Roger A. Coulombe, Jr.

Emeritus Professor of Toxicology and
Fulbright-Saastamoinen Distinguished Chair in Health Sciences
(Retired 2021)

Department of Veterinary Sciences
Utah State University, Logan, UT

Personal

Professional Experience

Director, Graduate Program in Toxicology; 1995-2021

Professor, Utah State University, Logan, UT: 1993-
Associate Professor, Utah State University, Logan, UT 1988-1993;
Assistant Professor, Utah State University, Logan, UT 1984-1988;

Fulbright-Saastamoinen Distinguished Chair in Health Sciences, Institute of Public Health and Clinical Nutrition, Faculty of Medicine, University of Eastern Finland

Fulbright-Saastamoinen Health Sciences Fellow, Institute of Public Health and Clinical Nutrition Faculty of Medicine, University of Kuopio, Kuopio Finland, 2010-2011.

Visiting Professor, Faculty of Health Sciences, Murdoch University, Perth, Western Australia, 1994-1995.

National Institutes of Health NRSA Postdoctoral Fellow in Biochemistry, Department of Internal Medicine, University of California, Davis, CA. 1982-1984.

Education

Ph.D. Food Science/Toxicology (1983); NIH NRSA Predoctoral Awardee. Toxicology Section, Department of Food Science and Toxicology, Oregon State University, Corvallis. (George Bailey, mentor)

M.S. Microbiology (1979). Department of Bacteriology and Biochemistry, University of Idaho, Moscow. (Richard Heimsch, mentor)

B.S. Microbiology (1977). University of Idaho, Moscow.

Professional Service

Academic Editor, *PLOS ONE* 2012-2022

Scientific Editor, *Research in Veterinary Science 2007-2016*

Editor-in-Chief, Toxicology Section, International Journal of Molecular Science 2011-2014

Review Editor, *Frontiers in Predictive Toxicity 2010-2022*

Member, Scientific Grant Review Panel, Animal Breeding, Genetics and Genomics Program (A1201), Agricultural and Food Research Institute (AFRI), United States Department of Agriculture. 2013-2022.

Member, Scientific Grant Review Panel, Sustainable Agricultural Systems (SAS - Program A9201) Scientific Grant Review Panel, Agricultural and Food Research Institute (AFRI), United States Department of Agriculture. 2018-2022.

US Veterans Administration Biomedical Research - Review Panel Member, Office of Research and Development, United States Department of Veterans Affairs. 2012-2022.

Member, Finland Higher Education Ministry Graduate Programmes Review Panel. 2014-2015.

External Departmental Review Committee, USDA-CSREES, Department of Environmental and Molecular Toxicology, Oregon State University, September, 2002.

USDA-CSREES Food Safety Technical and Advisory Committee: *Beneficial and Adverse Effects of Foodborne Bioactive Compounds on Human Health and Food Safety* 1985-2022

Molecular Biology/Toxicology Grant Review Committee, NCI, National Institutes of Health, 1993, 1997, 2000.

Special Study Section, Toxicology Grant Review Committee, NIEHS. National Institutes of Health.1991.

Special Study Section, Pharmacology Grant Review Committee, NIAID, National Institutes of Health. 1991.

Scientific Peer-Reviewed Publications

Eaton, D.L., Williams, D.E. and Coulombe, R.A. (2025) Species Differences in the Biotransformation of Aflatoxin B1: Primary Determinants of Relative Carcinogenic Potency in Different Animal Species. Toxins (Basel) Jan 9;17(1):30. doi: 10.3390/toxins17010030

Reed, K.M., Mendoza, K.M., and Coulombe, R.A. (2019) Altered Gene Response to Aflatoxin B_1 in the Spleens of Susceptible and Resistant Turkeys. *Toxins* Apr 28;11(5). doi: 10.3390/toxins11050242; https://www.mdpi.com/2072-6651/11/5/242

Reed, K.M., Mendoza, K.M., and Coulombe, R.A. (2019) Differential Transcriptome Responses to Aflatoxin B_1 in the Cecal Tonsil of Susceptible and Resistant Turkeys**.** *Toxins* 11 (1) 1-19. https://doi.org/10.3390/toxins11010055

Reed, K.M., Mendoza, K.M., Abrahnte, Juan and Coulombe, R.A. (2018) Comparative Response of the Hepatic Transcriptomes of Domesticated and Wild Turkey to Aflatoxin B_1. *Toxins* 10 (1) 1-24. doi:10.3390/toxins10010042

Monson, M. S., Cardona, C.J., Coulombe, R.A., and K.M. Reed. (2016). Hepatic Transcriptome Responses of Domesticated and Wild Turkey Embryos to Aflatoxin B_1. *Toxins* 8, 16; 1-22. doi:10.3390/toxins8010016

Monson, M. S**.,** Coulombe, R.A., and K.M. Reed. (2015). Sensitivity and Response of Poultry to Aflatoxin B_1 Exposure. *Agriculture* 5: 742-777. doi:10.3390/agriculture5030742

Monson, M. S., Settlage, R.E., Mendoza, K.M., Rawal, S., El-Nezami, H., Coulombe, R.A., and K.M. Reed. (2015). Modulation of the Spleen Transcriptome in Domestic Turkey (Meleagris gallopavo) in Response to Aflatoxin B1 and Probiotics. *Immunogenetics* Jan 20; DOI 10.1007/s00251-014-0825-y

Monson, M. S., Settlage, R.E., McMahon, K.W., Mendoza, K.M., Rawal, S., El-Nezami, H., Coulombe, R.A., and K.M. Reed. (2014). Response of the Hepatic Transcriptome to Aflatoxin B_1 in Domestic Turkey. *PLOS One* June 30; 9 (6) e100930. doi: 10.1371/journal.pone.0100930. DOI: 10.1371/journal.pone.0100930

Rawal, S., Bauer, M. M., Mendoza, K.M., El-Nezami, H., Hall, J.O., Kim, J.-E., Stevens, J.R., Reed, K.M., and R.A. Coulombe (2014). Aflatoxicosis Chemoprevention by Probiotic *Lactobacillus* and its Impact on BG Genes of the Major Histocompatibility Complex. *Research in Veterinary Science* 97: 274-281 doi:10.1016/j.rvsc.2014.06.008

Kim, J.E., Bunderson, B.R., Croasdell, A. Reed, K.M. and R.A. Coulombe Jr. (2013) Alpha-class Glutatione S-transferases in Wild Turkeys: Characterization and Role in Resistance to the Carcinogenic Mycotoxin Aflatoxin B_1. *PLoS One* 8(4): e60662. doi:10.1371/journal.pone.0060662

Wu, Y., McEwen, G.D., Tang, M., Yu, T., Dimmick, Zhou, A., Gilbertson, T.A., Coulombe, Jr., R.A., and J.R. Stevens. (2013) Sensing Biophysical Alterations of Human Lung Cells (A549) in the Context of Toxicity Effects of Diesel Exhaust Particles. *Cell Biochem Biophys* 67 (3):1147-1156 doi: 10.1007/s12013-013-9618-4

Bunderson, B.R., Ji Eun Kim, J.E., Croasdell, A., Reed, K.M. and R.A. Coulombe Jr. (2013) Heterologous Expression and functional characterization of avian *Mu*-class Glutatione S-transferases. *Comp. Biochem. Physiolol.* 158(2): 109-116. doi: 10.1016/j.cbpc.2013.05.007

Watterson, T.L., Hamilton, B., Martin, R., and R.A. Coulombe, Jr**.** (2012) Urban Particulate Matter Activates *Akt* in Human Lung Cells. *Archives of Toxicology* 86:121-135 DOI: 10.1007/s00204-011-0739-5

Rawal, S. and R. A. Coulombe, Jr. (2011) Metabolism of Aflatoxin B_1 in Turkey Liver Microsomes: The Relative Roles of Cytochromes P450 1A5 and 3A34. *Toxicology and Applied Pharmacology* 254:349-354. doi:10.1016/j.taap.2011.05.010..

Kim, J.E., Bunderson, B.R., Croasdell, A., and R. A. Coulombe, Jr. (2011) Functional Characterization of Alpha-class Glutathione S-transferases from the Turkey (Meleagris gallopavo). *Toxicological Sciences* 124: 45-53. doi: 10.1093/toxsci/kfr212

Riley, R.T., Voss, K.A., Coulombe, R.A., Pestka, J.J. and D. E. Williams (2011). Developing mechanism-based and exposure biomarkers for mycotoxins in animals. In Determining Mycotoxins and Mycotoxigenic Fungi in Food and Feed (S. De Saeger, ed.) Woodhead Publishing LTD, Cambridge, UK. ISBN 1 84569 674 3

Rawal, S., Yip, S.S.M., and R.A. Coulombe, Jr. (2010). Cloning, expression and functional characterization of cytochrome P450 3A37 from Turkey Liver with Aflatoxin B_1 Epoxidation Activity. *Chemical Research in Toxicology* 23: 1322-1329. DOI**:** 10.1021/tx1000267

Rawal, S., Kim, J., and R.A. Coulombe, Jr. (2010). Aflatoxin in poultry: metabolism, toxicity, and prevention. *Research in Veterinary Science* 89:325-331.

Dalloul, R. *et al.,* (2010) Multi-platform next-generation sequencing of the domestic turkey (*Meleagris gallopavo*) genome assembly and analysis. *PLoS Biology* Sept. 7; 8(9) 1-21; e1000475.

Kim, J.E. Bauer, M.M. Mendoza, K.M., Reed, K.M., and R.A. Coulombe, Jr. (2010) Comparative Genomics Identifies New Alpha Class Genes within the Avian Glutathione S-transferase Gene Cluster (*Meleagris gallopavo*). *Gene* 452: 45-53.

Watterson, T.L., Hamilton, B., J., Martin, R., and R.A. Coulombe, Jr. (2009) Urban Particulate Matter causes ER stress and the Unfolded Protein Response in Human Lung Cells. *Toxicological Sciences* 112: 111-122.

Rawal, S., K.M. Mendoza Reed, K.M. and R.A. Coulombe, Jr. (2009). Structure, function, and genetic mapping of the Cytochrome P4503A37 gene in the turkey (*Meleagris gallopavo*). *Cytogenetics and Genome Research* 125: 67-73.

Guarisco, J.A., Hall, J.O., and R.A. Coulombe, Jr. (2008) Butylated hydroxytoluene chemoprevention of aflatoxicosis - effects on aflatoxin B_1 bioavailability, hepatic DNA adduct formation, and biliary excretion. *Food and Chemical Toxicology* 46: 3727-3731. (DOI: 10.1016/j.fct.2008.09.050)

Guarisco, J.A., Hall, J.O., and R.A. Coulombe, Jr. (2008) Mechanisms of butylated hydroxytoluene chemoprevention of aflatoxicosis - inhibition of aflatoxin B_1 metabolism. *Toxicology and Applied Pharmacology* 227: 339-346 (DOI:10.1016/j.taap.2007.11.017).

Watterson, T.L., Sorenson, J., Martin, R., and R.A. Coulombe, Jr. (2007). Effects of $PM_{2.5}$ Collected from Cache Valley Utah on Genes Associated with the Inflammatory Response in Human Lung Cells. *Journal of Toxicology and Environmental Health* 70:1731-1734 (DOI: 10.1080/15287390701457746).

Reed, K.M., Mendoza, K.M. and R. A. Coulombe, Jr. (2007). Structure and genetic mapping of the Cytochrome P4501A5 gene in the turkey (*Meleagris gallopavo*). *Cytogenetics and Genome Research* 116: 104-109 (DOI:10.1159/000097426).

Guarisco, J.A., Hall, J.O., and R.A. Coulombe, Jr. (2007) Butylated hydroxytoluene reduces aflatoxin B_1 bioavailability and hepatic adduct formation in turkeys. In *Poisonous Plants: Global Research and Solutions* (K. Panter, T. Wierenga, J. Phister, eds.) CAB International, London. pp. 197-202.

Coulombe, R.A. and S.M. Yip. (2007) Heterologous expression of a cytochrome P450 from turkey liver that activates aflatoxin B_1. In *Poisonous Plants: Global Research and Solutions* (K. Panter, T. Wierenga, J. Phister, eds.) CAB International, London. pp. 82-88

Yip, S.S.M. and R.A. Coulombe, Jr. (2006) Molecular cloning and expression of a novel cytochrome P450 from turkey liver with aflatoxin B_1 metabolizing activity. *Chemical Research in Toxicology* 19:30-37.

Van Vleet, T.R., Watterson, T.L., Klein, P.J., and R.A. Coulombe, Jr. (2006). Aflatoxin B_1 alters the expression of p53 in cytochrome P450-expressing human lung cells. *Toxicological Sciences.* 89 (2), 399-407.

Coulombe, R.A., Guarisco, J.A., Klein, P.J. and J.O. Hall (2005) Chemoprevention of aflatoxicosis in poultry by dietary butylated hydroxytoluene. *Animal Feed Science and Technology* 121: 217-225.

Rieben, W.K., and Coulombe, R.A. (2004). DNA cross-linking by dehydromonocrotaline lacks apparent base sequence preference. *Toxicological Sciences* 82, 497-503.

Coulombe, R.A. (2003) Pyrrolizidine alkaloids in foods. *Advances in Food and Nutrition Research* (S.L. Taylor, Ed.). Elsevier Science Ltd., Oxford, U.K. Volume 45, pp. 61-99.

Coulombe, R.A., Klein, P.J. and J.O. Hall (2003). Butylated hydroxytoluene chemoprotection: Response to Williams. *Toxicology and Applied Pharmacology* 189:152.

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Klein, P.J., Hall, J.O. and R. A. Coulombe, Jr. (2003). Dietary butulated hydroxytoluene protects against aflatoxicosis in turkeys, in *Poisonous Plants and Related Toxins* (T. Acamovic, C.S. Stewart and T.W. Pennycott eds.), CAB International, London. pp. 478-483.

Coulombe, R.A., and W. K. Rieben (2003). Lack of Apparent Base Sequence Preference of Activated Pyrrolizidine Alkaloid Cross- yLinks with DNA, in *Poisonous Plants and Related Toxins,* (T. Acamovic, C.S. Stewart and T.W. Pennycott eds.) CAB International, London. pp. 26-31.

Van Vleet, T R, Macé, K and R. A. Coulombe, Jr. (2002). Comparative Aflatoxin B_1 Activation and Cytotoxicity in Human Bronchial Cells Expressing Human CYPs 1A2 and 3A4. *Cancer Research* 62, 105-112.

Van Vleet, T.R., Klein, P.J. and R. A. Coulombe, Jr. (2002). Metabolism and cytotoxicity of aflatoxin B_1 in cytochrome P-450-expressing human lung cells. *Journal of Toxicology and Environmental Health, Part A* 65: 853-67.

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Van Vleet, T.R., Bombick, D.W., and R.A. Coulombe, Jr. (2001) Inhibtition of Human Cytochrome P450 2E1 Activity by Nicotine, Cotinine, and Aqueous Cigarette Tar Extract in vitro. *Toxicological Sciences* 64**,** 185-191.

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Coulombe, R.A., Jr. (2000) Natural Toxins and Chemopreventives in Plants, In B. Helferich and C. Winter (eds.) *Food Toxicology*. CRC Press, Inc., Boca Raton, Fl. pp. 137-161.

Coulombe, R.A. Jr., Drew, G.L., and. F.R. Stermitz (1999). Pyrrolizidine alkaloids cross-link DNA with actin. *Toxicology and Applied Pharmacology* 154: 198-202. **"1999 Highlight Article."**

Stegelmeier, B.L., Edgar, J.A., Colegate, S.M., Gardner, D.L., Schoch, T.K., Coulombe, R.A., Jr. and Molyneux, R.J. (1999). Pyrrolizidine alkaloids plants, metabolism and toxicity. *Journal of Natural Toxins* 8:95-116.

Kim, H.Y., Stermitz, F.R., Li, J.K. and R.A. Coulombe, Jr. (1999). Comparative DNA cross-linking by activated pyrrolizidine alkaloids. *Food and Chemical Toxicology.* 37: 619-625.

Coulombe, R.A., Jr. (1999). *Natural Toxins,* in J.J. Francis, (ed) The Wiley Encyclopedia of Food Science and Technology, 2nd Edition. Wiley Interscience, Wiley & Sons, NY.pp. 2236- 2352.

Drew, G.L., Stermitz, F.R. and R.A. Coulombe, Jr. (1998) Molecular Interactions of Pyrrolizidine Alkaloids with critical cellular targets, In T. Garland and A. C. Barr (eds.) Toxic Plants and other Natural Toxicants, CAB International Press, New York. pp. 537-542.

Kelly, J.D., Guengerich, F.P., Eaton, D.L. and R.A. Coulombe, Jr. (1997) Activation of aflatoxin B_1 by human lung. *Toxicology and Applied Pharmacology*. 144:88-95.

Coulombe, R.A. (1996). Does nature know best? Natural carcinogens and anticarcinogens in American food. American Council on Science and Health. New York.

Sharma, R.P. and R.A. Coulombe, Jr. (1996). Pharmacokinetics in risk assessment, (Chapter 7) In A.M. Fan and L.W. Chang (eds.) *Toxicology Risk Assessment*. Marcel Dekker, Inc., New York. pp. 81-99.

Kim, H.Y., Stermitz, F.R. and R.A. Coulombe, Jr. (1995). Pyrrolizidine alkaloid-induced DNA-protein cross-links. *Carcinogenesis* 16:2691-2697.

Ball, R.W., Huie, J.M. and R.A. Coulombe, Jr. (1995). Comparative activation of aflatoxin B_1 by mammlian pulmonary tissues. *Toxicology Lett.* 75: 119-125.

Coulombe, R.A., Sharma, R.P. and J.W. Huggins (1995). Pharmacokinetics of the antiviral agent 3-dezaneplanocin A. *Eur. J. of Pharm. Pharmacokinetics.* 20:197-202.

Coulombe, R.A., Kim, H.Y. and F.R Stermitz (1994). Structure-activity relationships of pyrrolizdine alkaloid DNA cross-links, in S.M. Colegate and P.R. Dorling (eds.) *Poisonous Plants of the World: Agricultural, Phytochemical and Ecological Aspects*. CAB International, London. pp. 125-130.

Coulombe, R.A., Jr. (1994). "Non-Hepatic Effects and Biotransformations of Aflatoxin B_1 ," in D.L. Eaton, and J.D. Groopman (eds.) *The Toxicology of Aflatoxins: Human Health, Veterinary and Agricultural Significance.* Academic Press, Orlando, FL.

Coulombe, R.A., Jr. (1993). Biological Action of Mycotoxins. *J. Dairy Sci*. 76:880-891.

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Hsieh, G.C., R.P. Sharma, R.D. Parker and R.A. Coulombe, Jr. (1992). Immunological and neurobiochemical alterations induced by repeated oral exposure of phenol in mice. *Eur. J. Pharmacol.* 228:107-114.

Coulombe, R.A., J.R. Hincks, H.Y. Kim, H.J. Segall, F.R. Stermitz and R.J. Molyneux (1992). DNA cross-linking by pyrrolizidine alkaloids, In L.F. James, R.F. Keeler, E.M. Bailey, P.R. Cheeke and M.P. Hegarty (eds.) Poisonous Plants: Proceedings of the Third International Symposium. Iowa State University Press.

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Coulombe, R.A. (1991) Alternaria Toxins, in R.P. Sharma and D.K. Salunke (eds.) *Mycotoxins and Phytoalexins in Human and Animal Health*. CRC Press, Boca Raton, FL.

Ball, R.W. and R.A. Coulombe, Jr. (1991). Comparative biotransformation of aflatoxin B_1 in mammalian upper airway epithelium. *Carcinogenesis* 12:305-310.

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Hincks, J.R., H.Y. Kim, H.J. Segall, R.J. Molyneaux, F.R. Stermitz and R.A. Coulombe, Jr. (1991). DNA cross-linking in mammalian cells by pyrrolizidine alkaloids: structure-activity relationships *Toxicol. Appl. Pharmacol.* 111:90-98.

Wilson, D.W. R.W. Ball and R.A. Coulombe, Jr. (1990). Comparative action of aflatoxin B_1 in tracheal explants from four mammalian species. *Cancer Res*. 50:2493-2498.

Ball, R.W. and R.A. Coulombe, Jr. (1990). Comparative formation and repair of aflatoxin B_1-DNA adducts in mammalian tracheal epithelium. *Cancer Res.* 50:4918-4922.

Hsieh, G.C. R.P., Sharma, R.D. Parker and R.A. Coulombe, Jr. (1990). Evaluation of toluene exposure via drinking water levels of regional brain biogenic amines and their metabolites in CD-1 mice. *Ecotoxicol. Environ. Safety* 20:175-184.

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Hincks, J.R. and R.A. Coulombe (1989). Rapid analysis of DNA-DNA and DNA protein cross-links by gravity-flow alkaline elution. *Environ. Molec. Mutagen.* 13:211-217.

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Gillett, J.W., M.D. Knittel, E. Jolma and R.A. Coulombe (1983). Applicability of microbial toxicity assays to assessment problems. *Environ. Toxicol. and Chem*. 2:185-193.

Loveland, P.M., R.A. Coulombe, L.M. Libbey, N.E. Pawlowski, R.O. Sinnhuber and J.E. Nixon (1983). Identification and mutagenicity of aflatoxicol M_1 produced by metabolism of aflatoxin B_1 and aflatoxicol by liver fractions from rainbow trout (*Salmo gairdneri*). *Food Chem. Toxicol*. 21:557-562.

Eisele, T.A., R.A. Coulombe, J.L., Williams, D.W. Shelton and J.E. Nixon (1983). Time and dose-dependent effects of dietary cyclopropenoid fatty acids on the mixed-function oxidase system of rainbow trout. *Aquatic Toxicol*. 4:139-151.

Coulombe, R.A., D.W. Shelton, R.O. Sinnhuber and J.E. Nixon (1982). Comparative mutagenicity of aflatoxins using a *Salmonella*/trout hepatic activation system. *Carcinogenesis* 3:1261-1264.

Pollock, G.A., C.E. DiSabotino, R.C. Heimsch and R.A. Coulombe, Jr. (1982). Distribution, elimination and metabolism of ^{14}C-alternariol monomethylether in the rat. *J. Environ. Sci. Health B* 17:109-124.

Presentations at Scientific and Professional Conferences

1980-Present: More than 100 oral and poster presentations at national and international professional scientific meetings (Society of Toxicology, American Association for Cancer Research, Plant and Animal Genome, International Congress of Toxicology, Federation of Associated Societies of Experimental Biology, American Society of Pharmacology and Experimental Therapeutics, International Congress of Free Radical Biology and Medicine, and related professional).

Invited - Sponsored Lectures, Seminars, Presentations, Workshops, Guest and Honorary Lectures

"Grant Writing Workshop: How to Write a Competitive Application to a Funding Agency" Weeklong workshop, Tallinn University of Technology, Tallinn, Estonia, September 23-27, 2019. Funded by EU European Regional Development Programme.,

"Grant Writing Workshop: How to Write a Competitive Application to a Funding Agency" One week workshop at the University of Eastern Finland, September 9-13, 2019. Funded by Fulbright Finland.

"Grant Writing: How to Write a Competitive Application to a Funding Agency" Invited instruction in two one-week short courses sponsored by Fulbright Specialist Program, and the Instituto Zooprofilactico Sperimentale Umbria e Marche (IZSUM), Perugia, Italy. June 18 – July 2, 2016; September 8-20 2017, May 2018, May, 2019.

"Epigenetic Regulation of Glutathione S-transferases,", Invited seminar sponsored by Department of Pharmacology and Toxicology, Faculty of Medicine, University of Eastern Finland, November 1, 2018.

"Functional Genomics to Enhance Cancer Resistance: A Walk on the Wild Side." Invited seminar School of Veterinary Medicine, University of Padova, Padova Italy. September 21, 2017.

"Trout Cancer Model: Celebrating the Life and Career of George Bailey" Diet and Optimum Health Symposium, Linus Pauling Institute, Oregon State University, Corvallis, OR September 9-12 2015.

"Genomic Determinants to Disease Resistance: A Walk on the Wild Side" Keynote Address International Symposium on Poultry Genetics, School of Veterinary Medicine, Free University of Berlin, Berlin Germany, May 2015.

"Chemoprevention of Aflatoxicosis." International Symposium on Poultry Genetics, School of Veterinary Medicine, Free University of Berlin, Berlin Germany, May 2015.

"Public Health Impacts of Particulate Air Pollution in Northern Utah - Translational Studies." Keynote Speaker, Spring Symposium, Center for Environmental Medicine, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, May 8, 2013.

"Herbal Remedies and Nutritional Supplements: Applications, Efficacy and Safety. Invited lectures in short course sponsored by the PhD Programme in Applied Bioscience – Engineering, Food & Nutrition, Environment. The National Graduate School of Finland. University of Eastern Finland, Kuopio, Finland. December 17-19, 2012.

Invited lecturers in Food Safety and Nutritional Toxicology for FSTX 7002 course MSc Program in Food Safety and Toxicology, School of Biological Sciences, University of Hong Kong, October 18-22, 2012.

"Grant Writing: How to Write a Competitive Application to a Funding Agency"" Invited participation in short course sponsored by the PhD Programme in Applied Bioscience – Engineering, Food & Nutrition, Environment. The National Graduate School of Finland. University of Eastern Finland, Kuopio, Finland. August 13-17, 2012.

"Susceptibility to Mycotoxins: Systems Biological Methods" invited presentation, University of British Columbia, April 30, 2012.

"Genomic Approaches to Disease Susceptibility: A Walk on the Wild Side" Invited presentation, Genetics Program, Iowa State University, April 13, 2012.

"Toxicogenomics and Disease Prediction" Malcolm Trout Honorary Lecture, Michigan State University, March 28, 2012.

Invited lecturers in Food Safety and Nutritional Toxicology for FSTX 7002 course MSc Program in Food Safety and Toxicology, School of Biological Sciences, University of Hong Kong, October 18-28, 2011.

"Food and Cancer: Molecular Mechanisms, Biomarkers, and Prevention. Invited presentation, Applied Biosciences Program, Food and Nutritional Toxicology Lecture Series, University of Eastern Finland, Kuopio, Finland, August 2011.

Invited lectures for short course entitled "Bioanalysis, Drug Metabolism and Metabolite Analysis," sponsored by the University of Helsinki Graduate School in Pharmaceutical Research, Tvarminne Biological Research Station, Tvarminne, Finland, May 2011.
"Reducing Cancer in Developing Countries." Savonia University of Applied Sciences, Kuopio, Finland November 4, 2010.

"Genomic Determinants to Cancer Susceptibility - A Walk on the Wild Side." Invited presentation, Department of Pharmacology, Faculty of Medicine, University of Oulu, Oulu Finland. December 7, 2010.

"Antioxidants and Their Role in Cancer Prevention." Invited presentation, University of Turku, Turku Finland. November 25, 2010.

"The Role of Diet in Cancer." Invited presentation Laurea University of Applied Sciences, Helsinki, Finland. November 17, 2010.

"Nutritional Approaches to Cancer Prevention." Invited presentation Department of Clinical Medicine, Faculty of Medicine, University of Kuopio, Kuopio Finland. November 10, 2010.

Invited lecturers in Food Safety and Nutritional Toxicology for FSTX 7002 course MSc Program in Food Safety and Toxicology, School of Biological Sciences, University of Hong Kong, October 11-21, 2010.

"Genomic Approaches to Identify Sensitivity to Dietary Carcinogens. A Bird's Eye View." Invited presentation University of Turku, Turku Finland. September 20, 2010.

Invited lecturers in Food Safety and Nutritional Toxicology FSTX 7002 course MSc Program in Food Safety and Toxicology, School of Biological Sciences, University of Hong Kong, November 4-17, 2009.

"Discovery of Genetic Markers for Extreme Sensitivity of Poultry to Aflatoxin B_1." Invited Presentation, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, October 19, 2009.

Genotyping Aflatoxin Susceptibility in Turkeys: A Bird's Eye View. Invited presentation at the Symposium on Animal Genomics, Virginia Tech, October 2008.

"Expression of Genes Associated with the Inflammatory Response in Human Lung Cells Exposed to Cache Valley Particulate Matter." Invited Presentation, Utah Environmental Health Association, September, 2008.

"Food Safety from Farm to Fork," Invited lecturer for Food and Nutritional Toxicology Lecture Series, University of Kuopio Finland, August 2008.

Genotyping Carcinogen Metabolism as a Predictor of Susceptibility: A Bird's-Eye View. Presentation to Environmental Toxicology Program, University of Queensland, Brisbane Australia. July 4, 2008
"Urban Fine Particulate Matter Alters Expression of Genes Associated with the Inflammatory Response in Human Lung Cells." Invited presentation, Genes-to-Geosciences Program, MacQuarie University, Sydney, Australia. July 7, 2008.

"Turkey in the Straw: Genomic Approaches to Identify Markers for the Hypersensitivity of Poultry to Aflatoxin B_1." Invited presentation, Molecular Cell Biology and Biotechnology Seminar Series, Virginia Bioinformatics Institute, Virginia Tech, Blacksburg, VA. February 1, 2008.

"Genomics to Increase Aflatoxin Resistance in Turkeys" presented at the USDA-NRI Animal Genome Principal Investigators Conference, January 11, 2008. San Diego, CA.

"A Genomic Approach to Increasing Aflatoxin B_1 Resistance in Turkeys" 56^{th} Annual National Breeders Roundtable, Poultry Breeders of America. St. Louis, MO. May 3, 2007.

"Fine Particulate Matter Alters Expression of Genes Associated with the Inflammatory Response in Human Lung Cells" KTL - National Public Health Institute, Kuopio Finland. April 2, 2007.

"Characterizing Genes Associated with Aflatoxin B_1 Hypersensitivity And Chemoprevention In Turkeys" Invited symposium presentation, Plant and Animal Genomes Conference –XV. San Diego, January, 2007.

"Effects of Cache Valley $PM_{2.5}$ on Regulation of Genes Associated with the Inflammatory Response in Human Lung Cells." Affymetrix Gene Chip Symposium, Center for Integrated Biosystems, Utah State University, August 21, 2006.

"Molecular Mechanisms of Aflatoxin B_1 Hypersensitivity and Chemoprotection in Poultry," Invited seminar, Program in Molecular Biosciences, College of Veterinary Medicine, University of Minnesota. February 1, 2006.

"Food and Cancer: Molecular mechanisms, biomarkers and prevention." Invited lecturer for week-long short course, Department of Clinical Nutrition and Food & Health Research Centre, University of Kuopio, Kuopio Finland. August-September 2005.

"Modulation of Aflatoxin Toxicity with Antioxidants" Gordon Research Conference, Waterville, Maine, June 2005.

"Neutraceuticals as Double-Edged Swords: Weighing Benefits and Risks of Dietary Chemicals to Human Health," Society of Toxicology Annual Meeting, Baltimore, MD, March 2004.

"Toxicity and Chemoprevention of Aflatoxin B_1" Mountain West Society of Toxicology Meeting, Breckenridge, CO, September, 2003.

"Dietary Cancer Chemoprevention," CSIRO Livestock Industries, Australian Animal Health Laboratory, Geelong, Victoria, Australia, August 2003.

"Transformed human cells for Environmental Toxicology Risk Assessment," National Institute for Water and Atmospheric Research (NIWA), Hamilton, New Zealand, August 2003.

"Molecular Biomarkers for Environmental Carcinogens." Invited presentation, Interdisciplinary Program in Toxicology, Department of Physiology and Pharmacology, College of Veterinary Medicine, University of Georgia, May 2003.

Socrates Award Honorary Lecture. University of Idaho. December 2002.

“Molecular action of Dietary Carcinogens and Anticarcinogens.” Invited seminar, Department of Molecular Biology and Biochemistry, University of Idaho. December 2002.

“Toxic compounds in Traditional Southwest Medicines,” Montezuma Creek Community Health Center, Montezuma Creek, UT. October 2002.

“Clinical Relevance of Hepatotoxic Navajo Folk Medicines,” Navajo Area Indian Health Service, Kayenta, AZ. October 2002.

"Pulmonary toxicology of aflatoxin B_1." Invited presentation at the Mountain West Society of Toxicology Conference, Snowbird UT, September, 2000.

"Reducing Mycotoxin Risk in Food Supplies" Invited speaker at Biological Modeling Symposium, Cargill Inc.; Elk River, MN, January, 2000.

"Molecular Biomarkers for Exposure to DNA Cross-linking Agents," seminar to Division of Food Safety and Health, CSIRO, Geelong, Victoria, Australia, November 1999.

"Molecular mechanisms of DNA cross-linking compounds" seminar to Department of Chemistry, University of Montana, October 1998.

“Safety of Dietary Supplements” Annual Meeting of The Gerontological Society, Salt Lake City, UT, September 1997.

“Molecular interactions of activated pyrroles with nuclear DNA” To Institute of Animal Production and Processing, Division of Animal Health, CSIRO. Parkville, Victoria, Australia. September, 1995.

“Chemical carcinogenesis and anti-carcinogenesis.” Invited presentation to the Department of Internal Medicine, School of Medicine, University of Western Australia, Perth, Western Australia. September, 1995.

“Biophysical studies on the cross-linking of activated pyrroles with nuclear DNA.” Department of Biochemistry, University of Western Australia, Perth, Western Australia. July, 1995.

“Role of cytochromes P450 and glutathione S-transferases in chemical carcinogenesis.” Invited plenary presentation at the annual meeting of the Australian Society for Biochemistry and Molecular Biology. Mundaring Weir, Western Australia. April, 1995.

“Pyrrolizidine alkaloid induced poisonings in livestock” Invited presentation to the School of Veterinary Studies, Murdoch University, Perth, Western Australia. April, 1995.

“Molecular Toxicology of Pyrrolizidine Alkaloids” Invited presentation to the Interdepartmental Program in Toxicology, University of California, Davis. January, 1994.

“Tracheal explant cultures as a model for lung carcinogenesis studies" Invited presentation at the 1992 World Congress on Cell and Tissue Culture, Washington D.C. June, 1992.

"Action of aflatoxin B_1 in lung airway cultures" Invited presentation at the 1992 World Congress on Cell and Tissue Culture, Washington D.C. June, 1992.

"Aflatoxins" Invited presentation at the Society of Toxicology-sponsored Symposium on Natual Toxins, Dallas, TX, February 25, 1991.

"Biological Action of Mycotoxins," Invited presentation at the Annual Meeting of the American Dairy Science Association, Logan, UT. August, 1991.

"Mechanisms of Cancer," Invited presentation to Industrial Toxicology course at the University of Utah, May, 1990.

"Natural Toxins in Food," Presentation at USU for 1990 Land Grant Days. September 1990.

"Genetic Toxicology," Invited presentation to Industrial Toxicology Short Course, University of Utah, Salt Lake City, UT. May 1987, 1988.

"Aflatoxin Biochemistry in Respiratory Tissues," Invited Presentation to the School of Medicine, Duke University, August, 1988.

"In Vitro Pulmonary Carcinogenesis Studies," Invited Workshop presentation at Battelle Pacific Northwest Laboratories, Richland, WA, September, 1988.

"Pulmonary Carcinogenesis Studies of Aflatoxin B_1," Invited presentation to the Department of Bacteriology and Biochemistry, University of Idaho, September, 1988.

"An *In Vitro* Model of Pulmonary Carcinogenesis," Invited presentation at the AMC Cancer Research Center, Denver, CO, November, 1988.

"Mechanisms of Cancer," Invited presentation to Industrial Toxicology course at the University of Utah, May, 1989.

"Aspartame and Neurotransmitter Biochemistry," Honor Lecture, Sigma Xi Scientific Society. January 1986, Logan, UT.

Testimony on Food Safety Issues, Committee for Labor and Human Resources, United States Senate, Washington, D.C. February, 1986.

"Neurobiochemical Effects of Aspartame," Invited presentation to the US Food and Drug Administration, Washington, D.C. February, 1986.

"Studies on Aspartame," Annual Conference on Current Concerns on Toxicity, July 1985, San Francisco.

"Pulmonary Metabolism of Carcinogens," Presentation to the Departments of Biochemical Pharmacology and Toxicology, University of Utah, May 1985.

"Frontiers in Research," Presentation to students in the USU honors program, November, 1985.

Grants, Contracts and Awards

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $60,000, 04/19 – 06/20.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $60,000, 04/18 – 06/19.

USDA-AFRI Animal Genome Program, National Institute of Food and Agriculture (NIFA) Competitive Grant (Principal Investigator). *Functional Genomics to Enhance Disease Resistance in Poultry.* 2013-01043. $499,822, 9/13 – 9/18.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $40,000, 04/17 – 06/18.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $40,000, 04/16 – 06/17.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $40,000, 04/15 – 06/16.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $20,000, 04/14 – 06/15.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $18,500, 07/13 – 06/14.

Utah Agricultural Experiment Station Grant UTA 1091 (Principal Investigator) "Systems Biology and Toxicogenomics to Improve Animal Health." UTA 1091; $195,000, 7/12-6/17.

Utah Agricultural Experiment Small Grant (Principal Investigator) "Reducing Health Impacts of Particulate Air Pollution Generated by Animal Agriculture. $18,700. 9/2012-8/2014.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $18,000, 07/12 – 06/13.

USANA Health Sciences. Effect of an Antioxidant and Anti-Inflammatory Dietary Supplement Pack on the Adverse Physiological Actions Associated with Acute $PM_{2.5}$ Exposure (Michael Lefevre, PI). $147,685. 2011-2012.

United States Department of State, Council for International Exchange of Scholars. Fulbright Finland-United States Educational Exchange Commission. Fulbright-Saastamoinen Award in Health Sciences. $50,000. Grant #49473162. 6/10-1/11.

National Research Initiative, Competitive Grant, USDA (Principal Investigator) "Genomics to Increase Aflatoxin Resistance in Turkeys" 2006-04819 $449,302, 4/07 – 3/11.

USDA-AFRI Animal Genome Program. (co-I w/ Dalloul, Smith - VTech, Reed - UMn) *Reference genome sequence for the turkey, Meleagris gallopavo*. 2010-2014. $908,280 .

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $15,000, 07/08 – 06/10.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $18,000, 07/07 – 06/08.

Community/University Research Initiative (Principal Investigator). "Improving health through probiotic *Lactobacillus*." $15,068. 05/07- 06/08.

Utah Agricultural Experiment Station Grant (Principal Investigator) UTA 126 "Reducing the Impacts of Agricultural Toxins." UTA 126; $15,000/year, 7/07-6/12.

USDA-CSREES Multi-State Regional Project W-2122 "Beneficial and Adverse Effects of Food-Borne Bioactive Compounds on Human Health and Food Safety." 10/07 – 09/12

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $18,000, 07/06 – 06/07.

Center for Integrated Biosystems, Utah State University. Bioinformatic Profiling of Responses to Urban Air—A Multi-disciplinary Study (Principal Investigator). $24,975, 07/06 – 06/07.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $18,000, 07/05 – 06/07.

National Research Initiative, Competitive Grant, USDA (Principal Investigator) "Chemoprotection of aflatoxicosis by dietary antioxidants," 02-35204-12294; $293,750, 09/02- 09/07.

Marriner S. Eccles Charitable Foundation (Principal Investigator) **"**For a Healthier Utah – Determining Health Risks Associated with Particulate Air Pollution," $55,000, 07/04 – 06/05.

Community/USU Research Initiative Grant, (Principal Investigator) “Improving Poultry Health by Developing Chemopreventive Feed Additives,” $18,500, 07/04 -06/05.

Center for Integrated Biosystems, Graduate Student Fellowship Award. $16,000; 11/04-10/05.
Center for Integrated Biosystems, Affymetrix Chip Competitive Award. $5,575; 11/04

National Research Initiative, Competitive Grant, USDA (Principal Investigator) “Preventing mycotoxin disease in poultry by dietary induction of glutathione S-transferases,” 970-3081; $168,500, 10/97-12/01.

W.G. Swanson Foundation: (Principal Investigator). "Toxins and Medicines from Utah Plants." $20,000. 11/99-10/02.

Utah Agricultural Experiment Station Grant (Principal Investigator) "Mechanisms of Action of Toxicants and Chemoprotectants," UTA 126; $15,000/year, 7/02-6/07.

National Research Initiative, Competitive Grant, USDA (Principal Investigator). Increasing detoxification in poultry by dietary modification.” 98-3754. $29,925, 10/98-9/99.

National Research Initiative, Competitive Grant, USDA (Principal Investigator). "Immunological Detection of Pyrrolizidine Alkaloids in Animal Products. AS79. $4,950, 10/99-9/00.

Willard L. Eccles Charitable Foundation Grant: (Principal Investigator) "Protecting Utah's Environment." Student fellowship. $92,100. 4/99-4/04.

Willard L. Eccles Charitable Foundation Grant: (Principal Investigator) "Improve Native American Health Through Identification and Control of Natural Toxins." $104,000. 12/00-present.

Higher Education Technology Initiative, State of Utah. “Web-based multimedia learning modules for molecular biology. $10,000. 6/97-5/98

Pacific Egg and Poultry Association. “Improving Health of Poultry through Dietary Interventions.” $2,500. 8/97-7/98.

RJR Nabisco Student Fellowship in Toxicology. $12,000/year (for student training).

Western Alliance to Expand Student Opportunities (WEASO). Summer toxicology fellowship. $2,000. 6/98-9/98.

Utah Higher Education Technology Initiative. $10,000. 2/97.

American Lung Association Grant (Co-Investigator: P.I. Dennis Wilson) "Glutathione S-transferases in the lung," $50,000; 5/92-5/94.

Utah Turkey Marketing Board. “Increasing resistance of turkeys to aflatoxins through dietary interventions.” $5,000/ year. 6/96-5/98.

U.S. Public Health Service Grant, National Institutes of Health, NIEHS (Principal Investigator) "Pulmonary Toxicology of Aflatoxin B_1," RO1 ES04813; $449,591, 9/90-3/96.

U.S. Public Health Service Grant, National Institutes of Health, NIEHS (Principal Investigator) "Pulmonary Toxicology of Aflatoxin B_1," RO1 ES03591; $30,000, 4/84 -10/86.

Utah State University/Mineral Lease Fund. “Engineering Mycotoxin-Resistant Poultry” $14,300. 1994-1995.

U.S. Department of Defense, U.S. Army Medical Research Institute of Infectious Diseases (Principal Investigator) "Preclinical Pharmacology of Antiviral Agents," DAMD17-90-C-0108, $548,910, 7/90-12/93.

U.S. Public Health Service (National Institutes of Health): Biomedical Research Support Grant. (Principal Investigator). 1991 ($17,091).

U.S. Public Health Service (National Institutes of Health): Biomedical Research Support Grant. (Principal Investigator). 1990 ($12,890);

U.S. Public Health Service (National Institutes of Health): Biomedical Research Support Grant. (Principal Investigator). 1990 ($7,900).

U.S. Public Health Service (National Institutes of Health): Biomedical Research Support Grant. (Principal Investigator.) 1989 ($18,000).

U.S. Public Health Service (National Institutes of Health): Biomedical Research Support Grant. (Principal Investigator.) 1986 ($21,000).

Center for Biotechnology, Utah State University. "Characterization of Pyrrolizidine Alkaloid-Induced DNA Cross-Links," (Principal Investigator) $14,950 10/89-9/90.

Center for Biotechnology, Utah State University. "Sequence-Specificity of Aflatoxins in Cellular Oncogenes," (Principal Investigator) $14,298, 10/87-9/88.

American Heart Association. "Interactions of Aspartame and Antidepressant Drugs," (Principal Investigator) $11,500, 7/86-10/88.

University Faculty Research Grant, Utah State University, (Principal Investigator); $16,000, 6/85-7/87.

Utah Turkey Marketing Board (Co-P.I.): "Immunosupression in Turkey Poults by Aflatoxin B_1"; $9,000, 5/87-6/88.

U.S. Public Health Service, National Institutes of Health, NIHLB. National Research Service Award (Postdoctoral Fellowship). Pulmonary Section, Department of Internal Medicine, University of California, Davis School of Medicine, 1982-1984.

U.S. Public Health Service, National Institutes of Health. NIEHS Predoctoral training fellowship; Toxicology section, Oregon State University, 1979-1982.

Other Professional Activities:

External Graduate Program Review Committee Member. University of Eastern Finland. September/October 2014.

Regular reviewer for USDA NRI-Competitive and USDA-SBIR Grants program, 1996-2011

Regular reviewer for USDA Wheat and Barley Scab Initiative Grants program, 2005-2012
External Departmental Review Committee, USDA-CSREES, Department of Environmental and Molecular Toxicology, Oregon State University, September, 2002.

USDA-CSREES Food Safety Technical and Advisory Committee: *Beneficial and Adverse Effects of Foodborne Bioactive Compounds on Human Health and Food Safety* 1985-present

Molecular Biology/Toxicology Grant Review Committee, NCI, National Institutes of Health, 1993, 1997, 2000. Special Study Section, Toxicology Grant Review Committee, NIEHS. National Institutes of Health.1991.

Special Study Section, Pharmacology Grant Review Committee, NIAID, National Institutes of Health. 1991.

Awards, Recognition, News Articles:

Fulbright-Saastamoinen Distinguished Chair in Health Sciences, Fulbright Programme, U.S. Department of State and Government of Finland. 2018-2019.

LeGrande Shupe Research Achievement Award, College of Agriculture and Applied Sciences, Utah State University, October 2016.

Fulbright Specialist Award, Fulbright Specialist Program Council for International Exchange of Scholars (CIES) Institute of International Education (IIE). Instituto Zooprofilactico Sperimentale Umbria e Marche (IZSUM), Perugia, Italy. June 18 – July 2, 2016.

Fulbright-Saastamoinen Health Sciences Scholar, University of Eastern Finland, Kuopio, Finland 2010-2011.

"The Genome of Your Thanksgiving Supper" *Discover Magazine*, December 2010.

"Giving Thanks for the Turkey's Contribution to Cancer Research" article in *PLoS Blogs*

"Researchers Map Most of Turkey's Genome. *The New York Times*, September 2010

"Fowl News - Food Additive's Extra Benefit" *Science News*.

"Turkey Genome Sequenced More Than 90 Percent, Including Sex Chromosomes 'Z' and 'W'. *Science Daily* September 2010.

Honorary Professor, Department of Biological Sciences, University of Hong Kong. 2009-present

Faculty Library Award, Utah State University, October 2007.

Socrates Award. University of Idaho. December 2002.

Antioxidants Protect Turkeys Against Toxicity of Aflatoxin. *National Research Initiative (NRI) Highlights*, U.S. Department of Agriculture, 2001

1999 Highlight Paper: Coulombe, R.A. Jr., Drew, G.L., and. F.R. Stermitz--Pyrrolizidine alkaloids cross-link DNA with actin. *Toxicology and Applied Pharmacology* 154: 198-202.

Co-authored paper awarded "**Best Presentation**," 25th Annual Meeting of the Society of Toxicology, New Orleans, March, 1986.

National Research Service Award, National Institutes of Health. Postdoctoral Fellowship. Department of Internal Medicine, University of California, Davis. 1982-1984

National Research Service Award, National Institutes of Health. Pre-Doctoral Fellowship. Oregon State University, Corvallis. 1979-1982.

Consultation Activities:

Consultant in Environmental Toxicology, Risk Assessment, Environmental Risk Assessment, Cancer Epidemiology, Agricultural Toxicology, Food Safety and Food Microbiology. *Pro bono* environmental consulting for environmental causes.

Personal Interests and Activities

Guitar, bicycles, hiking, backpacking, vintage electronics, swimming, reading, gardening, cooking.