

**LISA A. PETERSON**  
**CURRICULUM VITAE**

**EDUCATION:**

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| 1977-1981 | B.A.  | Macalester College, St. Paul, MN<br>Major: Chemistry<br>Thesis: "Synthesis of pine beetle pheromone."  |
| 1981-1985 | Ph.D. | University of California, San Francisco, CA<br>Major: Pharmaceutical Chemistry<br>Thesis: "Stereochemical studies of the cytochrome P-450 catalyzed oxidation of ( <i>S</i> )-nicotine to nicotine $\Delta$ -1',5'-iminium ion." |

**PROFESSIONAL EXPERIENCE:**

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| 1985-1988    | Research Associate, Department of Biochemistry, Vanderbilt University, Nashville, TN  |
| 1988-1993    | Associate Research Scientist, American Health Foundation, Valhalla, NY  |
| 1993-1997    | Research Scientist, American Health Foundation, Valhalla, NY  |
| 1997-2002    | Associate Professor, Cancer Center and Division of Environmental and Occupational Health, School of Public Health, University of Minnesota, Minneapolis, MN     |
| 2002-2006    | Associate Professor with tenure, Cancer Center and Division of Environmental Health Sciences, School of Public Health, University of Minnesota, Minneapolis, MN |
| 2005-2006    | Visiting Scientist, Institute for Biochemistry and Molecular Biology I, Heinrich Heine University, Düsseldorf, Germany  |
| 2006-present | Professor, Masonic Cancer Center and Division of Environmental Health Sciences, School of Public Health, University of Minnesota, Minneapolis, MN               |
| 2014-2024    | co-Program Leader, Carcinogenesis and Chemoprevention, Masonic Cancer Center, University of Minnesota, Minneapolis, MN  |

**PROFESSIONAL AFFILIATIONS:**

- American Association for Cancer Research
- American Chemical Society
- American Society for Biochemistry & Molecular Biology
- American Society for Pharmacology and Experimental Therapeutics
- International Society for the Study of Xenobiotics
- Society of Toxicology

**AWARDS AND HONORS:**

- Summa cum laude, with highest honors, Macalester College
- Phi Beta Kappa
- Graduate Opportunity Fellowship, University of California, San Francisco, 1982-1983.
- Predocorial National Service Award, University of California, San Francisco, 1983-1985.
- Competitive National Research Service Award, National Institute of Environmental Health Services, "Bioactivation Pathways of Halogenated Hydrocarbons," Vanderbilt University, 1986-1988
- Sigma Xi, 2002
- Delta Omega, 2002
- Faculty Achievement Award in Environmental Health, Division of Environmental Health Sciences, University of Minnesota, 2005.
- American Chemical Society Fellow, 2013.

Macalester Alumni Service Award, 2016.

## RESEARCH INTERESTS:

Mechanisms of chemical carcinogenesis through the utilization of bio-organic and analytical chemical techniques; xenobiotic metabolism; characterization of unstable metabolic intermediates; DNA repair, gene-environment interactions.

## TEACHING RESPONSIBILITIES:

Toxicology courses: Principles of Toxicology I & II.

## BIBLIOGRAPHY:

### Original articles in refereed journals

Chiba, K., Peterson, L.A., Castagnoli, K.P., Trevor, A., and Castagnoli, Jr., N. Studies on the molecular mechanism of bioactivation of the selective nigrostriatal toxin 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP). *Drug Metab. Disp.*, 13: 342-347, 1985.

Weissman, J., Trevor, A., Chiba, K., Peterson, L.A., Caldera, P.S., Castagnoli, Jr., N., and Baillie, T. Metabolism of the nigrostriatal toxin 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) by liver homogenate fractions. *J. Med. Chem.*, 28: 997-1001, 1985.

Peterson, L.A., Caldera, P.S., Chiba, K., Trevor, A., and Castagnoli, Jr., N. Chemical studies on the intermediate 1-methyl-4-phenyl-2,3-dihydropyridine in the metabolism of neurotoxin 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine by monoamine oxidase. *J. Med. Chem.*, 28: 1432-1436, 1985.

Peterson, L.A., Trevor, A.J., and Castagnoli, Jr., N. Stereochemical studies on the cytochrome P-450 catalyzed oxidation of (S)-nicotine to the (S)- $\Delta$ -1',5'-iminium ion. *J. Med. Chem.*, 30: 249-254, 1987.

Peterson, L.A. and Castagnoli, Jr., N. Regio- and stereochemical studies on the  $\alpha$ -carbon oxidation of (S)-nicotine by cytochrome P450 model systems. *J. Med. Chem.*, 31: 637-640, 1988.

Peterson, L.A., Harris, T.M., and Guengerich, F.P. Evidence for an episulfonium ion intermediate in the formation of S-[2-(N7-guanyl)ethyl]-glutathione adducts. *J. Amer. Chem. Soc.*, 110: 3284-3291, 1988.

Guengerich, F.P., Peterson, L.A., and Böcker, R.H. Cytochrome P-450-catalyzed hydroxylation and carboxylic acid ester cleavage of Hantzsch pyridine esters. *J. Biol. Chem.*, 263: 8176-8183, 1988.

Peterson, L.A., Carmella, S.G., and Hecht, S.S. Investigations of metabolic precursors to hemoglobin and DNA adducts of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone. *Carcinogenesis*, 11: 1329-1333, 1990.

Spratt, T.E., Peterson, L.A., Confer, W.L., and Hecht, S.S. Solvolysis of model compounds for  $\alpha$ -hydroxylation of N'-nitrosornicotine and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone: Evidence for a cyclic oxonium ion intermediate in the alkylation of nucleophiles. *Chem. Res. Toxicol.*, 3: 350-356, 1990.

Peterson, L.A., Mathew, R., and Hecht, S.S. Quantitation of microsomal  $\alpha$ -hydroxylation of the tobacco-specific nitrosamine, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone. *Cancer Res.*, 51: 5495-5500, 1991.

Peterson, L.A., Mathew, R., Murphy, S.E., Trushin, N., and Hecht, S.S. In vivo and in vitro persistence of pyridyloxobutyl DNA adducts from 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone. *Carcinogenesis*, 12: 2069-2072, 1991.

Peterson, L.A. and Hecht, S.S.  $O^6$ -Methylguanine is a critical determinant of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone tumorigenesis in A/J mouse lung. *Cancer Res.*, 51: 5557-5564, 1991.

Foiles, P.G., Peterson, L.A., Miglietta, L.M., and Ronai, Z. Analysis of mutagenic activity and ability to induce replication of polyoma DNA sequences by different model compounds of the carcinogenic tobacco-specific nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone. *Mutat. Res.*, 279: 91-101, 1992.

Peterson, L.A., Liu, X.-K., and Hecht, S.S. Pyridyloxobutyl DNA adducts inhibit the repair of  $O^6$ -methylguanine. *Cancer Res.*, 53: 2780-2785, 1993.

Ronai, Z.A., Gradia, S., Peterson, L.A., and Hecht, S.S. G to A transitions and G to T transversions in codon 12 of the Ki-ras oncogene isolated from mouse lung tumors induced by 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) and related DNA methylating and pyridyloxobutylating agents. *Carcinogenesis*, 14: 2419-2422, 1993.

Peterson, L.A., Ng, D.K., Stearns, R.A., and Hecht, S.S. Formation of NADP(H) analogs of tobacco-specific nitrosamines in rat liver and pancreatic microsomes. *Chem. Res. Toxicol.*, 7: 599-608, 1994.

Chen, L.J., Hecht, S.S., and Peterson, L.A. Identification of *cis*-2-butene-1,4-dial as a microsomal metabolite of furan. *Chem. Res. Toxicol.*, 8: 903-906, 1995.

Carlson, T.J., Jones, J.P., Peterson, L., Castagnoli, N., Jr., Iyer, K.R., and Trager, W.F. Stereoselectivity and isotope effects associated with cytochrome P450-catalyzed oxidation of (S)-nicotine. The possibility of initial hydrogen atom abstraction in the formation of the  $\Delta$ -1', 5'-nicotinium ion. *Drug Metab. Dispos.*, 23, 749-756, 1995.

El-Bayoumy, K., Prokopczyk, B., Peterson, L.A., Desai, D., Amin, S., Reddy, B.S., Hoffmann, D., and Wynder, E. Effects of dietary fat content on the metabolism of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) and on DNA-methylation induced by NNK. *Nutr. & Cancer*, 26: 1-10, 1996.

Liu, X.K., Spratt, T.E., Murphy, S.E., and Peterson, L.A. Pyridyloxobutylation of guanine residues by 4-(acetoxymethylnitrosamino)-1-(3-pyridyl)-1-butanone generates substrates of  $O^6$ -alkylguanine-DNA alkyltransferase. *Chem. Res. Toxicol.*, 9: 949-953, 1996.

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Peterson, L.A. *N*-Nitrosobenzylmethylamine is activated to a DNA benzylating agent in rats. *Chem. Res. Toxicol.*, 10: 19-24, 1997.

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Wang, L., Spratt, T.E., Liu, X.K., Hecht, S.S., Pegg, A.E., and Peterson, L.A. Pyridyloxobutyl adduct,  $O^6$ -[4-oxo-4-(3-pyridyl)butyl]guanine, is present in 4-(acetoxymethylnitrosamino)-1-(3-pyridyl)-1-butanone-treated DNA and is a substrate for  $O^6$ -alkylguanine-DNA alkyltransferase. *Chem. Res. Toxicol.*, 10: 562-567, 1997.

Chen, L.J., Hecht, S.S., and Peterson, L.A. Characterization of amino acid and glutathione adducts of *cis*-2-butene-1,4-dial, a reactive metabolite of furan. *Chem. Res. Toxicol.*, 10: 866-874, 1997.

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Morse, M.A., Lu, J., Stoner, G.D., Murphy, S.E., and Peterson, L.A. Metabolism of *N*-nitrosobenzylmethylamine by human cytochrome P-450 enzymes. *J. Toxicol. Environ. Health, Part A* 58, 397-411, 1999.

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Peterson, L.A., Spratt, T.E., Shan, W., Wang, L., Subotkowski, W., and Roth, R. An improved synthesis of radio-labeled 4-(acetoxymethylnitrosamino)-1-(3-pyridyl)-1-butanone. *J. Label. Comp. Radiopharm*, 44: 445-450, 2001.

Pauly, G.T., Peterson, L.A., and Moschel, R.C. Mutagenesis by  $O^6$ -[4-oxo-4-(3-pyridyl)butyl]guanine in *Escheria coli* and human cells. *Chem. Res. Toxicol.*, 15: 165-169, 2002.

Peterson, L. A., Thomson, N. M., Crankshaw, D. L., Donaldson, E. E., and Kenney, P. J. (2001) Interactions between methylating and pyridyloxobutylating agents in A/J mouse lungs: implications for 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone-induced lung tumorigenesis. *Cancer Res.* 61: 5757-5763.

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Wichman, A.E., Thomson, N.M., Peterson, L.A., and Wattenberg, E.V. Genotoxic methylating agents modulate extracellular signal regulated kinase activity through MEK-dependent, glutathione-, DNA methylation-independent mechanisms in lung epithelial cells. *Chem. Res. Toxicol.* 16: 87-94, 2003.

Peterson, L.A., Predecki, D.P., Thomson, N.M., Villalta, P.W., and Donaldson, E.E. Nucleophilic reactions between thiols and a tobacco-specific nitrosamine metabolite, 4-hydroxy-1-(3-pyridyl)-1-butanone. *Chem Res Toxicol*, 16: 661-667, 2003.

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Mijal, R.S., Thomson, N.M., Fleisher, N.L., Pauly, G.T., Moschel, R.C., Kanugula, S., Fang, Q., Pegg, A.E., and Peterson, L.A. The repair of the tobacco-specific nitrosamine derived adduct, *O*<sup>6</sup>-pyridyloxobutylguanine, by *O*<sup>6</sup>-alkylguanine-DNA alkyltransferase variants. *Chem. Res. Toxicol.* 17: 424-434, 2004.

Byrns, M.C., Vu, C.C., and Peterson, L.A. The formation of substituted 1,*N*<sup>6</sup>-etheno-2'-deoxyadenosine and 1,*N*<sup>2</sup>-etheno-2'-deoxyguanosine adducts by *cis*-2-butene-1,4-dial, a reactive metabolite of furan. *Chem. Res. Toxicol.* 17: 1607-1613, 2004.

Thomson, N.M., Mijal, R.S., Ziegel, R., Fleischer, N.L., Pegg, A.E., Tretyakova, N., and Peterson, L.A. Development of a quantitative liquid chromatography/electrospray mass spectrometric assay for a mutagenic tobacco-specific nitrosamine-derived DNA adduct, *O*<sup>6</sup>-[4-oxo-4-(3-pyridyl)butyl]-2'-deoxyguanosine. *Chem. Res. Toxicol.* 17: 1600-1606, 2004.

Vu, C.C. and Peterson, L.A. Synthesis of [<sup>13</sup>C<sub>4</sub>]furan. *J. Label. Compounds Radiopharm.*, 48: 117-121, 2005.

Vu, C.C. and Peterson, L.A. Synthesis of a 2'-deoxyguanosine adduct of *cis*-2-butene-1,4-dial, a reactive metabolite of furan. *Chem. Res. Toxicol.*, 18: 1012-1017, 2005.

Peterson, L.A., Cummings, M.E., Vu, C.C., and Matter, B.A. Glutathione trapping to measure microsomal oxidation of furan to *cis*-2-butene-1,4-dial. *Drug Metab. Disp.* 33: 1453-1458, 2005.

Mijal, R.S., Loktionova, N.A., Vu, C.C., Pegg, A.E., and Peterson, L.A. *O*<sup>6</sup>-Pyridyloxobutylguanine adducts contribute to the mutagenic properties of pyridyloxobutylating agents. *Chem. Res. Toxicol.*, 18: 1619-1625, 2005.

Byrns, M.C., Vu, C.C., Neidigh, J.W., Abad, J.L., Jones, R.A., and Peterson, L.A. Detection of DNA adducts derived from the reactive metabolite of furan, *cis*-2-butene-1,4-dial. *Chem. Res. Toxicol.* 19: 414-420, 2006.

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Mijal, R.S., Kanugula, S., Vu, C.C., Fang, Q., Pegg, A.E., and Peterson, L.A. Repair of the tobacco-specific adduct *O*<sup>6</sup>-[4-oxo-4-(3-pyridyl)butyl]guanine by *O*<sup>6</sup>-alkylguanine-DNA alkyltransferase is affected by sequence context. *Cancer Res.*, 66: 4968-4974, 2006.

- Chen, B., Vu, C.C., Byrns, M.C., Dedon, P.C., and Peterson, L.A. Formation of 1,4-dioxo-2-butene-derived adducts of 2'-deoxyadenosine and 2'-deoxycytosine in oxidized DNA. *Chem. Res. Toxicol.* 19: 982-985, 2006.
- Peterson, L.A., Cummings, M.E., Chan, J.Y., Matter, B., and Vu, C.C. Identification of a *cis*-2-butene-1,4-dial-derived glutathione conjugate in the urine of furan-treated rats. *Chem. Res. Toxicol.* 19: 1138-1141, 2006.
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- Gong, J., Ganesan, V. V., Yu, X., Kensler, T. W., Peterson, L. A., and Sturla, S. J. Chemically labile acylfulvene-DNA adducts: Characterizing reactions of a promising antitumor agent. *J. Am. Chem. Soc.* 129: 2101-2111, 2007.
- Peterson, L. A., Wagener, T., Sies, H., and Stahl, W. Decomposition of *S*-nitrosocysteine via *S*- to *N*-transnitrosation. *Chem. Res. Toxicol.* 20: 721-723, 2007.
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- Sandercock, L. E., Hahn, J. N., Li, L., Luchman, A., Giesbrecht, J. L., Peterson, L. A., and Jirik, F. R. *Mgmt* deficiency alters the *in vivo* mutational spectrum of tissues exposed to the tobacco carcinogen 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK). *Carcinogenesis*, 29, 866-874, 2008.
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Peterson, L.A., Mijal, R.S., Kanugula, S., Vu, C.C., Fang, Q., and Pegg, A.E. (2005) Characterization of *O*<sup>6</sup>-pyridyloxobutylguanine repair by *O*<sup>6</sup>-alkylguanine-DNA alkyltransferase variants. MGMT meeting, August 2005, Keele, England. *Paper selected for oral presentation.*

Mijal, R.S., Kanugula, S., Vu, C.C., Fang, Q., Pegg, A.E., and Peterson, L.A. Sequence context affects the repair of *O*<sup>6</sup>-pyridyloxobutylguanine by human *O*<sup>6</sup>-alkylguanine-DNA alkyltransferase variants. American Chemical Society National Meeting, August 2005, Washington, DC. *Presented by Renée Mijal.*

Gong, J., Neels, J.F., Yu, X., Kensler, T, Peterson, L.A., and Sturla, S.J. Synthesis, bioactivation and cellular toxicity of antitumor acylfulvenes. American Association for Cancer Research, April 2006. *Presented by Jiachang Gong.*

Li, L., Pegg, A.E., Lao, Y., Hecht, S.S., Reardon, J.T., Sancar, A., Wattenberg, E.V., Peterson, L.A. The influence of DNA repair pathways on the toxicity and mutagenicity induced by pyridyloxobutylating agents. American Chemical Society National Meeting, Boston, MA, August, 2007. *Presented by Li Li.*

Lu, D., Sullivan, M.M. and Peterson, L.A. Characterization of furan metabolites and their potential role in furan-derived protein binding. American Chemical Society, Philadelphia, PA, August 2008. *Presented by Ding Lu.*

Peterson, L.A., Sullivan, M.M. and Lu, D. Degraded protein adducts are metabolites of the hepatotoxicant, furan. International Society for the Study of Xenobiotics North American Meeting, San Diego, CA, October 2008.

Warmka, J., Fang, Q., Pegg, A.E., Peterson, L.A. Phenotyping human livers for repair of *O*<sup>6</sup>-methylguanine and *O*<sup>6</sup>-[4-oxo-4-(3-pyridyl)butyl]guanine adducts by *O*<sup>6</sup>-alkylguanine-DNA alkyl-transferase, American Association for Cancer Research, April 2009. *Presented by Janel Warmka.*

Sullivan, M.M., Phillips, M.B., Lu, D., and Peterson, L.A. Furan metabolites react with polyamines and their precursors. American Chemical Society National Meeting, Washington DC, August, 2009. *Presented by Mathilde Sullivan.*

Lu, D., Sullivan, M.M., and Peterson, L.A. Identification of furan metabolites derived from cysteine-*cis*-2-butene-1,4-dial-lysine cross-links. American Chemical Society National Meeting, Washington DC, August, 2009. *Presented by Ding Lu.*

Warmka, J.K., Fang, Q., Urban, A.M., Pegg, A.E. and Peterson, L.A. Phenotyping human livers for repair of *O*<sup>6</sup>-methylguanine and *O*<sup>6</sup>-[4-oxo-4-(3-pyridyl)butyl]guanine adducts by *O*<sup>6</sup>-Alkylguanine-DNA alkyl-transferase. American Chemical Society National Meeting, Boston, MA, August 2010. *Presented by Janel Warmka who won 2<sup>nd</sup> prize in the postdoctoral poster competition.*

Urban, A.M., Upadhyaya, P. and Peterson, L.A. Role of pyridyloxobutyl DNA adducts in nitrosamine-induced cancers. American Chemical Society National Meeting, Boston, MA, August 2010. *Presented by Ania Urban who won 2<sup>nd</sup> prize in the graduate student poster competition.*

Terrell, A.N, Huynh, M. and Peterson, L.A. The mutagenic potential of *cis*-2-butene-1,4-dial. Society of Toxicology National Meeting, Washington DC, March 2011. *Presented by Ashley Terrell who won a travel grant award.*

Urban, A.M., Upadhyaya, P., and Peterson, L.A. Pyridyloxobutyl DNA adducts and their relationship to tumor formation in the A/J mouse lung model. American Chemical Society National Meeting, Denver, CO, August 2011. *Presented by Ania Urban who won 1<sup>st</sup> prize in the graduate student poster competition.*

Brus, L.A., Lu, D., and Peterson, L.A. Oxidation of furan to a reactive metabolite by human cytochrome P450 enzymes. American Chemical Society National Meeting, Denver, CO, August 2011. *Presented by Leah Brus Gates.*

Phillips, M.B. and Peterson, L.A. Measurement of the kinetics of reaction of *cis*-2-butene-1,4-dial with glutathione using NMR. Society of Toxicology National Meeting, San Francisco, March 2012. *Presented by Martin Phillips.*

Peterson, L.A., Gates, L.A., Phillips, M.B., and Matter, B.A. Comparative metabolism of furan in rodent and human cryopreserved hepatocytes. American Chemical Society National Meeting, Philadelphia, PA, August 2012.

Peterson, L.A., Urban, A.M, Vu, C.C., Cummings, M.E., Brown, L.C., Fish, A.J., Li, L., Warmka, J.K., Wattenberg, E.V. and Pegg, A.E. Role of aldehydes in the toxic and mutagenic effects of nitrosamines. American Chemical Society National Meeting, Philadelphia, PA, August 2012.

Grill, A.E., Gates, L.A., and Peterson, L.A. LC-MS/MS assay for biomarkers of furan exposure and metabolism in human urine. American Chemical Society National Meeting, Indianapolis, IN, September 2013. *Presented by Alex Grill.*

Grill, A.E., Gates, L.A., Lu, D., Murphy, S.E., Hecht, S.S. and Peterson, L.A. Human urinary metabolites as possible biomarkers of exposure to furan. American Chemical Society National Meeting, San Francisco, CA, August 2014. *Presented by Alex Grill.*

Ignatovich, I.V., Grill, A.E. and Peterson, L.A. Inter-individual differences in sensitivity to cytotoxic and genotoxic properties of nitrosamines. American Chemical Society National Meeting, San Francisco, CA, August 2014. *Presented by Igor Ignatovich.*

Peterson, L.A., Ignatovich, I.V., Grill, A.E. and Ho, Y. Individual differences in sensitivity to cytotoxic and genotoxic effects of a tobacco carcinogen. American Chemical Society National Meeting, Boston, MA, August 2015.

Peterson, L.A., Oram, M., Seabloom, D., Ho, Y.Y., O'Sullivan, G.O., Hecht, S.S. Balbo, S., and Wiedmann, T. Interaction between tobacco smoke constituents in A/J mouse tumor model. NIH Tobacco Regulatory Science Conference, Washington DC, May 2016.

Oram, M.K., Seabloom, D., O'Sullivan, M.G., Ho, Y.Y., Zhang, L., Hecht, S.S., Balbo, S., Wiedmann, T.S. and Peterson, L.A. Inhaled Aldehydes Increase Lung Tumor Formation in the NNK Induced A/J Mouse Tumor Model. American Chemical Society National Meeting, Philadelphia, PA, August 2016. *Presented by M. Oram.*

Peterson, L.A., Oram, M.K., Flavin, M., Seabloom, D., Smith, W.E., Cornax, I. O'Sullivan, M.G., Upadhyaya, P., Zhang, L., Hecht, S.S., Balbo, S., and Wiedmann, T.S. Aldehydes increase the tumorigenic properties of tobacco specific nitrosamines in rodent tumor models. American Chemical Society National Meeting, August 2017.

Peterson, L.A., Ignatovich, I.V., Grill, A.E., Ho, Y.Y., DiLernia, A., and Zheng, L. Individual differences in  $O^6$ -mG repair in human lymphocytes and its impact on cytotoxic and mutagenic effects of a DNA methylating agent. The 6<sup>th</sup> EU-US DNA Repair Meeting, Udine, Italy, September 2017.

Peterson, L.A., Oram, M.K., Flavin, M., Seabloom, D., Smith, W.E., Stornetta, A., Cornax, I. O'Sullivan, M.G., Upadhyaya, P., Zhang, L., Hecht, S.S., and Balbo, S. Acetaldehyde increased the tumorigenesis of *N*-nitrosornicotine in rats. NIH Tobacco Regulatory Science Meeting in Bethesda, MD. June 2018.

Tăbăran, A.F., Peterson, L.A., and O'Sullivan, M.G. Inhaled furan selectively damages club cells in lungs of A/J mice. Society of Toxicologic Pathology, 37th Annual Symposium in Indianapolis, IN, June 2018. *Presented by A.F. Tăbăran.*

Degner, A., Madugundu, G., Arora, R., Peterson, L.A. and Tretyakova, N.Y. Inter-individual differences in metabolism of 1,3-butadiene. American Chemical Society National Meeting, Boston, MA, August 2018. *Presented by A. Degner.*

Tăbăran, A.F., Cornax, I., Hecht, S.S., Balbo, S., Peterson, L.A., and O'Sullivan, M.G. Acetaldehyde potentiates the tumorigenesis of *N*'-nitrosornicotine in rats. American College of Veterinary Pathologists Annual Meeting in Washington DC, November 2018. *Selected for an oral presentation. Presented by A.F. Tăbăran.*

Peterson, L.A., Oram, M.K., Seabloom, D.E., Smith, W.E., Stornetta, A., Vevang, K.R., Flavin, M., Tăbăran, A.F., Cornax, I., O'Sullivan, M.G., Upadhyaya, P., Zhang, L., Hecht, S.S., Balbo, S. and Wiedmann, T.S. Interactions between tobacco smoke chemicals in rodent tumor models. Environmental Carcinogenesis: Potential Pathway to Cancer Prevention, American Association for Cancer Research, Charlotte, NC, June 2019.

Peterson, L.A., Seabloom, D.E., Smith, W.E., Vevang, K.R., Oram, M.K., O'Sullivan, M.G., Zhang, L., Hecht, S.S., Balbo, S. and Wiedmann, T.S. Carbon dioxide enhances the pulmonary tumorigenic activity of the tobacco specific nitrosamine, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK). American Chemical Society National Meeting, San Diego, CA, August 2019.

Peterson, L.A., Seabloom, D.E., Smith, W.E., Vevang, K.R., Zhang, L., and Wiedmann, T.S. Acrolein increases the pulmonary tumorigenic activity of the tobacco specific nitrosamine, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK), American Chemical Society National Meeting, Virtual, August 2020.

Peterson, L.A., Temiz, A., Hecht S.S., Vevang, K.E., Guo, J., Mayel, T., Renard, C., Cros, M.P., Chavanel, B., Keita, S., Korenjak, M., and Zavadil, J. The pyridyloxobutyl DNA adducts formed from tobacco specific nitrosamines yield a unique mutational signature in both cell and animal models, Environmental Mutagenesis and Genomics Society, Virtual, September 2021. *Selected for an oral presentation.*

Peterson, L.A., Temiz, A., Hecht, S.S., Vevang, K.E., Guo, J., Mayel, T., Renard, C., Cros, M.P., Chavanel, B., Keita, S., Virard, F., Korenjak, M., and Zavadil, J. Pyridyloxobutyl DNA adducts formed from tobacco specific nitrosamines yield a unique mutational signature in both cell and animal models. American Chemical Society National Meeting, Chicago/Hybrid, August 2022.

Korenjak, M., Temez, N.A., Keita, S., Chavanel, B., Renard, C., Cros, M.P., Mayel, T., Vevang, K., Guo, J., Senkin, S., Hecht, S.S., Virard, F., Peterson, L.A., and Zavadil, J. Characterization of tobacco-specific nitrosamine-derived mutational signatures. Environmental Mutagenesis and Genomics Society, Chicago, IL, September 2023.

#### **INVITED LECTURES AND PRESENTATIONS:**

Medicinal Chemistry Department, University of Minnesota, "Mechanistic studies on the bioactivation of the carcinogen ethylene dibromide." May 1988.

Section of Medicinal Chemistry, School of Pharmacy, University of Connecticut, Storrs, "Mechanistic studies on the bioactivation of the carcinogen ethylene dibromide," September 1988.

Drug Disposition Section, Sandoz Pharmaceutical Corporation, "Mechanisms of lung tumor formation in A/J mice by the tobacco-specific nitrosamine, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone," March 1990.

Department of Drug Metabolism, Hoffmann-LaRoche, "Mechanisms of lung tumor formation in A/J mice by the tobacco-specific nitrosamine, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone." July 1990.

Queens College, "Mechanistic studies on the carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone-induced lung tumorigenesis in A/J mice." March 1993.

Laboratory for Cancer Research, Rutgers University, "Mechanistic studies on the carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone-induced lung tumorigenesis in A/J mice." December 1993.

Laboratory of Molecular Endocrinology, Laval University, Sainte-Foy, Quebec, "Mechanistic studies on the carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone-induced lung tumorigenesis in A/J mice." July 1995.

University of Minnesota Cancer Center and Division of Environmental and Occupational Health, School of Public Health, "Mechanistic studies on the carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone-induced lung tumorigenesis in A/J mice." December 1996.

Department of Environmental and Industrial Health, University of Michigan, "Mechanistic studies on the carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone-induced lung tumorigenesis in A/J mice." May 1997.

Safety Assessment Department, Merck Research Laboratories, "Mechanistic studies on the carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone-induced lung tumorigenesis in A/J mice." August 1997.

Chemistry Department and Cancer Center, Wake Forest University, "Mechanistic studies on the lung carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone in A/J mouse." April 1998.

Macalester College, "Chemical mechanisms of lung tumor formation in A/J mice by the tobacco-specific nitrosamine, NNK." November 1998.

Nucleic Acids Interest Group, Chemistry Department, University of Minnesota, "Interactions between DNA alkylation pathways resulting from an unsymmetric nitrosamine." October 1998.

Division of Chemical Toxicology, American Chemical Society Meeting, "Chemical mechanisms of NNK-induced lung carcinogenesis in A/J mice," Anaheim, CA, March 1999.

9th North American International Society for the Study of Xenobiotics Meeting, "Interactions between two alkylation pathways of an unsymmetric nitrosamine," Nashville, TN, October 1999.

Chemistry Department, St. John's University/College of Saint Benedict, Collegeville, MN, "Studies in Chemical Carcinogenesis," October 2001.

Special Topics in Chemistry (Chem 2910), University of Minnesota, "Studies in Chemical Carcinogenesis," October 2001.

Department of Chemistry, Kalamazoo College, Kalamazoo, MI, "Studies in Chemical Carcinogenesis," November 2001.

Applications to Promote Research Collaborations Workshop, Division of Cancer Biology, NCI, Bethesda, MD, "Co-Carcinogenic Activity of Nitrosamine Metabolites," January 2002.

Northland Chapter of the Society of Toxicology Fall Meeting, "Gene-Environment Interactions: A Role for DNA Repair in Tobacco-Related Cancers?" November 2002.

Department of Chemistry, St. Catherine's University, St. Paul, MN, "Studies in Chemical Carcinogenesis," November 2002.

Chemistry Department, Macalester College, St. Paul, MN, "Gene-environment interactions: role of DNA repair in tobacco-related cancers," November 2004.

American Association for Cancer Research Think Tank on Chemistry in Cancer, Philadelphia, PA., "Chemical biology of cancer," February 10-11, 2005.

Chemistry Department, Hamline University, St. Paul, MN, "Gene-environment interactions: role of DNA repair in tobacco-related cancers," March 2005.

Seventh International Symposium on Biological Reactive Intermediates Meeting held jointly with the Division of Chemical Toxicology, American Chemical Society, “Electrophilic intermediates produced by bioactivation of furan” Tucson, AZ, January 2006.

Department of Biochemistry and Molecular Cell Biology, University of Göttingen, Göttingen, Germany, “Gene-environment interactions: the role of DNA repair in tobacco-related cancers,” March 2006.

American Chemical Society National Meeting, “Mechanisms of furan toxicity and carcinogenicity,” Philadelphia, PA, August 2008.

Department of Medicinal Chemistry, University of Kansas, “Mechanisms of furan induced toxicity and carcinogenicity,” Lawrence, KS, February 2009.

Center in Molecular Toxicology, Vanderbilt University, “Reaction of furan metabolites with cellular nucleophiles,” Nashville, TN, April 2009.

National Center in Toxicological Research, “Mechanisms of furan-induced toxicity and carcinogenicity,” Little Rock, Arkansas, June 2010.

American Chemical Society National Meeting, “Reactive metabolites in the biotransformation of furan-containing molecules,” Boston, MA, August 2010.

Expert Panel of the Flavor and Extract Manufacturers Association, “Furan as an environmental toxicant,” Boston, MA September 2011.

Department of Medicinal Chemistry and Pharmacognosy, University of Illinois, Chicago, “Reactive metabolites of furan, a possible human carcinogen,” Chicago, IL, January 2013.

Drug Metabolism Gordon Conference, “Bioactivation pathways of furan, a possible human carcinogen,” Holderness School, NH, July 2013.

American Chemical Society National Meeting, “Context Matters: Contribution of specific adducts to the genotoxic properties of nitrosamines,” San Francisco, CA, August 2014.

Center of Excellence in Environmental Toxicology, University of Pennsylvania, “Context Matters: Contribution of specific adducts to the genotoxic properties of nitrosamines,” Philadelphia, PA, October 2014.

Macalester College, Distinguished Alumni Day in Olin Rice Science Center, “Chemical Adventures in Toxicology,” St. Paul, MN, October 2014.

Penn State College of Medicine, Biomedical Sciences Seminar Series, “Mechanisms of carcinogenesis by environmental chemicals,” Hershey, PA September 2016.

2017 Mesilla Chemistry Workshop on Mass Spectrometry of Nucleic Acids, “Combining mass spectrometry with biochemical studies to define the contribution of specific DNA damage to the carcinogenic properties of tobacco chemicals,” Mesilla, New Mexico, February 2017.

Center of Excellence in Environmental Toxicology, University of Pennsylvania, “Children’s Health Exposure Assessment Resource (CHEAR),” Philadelphia, PA, June 2017.

American Chemical Society National Meeting, “Biological targets of electrophilic furan metabolites,” Boston, MA, August 2018.

Department of Chemistry, St. Thomas University, “Mechanisms of cancer induction by environmental chemicals.” St. Paul, MN, September 2018.

Department of Environmental Medicine, Icahn School of Medicine at Mount Sinai, “Insights into the Toxicity of Tobacco Smoke Chemicals from Animal Studies.” February 2021.

American Chemical Society National Meeting, “The role of pyridyloxobutyl DNA adducts in the carcinogenic properties of tobacco specific nitrosamines,” Atlanta, GA, August 2021.



## **INTERNAL SEMINARS:**

### **University of Minnesota**

University of Minnesota Cancer Center, "Mechanistic studies on the carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone in A/J mouse lung." February 1998.

General Environmental Toxicology (PubH 5261), University of Minnesota, "Lung-specific carcinogenicity of nicotine derivatives present in tobacco smoke." November 1998.

Division of Environmental and Occupational Health, School of Public Health, University of Minnesota, "Mechanisms of lung tumor formation in A/J mice by the tobacco-specific nitrosamine, NNK." October 1998.

Department of Medicinal Chemistry, School of Pharmacy, University of Minnesota, "Chemical mechanisms of NNK-induced lung carcinogenesis in A/J mice," September 1999.

Grand Rounds, School of Medicine, University of Minnesota, "Mechanistic studies on the carcinogenic activity of a tobacco-specific nitrosamine," December 1999.

M.D./Ph.D. Program Seminar, School of Medicine, University of Minnesota, "Studies in Chemical Carcinogenesis," April 2000.

Division of Environmental and Occupational Health, School of Public Health, University of Minnesota, "Studies in chemical carcinogenesis, April 2000.

M.D./Ph.D. Program Seminar, School of Medicine, University of Minnesota, "Studies in Chemical Carcinogenesis," October 2001.

Special Topics in Chemistry (Chem 2920), University of Minnesota, "Research at the Cancer Center," February 2003.

Carcinogenesis and Chemoprevention Program, Cancer Center, University of Minnesota, "Chemical mechanisms of furan-induced carcinogenesis," February 2005.

Carcinogenesis and Chemoprevention Program, Cancer Center, University of Minnesota, "Mechanisms of furan toxicity and carcinogenicity," September 2008.

Environmental Health Sciences, University of Minnesota, "Mechanisms of cancer induction by environmental chemicals," September 2009.

M.D./Ph.D. Program Seminar, School of Medicine, University of Minnesota, "Mechanisms of cancer induction by environmental chemicals," February 2010.

Cancer Prevention and Control, Masonic Cancer Center, University of Minnesota, "Furan as an environmental carcinogen," September 2011.

Pathway Driven Pharmacogenomics, University of Minnesota Alliance (PUMA), "Ethnic/racial differences in DNA repair," September 2011.

Institute of Human Genetics, University of Minnesota, "Effect of Tobacco Carcinogens on Gene Expression." November 2011.

Carcinogenesis and Chemoprevention Program, University of Minnesota Masonic Cancer Center, "Update on Furan," September 2014.

Division of Environmental Health Sciences, University of Minnesota, "Individual differences in sensitivity to cytotoxic and genotoxic effects of a tobacco carcinogen," November 2016.

Carcinogenesis and Chemoprevention Data Club, University of Minnesota Masonic Cancer Center, "Interaction between tobacco smoke chemicals in rodent tumor models," November 2016.

Masonic Cancer Center, University of Minnesota, "Interaction between tobacco smoke chemicals in rodent tumor models." November 2018.

## American Health Foundation

American Health Foundation, "Investigations of the bioactivation mechanism(s) of NNK in A/J mouse lung." September 1989.

American Health Foundation, "Mechanistic studies on the carcinogenic activity of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone in A/J mouse lung." February 1991.

American Health Foundation, "Pyridyloxobutyl DNA adducts inhibit the repair of O<sup>6</sup>-methylguanine." September 1992.

American Health Foundation, "Pyridyloxobutyl DNA adducts inhibit the repair of O<sup>6</sup>-methylguanine." March 1994.

American Health Foundation, "Investigations into the mechanism of pancreatic carcinogenesis by 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNAL) in the rat." November 1995.

American Health Foundation, "Characterization of an O<sup>6</sup>-alkylguanine-DNA alkyltransferase substrate adduct in pyridyloxobutylated DNA." May 1997.

## GRANTS, CONTRACTS, AND AWARDS OBTAINED:

### External grants

#### Active:

**2UC2 ES026533 "Minnesota HHEAR Targeted Analysis Laboratory," Principal Investigator, 10% effort, National Institute for Environmental Health Sciences, 07/01/19 – 6/30/24.**

This cooperative agreement funds the measurement of exposure and biological response indicator biomarkers in biological samples from NIH funded human health studies.

**Administrative Supplement to UC2 ES026533 "Exposure Services for ECHO," co-Principal Investigator 16% effort, National Institute for Environmental Health Sciences, 10/01/16 – 9/31/19.**

This supplement will be to augment CHEAR resources to do analytical measurements of exposure in Environmental Influences on Child Health Outcomes grantee samples.

**UG3CA265791 "The 10,000 Families Cohort: a new study to understand the environmental causes of cancer" (MPI: Poynter, Nelson, Peterson), 15% effort, years 1-2; 20% effort, years 3-6, National Cancer Institute, 09/01/2021 – 08/31/2027**

Environmental exposures with carcinogenic potential are a concern to individuals living in Minnesota, including poly- and perfluoroalkyl substances (PFAS), glyphosate (RoundUp), and radon. The impact of these exposures may be especially relevant for populations that have been typically under-represented in existing cohort studies such as individuals living in rural areas, racial/ethnic minorities, and immigrants. We are proposing to launch a new cohort study to investigate these relevant exposures and risk of malignancy.

#### Past:

**R01 CA-59887 "Co-carcinogenesis of nitrosamine metabolites," Principal Investigator, 20%, National Cancer Institute, 5/5/93 - 3/31/08.**

This grant investigated the ability of nitrosamine metabolites to interfere with the repair of O<sup>6</sup>-alkylguanine adducts through mechanisms other than competition for reaction with the repair protein, O<sup>6</sup>-alkylguanine-DNA alkyltransferase.

**"Activities to Promote Research Collaboration," Principal Investigator, National Cancer Institute, Collaborative supplement to "Co-Carcinogenic Activity of Nitrosamine Metabolites" RO1-59887, 9/1/99 - 12/31/99**

The major goal of this pilot project was to examine the role of protein alkylation in the activation of mitogen activated protein kinases by simple alkylating agents.

**RO1 ES-10557 “Mechanisms of Furan-Induced Carcinogenicity and Toxicity,” Principal Investigator, 35%, National Institute of Environmental Health Science, 8/17/00-7/31/04, 8/17/07-3/31/13.**

The major goal of this grant was to determine what metabolites are responsible for furan-induced liver carcinogenicity and toxicity in rats and mice.

**RO1 ES-10557 Diversity Supplement “Mechanisms of Furan-Induced Carcinogenicity and Toxicity,” Principal Investigator, National Institute of Environmental Health Science, 4/01/10 - 3/31/12.**

This supplement funded Ashley Terrell’s stipend and travel expenses for two years.

**RO1 ES-10557 Summer Student Supplement “Mechanisms of Furan-Induced Carcinogenicity and Toxicity,” Principal Investigator, National Institute of Environmental Health Science, 06/01/10 - 08/31/10.**

This supplement funded the summer stipend of Mailee Huynh, an undergraduate student at the University of Minnesota.

**R13 CA-CA89593 “Chemical Perspectives on Human Cancer,” Principal Investigator, National Cancer Institute, 7/1/00 - 6/3/01**

This grant covered the travel expenses of invited speakers to the Symposium entitled “Chemical Perspectives on Human Cancer” that will be held at the Pacificchem Congress in Honolulu, Hawaii December 16 and 17, 2000. Lisa Peterson is a co-organizer of this symposium.

**ES-10956 “Training Grant in Environmental and Occupational Health,” Co-director; Principal Investigator: William Toscano, NIH National Research Service Award, 7/1/01 - 6/30/06**

This training grant supported students pursuing a PhD. degree in Environmental Health.

**“Human variation in *O*<sup>6</sup>-alkylguanine repair” Principal Investigator, 2%, National Cancer Institute University of Minnesota Cancer Center Cancer Etiology, Prevention and Control Award, NIH/NCI/5 P30 CA077598-07 (Pilot Project 17), 07/01/04 – 06/30/06**

This grant provided seed funding to explore individual differences in repair of bulky *O*<sup>6</sup>-alkylguanine adducts in humans.

**R01-CA107143 “Predictors of Adult Leukemia” Co-investigator, 4%, National Cancer Institute (PI: Ross, J.) 04/01/05 - 03/3/10**

This project will investigate the role of exposure to non-steroidal anti-inflammatory drugs and farming practices and related exposures in gene-environment interactions in the etiology and risk of adult leukemia.

**R01-CA115309, “Role of *O*<sup>6</sup>-alkylguanine in nitrosamine-induced cancers,” Principal Investigator, 20%, National Cancer Institute, 4/1/05 - 3/31/11.**

The major goal of this grant was to determine the role of bulky *O*<sup>6</sup>-alkylguanine DNA adduct formation and repair in the carcinogenic and mutagenic properties of tobacco-specific nitrosamines.

**P01 CA138338 Mechanisms of Ethnic/Racial Differences in Lung Cancer Due to Cigarette Smoking (PI: Stephen Hecht, Ph.D), Project 4: Ethnic/Racial Differences in DNA Repair, Project Leader, 15%, National Cancer Institute, 04/01/10 – 03/31/15.**

This program investigated the hypothesis that ethnic and racial differences in lung cancer are caused by cigarette smoking are due to dissimilarities in exposure and response to tobacco smoke carcinogens. Project 4 explored ethnic/racial differences in the repair and biological consequences of tobacco-carcinogen derived DNA damage.

**Institutional Research Grant, Principal Investigator, 0% effort, American Cancer Society, 02/01/12 - 12/31/16.**

This grant funds junior faculty seed grants for cancer research. This grant was successfully renewed and Kaylee Schwertfeger took over in March 2017 as the PI.

**R01 CA184987 Interactions between tobacco smoke constituents in rodent tumor models, Principal Investigator, 25% effort, National Cancer Institute, 06/15/2014 – 05/31/2020**

The goal of this project is to characterize the potential interactions between known human carcinogens (4-methylnitrosamino-1-(3-pyridyl)-1-butanone, *N*-nitrosonornicotine, or benzo[*a*]pyrene) and volatile components of tobacco smoke (acetaldehyde, acrolein, and formaldehyde) in established rodent tumor models.

**P01 CA138338 Mechanisms of Ethnic/Racial Differences in Lung Cancer Due to Cigarette Smoking (PI: Stephen Hecht, Ph.D), Project 3: Ethnic/racial Differences in Metabolism and DNA Adduct Formation by 1,3-Butadiene (Project Leader: Natalia Tretyakova), co-Investigator 4%, National Cancer Institute, 09/21/16 – 08/31/21.**

The goal of Project 3 is to investigate inter-individual and inter-ethnic/racial differences in formation of butadiene induced DNA adducts in smokers, to establish their role in lung cancer risk, and to link inter-individual differences in response to butadiene to specific polymorphisms of carcinogen metabolism and DNA repair genes.

**1UC2 ES026533 “Minnesota CHEAR Exposure Assessment Hub, co-Principal Investigator and Biological Response Indicator Resource Leader, 15% effort, National Institute for Environmental Health Sciences, 10/01/15 – 5/31/20.**

This cooperative agreement funds the measurement of exposure and biological response indicator biomarkers in biological samples from NIH funded children’s health studies.

**P30 CA077598 Cancer Center Support Grant (PI: Yee, D) Program Leader, Carcinogenesis and Chemoprevention Program, 7.6% effort, National Cancer Institute 02/01/14 – 01/31/19.**

The Cancer Center Support Grant provides infrastructure support for broadly based, multidisciplinary cancer research efforts, specifically Masonic Cancer Center leadership and shared resources: Analytical Chemistry and Biomarkers, Biostatistics, Cell Therapy Lab, Mouse Genetics Lab, Peptide Synthesis and Design, Data Collection and Survey, Tissue Procurement Facility, Flow Cytometry and Cancer Protocol Review.

## **University of Minnesota Internal Grants**

### **Current:**

#### **Past:**

**“Interaction between tobacco chemicals in a rat esophageal tumor model,” Principal Investigator, Chainbreaker Gopher-a-Cure, Masonic Cancer Center, University of Minnesota, 07/01/2019 – 06/30/2021.**

The major goal of this award is to explore the mutational signature of esophageal tumors from rats receiving the tobacco specific esophageal carcinogen, *N*-nitrosonornicotine and/or acetaldehyde as well as how this co-exposure influences the transcriptome and epigenome of the esophagus.

**Consortium on Methods Evaluating Tobacco (COMET): Filter Ventilation and Product Standards Pilot Funding, “Particle size and lung distribution of smoke from ventilated and non-ventilated cigarettes” (co-PIs: Irina Stepanov and Kimberley Anderson), co-investigator, April 1, 2020 – March 31, 2022.**

Cigarette filter ventilation is associated with an increased risk of adenocarcinoma in smokers. Deposition of key smoke constituents in the distal parts of the lung, as the result of ventilation-induced changes to the physicochemical properties of cigarette smoke particles, is a potential mechanism. The proposed study will use an animal model of inhalation and pulmonary deposition to test this hypothesis.

**“Mechanisms of Furan-induced Toxicity and Carcinogenicity” Principal Investigator, Grant-in-Aid of Research, Artistry and Scholarship, University of Minnesota, 05/15/2012 – 11/30/2013.**

Bridge funding to study the mechanisms of furan-induced toxicity and carcinogenicity.

**“Biomarkers of furan exposure and bioactivation” Principal Investigator, Midwest Center for Occupational Health and Safety Seed Grant, University of Minnesota, 11/01/2012 – 10/31/2013.**

The goal of this project was to develop urinary biomarkers for furan exposure in humans.

**“Effect of Tobacco Carcinogens on Gene Expression” Principal Investigator, Institute of Human Genetics, University of Minnesota, 07/01/2010 – 06/30/2011.**

The major goal of this proposal was to determine if tobacco carcinogen-derived DNA damage induces changes in gene expression in immortalized human lymphocytes.

**“Modulation of mitogen-activated protein kinase pathways by genotoxic alkylating agents,” Co-investigator with Elizabeth Wattenberg, Academic Health Center, University of Minnesota, Faculty Seed Grant, 7/1/99-6/31/01**

The major goal of this pilot project was to determine the role of DNA alkylation, specifically O<sup>6</sup>-methylguanine, in the activation of mitogen activated protein kinases by four model methylating agents: acetoxymethylmethylnitrosamine, methyl methane-sulfonate, *N*-methyl-*N*-nitrosourea, and *N*-nitroso-*N*-methylethane.

**“Application for an electrochemical detector” Principal Investigator, Minnesota Medical Foundation, 5/15/01-5/14/02**

This grant was for the purchase of an electrochemical detector for HPLC.

**“A rat cell model to measure toxicity of fine fungal particles” Principal Investigator, University of Minnesota School of Public Health Faculty Seed Grant, Minnesota Medical Foundation, 02/01/04 – 07/31/05**

This is a pilot grant to fund preliminary studies to investigate the hypothesis that fine mold particles contain levels of toxicants sufficient to cause human health effects.

**“The role of DNA and protein adducts in the action of the chemotherapeutic agent (hydroxymethyl)acylfulvene” Co-Principal Investigator, University of Minnesota Cancer Center Carcinogenesis and Chemoprevention Program, 07/01/04 – 06/30/06**

This grant provided funding for a postdoctoral fellow to characterize DNA and protein adducts formed by a novel chemotherapeutic agent.

**“Biomarkers to investigate ethnic differences in tobacco carcinogenesis” Co-investigator (PI: S.S. Hecht), Faculty Research Development Grant, Academic Health Center, University of Minnesota, 01/01/2009 – 12/31/2010**

The major goal of this proposal was to develop biomarkers to assess risk of tobacco carcinogenesis in humans. My portion was to develop methods to determine ethnic differences in DNA repair of tobacco carcinogen DNA damage in immortalized human lymphocytes from the Hapmap Project.

**“Tissue Culture Equipment” Principal Investigator, Grant-in-Aid of Research, Artistry and Scholarship, University of Minnesota, 07/01/2010 – 01/15/2011.**

The major goal of this proposal was to purchase tissue culture equipment.

#### **American Health Foundation grants**

**“Inhibition of O<sup>6</sup>-alkylguanine-DNA alkyltransferase by aldehydes,” Principal Investigator, American Health Foundation Internal Seed Grant, 1/1/92-12/31/92**

The major goal of this pilot project was to determine the role of aldehydes in enhancing the carcinogenic effects of nitrosamines.

**“Mechanism of pancreatic carcinogenesis by NNAI and NNK in the rat.” Principal Investigator, American Health Foundation Internal Seed Grant, 6/1/94-5/31/95**

The major goal of this pilot project was to explore the role of cell proliferation, oxidative damage and alkylation DNA in pancreatic tumors induced by tobacco-specific nitrosamines in the rat pancreas.

## COURSES TAUGHT

### Organic Chemistry – School of Pharmacy, University of California, San Francisco

Teaching Assistant

Fall 1981 – Spring 1982 : Enrollment: 50

### General Chemistry – Department of Science, Marymount College, Tarrytown, NY

Sole Instructor

Spring 1996 : Enrollment 15

### Master Thesis (PubH 5250-15)

Advised writing of thesis

Fall 1998 : Enrollment 1

### Seminars in Environmental Health (PubH 5159)

Critiqued seminar and helped in coordination of the course which focused on mechanisms of cell death

Spring 1999 : Enrollment 17

### Topics in Chemical Toxicology (PubH 5150-04)

Co-taught with E. Wattenberg

Spring 1999 : Enrollment 5

### Environmental Health Effects: Toxicology and Epidemiology (PubH 5104)

Gave five lectures

Fall 1999: Enrollment 33

### Independent Study in Toxicology (PubH 5100)

Advised writing of term paper on lead toxicity

Fall 1999: Enrollment 1

### Physiological Disposition of Xenobiotics (PubH 5160)

Sole Instructor

Spring 2000: Enrollment 8

Spring 2001: Enrollment 6

Spring 2002: Enrollment 13

Spring 2003: Enrollment 9

Spring 2004: Enrollment 7

### Directed Studies (Chem 2094)

Mentor for undergraduates performing research in Dr. Peterson's lab

Fall 2000 – Spring 2002

### Directed Studies (GCD 4994)

Mentor for undergraduates performing research in Dr. Peterson's lab

Fall 2000 – Spring 2002

### Environmental Health Effects (PubH 5104)

Gave one lecture

Fall 2000, 2001, 2002, 2004: Enrollment 40

### Environmental Health Effects (PubH 3104/6104)

Gave 5 lectures and helped coordinate the class

Fall 2008: Enrollment 56

Gave 1 lecture:

Fall 2009, Summer Institute 2010

### Field Experience in Environmental and Occupational Health (PubH 5102)

Coordinator

Fall 2000: Enrollment 1

### Vistas in Medicinal Chemical Research (MedC 5495)

Gave one lecture

Fall 2000, 2001, 2002, 2003, 2004, 2006, 2007, 2008, 2009, 2010: Enrollment ~9

Biology of Cancer (MICa 8004)

Gave two lectures on environmental carcinogenesis

Spring 2001, 2002: Enrollment 25

Chemoprevention and Carcinogenesis (Nutr 8617)

Gave three lectures on DNA adducts, repair and mutagenesis

Spring 2002, 2005: Enrollment ~6

Current Literature in Toxicology (PubH 8100-3/8161)

Coordinator

Spring 2001: Enrollment 13

Spring 2002: Enrollment 7

Fall 2003: Enrollment 3

Fall 2004: Enrollment 4

Fall 2006: Enrollment 4

Fall 2007: Enrollment 6

Fall 2010: Enrollment 3

Fall 2011: Enrollment 6

Fall 2012: Enrollment 7

Fall 2013: Enrollment 2

Fall 2014: Enrollment 3

Fall 2015: Enrollment 5

Fall 2016: Enrollment 4

Fall 2017: Enrollment 4

Fall 2018: Enrollment 5

Fall 2020: Enrollment 2

Metabolomics (PubH 5160, then PubH 6160)

Sole Instructor

Spring 2005: Enrollment 11

Spring 2007: Enrollment 7

Spring 2008: Enrollment 7

Spring 2009: Enrollment 11

Spring 2011: Enrollment 7

Spring 2012: Enrollment 11

Spring 2013: Enrollment 5

Systems Toxicology (PubH 6160)

Sole Instructor

Spring 2014: Enrollment 2

Spring 2015: Enrollment 4

Spring 2016: Enrollment 6

Spring 2017: Enrollment 3

Principles of Toxicology II (PubH 6160)

Co-taught with Irina Stepanov

Spring 2018: Enrollment 4

Spring 2019: Enrollment 6

Summer 2020: Enrollment 1

Spring 2021: Enrollment 2

Spring 2023: Enrollment 3

Spring 2024: Enrollment 5

Principles of Toxicology I (PubH 6159)

Fall 2020: Enrollment 18

Fall 2021: Enrollment 15

Fall 2022: Enrollment 19

Fall 2023: Enrollment 10

Advanced Toxicology (PubH 8160)

Fall 2009: Enrollment 5 (co-taught with Elizabeth Wattenberg)  
Fall 2010: Enrollment 3 (co-taught with Elizabeth Wattenberg)  
Fall 2011: Enrollment 2 (co-taught with Elizabeth Wattenberg)  
Fall 2014: Enrollment 3.  
Fall 2015: Enrollment 3 (co-taught with Elizabeth Wattenberg)  
Fall 2016: Enrollment 3 (co-taught with Elizabeth Wattenberg)  
Fall 2017: Enrollment 3 (co-taught with Elizabeth Wattenberg)  
Fall 2018: Enrollment 2 (co-taught with Elizabeth Wattenberg)  
Fall 2019: Enrollment 5 (co-taught with Elizabeth Wattenberg)  
Fall 2020: Enrollment 2 (co-taught with Elizabeth Wattenberg)

Current Topics in Toxicology (PubH 8165)

Spring 2010: Enrollment 4 (Coordinated Student Presentations)  
Fall 2010: Enrollment 1 (Coordinated Guest Presentations)

Chemical Aspects of Drug Metabolism and Bioactivation(MedC 8600)

Gave one lecture

Fall 2006: Enrollment 3

General Principals of Medicinal Chemistry (MedC 5700)

Gave 8 lectures

Fall 2007: Enrollment 10

Fall 2010: Enrollment 9

**ADVISING:**

**Graduate students**

<b>Student Name</b>	<b>Degree Sought</b>	<b>Major</b>	<b>Advisor's Role</b>	<b>Date of Degree Completion</b>
Ann Johnson	MS	Environmental Health	Academic/Thesis Advisor	6/99
Jeremy Stuart	MPH	Environmental Health	Academic Advisor	8/00
Angela Preimesberger	MS	Environmental Health	Academic/Thesis Advisor	8/01
Eugenia Kliris	MPH	Environmental Health	Academic Advisor	8/02
Daniel Tranter	MPH	Environmental Health	Academic Advisor	6/02
Dawn Errede	Ph.D.	Environmental Health	Academic/Thesis Advisor	5/11
Michael Byrns	Ph.D.	Environmental Health	Academic/Thesis Advisor	6/05
Renee Mijal	Ph.D.	Environmental Health	Thesis Advisor	6/05
Elizabeth Thompson	MS	Biological Sciences	Advisor/Thesis Advisor	5/03
Marissa Lightbourne	MPH	Environmental Health	Advisor/Thesis Advisor	10/06
Thomas Higgins	MS	Environmental Health	Academic Advisor	9/06
Sing-Wei Ho	MPH	Environmental Health	Academic Advisor	8/06
Stephen LeMaster	MPH	Environmental Health	Academic Advisor	8/08
Anna Urban	MPH	Environmental Health	Academic Advisor	11/09
Anna Urban	PhD	Environmental Health	Academic/Thesis Advisor	1/12
Iman Hassan	MPH	Environmental Health	Thesis Advisor	8/07
Melinda Hexum	MS	Environmental Health	Academic Advisor	5/09
Jeffery Caudill	MS	Environmental Health	Academic Advisor	6/12
Martin Phillips	PhD	Medicinal Chemistry	Thesis Advisor	9/12
Brandy Kreuser	MPH	Environmental Health	Academic Advisor	10/14
Leah Brus	MPH	Environmental Health	Academic Advisor	5/12
Ashley Terrell	PhD	Environmental Health	Thesis Advisor	1/12
Karin Vineretsky	PhD	Environmental Health	Academic Advisor	11/14



Colin Owens	MPH	Environmental Health	Academic Advisor	4/14
Elizabeth Bell	MPH	Environmental Health	Academic Advisor	4/14
Ngozi Njoku	MPH	Environmental Health	Academic Advisor	4/16
Lindsey Spaude	MPH	Environmental Health	Academic Advisor	6/16
Jiahuan (Steve) Sun	MS	Environmental Health	Academic Advisor	12/14
Shaine Hartmann	MPH	Environmental Health	Academic Advisor	
Jianji Chen	MS	Environmental Health	Academic Advisor	5/15
Melissa O'Hehir	MS	Environmental Health	Academic Advisor	6/16
Paxia Her	MPH	Environmental Health	Academic Advisor	12/16
James Meinert	JD/MPH	Environmental Health	Academic Advisor	5/17
Guole Shi	MPH	Environmental Health	Academic Advisor	6/17
Thomas Hexum	MS	Environmental Health	Academic Advisor	6/19
Zofia Tillman	MPH	Environmental Health	Academic Advisor	withdrawn
Bailey Stanton	MPH	Environmental Health	Academic Advisor	
Maria Roeser	MPH	Environmental Health	Academic Advisor	6/23
Sarah Bergman	MPH	Environmental Health	Academic Advisor	
Hannah Jeffers	MS	Environmental Health	Academic Advisor	
Mohammed Almansour	MPH	Environmental Health	Academic Advisor	

### Undergraduate students

William Confers, American Health Foundation Summer Student Program, Summer 1989

Brooke Bloom, American Health Foundation Summer Student Program, Summer 1990

Ankur Patel, American Health Foundation Summer Student Program, Summer 1991

Ketaki Patel, American Health Foundation Summer Student Program, Summer 1993

Larry Balter, American Health Foundation Summer Student Program, Summer 1994

Urmi Desai, American Health Foundation Summer Student Program, Summer 1996

Michelle MacDonald, Independent Study, Marymount College, Fall Semester, American Health Foundation, 1995

Tamara Harms, Biology Colloquium, University of Minnesota, Winter Quarter 1998.

Diana Hargreaves, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 1998.

Laura Guengerich, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 1999.

Audra Agnelly, Internship, Macalester College January 1999.

Elizabeth Donaldson, University of Minnesota Chemistry Summer Undergraduate Research Program and Macalester College Honor's thesis advisor, 1999-2000.

Kristan Steffen, Biology Colloquium, University of Minnesota, Spring Semester 2000; UROP Grant 2001; Biochemistry Directed Studies Fall 2001-Spring 2002.

Selina Jaman, Biology Colloquium, University of Minnesota, Spring Semester 2000 and Chemistry Directed Studies, Fall Semester 2000.

Rebecca Krenz, Biochemistry Directed Studies, University of Minnesota, Fall Semester 2000.

Jacqueline Chan, Chemistry Directed Studies, University of Minnesota, Summer 2001 and Biochemistry Directed Studies Fall 2001- Spring 2002.

Katherine Rammer, University of Minnesota, UROP Grant 2002.

Lauren Bergerson, Directed Studies, University of Minnesota, Fall 2003.

Minda Olson, Directed Studies, University of Minnesota, Fall 2003-Spring 2004.

Patrice Kiiru, University of Minnesota Life Science Summer Undergraduate Research Program, Summers 2004, 2005.

Ahmed Uddin, Biology Colloquim, University of Minnesota, Spring Semester, 2007.

Carolyn Fisk, Directed Studies, University of Minnesota, Fall 2007-Spring 2008.

Jaye Gardiner, NorthStar Stem Alliance for Minority Participation, Macalester College, Summer 2009, Fall 2009.  
 Daniel Ressler, NorthStar Stem Alliance for Minority Participation, Macalester College, Summer 2009.  
 Jaye Gardiner, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 2010.  
 Mailee Hunyh, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 2010.  
 Sam Gonzalez, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 2011.  
 Mildrede Bonglack, Masonic Cancer Center Health Disparities Internship Program, Summer 2011; UROP grant Spring 2012.  
 Justin Peterson, Chemistry Directed Studies, Spring 2013.  
 Kunlin Wang, Chemistry Directed Studies, Spring 2013.  
 Thaddeus Schmitt, Biochemistry Directed Studies Spring 2014/ UROP grant summer 2014/Honors thesis.  
 Nicole Mandel, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 2014.  
 Tia Eskridge, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 2015.  
 Jenna Thomforde, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 2016.  
 Ebisie Deressa, Masonic Cancer Center CURE Internship Program, April 2016 – August 2017.  
 Esther Rodman, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 2016.  
 Makenzie Cavil, Directed Studies, Spring 2020, UROP grant Spring 2021.  
 Carlos Ocasio Ramirez, University of Minnesota Life Science Summer Undergraduate Research Program, Summer 2021.  
 An Trinh, Undergraduate Research Opportunity Program grant, Fall 2021 and Fall 2022.

#### **M.S./MPH examining committees**

Member, MS, Environmental Toxicology, Ann Johnson  
 Member, MPH, Environmental Toxicology, Jeremy Stuart  
 Member, MS, Environmental Toxicology, Angela Preimesberger  
 Member, MS, Environmental Toxicology, Sarah Northrup  
 Member, MS, Environmental Toxicology, Teresa Fick  
 Member, MPH, Environmental Health, Eugenia Kliris  
 Member, MPH, Epidemiology, Waseem Khaliq  
 Member, MPH, Epidemiology, Bijay Nair  
 Member, MS, Medicinal Chemistry, Rebecca Zeigel  
 Member, MS, Biological Sciences, Elizabeth Anderson  
 Member, MS, Medical Sciences, Yiyang Yang  
 Member, MPH, Epidemiology, Jeff Anderson  
 Member, MPH, Environmental Health, Stuart Cameron  
 Member, MPH, Epidemiology, Lucy Alderich  
 Member, MPH, Environmental Health, Kelly Lewis  
 Member, MPH, Environmental Health, Marissa Lightbourne  
 Member, MPH, Environmental Health, Misato Hirano  
 Member, MPH, Environmental Health, Iman Hassan  
 Member, MPH, Environmental Health, Majken Hall  
 Member, MS, Environmental Health, Melinda Hexum  
 Member, MS, Medicinal Chemistry, Lei Meng  
 Member, MS, Medicinal Chemistry, Katherine Pietsch  
 Member, MPH, Environmental Health, Ania Urban

Member, MS, Environmental Health, Brad Bagley.  
Member, MPH, Environmental Health, Julia Well.  
Member, MS, Environmental Health, Jeff Caudill.  
Member, MPH, Environmental Health, Leah Gates.  
Member, MS, Environmental Health, David Bell.  
Member, MS, Environmental Health, David Dassenko.  
Chair, MS, Environmental Health, Colin Owens.  
Member, MPH, Environmental Health, Elizabeth Bell.  
Member, MPH, Environmental Health, Natasha Cardinez-Singh.  
Member, MPH, Environmental Health, Elizabeth Vold.  
Member, MS, Masters of Biological Sciences, Tesha Alston.  
Member, MPH, Environmental Health, Brandy Kreuser Fischer  
Member, MS, Environmental Health, Frank Bettmann  
Member, MS, Environmental Health, Steve Sun  
Chair, MS, Environmental Health, Jianji Chen  
Member, MS, Environmental Health, Melissa O'Hehir  
Member, MS, Medicinal Chemistry, Emily Boldry  
Chair, MS, Environmental Health, Guole Shi  
Member, MS, Masters of Biological Sciences, James Piper.  
Member, MS, Environmental Health, Stephen Campbell  
Member, MS, Environmental Health, Richard LaCroix  
Member, MS, Medicinal Chemistry, Amanda Degner  
Member, MS, Environmental Health, Hannah Kaup  
Member, MS, Environmental Health, Maggy Osorio  
Chair, MS, Environmental Health, Thomas Hexum  
Member, MS, Environmental Health, Yihua Bai  
Member, MS, Environmental Health, Kimberly Harber

#### **Ph.D. examining and thesis committees**

Hongliang Cai, Chemistry Department, Wake Forest University, April 24, 1998.  
Shunan Li, Division of Environmental and Occupational Health, School of Public Health, University of Minnesota, 1998-1999.  
Linda Von Weyarn, Department of Biochemistry, Molecular Biology, & Biophysics, University of Minnesota, 1999-2002.  
Janel Warmka, Department of Environmental Health Sciences, University of Minnesota, 2000-2004.  
Natarajan Kalyanaraman, Department of Medicinal Chemistry, University of Minnesota, 2002-2003.  
Michael Byrns, Division of Environmental Health Sciences, University of Minnesota, 2003-2005  
Renée Mijal, Division of Environmental Health Sciences, University of Minnesota, 2003-2005.  
Dawn Errede, Division of Environmental Health Sciences, University of Minnesota, 2003-2011.  
Nicholette Zeliadt, Division of Environmental Health Sciences, University of Minnesota, 2006-2010.  
Sarah Gilpin, Division of Environmental Health Sciences, University of Minnesota, 2007-2010.  
Ania Urban, Division of Environmental Health Sciences, University of Minnesota, 2007-2012.  
Aaron Teitelbaum, Department of Medicinal Chemistry, University of Minnesota, 2009.  
Martin Phillips, Department of Medicinal Chemistry, University of Minnesota, 2010-2012.

Ashley Terrell, Division of Environmental Health Sciences, University of Minnesota, 2010-2012.  
Sarah Oppeneer, Division of Epidemiology, University of Minnesota, 2012-2014.  
Manoj Chiney, Experimental and Clinical Pharmacology, University of Minnesota, 2012-2013.  
Val Kramlinger, Department of Biochemistry, Molecular Biology and Biophysics, University of Minnesota, 2013.  
Tian Qiu, Department of Chemistry, University of Minnesota, 2013  
Karin Vineretsky, Division of Environmental Health Sciences, University of Minnesota, 2012-2014  
Erik Carlson, Department of Pharmacology, University of Minnesota, 2015–2019.  
Emily Boldry, Department of Medicinal Chemistry, University of Minnesota, 2016–2019.  
Dmitri Konorev, Department of Medicinal Chemistry, University of Minnesota, 2016-present.  
Amanda Degner, Department of Medicinal Chemistry, University of Minnesota, 2017–2018.  
Valeria Guidolin, Division of Environmental Health, University of Minnesota, 2019–present.  
Ying Huang, Department of Biochemistry, Molecular Biology and Biophysics, University of Minnesota, 2019-2020.

#### **Ph.D. Theses**

Michael Byrns. Determination of the role of DNA alkylation by *cis*-2-butene-1,4-dial in furan-induced carcinogenesis. University of Minnesota, June 2005.  
Renée Mijal. Gene-Environment Interactions: Is the repair of pyridyloxobutylguanine adducts modified by AGT genotype. University of Minnesota, June 2005.  
Dawn Errede. Distribution of mycotoxins in fungal structures. University of Minnesota, May 2011.  
Ashley Terrell. The mutagenic potential of furan and its metabolite *cis*-2-butene-1,4-dial. University of Minnesota, January 2012.  
Anna Urban. Formation and repair of pyridyloxobutyl DNA adducts and their relationship to tumor yield in A/J mice. University of Minnesota, January 2012.  
Martin Phillips. Characterization of the chemical properties of intermediates in furan metabolism. University of Minnesota, September 2012.

#### **NATIONAL/INTERNATIONAL ACTIVITIES:**

##### **Editorial Activities:**

Manuscript Reviewer for *Biochemistry*, *Bioorganic Chemistry*, *Cancer Letters*, *Cancer Research*, *Chemico-Biological Interactions*, *Drug Metabolism and Disposition*, *Chemical Research in Toxicology*, *Cancer Epidemiology, Biomarkers & Prevention*, *Environmental Toxicology*, *European Journal of Medicinal Chemistry*, *Free Radical Biology and Medicine*, *Journal of Medicinal Chemistry*, *International Journal of Cancer*, *Molecular Carcinogenesis*, *Mutation Research*, *Proceedings of the National Academy, USA*, *Pharmacogenetics and Genomics*, *Oncogene*, *Toxicology and Applied Pharmacology* and *Toxicological Sciences*.

Member, Editorial Board, *Chemical Research in Toxicology*, 2002-2008, 2019-present.

Associate Editor, *Chemical Research in Toxicology*, 2013-2017.

##### **Review Panels and Study Sections:**

Member, Special Emphasis Panel for Grant Review, MEP Study Section, National Institutes of Health, August 1998.

Member, Special Emphasis Panel for Review of RFA 99-007, "Carcinogenicity of Drinking Water Disinfection By-Products," National Institute of Environmental Health Sciences, December 1999.

Reviewed faculty seed grant proposals for the Center in Molecular Toxicology, Vanderbilt University, February 2001.

Member, Special Review Committee, Pathology B Study Section, National Institute of Health, July 2001.

Member, Special Emphasis Panel, Pathology C Study Section, National Institutes of Health, October 2001.

Member, Special Review Committee, Study Section, National Institutes of Health, April 2002.

Member, Special Review Committee, Study Section, National Institutes of Health, July 2002

Ad Hoc member, Chemical Pathology Study Section, National Institutes of Health, October 2002.

Reviewer, U.S. Civilian Research and Development Foundation Cooperative Grants Program, 2003.  
*Ad hoc* member, Cancer Etiology Study Section, National Institutes of Health, October 2003.  
Reviewer, Alberta Heritage Foundation for Medical Research, Heritage Medical or Health Scientist Award Applications, Alberta, Canada, January 2005.  
*Ad hoc* member, Cancer Etiology Study Section, National Institutes of Health, June 2005.  
Member, Cancer Etiology Study Section, National Institutes of Health, 2005-2008.  
Member, External Peer Review Panel, The toxicological review for the tetrahydrofuran human health assessment, Environmental Protection Agency, November 2007.  
Member, Expert Panel, National Toxicology Program Review of Formaldehyde Carcinogen Status, National Institutes of Environmental Health Sciences, November 2009.  
Member, Member Conflict: Carcinogenesis and Tumorigenesis Panel, National Institutes of Health, January 2010.  
Member, Special Emphasis Panel, Oncology I - Basic Translational (OBT) Integrated Review Group, National Institutes of Health, August 2010.  
Member, Superfund Basic Sciences Research Program Grants Review Committee, National Institutes of Environmental Health Sciences, October 2010.  
Member, Biomarkers Grant Review Committee, National Institutes of Environmental Health Sciences, March 2011.  
Member, Peer Review Committee, National Toxicology Program, National Institutes of Environmental Health Sciences, February 2012.  
Member, Tobacco Regulatory Science Peer Review Committee, National Institutes of Health, 2014, 2016 and 2017.  
Member, NIH Special Emphasis Panel: Evaluation of U01 Grant Applications: DNA Repair Capacity (DRC) Assay Measures in Population-based Studies, March 2018.  
Member, NIH Special Emphasis Panel: ENDS-Basic Mechanisms of Health Effects, March 2019.  
Chair, NIH Special Emphasis Panel: ENDS-Basic Mechanisms of Health Effects, November 2019.  
Co-Chair, NIH Special Emphasis Panel: ENDS-Basic Mechanisms of Health Effects, March 2020.  
Ad hoc Member, Systemic injury by environmental exposures NIH study section, March 2021.  
Member, NIH Special Emphasis Panel: RFA-CA-20-045, April 2021.  
Member, American Lung Association Grant Review Committee, April 2021.  
Co-Chair, NIH ENDS & Tobacco Use Special Emphasis Panel VH-K K01-K99 Review, March 2022.  
Chair, ZRG1 IFCN-E (56) R - RFA Panel: Tobacco Regulatory Science A Special Emphasis Panel, May 2022.  
Member, ZRG1 IFCN-R (50) Tobacco Center of Regulatory Science study section, January 2023.  
Member, University of Kentucky Cancer Center Site Grant in-person site visit team, February 2023.  
Member, Environmental Exposure and Toxicology Review Panel, University of California, Research Grants Program, February 2023.  
Ad hoc Member, Environmental Determinants of Disease, National Institutes of Health, February 2024.  
Member, Environmental Exposure and Toxicology Review Panel, University of California, Research Grants Program, February 2024

### **Advisory Panels**

Chair, National Toxicology Program Board of Scientific Counselors, 2013-2016.  
Member, Cosmetic Ingredient Review Expert Panel, 2019-2021

### **Scientific Organizations:**

#### **Committee Positions:**

Chair, Bylaws Committee, Division of Chemical Toxicology (probationary), American Chemical Society, 1997-1998.  
Member, Executive Committee, Division of Chemical Toxicology, American Chemical Society, 1997-1998.

Member and ACS Pacificchem 2000 liaison, Program Committee, Division of Chemical Toxicology, American Chemical Society, 1997-2000

Treasurer-elect, International Society for the Study of Xenobiotics, 2002-2003.

Councillor, Division of Chemical Toxicology, American Chemical Society, 2002-2004.

Treasurer, International Society for the Study of Xenobiotics, 2004-2005.

Chair, Finance Committee, International Society for the Study of Xenobiotics, 2006-2007.

Chair, Young Chemist Committee, Chemistry in Cancer Research, American Association for Cancer Research, 2006-2007.

Member, Young Chemist Committee, Chemistry in Cancer Research, American Association for Cancer Research, 2007-2008.

Chair, Nominations Committee, Division of Chemical Toxicology, American Chemical Society, 2007.

Member, Meeting Organizing Committee, 15<sup>th</sup> North American Meeting of the International Society for the Study of Xenobiotics, San Diego, CA, 2008.

Chair-elect, Division of Chemical Toxicology, American Chemical Society, 2008.

Chair, Division of Chemical Toxicology, American Chemical Society, 2009-2010.

Immediate Past Chair, Division of Chemical Toxicology, American Chemical Society, 2011-2012.

Member, Nominations Committee, Division of Chemical Toxicology, American Chemical Society, 2014-2015. 2020-2022.

Chair, Nominations Committee, Division of Chemical Toxicology, American Chemical Society, 2016.

#### **Meetings:**

Session Chair, Division of Chemical Toxicology (probationary), American Chemical Society National Meeting, Orlando, FL., 1996.

Session Chair, Division of Chemical Toxicology (probationary), American Chemical Society National Meeting, Las Vegas, NV, 1997.

Session Chair, Division of Chemical Toxicology, American Chemical Society National Meeting, Boston, MA, 1998.

Poster judge at the 9th North American International Society for the Study of Xenobiotics Meeting, Oct 24-28, 1999, Nashville, TN.

Corresponding symposium co-organizer, "Chemical Perspectives on Human Cancer," Pacificchem 2000 Congress, Honolulu, Hawaii, December 2000

Poster judge for the Division of Chemical Toxicology at the American Chemical Society Meeting in Chicago, IL, August 2001.

Poster judge for the Division of Chemical Toxicology at the American Chemical Society Meeting in Boston, MA August 2002.

Member, Program Committee, Chemistry Subsection, American Association for Cancer Research, Washington DC, July 2003.

Co-Chair, Poster Discussion Session, "DNA adducts: Structures and consequences" American Association for Cancer Research, Toronto, Washington DC, July 2003.

Poster judge for the Division of Chemical Toxicology at the American Chemical Society Meeting in New York, NY August 2003.

Symposium co-organizer, "A systems biology approach to hormone active agents in the environment," Fall American Chemical Society Meeting, Philadelphia, PA, August 2004.

Judge, Young Investigator Awards, Division of Chemical Toxicology at the American Chemical Society Meeting in Boston, MA, August 2007.

Judge, Young Investigator Awards, Division of Chemical Toxicology at the American Chemical Society Meeting in Philadelphia, PA, August 2008.

Judge, Young Investigator Awards, Division of Chemical Toxicology at the American Chemical Society Meeting in Washington DC, August 2009.

Judge, Poster Awards, Division of Chemical Toxicology at the American Chemical Society Meeting in Denver CO, August 2011.

Discussion Leader, Carcinogen Metabolism and Bioactivation, Drug Metabolism Gordon Conference, Holderness School, Holderness, NH, July 2013.

#### **CITY/STATE ACTIVITIES:**

Collaborator, Science Education Partnership Award Grant, "Tissues of Life," Science Museum of Minnesota.

Conducted DNA spooling experiments, Cancer Center Research Fair as part of The March, Coming Together To Conquer Cancer, Mall of America, September 26, 1998.

Spoke to the Brooklyn Park Rotary Club about Cancer Prevention, July 19, 1999.

Spoke to high school students on Cancer Center field trip, October 11, 1999. Members of my laboratory conducted DNA spooling experiments for several groups touring the Cancer Center since 1999.

Participated in "Cancer and the Human Body" at the Science Museum of Minnesota on March 4, 2000 and March 16, 2001.

Participated in the "State of Minnesota Earth Day" at Olson Middle School, April 19, 2001 and at Earth Day 2002, Henry High School, Minneapolis, MN.

Organized DNA spooling experiment at Cancer Center Day at the Minnesota State Fair, 2000-2005.

Organized DNA spooling demonstration at School of Public Health Day at the Minnesota State Fair, 2001-2007.

#### **UNIVERSITY ACTIVITIES:**

##### **General Activities:**

Spoke with undergraduate summer students about the Division of EOH and public health careers, August 1998.

Spoke with students in the Biology Colloquium about my research and public health careers, November 3 and 9, 1998.

Participate in the Cancer Center Open House by running DNA spooling experiment, 1998-2003.

Spoke to Biology Sciences Student Association about the Division of Environmental and Occupational Health and public health careers, February 8, 1999.

Spoke to Biology Colloquium Students about research, October 12, 1999.

Participant, 2001-2002 Bush Early Career Teaching Program.

##### **Committees:**

Member, Teaching Committee, Division of Environmental and Occupational Health, 1998-1999.

Reviewer, Cancer Center Seed Grants, September 1998.

Member, Search Committee, Professor of Toxicology Position, Division of Environmental and Occupational Health, 1998-1999.

Member, Search Committee, Assistant Professor, Department of Medicinal Chemistry and Cancer Center, 1999.

Member, Search Committee, Assistant/Associate Professor, Industrial Health, Division of Environmental and Occupational Health, 1999.

Member, Student Committee, Division of Environmental and Occupational Health, 1999-2000.

Mentor for John Yick, President's Distinguished Faculty Mentor Program, 2000-2001.

Member, Awards Committee, Division of Environmental and Occupational Health, 2000-2002.

Chair, Laboratory Committee, Division of Environmental and Occupational Health, 2000-2010.

Member, Search Committee, Assistant Professor, Human Exposure, Division of Environmental and Occupational Health, 2000-2001.

Member, Faculty Advisory Committee, Division of Environmental and Occupational Health, 2000-2001.

Chair, Awards Committee, Division of Environmental Health Sciences, 2002-2005, 2007-2008.  
Member, Research Committee, School of Public Health, 2001-2004, 2007-2010, 2010-2013. Chair, 2004, 2009.  
Member, Public Health Informatics, School of Public Health, 2001-2003.  
Member, Appointments, Tenure and Promotion Committee, School of Public Health, 2002-2004.  
Member, Medicinal Chemistry Assistant Professor Search Committee, University of Minnesota, Fall 2002.  
Member, TTURC Smoking Reduction Data and Safety Monitoring Board, University of Minnesota, 2003-2004.  
Reviewer, TTURC pilot grants, University of Minnesota, June 2005.  
Reviewer, Cancer Center Etiology / Prevention / Control Grant Proposals, Cancer Center, University of Minnesota, June 2005.  
Member, School of Public Health, Recognition, Awards and Honors Committee, 2006-2008.  
Interim Director of Graduate Studies, Division of Environmental Health Sciences, University of Minnesota, Fall 2008.  
Member, Masonic Cancer Center, Science Council, 2009-present. Symposium subcommittee, Spring 2010.  
Member, Faculty Research Development Grant Review Panel, University of Minnesota, November 2009.  
Member, Minnesota Futures Grant Review Panel, University of Minnesota, May 2010.  
Member, Carcinogenesis and Chemoprevention Seed Grant Review Committee, Masonic Cancer Center, University of Minnesota, November 2010.  
Member, Search Committee, Assistant Professor, Division of Environmental Health Sciences and Masonic Cancer Center, 2011.  
Member, Minnesota Futures Grant Review Panel, University of Minnesota, May 2011.  
Member, Written Exam Committee, Department of Medicinal Chemistry, 2012-2015.  
Reviewer, University of Minnesota Medical School Grant-writing course for junior faculty, January 2012.  
Member, Strategic Planning Team, Division of Environmental Health Sciences, 2012-2013  
Chair, American Cancer Society Institutional Research Grant Seed Grant Review Committee, University of Minnesota, 2012 – 2016.  
Member, Junior Faculty Mentoring Team, Masonic Cancer Center, 2013- 2016  
Chair, Search Committee, Assistant Professor, Division of Environmental Health Sciences and Masonic Cancer Center, 2014.  
Reviewer, University of Minnesota Undergraduate Research Opportunities Program Grants, 2014.  
Reviewer, University of Minnesota Masonic Cancer Center Internal Grants, 2014.  
Member, Appointments, Tenure and Promotion Committee, School of Public Health, 2014-2015.  
Chair, Appointments, Tenure and Promotion Committee, School of Public Health, 2016.  
Member, Science Council, Masonic Cancer Center, 2014-2024  
Co-Chair, University of Minnesota Toxicology Community Advisory Board, Division of Environmental Health Sciences  
Vice-Chair, American Cancer Society Institutional Research Grant Seed Grant Review Committee, University of Minnesota, 2017-2019.  
Representative of the Division of Environmental Health, Climate Support Network, University of Minnesota, 2020-2022.  
Member, Appointments, Tenure and Promotion Committee, School of Public Health, 2020-2021.  
Member, School of Public Health, Diversity, Equity and Inclusion Strategic Planning Team, 2020-2021.  
Member, Space Committee, Masonic Cancer Center, 2020-2024.  
Member, Community Outreach and Engagement Internal Advisory Board, Masonic Cancer Center, 2021-2024.  
Member, Diversity, Equity and Inclusion Committee, Division of Environmental Health Sciences, 2021–present.  
Chair, Appointments, Tenure and Promotion Committee, School of Public Health, 2021-2022.



Member, Admission Committee, Division of Environmental Health Sciences, 2018-present.

Member, Division Head Search Committee, Division of Environmental Health Sciences, 2021

Chair, Research and Infrastructure Committee, Division of Environmental Health Sciences, 2022-2024

Member, Environmental Health Sciences Leadership Committee, Division of Environmental Health Sciences, 2022-2024

Member, University of Minnesota Toxicology Community Advisory Board, 2022 - present.

Planning committee, Microbiome and Cancer Symposium, U of MN, 2021-2023.

**ACTIVITIES AT OTHER ORGANIZATIONS:**

Member, Graduate Instructional and Research Committee, University of California, San Francisco, 1982-1984.

Member, Radiation Safety Committee, American Health Foundation, 1990-1997.

Member, Treetops Day Care Center Steering Committee, American Health Foundation, 1991-1992.

Member, Biological and Chemical Safety Committee, American Health Foundation, 1993-1997.

Member, Seminar Committee, American Health Foundation, 1996-1997.

Chair, Scientific Review Committee, Minnesota Colon Cancer Research Fund, 2017-now.