgia. License number RPH024442, granted August 2008.
Nuclear pharmacist; Authorized User status granted by the Georgia Board of Pharmacy December 2008.

Ph.D. in Medicinal Chemistry, College of Pharmacy, University of Georgia, June 1992. Advisor: Dr. Peter C. Ruenitz. Research Emphasis: Drug Metabolism. Dissertation: N-Dechloroethylation of Cyclophosphamide and Ifosfamide in the Rat.

M.S. in Organic Chemistry, Ohio State University, September 1985. Advisor: Dr. Matthew S. Platz. Research Emphasis: Carbene Chemistry. Thesis: Variable Temperature Laser Flash Photolysis of 9-Diazafluorene.

B.S. in Chemistry, graduated with honors, University of Georgia, June 1982.

PRESENT

Assistant Professor, Department of Basic Pharmaceutical Sciences, High Point University, High Point, NC. Committee assignments: Admissions, Assessment.

January 2010 – June 2015

Research Scientist and Adjunct Faculty, Joint School of Nanoscience and Nanoengineering (JSNN), University of North Carolina at Greensboro, Greensboro, NC.

Design and preparation of custom DNA strands for 1) examination of HIV and Ebola gene expression and 2) analysis by nanopore translocation (in collaboration with Dr. Adam Hall, Wake Forest University)

Research activities: Engineering of mammalian expression vectors designed to study potential ribosomal frameshifting sites in HIV and Ebola, utilizing a unique dual fluorescent protein reporter gene system. Examination of a proposed novel mechanism for the insertion of selenocysteine (Sec) into HIV and Ebola genes, via construction of expression vectors containing viral gene regions coding for mRNA capable of "tethering" a host SECIS element, an RNA structure necessary for Sec incorporation into proteins. Maintenance of mammalian cell culture stocks for transfection with custom plasmids. Construction of novel DNA strands containing modified bases as model vehicles for epigenetic and cancer marker studies using nanopore techniques.

Extensive use of cell culture, polymerase chain reaction, gel electrophoresis (agarose and polyacrylamide), cloning and expression vectors. transfections, transformations. Routine use of BioTek Synergy Mx microplate reader, AMG Evos // fluorescence microscope, Quantas fluorometer, Agilent 2100 bioanalyzer, Stratagene Robocycler gradient 96 thermal cycler, Thermo Nanodrop 2000c.

Manager, JSNN Biosafety Laboratory 3 (BSL3); facilitate operations in Genomics Laboratory. Operate and maintain CO₂ incubators, biosafety cabinets, ultracold freezers, centrifuges, gel imagers, light microscopes, liquid nitrogen storage systems. Responsible for writing BSL3 SOP manuals and maintaining service and inventory logs.

Teaching of NAN 692, a two-semester lecture and laboratory Nanoscience course covering molecular biology techniques with an emphasis on recombinant DNA/cloning.

Mentoring of graduate students, including service on graduate committees and guidance of doctoral research; direct supervision of visiting community college students and high school interns.

PUBLICATIONS

Taylor, E. W.; Ruzicka, J. A.; Premadasa, L.; Zhao, L. Cellular Selenoprotein mRNA Tethering via Antisense Interactions with Ebola and HIV-1 mRNAs may Impact Host Selenium Biochemistry. *Curr Top Med Chem* **2016**, *16*, 1530-1535.

Zahid, O. K.; Wang, F.; Ruzicka, J. A.; Taylor, E. W.; Hall, A. R. Sequence-Specific Recognition of MicroRNAs and Other Short Nucleic Acids with Solid-State Nanopores. *Nano Lett* **2016**, *16*(3) 2033-2039.

Zahid, O. K.; Wang, F.; Ruzicka, J. A.; Taylor, E. W.; Hall, A. R. Solid-State Nanopore Detection of Epigenetic DNA Modifications. *Biophys J* **2015**, *108* (2) supp 1, 481a.

Marshall, M. M.; Ruzicka, J. A.; Zahid, O. K.; Henrich, V. C.; Taylor, E. W.; Hall, A. R. Nanopore Analysis of Single-Stranded Binding Protein Interactions with DNA. *Langmuir* **2015**, *31*, 4582–4588. doi: 10.1021/acs.langmuir.5b00457

Carlsen, A. T.; Zahid, O. K.; Ruzicka, J. A.; Taylor, E. W.; Hall, A. R. Selective Detection and Quantification of Modified DNA with Solid-State Nanopores. *Nano Lett* **2014**, *14* (10), 5488-5492. doi: 10.1021/nl501340d

Marshall, M. M.; Ruzicka, J. A.; Taylor, E. W.; Hall, A. R. Detecting DNA Depurination with Solid-State Nanopores. *PLoS One* **2014**, *9* (7), e101632. doi:10.1371/journal.pone.0101632 e101632

Carlsen A. T.; Zahid, O. K.; Ruzicka, J. A.; Taylor, E. W.; Hall, A. R. Interpreting the Conductance Blockades of DNA Translocations Through Solid-State Nanopores. *ACS Nano* **2014**, *8* (5), 4754–4760. doi: 10.1021/nn501694n

Taylor, E. W.; Nadimpalli, R. G.; Zhang, W.; Bhat, A.; Zhao, L.; Ruzicka, J. A.; Dean, R. G. HIV-1 Encoded Selenoproteins as a Basis for Antioxidant Therapy. In: Pharmacology of HIV Infection and AIDS. D. Fuchs, Ed. OICA Int., Santa Lucia, London **2000**.

Taylor, E. W.; Cox, A. G.; Zhao, L.; Ruzicka, J. A.; Bhat, A.; Zhang, W.; Nadimpalli, R. G.; Dean, R. G. Nutrition, HIV and Drug Abuse: The Molecular Basis of a Unique Role for Selenium. *J. AIDS Human Retrovirol* (NIH Symposium Proceedings Volume), **2000**, *25*, S53-S61.

Zhao, L.; Cox, A. G.; Ruzicka, J. A.; Bhat, A.; Zhang, W.; Taylor, E. W. Molecular Modeling and in vitro Activity of an HIV-1-Encoded Glutathione Peroxidase. *P Natl Acad Sci USA*, **2000**, *97*, 6356-6361.

Baker, M. T.; Ruzicka, J. A.; Tinker, J. H. One Step Synthesis of 1,1,1,4,4,4-Hexafluorobutane from Succinonitrile. *J. Fluorine Chem*, **1999**, *94*, 123 - 126.

Baker, M. T.; Ronnenberg, W. C.; Ruzicka, J. A.; Tinker, J. H. Deuterium Labeling of Methyl 1,1,1,3,3,3-Hexafluoroisopropyl Ether. *J. Labelled Compd Radiopharm*, **1997**, 39, 387 - 393.

Ruzicka, J. A.; Pedersen, S. D.; Baker, M. T. Synthesis and Toxicity of 1,2-bis(trifluoromethoxy)-1,1,3,3,3-pentafluoropropane. *J. Fluorine Chem*, **1996**, 76, 213 - 217.

Ruzicka, J. A.; Hrdy, J. B.; Baker, M. T. Synthesis and Pharmacological Properties of 1,2-bis(fluoromethoxy)-1,1,3,3,3-pentafluoropropane. *J. Fluorine Chem*, **1995**, 75, 191 -196.

Ruzicka, J. A.; Baker, M. T. Fluoro-dideutero-methyl 1,1,1,3,3,3-hexafluoroisopropyl ether (D₂-Sevoflurane) Reactions on Soda Lime: Deuterium Content of Deuterated Sevoflurane and its Volatile Degradation Products. *J. Fluorine Chem*, **1995**, 71, 55 - 58.

Ruzicka, J. A.; Hidalgo, J. C.; Tinker, J. H.; Baker, M. T. Inhibition of Volatile Sevoflurane Degradation Product Formation in an Anesthesia Circuit by a Reduction in Soda Lime Temperature. *Anesthesiology*, **1994**, 81, 238 - 244.

Baker, M. T.; Ronnenberg, W. C.; Ruzicka, J. A.; Chiang, C.-K.; Tinker, J. H.; Inhibitory Effects of Deuterium Substitution on the Metabolism of Sevoflurane in the Rat. *Drug Metab Dispo*, **1993**, 21, 1170 - 1171.

Ruzicka, J. A.; Qiu, W.; Baker, M. T.; Burton, D. J. Synthesis of [1-¹⁴C]-2,2-Difluoroethene from [¹⁴C]-Formaldehyde. *J. Labelled Compd Radiopharm*, **1993**, 34, 59 - 65.

Ruzicka, J. A.; Ruenitz, P. C. Cytochrome P450-Mediated N-Dechloroethylation of Cyclophosphamide and Ifosfamide in the Rat. *Drug Metab Dispo*, **1992**, 20, 770 - 772.

Wilson, S.; Ruenitz, P. C.; Ruzicka, J. A. Estrogen Receptor Affinity and Effects on MCF-7 Cell Growth of Triarylethylene Carboxylic Acids Related to Tamoxifen. *J Steroid Biochem Molec Biol*, **1992**, 42, 613 - 616.

Ruzicka, J. A.; Ruenitz, P. C. Derivatization-Liquid Chromatographic Assay of Chloroacetaldehyde in Biological Samples. *J Chromatogr*, **1990**, 518, 385 - 389.

Ruzicka, J. A.; Leyva, E.; Platz, M. S. Laser Flash Photolysis of 9-Diazafluorene in Low Temperature Glasses. *J Am Chem Soc*, **1985**, 114, 897 - 905.

Baker, M. T.; Tinker, J. H.; Ruzicka, J. A. Process for the Synthesis of Hexafluoroisopropyl Ethers. US patent 5,705,710 **1998**.

Baker, M. T.; Ruzicka, J. A; Process for the Synthesis of Hexafluoropropanes. US Patent 5,789,630 **1998**.