

## Curriculum Vitae

**Luoping Zhang, Ph.D.**

Adjunct Professor

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### EDUCATION

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| 1993 | <b>Ph.D. <i>Biochemical Toxicology</i></b><br>Degree received from Simon Fraser University (SFU), Burnaby, B.C. Canada, with research done both at SFU and at University of California, Berkeley, California (1993). |
| 1985 | <b>M.S. <i>Biochemistry</i></b><br>Huazhong University of Science and Technology, Wuhan, P.R. China  |
| 1982 | <b>B.S. <i>Physical Chemistry</i></b><br>Wuhan University, Wuhan, P.R. China   |

### PROFESSIONAL EXPERIENCE

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| July 2015 - Pres | Adjunct Professor IV (Researcher 4)<br>School of Public Health, University of California, Berkeley, USA                     |
| 2012-2015        | Adjunct Professor III (Researcher 3)<br>School of Public Health, University of California, Berkeley, USA                    |
| 2009 - 2012      | Associate Adjunct Professor V (Associate Researcher 5)<br>School of Public Health, University of California, Berkeley, USA  |
| 2006-2009        | Associate Adjunct Professor IV (Associate Researcher 4)<br>School of Public Health, University of California, Berkeley, USA |
| 2000 - 2006      | Specialist 2-3<br>School of Public Health, University of California, Berkeley, USA  |
| 1996- 2000       | Associate Specialist 2,4<br>School of Public Health, University of California, Berkeley, USA                                |
| Dec.1992 - 1996  | Assistant Specialist 2, 3<br>School of Public Health, University of California, Berkeley, USA                               |
| Apr.-Nov. 1992   | Postgraduate Research 1<br>School of Public Health, University of California, Berkeley, USA                                 |
| 1989-90          | Research & Teaching Assistant<br>School of Kinesiology, Simon Fraser University, Burnaby, B.C. Canada                       |
| 1988-89          | Visiting Scientist<br>Department of Biochemistry, University of Padova, Padova, Italy                                       |
| 1987-88          | Visiting Scientist<br>Department of Experimental Medicine & Biochemical Science, University of Perugia, Perugia, Italy      |
| 1985-87          | Research & Teaching Associate<br>Department of Chemistry, Huazhong University of Science and Technology, Wuhan, China       |
| 1982             | Research Associate<br>Department of Chemistry, Zhongnan National College, Wuhan, China                                      |

**HONORS**

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2016	Distinguished Chinese Toxicologist Lectureship Award Society of Toxicology, Reston, VA, USA
2015, 2014	School of Public Health Award for Teaching Excellence Spring 2014 University of California, Berkeley, CA, USA
2000 - Pres	Honored Professor in the College of Life Science and Technology at Huazhong University of Science and Technology, Wuhan, P. R. China
1992 - 1993	University of California Toxic Substances Program Scholarship University of California, Berkeley, CA, USA
1991 - 1992	Steel Memorial Graduate Scholarship Simon Fraser University, Burnaby, B.C. Canada
1989 - 1990	Graduate Fellowship Simon Fraser University, Burnaby, B.C. Canada
1987 - 1988	Research Fellowship for Outstanding Scientists The Third World Academic Science, Trieste, Italy
1986 & 1988	Awards of Academic Excellence for Publications Chinese Chemical Society, Hubei, P. R. China
1986	Outstanding Teaching Award Huazhong University of Science and Technology, Wuhan, P. R. China

**NATIONAL AND  
INTERNATIONAL  
SERVICES**

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2012-Present	Member: Appointed by Governor Brown, Carcinogen Identification Committee, Science Advisory Board, OEHHA, Cal EPA.
2012-Present	Served on the Board of Editors for <i>Environmental and Molecular Mutagenesis</i>
2011-2013	Served on the Board of Society of Toxicology, Northern California.
2011-Present	Served on the Board of Editors for <i>Journal of Clinical Toxicology</i> .
2011	Served on the Technical Program Committee and as a plenary speaker at <i>International Conference on Environmental Pollutants and Public Health</i> (EPPH 2011) in Wuhan, China.
2010 - 2014	Selected and served as an expert on the Environmental Health Sciences Review Committee (EHSRC) at NIEHS, North Carolina.
2010 - 2013	National Academy of Science (NAS-IOM) Committee for the <i>Review of the Health Effects in Vietnam Veterans of Exposure to Herbicides</i>
2010	Served as an expert at the Expert Consultation Meeting in the Federal Institute for Risk Assessment, June 14-15, Berlin, Germany 2010.
2009	Served as a technical expert on formaldehyde for National Toxicology Program: 12 <sup>th</sup> Report on Carcinogens (RoC), September–November, 2009, NIEHS, North Carolina.
2009	Member of Organizing Committee of Special International Conference on <i>“Benzene 2009: Health Effects and Mechanisms of Bone Marrow Toxicity Implications for t-AML and the Mode of Action Framework”</i> Munich, Germany.

2008-2009	Proposal reviewer for Gillings Innovation Laboratory (GIL) Honorarium at Gillings School of Public Health, University of North Carolina at Chapel Hill, North Carolina.
2008 – 2009	National Academy of Science Committee for “ <i>Review of EPA’s Toxicological Assessment of Tetrachloroethylene</i> ”.
2008 – Pres	Served on the Board of Editors for <i>China Occupational Medicine</i> .
2008	Invited Reviewer of STAR fellowship of Molecular Biology in US EPA.
2008	Chair of the Symposium of “ <i>Formaldehyde and Leukemia</i> ” at the 2008 EMS Annual Conference.
2004	Organizer and Co-Chair of Program Committee of Special Conference on “ <i>Recent Advances in Benzene Toxicity</i> ,” Munich, Germany.

**PROFESSIONAL AFFILIATIONS**

2007 - Pres	Member of <i>American Association of Chinese in Toxicology</i>
2007 - Pres	Member of <i>Society of Toxicology (SOT)</i>
2005 - Pres	Member of <i>Northern California Society of Toxicology (NorCal SOT)</i>
2001 - Pres	Member of <i>Environmental Mutagenesis and Genomics Society (EMGS)</i>
2001 - 2014	Member of Molecular Epidemiology group of the <i>American Association for Cancer Research (AACR)</i>
1992 - 2014	Member of <i>American Association for Cancer Research (AACR)</i>

**RESEARCH INTERESTS**

For the past two decades, my research has focused on understanding the molecular mechanisms of bone marrow toxicity caused by benzene (BZ) and other toxic chemicals including butadiene (BD), formaldehyde (FA), trichloroethylene (TCE) and arsenic (As). Our investigations have mainly involved the detection of biomarkers associated with these chemical exposures in molecular epidemiological studies conducted with national and international collaborators. My group investigated specific chromosomal aneuploidies and rearrangements in many of these studies, as well as in mature and progenitor human cells *in vitro* by a molecular cytogenetic method named FISH (fluorescence *in situ* hybridization). We have developed and applied the innovative OctoChrome FISH method that simultaneously detects specific rearrangements of all 24 human chromosomes, including common genetic changes associated with leukemia and/or lymphoma. In order to identify additional biomarkers and disease-related mechanisms associated with these chemical exposures, we have developed and continue to employ many high-throughput technologies, such as single-cell genetic analysis (SCGA) and array-based toxicogenomic (genomics, transcriptomics, proteomics, and metabolomics) and epigenomic (DNA-methylation, histone modification, and microRNomics) tools. These advanced omic methodologies and RNAi (RNA interference) are also applied to *in vitro* human cell culture studies of chemical exposure. Besides my long-term involvement and contributions to the Northern California Childhood Leukemia Study (NCCLS), I have been a co-project leader and/or co-principal investigator in the Center for Interdisciplinary Research on Childhood Leukemia and the Environment (CIRCLE), the Superfund Basic Research Program (SBRP) and the Center for Exposure Biology (CEB) at Berkeley. Currently, I am applying the novel functional genomic editing approach (CRISPR)-Cas9 in human cells, including stem/progenitor cells or other types, to systematically identify functionally important genes, cellular targets, biological pathways, and human susceptibility genes.

**SELECTED  
LECTURES**

- 2015** "Applying Biomarkers, Systems Biology, and Exposome Approaches to Study Environmental and Occupational Exposures to Toxic Chemicals." Invited speaker at the 46<sup>th</sup> Annual *Environmental Mutagenesis and Genomics Society (EMGS) Meeting on Research Education, and Policy in Concert*, September 26-30, 2015, New Orleans, Louisiana, USA.
- 2014** "Career Path in Academic Settings." Career Workshop organized by *American Association of Chinese in Toxicology (AACT)* at *National Society of Toxicology (SOT) Annual Conference*, Phoenix, AZ, March 23-27, 2014.
- 2013** "Previous, Current and Future Studies of Environmental and Occupational Exposures to Toxic Chemicals: Biomarkers, Systems Biology and Exposome Approaches." Invited speaker as the US AACT delegation at the 6<sup>th</sup> *China SOT*, Nov. 13-15, 2013.
- "Application of Genome-Wide Profiling to Evaluate Effects of Benzene and Its Metabolites from Yeast to Human." Invited speaker at The New York Academy of Sciences meeting: *The Bone Marrow Niche, Stem Cells, and Leukemia: Impact of Drugs, Chemicals, and the Environment*. New York, USA. May 29-31, 2013.
- 2012** "Functional and Comparative Genomics: Systematic Screening for Genes and Pathways Involved in Human Susceptibility to Chemical Exposures". Invited speaker at the 43<sup>rd</sup> Annual *Environmental Mutagen Society (EMS) Meeting on EMS: The Next Generation*, September 8-12, 2012, Bellevue, Washington, USA.
- "Adverse Health Effects of Formaldehyde Exposure". Invited speaker at Central China (Huzhong) Normal University, June 2012, Wuhan, China.
- "Systemic Effects of Formaldehyde Exposure and Potential Mechanisms". Invited speaker at the *Formaldehyde Science Conference - FormaCare*, April 19-20, 2012, Madrid, Spain.
- "Studies of Environmental and Occupational Exposures to Toxic Chemicals: Biomarkers, Systems Biology and Exposome Approaches". Invited speaker at *Environmental Chemistry Lab Seminar*, Department of Toxic Substances Control (DTSC), Cal EPA, October 10, 2012, Berkeley, CA, USA.
- 2011** Chair of Symposium: *Site of Contact and Systemic Effects of Formaldehyde Exposure*, and invited speaker on "*Reproductive and Developmental Toxicity of Formaldehyde: A Systematic Review*" at the 42<sup>nd</sup> Annual *Environmental Mutagen Society (EMS) Meeting on Environmental Impacts on the Genome and Epigenome: Mechanisms and Risks*, October 12-19, 2011, Montreal, Canada.
- "Biomarker Studies of Occupational Exposure to Toxic Chemicals in China: A 20-Year Review", Invited plenary speaker at *International Conference on Environmental Pollution and Public Health (EPPH2011)*, May 10-12, 2011, Wuhan, China.
- "Systems Biology of Human Benzene Exposure", Invited speaker at BIT Life Sciences' 2<sup>nd</sup> *World DNA and Genome Day* (Track 3: System Biology), April 25-29, 2011, Dalian, China.
- 2010** "Chromosome-Wide Aneuploidy Study (CWAS) in Benzene-Exposed Workers", Invited speaker at *Benzene Litigation and Lymphoid Cancers: New Scientific Evidence*, December 9-10, 2010, Marina del Rey, California, USA.
- "Systems Biology of Human Benzene Exposure". Invited speaker at the 41<sup>st</sup> Annual *Environmental Mutagen Society (EMS) Meeting on Complex Systems in Biology and Risk Assessment*, October 23-27, 2010, Fort Worth, Texas, USA.

- “Ubiquitous formaldehyde exposure and public health concerns in China”, Invited keystone speaker at *International Conference on Environmental Pollution and Public Health (EPPH2010)*, June 21-23, 2010, Chengdu, China.
- “Formaldehyde and Leukemia: Potential mechanisms and supporting evidence”, Invited speaker at *Formaldehyde and Systemic Cancer - Expert Consultation Meeting* in Federal Institute for Risk Assessment, June 14-15, 2010, Berlin, Germany.
- “Towards Toxicity Testing in the 21st Century: A new global and systematic paradigm to identify potential human carcinogens” *Human Health Hazard Indicators Workshop* at Cal EPA, March 15-16, 2010, Sacramento, California, USA.
- 2009** “Formaldehyde and Leukemia: Biologically probable or implausible?” Invited technical expert as a solo speaker at *National Toxicology Program: 12<sup>th</sup> Report on Carcinogens (RoC)*, November 2-4, 2009, NIEHS, North Carolina, USA.
- “Benzene Induced Hematotoxicity: Susceptibility genes and DNA repair mechanisms”. Invited speaker at the 40<sup>th</sup> Annual *Environmental Mutagen Society (EMA) Meeting on Genomics in the Environmental Century*, October 24-28, 2009, St. Louis, Missouri, USA.
- “Spectrum of chromosomal aneuploidy, benzene exposure and leukemia risk”. Invited speaker at the 40<sup>th</sup> Annual *Environmental Mutagen Society (EMS) Meeting on Genomics in the Environmental Century*, October 24-28, 2009, St. Louis, Missouri, USA.
- “Systems biology of human benzene exposure”. Invited speaker at *International Conference on Benzene 2009: Health Effects and Mechanisms of Bone Marrow Toxicity Implications for t-AML and the Mode of Action Framework*, September 7-11, 2009, Munich, Germany.
- “Biomarker studies of occupational exposure to chemicals in China”. Invited speaker at the *Environmental Toxicology Seminar*, February 2009, University of California, Santa Cruz, California, USA.
- 2008** Chair & Organizer for *Symposium 8: Formaldehyde and Leukemia: Epidemiology, Potential Mechanisms, and Implications for Risk Assessment*, and Invited Speaker on “An overview of formaldehyde exposure and leukemia” at the 39<sup>th</sup> Annual *Environmental Mutagen Society (EMS) Meeting on Genes and the Environment: From Molecular Mechanisms to Risk*, October 18-22, 2008, Puerto Rico.
- “Spectrum of chromosomal alterations in lymphocytes in workers exposed to benzene.” Invited speaker for the *Annual American Association for Cancer Research (AACR) Meeting 2008*, April 11-16, 2008, San Diego, California, USA.
- “Benzene exposure, aneuploidy, and leukemia risk”. Invited speaker at *Second Conference on Aneuploidy and Cancer: Clinical and Experimental Aspect*, January 31-February 3, 2008, Oakland, California, USA.
- 2007** “Genotoxic effects of formaldehyde on human blood stem and progenitor cells”. Invited speaker at 38<sup>th</sup> Annual *Environmental Mutagen Society (EMS) Meeting on Mutational and Epigenetic Mechanisms of Susceptibility and Risks for Genetic Diseases*, October 20-24, 2007, Atlanta, Georgia, USA.
- “Biomarkers of human cancer risk”. Invited speaker at 38<sup>th</sup> Annual *Environmental Mutagen Society (EMS) Meeting on Mutational and Epigenetic Mechanisms of Susceptibility and Risks for Genetic Diseases*, October 20-24, 2007, Atlanta, Georgia, USA.

- 2006 "Gene expression profiling of peripheral blood mononuclear cells from benzene-exposed workers". Invited speaker at 37<sup>th</sup> Annual *Environment Mutagenesis Society (EMS) Meeting on Genetic and Environmentally Induced Genotoxicity: Causes and Impact*, September 16-20, 2006, Vancouver, Canada.
- 2005 "Hematotoxicity in workers exposed to low levels of benzene in China". Invited speaker at a special Workshop organized by EPA and SBPR at UCB on *Relationships for Chemicals Associated with Non-Cancer Effects and Their Policy Implications*, January 27-28, 2005, Oakland, California, USA.
- 2004 "Using new technologies to discover novel biomarkers for benzene". Invited speaker at The Third International Academic Conference on *Environmental and Occupational Medicine*, November 10-12, 2004, Shanghai, China.
- "Molecular cytogenetics of benzene exposure". Invited speaker at International Conference on *Recent Advances in Benzene Toxicity*, October 9-12, 2004, Munich, Germany.
- "Aneuploidy in leukemia development". Invited speaker at First Conference on *Aneuploidy and Cancer*, January 23-26, 2004, Oakland, California, USA.
- 2002 "Biomarkers of benzene and leukemia risk". Invited speaker at *Guandong Poison Control Center (GDPCC)*, July 2002, Guanzhou, China.
- "The development and methods of chromosomal technology". Invited speaker at *Chinese Academy of Preventive Medicine*, February 2002, Beijing, China.
- 1998 "Molecular cytogenetics of benzene". Invited speaker at the *Third National Symposium in Industrial Toxicology*, October 9-12, 1998, Xiamen, China.
- 1995 "Benzene-induced chromosomal damage detected by FISH". Invited speaker at International Conference on *The Toxicity, Carcinogenesis, and Epidemiology of Benzene*, June 17-20, 1995, Piscataway, New Jersey, USA.

**CLASS LECTURES  
AT UC BERKELEY**

"Practical Toxicology". Instructor for **PH270C** – Spring 2007- 2016 course at School of Public Health and Department of Nutritional Sciences and Toxicology.

Various Topics. Invited speaker for **PH270B** *Advanced Toxicology* – Spring 2005-2016 course at School of Public Health.

"Genetic and Molecular Epidemiology and Human Health in 21<sup>st</sup> Century." **PH256** at School of Public Health (Molecular cytogenetic lab section and tour)

"Formaldehyde Exposure and Leukemia". Invited lecturer for **PH150B** *Introduction to Environmental Health Sciences* – Spring and Fall, 2009-2011 at School of Public Health.

"Nutrition and Toxicology Laboratory". Co-instructor for **NST171** *Nutrition and Toxicology Laboratory* – Fall 2006, 2007 and 2008 courses at the Department of Nutritional Sciences and Toxicology.

"Gene Expression Studies in Human". Co-instructor for **NST290** *Toxicogenomics Seminar* – Spring 2006 course at Department of Nutritional Sciences and Toxicology.

"Hematotoxicity in Workers Exposed to Low levels of Benzene in China". Invited speaker for **NST11** *Toxicology* – Spring 2005 course at Department of Nutritional Sciences and Toxicology.

Various topics. Invited speaker for **Toxicology I** – Fall 2002-2003 course at School of Public Health.

**PUBLICATIONS****Book Chapters**

- 2014 Walker MK, Betensky RA, Carvan III MJ, Davis S, Duan N, Engel SM, Grandis JR, Kelsey K, Kritchevsky SB, Olson JR, Prins GS, Suh HH, Weisskopf M, White LA & **Zhang L** (2014). *Veterans and Agent Orange: update 2012*, Institute of Medicine, The National Academies Press, Washington, D.C. ISBN-10: 0-309-28886-X.
- 2012 Walker MK, Bell E, Burchiel SW, Dietert RR, Duan N, Hauser RB, Kelsey K, Kerkvliet NI, Kritchevsky SB, Lees PSJ, McCauley LA, Olson JR, Shefner JM, Skinner M & **Zhang L** (2012). *Veterans and Agent Orange: update 2010*, Institute of Medicine, The National Academies Press, Washington, D.C. ISBN-10: 0-309-21447-5.
- 2011 McHale C, **Zhang L**, Hubbard AE, Smith MT (2011). Toxicogenomic studies in human populations, in *"Applications of Toxicogenomics in Safety Evaluation and Risk Assessment"*, Boverhof, DR and Gollapudi, BB, eds., John Wiley & Sons, Inc. pp. 177-206. ISBN: 978-0-470-44982-0.
- 2010 Kacew S, Alexander BH, Bleecker ML, Carlson GP, Cowan LD, Davis ME, Frey HC, Landolph JR, Meek ME, McMillian DC, Newland MC, Quint J, Rosner GL, Rusyn I, Schulte-Hermann R, Schultz IR, Snyder R, White RF, **Zhang L** & Zhu Y (2010). *Review of the Environmental Protection Agency's Draft IRIS Assessment of Tetrachloroethylene*, National Research Council, The National Academies Press, Washington, D.C. ISBN-10: 0-309-15094-9.
- 2005 Gunn L, **Zhang L**, Smith MT (2005). Methods for Genetic Testing II: New methods for assessing acquired DNA damage in humans without cancer, in *"Cancer Risk Assessment"*, P.G. Shields, ed., Taylor & Francis. Boca Raton, FL, pp. 77-97. ISBN-10:0-8247-2984-6.
- 2002 Gunn L, **Zhang L**, Forrest MS, Holland NT, Smith MT (2002). Biomarkers of early effect in the study of cancer risk, in *"Biomarkers of Environmentally Associated Disease: Technologies, Concepts, and Perspectives"*, Wilson SH and Suk WA, eds., Lewis Publishers, pp. 319-334. ISBN-10: 1-5667-0596-7.
- 2000 Holland NT, **Zhang L**, Smith MT (2000). Cytogenetic biomarkers and air pollution, in *"Relationship between Acute and Chronic Effects of Air Pollution"*, U. Heinrich & U. Mohr, eds., ILSI Press, Washington, D.C., pp. 65-78.
- 1994 **Zhang L**, Smith MT, Bandy B, Tamaki SJ, Davison AJ (1994). Role of quinones, active oxygen species and metals in the genotoxicity of 1,2,4-benzenetriol, a metabolite of benzene, in *"Free radicals in the environment, medicine and toxicology"*, Vol. 8. Nohl, H., Esterbauer, H. and Rice-Evans, eds., Richelieu, London, pp. 521-62.

**Papers in Peer-Reviewed Journals**

- 2016 **149.** Carlos-Wallace FM, **Zhang L**, Smith MT, Rader G, Steinmaus C (2016). Parental, In Utero, and Early-Life Exposure to Benzene and the Risk of Childhood Leukemia: A Meta-Analysis. *Am J Epidemiol.* 183(1):1-14. PMID: 26589707.
- 2015 **148.** Bailey HD, Metayer C, Milne E, Petridou E, Infante-Rivard C, Spector LG, Clavel J, Dockerty JD, **Zhang L**, Armstrong BK, Rudant J, Fritschi L, Amigou A, Hatzipantelis E, Kang A, Stiakaki E, Schüz J (2015). Home paint exposures and risk of childhood acute lymphoblastic leukemia: findings from the Childhood Leukemia International Consortium. *Cancer Causes Control.* 26(9):1257-70. PMID: 26134047.

147. Goodson WH III, Lowe L, Carpenter DO, Gilbertson M, Ali AM, de Cerain Salsamendi AL, Lasfar A, Carnero A, Azqueta A, Amedei A, Charles AK, Collins AR, Ward A, Salzberg AC, Colacci A, Olsen AK, Berg A, Barclay BJ, Zhou BP, Blanco-Aparicio C, Baglolle CJ, Dong C, Mondello C, Hsu CW, Naus CC, Yedjou C, Curran CS, Laird DW, Koch DC, Carlin DJ, Felsher DW, Roy D, Brown DG, Ratovitski E, Ryan EP, Corsini E, Rojas E, Moon EY, Laconi E, Marongiu F, Al-Mulla F, Chiaradonna F, Darroudi F, Martin FL, Van Schooten FJ, Goldberg GS, Wagemaker G, Nangami G, Calaf GM, Williams G, Wolf GT, Koppen G, Brunborg G, Lysterly HK, Krishnan H, Hamid HA, Yasaei H, Sone H, Kondoh H, Salem HK, Hsu HY, Park HH, Koturbash I, Miousse IR, Scovassi AI, Klaunig JE, Vondráček J, Raju J, Roman J, Wise, Sr. JP, Whitfield JR, Woodrick J, Christopher JA, Ochieng J, Martinez-Leal JF, Weisz J, Kravchenko J, Sun J, Prudhomme KR, Narayanan KB, Cohen-Solal KA, Moorwood K, Gonzalez L, Le Jian LS, D'Abronzio LS, Lin LT, Li L, Gulliver L, McCawley LJ, Memeo L, Vermeulen L, Leyns L, **Zhang L** et al. (2015). Assessing the carcinogenic potential of low-dose exposures to chemical mixtures in the environment: the challenge ahead. *Carcinogenesis*. 36(1):S254-96. PMID: 26106142. PMCID: PMC4480130.
146. Langie AS, Koppen G, Desaulniers D, Al-Mulla F, Al-Temaimi R, Amedei A, Azqueta A, Bisson WH, Brown D, Brunborg G, Charles AK, Chen T, Colacci A, Darroudi F, Forte S, Gonzalez L, Hamid RA, Knudsen LE, Leyns L, de Cerain Salsamendi AL, Memeo L, Mondello C, Mothersill C, Olsen AK, Pavanello S, Raju J, Rojas E, Roy R, Ryan E, Ostrosky-Wegman P, Salem HK, Scovassi I, Singh N, Vaccari M, Van Schooten FJ, Valverde M, Woodrick J, **Zhang L**, Van Larebeke N, Kirsch-Volders M, and Collins AR (2015). Causes of genome instability: the effect of low dose chemical exposures in modern society. *Carcinogenesis*. 36(1):S61-88. PMID: 26106144. PMCID: PMC4564613.
145. Seow WJ, **Zhang L**, Vermeulen R, Tang X, Hu W, Bassig BA, Ji Z, Shiels MS, Kemp TJ, Shen M, Qiu C, Reiss B, Beane Freeman L, Blair A, Kim C, Guo W, Wen C, Li L, Pinto LA, Huang H, Smith MT, Hildesheim A, Rothman N, Lan Q (2015). Circulating immune/inflammation markers in Chinese workers occupationally exposed to formaldehyde. *Carcinogenesis*. 36(8):852-7. PMID: 25908645. PMCID: PMC4542853.
144. Bailey HD, Infante-Rivard C, Metayer C, Clavel J, Lightfoot T, Kaatsch P, Roman E, Magnani C, Spector LG, Petridou E, Milne E, Dockerty JD, Miligi L, Armstrong BK, Rudant Fritschi L, Simpson J, **Zhang L**, Rondelli R, Baka M, Orsi L, Moschovi M, Kang AY, Schüz J (2015). Home pesticide exposures and risk of childhood leukemia: Findings from the childhood leukemia international consortium. *Int J Cancer*. 137(11):2644-63. PMID: 26061779 PMCID: PMC4572913.
143. Ji Z, McHale CM, Bersonda J, Tang J, Smith MT, **Zhang L** (2015). Induction of centrosome amplification by formaldehyde, but not hydroquinone, in human lymphoblastoid TK6 cells. *EMM*, 56(6):535-44. PMID: 25821186.
142. Shen H, McHale CM, Smith MT, **Zhang L** (2015). Functional Genomic Screening Approaches in Mechanistic Toxicology and Potential Future Applications of CRISPR-Cas9. *Mutat Res Rev*, 728(3):118-138. PMID: 26041264. PMCID: PMC4456615.
141. Lan Q, Smith MT, Tang X, Guo W, Vermeulen R, Ji Z, Hu W, Hubbard AE, Min S, McHale CM, Qiu C, Liu S, Reiss B, Beane Freeman L, Blair A, Ge Y, Xiong J, Li L, Rappaport SM, Huang H, Rothman N, **Zhang L** (2015). Chromosome-Wide Aneuploidy Study (CWAS) of cultured circulating myeloid progenitor cells from workers occupationally exposed to formaldehyde. *Carcinogenesis*. 36(1):160-7. PMID: 25391402. PMCID: PMC4291049.



- 2014 140. Daniels SL, Sille FCM, Goldbaum A, Yee B, Key EF, **Zhang L**, Smith MT, Thomas R (2014). Improving power to detect changes in blood miRNA expression by accounting for sources of variability in experimental designs. *CEBP* 23(12):2658-66. PMID: 25472674. PMCID: PMC4256675.
139. **Zhang L**, Samad A, Pombo-de-Oliveira MS, Scelo G, Smith MT, Feusner J, Wiemels JL, Metayer C (2014). Global characteristics of childhood acute promyelocytic leukemia. *Blood Rev.* 29(2): 101-125. PMID: 25445717. PMCID: PMC4379131.
138. **Zhang L**, McHale CM, Greene N, Snyder RD, Rich IN, Aardema MJ, Roy S, Pfuhrer S, Venkatachalam S (2014). Emerging approaches in predictive toxicology. *Environ Mol Mutagen.* 55(9):679-88. PMID: 25044351.
137. Bassig BA, **Zhang L**, Cawthorn RM, Smith MT, Yin S, Li G, Hu W, Shen M, Rappaport S, Barone-Adesi F, Rothman N, Vermeulen R, Lan Q (2014). Alterations in leukocyte telomere length in workers occupationally exposed to benzene. *Environ Mol Mutagen.* 55(8):673-8. PMID: 24945723.
136. Lan Q, **Zhang L**, Vermeulen R, Hu W, Bassig B, Jie Seow W, Shiels M, Hildesheim A, Smith M, Rothman N (2014). Elucidating mechanisms using comparative molecular epidemiology: Immunologic alterations in workers exposed to trichloroethylene and formaldehyde. *Occup Environ Med* 71 Suppl 1:A125. PMID: 25018255.
135. Thomas R, Hubbard AE, McHale CM, **Zhang L**, Rappaport SM, Qing L, Rothman N, Vermeulen R, Guyton KZ, Jinot J, Sonawane BR, Smith MT (2014). Characterization of Changes in Gene Expression and Biochemical Pathways at Low Levels of Benzene Exposure. *PLoS ONE* 9(5): e91828. PMID: 24786086. PMCID: PMC4006721.
134. McHale CM, Smith MT, **Zhang L** (2014). Application of toxicogenomic profiling to evaluate effects of benzene and formaldehyde: from yeast to human. *Ann. NY Acad. Sci.* 1310(1):74-83. PMID: 24571325. PMCID: PMC3978411.
133. North M, Shuga J, Fromowitz M, Loguinov A, Shannon K, **Zhang L**, Smith M, Vulpe C (2014). Modulation of Ras signaling alters the toxicity of hydroquinone, a benzene metabolite and component of cigarette smoke. *BMC Cancer.* 14(1):6. PMID: 24386979. PMCID: PMC3898384.
132. Ji Z, Li X, Fromowitz M, Mutter-Rottmayer E, Tung J, Smith M, **Zhang L** (2014). Formaldehyde induces micronuclei in mouse erythropoietic cells and suppresses the expansion of human erythroid progenitor cells. *Toxicology Letters.* 224(2):233-239. PMID: 24188930. PMCID: PMC3891867.
- 2013 131. Ye X, Ji Z, Wei C, McHale CM, Ding S, Thomas R, Yang X, **Zhang L** (2013). Inhaled formaldehyde induces DNA-protein crosslinks and oxidative stress in bone marrow and other distant organs of exposed mice. *Environ Mol Mutagen.* 54:705-718. PMID: 24136419.
130. Zhang YC, Liu XD, McHale C, Li R, **Zhang L**, Wu Y, Ye X, Yang X, Ding SM (2013). Bone Marrow Injury Induced Via Oxidative Stress in Mice by Inhalation Exposure to Formaldehyde. *PLoS ONE* 8(9): e74974. PMID: 24040369. PMCID: PMC3770590.
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