BIOGRAPHICAL SKETCH

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NAME: Reuhl, Kenneth

eRA COMMONS USER NAME (credential, e.g., agency login): KREUHL

POSITION TITLE: Professor, Department of Pharmacology & Toxicology

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Wisconsin, Madison	BA	06/1973	Zoology/Classics
University of Wisconsin, Madison	Ph.D.	06/1980	Pathology

A. Personal Statement

My research interests are in the area of experimental and diagnostic pathology, particularly in the areas of neurotoxicology, experimental carcinogenesis, and the toxic side-effects of chemotherapies. I am particularly interested in factors that influence idiosyncratic responses to toxicants and mechanisms of tissue repair. I am trained in both human and rodent pathology; for more than 35 years I have served as the study pathologist for numerous NIH-funded research programs, in addition to conducting my own research program in heavy metal neuropathology. During this time, I have worked extensively to develop and validate methods to detect and characterize morphological changes in cells and tissues at both the light microscopic and ultrastructural levels, with a specific emphasis on identification mechanisms of toxicant action. I am currently Professor of Pharmacology and Toxicology at the Mario School of Pharmacy at Rutgers. For 17 years I was Director of the Joint Graduate Program in Toxicology and for 11 years I was the Director of the Environmental and Occupational Health Sciences Institute (EOHSI). I currently direct the Molecular Pathology Facility Core of the EOHSI P30 Center. I am the author or co-author of more than 150 peer-reviewed papers and book chapters, and I am board-certified by the American Board of Toxicology. I am past-Associate Editor of NeuroToxicology and have been a member and/or Chair of numerous studies sections for NIH, EPA and DOD.

Ongoing and recently completed projects that I would like to highlight include:

R01CA238871-01
Minko (PI), Role: Co-I
04/01/19 – 03/31/24
Bionanotechnology approach for treatment of lung cancer

R01CA209818
Minko (PI), Role: Co-I
04/21/17 – 03/31/23
Tumor-targeted nanoparticle-based delivery system for imaging and treatment of cancer

P30ES05022-31
Zarbl (PI), Role: Co-I and Director, Molecular Pathology Facility Core
4/1/1—3/31/24
Center Grant to support research in environmental toxicology

RO1 CA238871
National Institutes of Health/ National Cancer Institute
3/1/19-2/28/24

Nanotechnology approach for targeted inhalation therapy of lung cancer
Principal Investigator: Tamara Minko; Co-Investigator: Kenneth Reuhl

Citations:

1. Zhang, M, Garbuzenko, OB, Reuhl, KR, Rodriguez-Rodriguez, L and Minko, T. Two-in-One: Combined targeted chemo and gene therapy for tumor suppression and prevention of metastases. Nanomedicine 7:185-197, 2012. PMID: 22339132.
2. Goraczniak, R, Wall, BA, Behlke, MA, Lennox, KA, Ho, ES, Zaphiros, NH, Jakubowski, C, Patel, NR, Zhao,S, Magaway, C, Subbie, SA, Yu, LJ, LaCava, S, Reuhl, KR, Chen, S and Gunderson, SI: U1 adaptor oligonucleotides targeting *BCL2* and *GRM1* suppress growth of human melanoma xenografts*in vivo*. molecular Therapy—Nucleic Acids. E92; doi 10:1038/mtna.2013.24. PMCID: PMC4817935
3. Ivanova, V., Garbuzenko, O. B., Reuhl, K.R., Reimer, D.C., Pozharov, V.P, and Minko, T., Inhalation treatment of pulmonary fibrosis by liposomal prostaglandin E2. European J. Pharmaceutics and Biopharmaceutics 84:335-344, 2013. PMCID: 3660419
4. Meng, Y., Sohar, I., Sleat, D.E., Richardson, J., Reuhl, K.R., Jenkins, R.B., Sarkar, G., and Lobel, Effective intravenous therapy for neurodegenerative disease with a therapeutic enzyme and a peptide that mediates delivery to the brain. Molec.Ther. 22:547-553, 2014. PMCID: 3944336

B. Positions and Honors

Positions and Employment

1979-81 Research Associate, National Research Council of Canada
1982-85 Assistant Research Officer, National Research Council of Canada
1984 Visiting Research Fellow, Macquarie University North Ryde, Australia
1984-88 Clinical Professor of Pathology, University of Ottawa, Ottawa, Ontario, Canada
1987 Research Scientist, Health and Welfare Canada, Ottawa, Ontario, Canada
1987-1991 Associate Professor; Rutgers University;
1991-present Professor of Pharmacology and Toxicology, Rutgers University
1991 Mayne Guest Professor, University of Queensland, Australia
1997-2015, Director, Joint Graduate Program in Toxicology
2001-2006, Deputy Director, NIEHS Center of Excellence in Toxicology
2001-2006, Co-Director, Center for Childhood Neurotoxicology and Exposure Assessment
2004-2007, Associate Director, Environmental and Occupational Health Sciences Institute
2007-2017 Interim Director, Environmental and Occupational Health Sciences Institute.

Other Experience and Professional Memberships

1983-87 NIH Toxicology Study Section
1982, 1983, 1985-2021, Member and/or Chair, NIH/NIEHS P30, P01, P42, P50, U13, U54, ONES, T32, ViCTER, K99/R00, R21, R13, K22, R01 Study Sections
1988-2001, EPA Advisory Board Neurotoxicology Subcommittee
1993-1996, Board of Scientific Councilors, National Toxicology Program, (Chair 1995-1996)
1996-1999 NIH Environmental Health Sciences Review Committee.

Honors

1987-89 Henry Rutgers University Fellowship
1990 Delta Sigma Theta Epsilon Teaching Award
1990, 1992 William Levine Teacher of the Year, Rutgers College of Pharmacy
2016 Society of Toxicology Education Award

C. Contributions to Science

1. My early publications were in the area of heavy metal neuropathology particularly that arising from developmental exposures to methylmercury. This ubiquitous environmental toxicant has been shown to induce both structural and behavioral alterations in brain, but the underlying mechanisms were poorly understood. I focused on the ability of methylmercury to disassemble highly kinetic spindle microtubules the role of microtubule associated proteins to stabilize microtubules in mature neurons. The increasing stability of microtubules with age has been used as a mechanistic explanation for the age-dependent change in dose-response to the toxicant.

a. Polunas, M.A., Halladay, A., Tjalkens, R.B., Philbert, M.A., Lowndes, H.E. and Reuhl, K.R.: Role of oxidative stress and the mitochondrial permeability transition in methylmercury cytotoxicity. NeuroToxicology 32:526-34, 2011. PMID: 21871920; PMCID: 3200472.
b. Burke, K., Cheng, Y., Li, B., Petrov, A., Joshi, P., Berman, R., Reuhl, K.R., and DiCicco-Bloom, E.:Methylmercury elicits rapid inhibition of cell proliferation in the developing brain and decreases cell cycle regulator, cyclin E. Neurotoxicol. 27:970-981, 2006.
c. Philbert, M.A., Billingsley, M.L., and Reuhl, K.R.: Mechanisms of injury in the central nervous system. Toxicol.Pathol., 28: 43-53, 2000.

2. During developmental exposure to toxicants such as heavy metals, neuronal migration is commonly disturbed, resulting in significant morphological and behavioral abnormalities. A major molecular event in brain morphogenesis is the differential expression of neural cell adhesion molecules (NCAMs) which serve to guide neurons to their appropriate anatomical destinations. NCAMs are members of the immunoglobulin superfamily and as such, have potentially vulnerable –SH groups. In a series of studies, we demonstrated that heavy metals such as methylmercury, trimethyltin, lead and manganese perturb NCAM expression in an isoform-specific manner. Our work and that of others has resulted in NCAM being used as a biomarker of neurotoxicity.

a. Prozialeck, W. C., Grunwald, G.B., Dey, P. M., Reuhl, K.R, and Parrish, A.R.: Review. Cadherins and NCAMs as potential targets in metal toxicity.Toxicol. Appl. Pharm., 182:255-265, 2002.
b. Wilson, D.T., Polunas, M.A., Zhou, R., Halladay, A.K., and Reuhl, K.R.: Methylmercury alters Eph and ephrin expression during neuronal differentiation of P19 embryonal carcinoma cells. Neurotoxicol., 26:661-674, 2005.
c. Halladay, A. K., Wilson, D.T., Wagner, G.C., and Reuhl, K.R.: Trimethyltin-induced alterations in behavior are linked to changes in PSA-NCAM expression. Neurotoxicol., 27:137-146, 2006.
d. Polunas, M.A., Halladay, A., Tjalkens, R.B., Philbert, M.A., Lowndes, H.E. and Reuhl, K.R.: Role of oxidative stress and the mitochondrial permeability transition in methylmercury cytotoxicity. NeuroToxicology 32:526-534, 2011. PMID: 21871920; PMCID: 3200472.

3. Prevention of cancer is clearly a superior alternative to treating an existing malignancy. During the last 15 years, numerous chemopreventive strategies have been developed using dietary compounds and additives. The effectiveness of these agents requires rigorous testing with animal models. Together with the C. S. Yang and the late Allan Conney, we examined a wide variety of potential chemopreventive agents for their ability to prevent tumor formation or to alter the spectrum of neoplasms induced by natural and chemical carcinogens. These studies have provided mechanistic understanding of how these agents exert their effects on tumor development.

a. Smolarek, A. M., So, J-Y, Thomas, P.E., Lee, H.J., Paul, S., Dombrowski, A., Wang, C-X, Saw, L-L., Khor,T. O., Kong, A-N, Reuhl, K., Lee, M-J, and Yang, C.S and Suh, N..: Dietary tocopherols inhibit cell proliferation of ERα, PPARγ and Nrf2, and decrease serum inflammatory markers during the development of mammary hyperplasia. Molec. Carcinogenesis 52:514-525, 2013. PMID: 22389237; PMCID: 3374909.
b. Chen, Y.K., Cheung, C., Reuhl, K.R., Liu, A.B., Lee, M-J, Lu, Y-P, and Yang, C.S.: Effects of green teapolyphenol (-)-epigallocatechin-3-gallate on high-fat/Western-style diet induced obesity and metabolic syndrome in mice. J. Agricultural & Food Chemistry 59:11862-11871, 2011. PMID: 21932846; PMCID: 3243651.
c. Chen, J.X., Wang, H, Liu, A, Zhang, L, Reuhl, K and Yang, C.S.: PhIP/DSS-induced colon carcinogenesis in CYR1A-humanized mice and the possible role of Lgr5+ stem cells. Toxicol. Sci. 155:224-233, 2016. PMCID: PMC5216652.
d. Meng, Y, Wiseman, JA, Nemtsova, Y, Moore, DF, Guevarra, J, Reuhl, K, Banks, WA, Daneman, R, Sleat, DE and Lobel, P: A basic ApoE-based peptide mediator to deliver a theapeutic protein across the blood-brain barrier: long-term efficacy, toxicity and mechanism. Mol. Ther. 25:1531-1543, 2017. doi.org/10.1016

Complete List of Published Work in MyBibliography:
https://www.ncbi.nlm.nih.gov/sites/myncbi/kenneth.reuhl.1/bibliography/43435576/public/?sort=date&direction=ascending