David M. DeMarini, Ph.D.

David M. DeMarini was born in Peoria, Illinois, USA on May 20, 1950. He received the B.S. (1972), M.S. (1974), and Ph.D. (1980) in Biological Sciences (genetics) at Illinois State University, Normal, IL, studying under Dr. Herman E. Brockman.

From 1980-1982, he did postdoctoral research at the Biology Division, Oak Ridge National Laboratory, Oak Ridge, TN. He then was a Research Geneticist at the National Toxicology Program, National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC from 1983-1984.

He began his current position as a Genetic Toxicologist at the US Environmental Protection Agency (US EPA), Research Triangle Park, NC in 1985. He is also an Adjunct Professor, Dept. of Environ. Sci. & Engineering, School of Public Health, University of North Carolina, Chapel Hill, NC (1991-present). He is a member of the Environmental Mutagenesis and Genomics Society (EMGS) and the Genetics and Environmental Mutagenesis Society (GEMS). He has served as President of EMGS, GEMS, and of the International Association of Environmental Mutagenesis and Genomics Societies.

He is an Editor of *Mutation Research--Reviews* (1998-present, 5-year Impact Factor 6.3) and is on the Editorial Board of *Environmental and Molecular Mutagenesis* (1984-1989, 1993-present) and *Genes and Environment* (2006-present). He has organized conferences, symposia, and training courses internationally, and has given invited lectures at more than 140 conferences in 55 countries. He has served on both (1986 and 2004) Tobacco Smoking and Cancer Monographs of the International Association for Research on Cancer (IARC) with WHO in Lyon, France, as well as the IARC Monographs on Drinking Water/Arsenic, Indoor Air, Vol. 100 Human Carcinogens, Auto and Diesel Exhaust, and Outdoor Air. He Chaired the IARC Monograph on Drinking Water, Food, and Industrial Chemicals (2011).

He has published 173 articles, 22 book chapters, and received the Alexander Hollaender Award from the EMGS in 2011. He has mentored 10 graduate students and 10 postdocs through his adjunct professorship at UNC-Chapel Hill. His research interests are molecular mechanisms of mutagenesis, mutation spectra, complex mixtures, and biomarkers of mutation in humans.

BIOGRAPHICAL SKETCH

Personal Statement

I was trained by scientists who helped create the field of genetic toxicology/environmental mutagenesis from my PhD and through postdoctoral work. I have worked continuously in this field for 45 years, making contributions in air and water mutagenesis/carcinogenesis and biomarkers studies. I have combined molecular biology with complex mixture mutagenesis to provide a deeper understanding of the mutational mechanisms of complex mixtures, mostly of air, water, and combustion emissions.

Positions and Honors

- Research Geneticist, NTP, NIEHS, RTP, NC, 1982-1984
- Genetic Toxicologist, U.S. EPA, RTP, NC, 1985-present
- Adjunct full professor, ENVR, UNC, Chapel Hill, 1991-present
- Alumni Hall of Fame, 2006, Illinois State University, for scientific achievement.
- Level II Scientific and Technological Achievement Award (STAA), US EPA, 2008, for
- "Review of Genotoxicity and Carcinogenicity of Drinking Water Disinfection By-
- products"
- Level II Scientific and Technological Achievement Award (STAA), US EPA, 2008
- "Review of Health Effects of Swimming Pool Water"
- U.S. EPA, Office of Research and Development (ORD) 2008 "Science Communications
- Award"
- Environmental Mutagen Society, Education Award, 2009.
- Level II Scientific and Technological Achievement Award (STAA), US EPA, 2008, for
- The 2011 Alexander Hollaender Award from the Environmental Mutagen Society
- Level III Scientific and Technological Achievement Award (STAA) 2011, US EPA for "A
- Review of the *Salmonella* Mutagenicity Assay and How it Informs the Development of
- 21st Century Toxicology Assays"
- Honorable Mention Scientific and Technological Achievement Award (STAA) 2011 for
- "The First Comprehensive Characterization of DBPs in Indoor Swimming Pool Water and
- Their Role in the Water's Mutagenicity"
- President, Genetics and Environmental Mutagenesis Society (GEMS), 1988-1989
- President, Environmental Mutagenesis and Genomics Society (EMGS), 2001-2002.
- President, International Association of Environmental Mutagenesis and Genomics Societies (IAEMGS), 2006-2009.
- Served on 8 IARC Monographs, and chaired 1 of them: Tobacco Smoke (2), Arsenic, Indoor Air, Outdoor Air, Diesel Exhaust, Selected Chemicals, Vol 100 Summary Monograph (1985-2013).
- Editor, Mutation Research—Reviews (1998-present); 5-year impact factor 6.27.
- Editorial Boards (Environ Mol Mutagen, Genes and Environ, Environ Health Perspect)
- 150 Invited Lectures, 55 countries.

Contributions to Science

Book Chapters (4 out of 21)

1. PA White, DM DeMarini (2000) Water-borne mutagens, in: Environmental Medicine, L. Moller (Ed.), Joint Industrial Safety Council, Sweden, 102-122.
2. DM DeMarini (2009) Genotoxicity of tobacco smoker, in: Surgeon General's Report on Smoking and Health, Centers for Disease Control and Prevention, Dept Health Human Services, Washington, DC.
3. DT Shaughnessy, DM DeMarini (2009) Types and consequences of DNA damage, in Chemoprevention of Cancer and DNA Damage by Dietary Factors, S. Knasmuller, D.M.
4. DeMarini, I.T. Johnson, C. Gerhauser (Eds.), Wiley, New York, in press. DM DeMarini (2009) Carcinogenicity of Disinfection By-products: Comparison to Genotoxicity, in Encyclopedia of Environmental Health, Vol. 2, J.O. Nriagu (Ed.) pp 920-926, Burlington: Elsevier.

Journal Articles (10 out of 173 journal articles)

1. E Mutlu, SH Warren, SM Ebersviller, IM Kooter, JE Schmid, JA Dye, WP Linak, MI Gilmour, JJ Jetter, M Higuchi, DM DeMarini (2016) Mutagenicity and pollutant emission factors of solid-fuel cookstoves: comparison to other combustion sources. Environ Health Perspect 124:974-982.
2. EJ Daiber, DM DeMarini, SA Ravuri, HK Liberatore, AA Cuthbertson, A Thompson-Klemish, JD Byer, JE Schmid, MZ Afifi, ER Blatchley III, SD Richardson (2016) Progressive increase in disinfection byproducts and mutagenicity from source to tap to swimming pool and spa water: impact of human inputs. Environ Sci Technol 50:6652-6662.
3. DM DeMarini, SH Warren, A Flen, K Lavrich, J Aurell, W Mitchell, D Greenwell, W Preston JE Schmid, WP Linak, M Hays, JM Samet, BK Gullett (2017) Mutagenicity and oxidative damage induced by an organic extract of the particulate emissions from a simulation of the *Deepwater Horizon* surface oil burns (2017) Environ Mol Mutagen, 58:162-171.
4. J Zavala, R Greenan, QT Krantz, DM DeMarini, M Higuchi, MI Gilmour, P White (2017) Regulating temperature and relative humidity in air-liquid interface *in vitro* systems eliminates cytotoxicity resulting from control air exposures. Toxicol Res 6:448-459.
5. J Zavala, J Krug, SH Warren, QT Krantz, C King, J McKee, SH Gavett, M Lewandowski, WA Lonneman, TE Kleindienst, M Meier, M Higuchi, MI Gilmour, DM DeMarini (2018) Evaluation of an air quality health index for predicting the mutagenicity of simulated atmospheres. Environ Sci Technol 52:3045-3053.
6. Kim YH, Warren SH, Krantz QT, King C, Jaskot R, Preston WT, Hays MD, Landis MS, Higuchi M, DeMarini DM, Gilmour MI (2018) Mutagenicity and lung toxicity of smoldering versus flaming emissions from various biomass fuels: implications for health effects from wildland fire. Environ Health Perspect 126:017011.
7. Stevens JS, Padilla S, DeMarini DM, Hunter D, Martin WK, Gilmour MI, Hazari SM, Farraj AK (2018) Zebrafish locomotor responses reveal irritant effects of organic extracts and fractions of diesel exhaust particles: Role for TRPA1. Toxicol Sci 161:290-299.

8. Riedel TP, DeMarini DM, Zavala J, Warren SH, Corse EW, Offenberg JH, Kleindienst TE, Leandowski M (2018) Mutagenic atmospheres resulting from the photo-oxidation of aromatic hydrocarbon and NO_2 mixtures. Atmos Environ 178:164-172.
9. Krug JD, Lewandowski M, Offenberg JH, Turlington JM, Lonneman WA, Modak N, Krantz QT, King C, Jaoui M, Gavett SH, Gilmour MI, DeMarini DM, Kleindienst TE (2018) The photochemical conversion of surrogate emissions for use in toxicological studies: role of particulate- and gas-phase products. Environ Sci Technol 52:3037-3044.
10. Gilmour MI, Krug JD, Gavett SH, Hazari M, DeMarini DM, Costa DL (2018) Complex air pollution mixtures formed by irradiation of hydrocarbons elicit and array of toxicological responses. Environ Sci Technol 52:2429-2431.

Additional Information: Research Support and/or Scholastic Performance

I have trained 9 graduate students (4 M.S. and 5 Ph.D.) and 11 postdoctoral investigators. Most have been through UNC-Chapel Hill, but one M.S. student was through NCCU in Durham, NC, and one Ph.D. student was through NCSU in Raleigh, NC.