WOLFGANG ZACHARIAS ***CURRICULUM VITAE*** (updated 7/31/18)

Personal Data: Born: Bamberg, Germany

Visa status: US Permanent resident

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Education:

1953 - 1957: Elementary School; Bamberg, Germany
1957 - 1966: High School; Clavius-Gymnasium, Bamberg, Germany
1966 - 1968: Military service Germany
1968 - 1974: Philipps-University Marburg, Germany; chemistry
1974: Diplom-Chemiker (diploma in chemistry)
1974 - 1980: Graduate student in biochemistry; Philipps-University Marburg, Germany
1980: Ph.D. in biochemistry; Philipps-University Marburg, Germany

Professional Experience:

2016 – present: Clinical Professor of Medicine (0.4 FTE); Dept of Medicine, University of Louisville, KY

2007 – 2016: Professor, Dept. of Medicine and Dept. of Pharmacology & Toxicology, University of Louisville, Kentucky

2000 - 2007: Associate Professor, Dept. of Medicine and Dept. of Pharmacology-Toxicology, University of Louisville, Kentucky

2000 - present: Scientist, James Graham Brown Cancer Center, Univ. of Louisville, Kentucky;
Member, Center for Genomics and Molec. Medicine, Univ. of Louisville, Kentucky
Member, Center for Oral Health and Systemic Disease, Univ. of Louisville, Kentucky
Member, Center for Environmental & Occupational Health; Kentucky Institute for Environment & Sustainable Development (KIESD), Univ. of Louisville, Kentucky
Member, Center for Environmental Genomics and Integrative Biology, Univ. of Louisville, Kentucky (2007-2012)

1996 - 2000: Research Assistant Professor, Dept. of Medicine, Div. of Hematology-Oncology, Univ, of Alabama at Birmingham, Birmingham, Alabama

1996 - 2000: Associate Scientist, Comprehensive Cancer Center, Univ. of Alabama at Birmingham, Birmingham, Alabama

1986 - 2000: Associate Scientist, Multipurpose Arthritis Center, Univ. of Alabama at Birmingham, Birmingham, Alabama

1992 - 1996: Assistant Professor, Dept. of Biochemistry and Molecular Genetics, Univ. of Alabama at Birmingham, Birmingham, Alabama

1985 - 1992: Research Assistant Professor, Dept. of Biochemistry, Univ. of Alabama at Birmingham, Birmingham, Alabama

1982 - 1985: Research Associate with Dr. R.D. Wells, Dept. of Biochemistry, Univ. of Alabama at Birmingham, Birmingham, Alabama

1980 - 1982: Research Associate with Dr. R.D. Wells, Dept. of Biochemistry, Univ. of Wisconsin, Madison, Wisconsin

1979 - 1980: Instructor, chemistry lab courses for biology students; Univ. of Marburg, Germany

1974 - 1980: Graduate student in biochemistry; Dept. of Chemistry, Div. of Biochemistry, Univ. of Marburg, Germany; under Prof. Dr. H. Follmann

1972 - 1973: Teaching Assistant, organic chemistry for chemistry students; Univ. of Marburg, Germany

1971 - 1972: Teaching Assistant, chemistry courses for medical students; Univ. of Marburg, Germany

Scientific Societies:

American Society of Biochemistry & Molecular Biology

Honors and Awards:

Nomination for Excellence in Teaching Award, Biochemistry for Medical Students, Univ. of Alabama at Birmingham, 1996.

Second place poster award postdoctoral fellows, UofL Brown Cancer Center 3. Annual Retreat, Louisville, KY, Sept. 23, 2004: X. Sun, R. Colella, and W. Zacharias. Hypoxia increases cathepsin secretion and invasive ability in lung carcinoma cells.

Second place Ed Nelson Research Award, International Society for the Prevention of Tobacco Induced Diseases Third Annual Meeting, Louisville, KY, USA, Oct. 31, 2004: N. Nagaraj, S. Beckers, N. Vigneswaran, and W. Zacharias. Cigarette Smoke Condensate in Oral Cancer - Apoptosis or Inflammation?

First place poster award, 10th Annual Hinman Student Research Symposium, Memphis, TN, Oct. 29-Oct. 31, 2004. D. Bacum, S. Awagu, W. Zacharias, T. Rives & N. Vigneswaran. Differential Expression of TRAIL (Tumor Necrosis Factor-Related Apoptosis-Inducing Ligand) receptors does not correlate with the apoptosis rate and metastatic progression of OSCC.

Awarded tenure, University of Louisville; July 2007.

Third Place Award Clinical Fellows posters; J.G. Brown Cancer Center 9th Annual Retreat, Louisville KY; Nov. 5, 2010. Joos, N., Garbett, N., Chaires, B., Bumpous, J., Zacharias, W., and Shumway, Serum and Saliva Analysis by Differential Scanning Calorimetry as a Novel Diagnostic Modality in Head and Neck Cancer: A Pilot Study.

Third Place Award Postdoctoral Fellows posters; J.G. Brown Cancer Center 9th Annual Retreat, Louisville, KY; Nov. 5, 2010. Malik, M. T., Rinaldo, F., Shams, M., Zacharias, W., Waigel, S., Arumugam, V., Hasan, N., Hu, C., Xu, B., Hammond, G.B., and Bates, J.P. A novel inhibitor of DNA methylation.

Grants support:

Past Grant Support: (as of 7/31/18)

American Cancer Society Institutional Grant Support Program, Compr. Cancer Center, U.A.B.: "Functions of left-handed Z-DNA: Genetic, biochemical, and immunological studies"; W. Zacharias, Principal Investigator; 0% effort; $7,500 for 11/01/85 to 10/31/86.

National Institutes of Health P60 AM 20614: University of Alabama at Birmingham Multipurpose Arthritis Center Grant; Director W.J. Koopman; W. Zacharias, Principal Investigator in Feasibility Project: "Functions of left-

handed Z-DNA: Genetic, biochemical, and immunological studies"; 50% effort; $170,854 for 01/01/87 to 12/31/89.

US-Japan Cooperative Cancer Research Program (Japan Society for Promotion of Science and NCI USA): Travel Award for visit at Okayama University, Faculty of Pharmaceutical Sciences, for collaboration and scientific exchange with Drs. Hikoya Hayatsu and Kazuo Negishi; 09/05/87 - 09/29/87.

American Society for Biochemistry and Molecular Biology Travel Award: Participation in the 14th International Congress of Biochemistry; July 10-15, 1988; Prague, CSSR.

Postdoctoral Support Program, Department of Biochemistry, University of Alabama at Birmingham: Stipend Award for one post-doctoral position; from the, $18,000 for 10/12/88 to 09/11/89.

Arthritis Foundation Biomedical Science Grant: "The role of Z-DNA-protein interactions in autoimmune disease"; W. Zacharias, Principal Investigator; 50% effort; $225,000 for 07/01/90-06/30/93.

NCI RO1: "Triplex-based inhibition of DHFR and Cyclin D1"; D. M. Miller, P.I.; W. Zacharias, Co-Investigator; 44% effort for 03/01/96 to 02/28/01.

ACS Institut. Grant Support Program, Compr. Cancer Center U.A.B: "Mithramycin and K-*ras* transcription". N. Vignesvaran, P.I.; W. Zacharias, Co-Investigator, 0% effort; $15,000 for 07/01/97 to 06/30/98

ACS Institut. Grant Support Program, Compr. Cancer Center U.A.B: "Ribozyme-based inhibition of tumor-promoting proteases"; W. Zacharias, Principal Investigator; 0% effort; $20,000 for 07/01/98 to 06/30/99.

Arthritis Foundation Biomedical Science Grant: "Ribozymes as gene therapy for rheumatoid arthritis"; W. Zacharias, Principal Investigator; 50% effort; $225,000 for 07/01/97 to 06/30/00.

Health Science Foundation, U.A.B.: "Comparative expression profiles of novel human oral carcinoma cell lines by microarray gene chip technology"; W.Zacharias, Principal Investigator; $7,500 on 05/03/99.

Health Science Foundation, U.A.B.: "Comparative expression profiles of human synoviocyte cell populations from rheumatoid arthritis and osteoarthritis by microarray gene chip technology"; L. Bridges, Principal Investigator, W.Zacharias, Co-Investigator; $7,500 on 05/03/99.

Univ. of Louisville Grant-in-Aid: "DNA replication proteins as potential therapeutic targets." W. G. McGregor, P.I.; W. Zacharias, Co-Investigator; 0% effort; $15,000 for 01/01/01 to 12/31/01.

US Army/DoD, Breast Cancer Research Program Concept Award DAMD17-01-1-0643: "Role of cystatin M in breast cancer"; N. Vigneswaran, P.I.; W. Zacharias, Co-Investigator; 0% effort; $50,000 for 06/01/01 to 05/31/02.

NIH/NIDCR Consortium PO1 DE12467: "Harvard-Forsyth Collaborative Microarray Core", HFCMC; D. Wong, & F. Dewhirst, Co-P.I.s; W. Zacharias, Investigator; 0% effort; 07/01/01 to 06/30/03.

Kentucky Lung Cancer Program: "Tumor microenvironment as determinant of protease-mediated malignancy in lung cancer"; W. Zacharias & R. Colella, Co-P.I.s; 10% effort/no salary; $272,727 for 07/01/02 to 09/30/05.

UofL Brown Cancer Center Postdoctoral Fellowship, recipient N. S. Nagaraj: "Cystatin as anti-apoptotic and pro-metastatic protease inhibitor in tumor cells"; W. Zacharias, P.I. & Mentor; $30,000 for 07/01/03 to 06/30/04.

Univ. of Louisville CGeMM Research grant: G. McGregor, P.I.; W. Zacharias, Co-Investigator; "Chronic inflammation-induced changes in gene expression in carcinogen-induced lung cancer." 0% effort; $30,000/yr. for 12/01/03 to 11/30/05.

Philip Morris External Research Program: "Premalignant to malignant transition in oral cancer: a molecular analysis"; W. Zacharias, Principal Investigator; 30% effort; $696,182 for 07/01/02 to 06/31/06.

UofL Brown Cancer Center Faculty Pilot Project: "Ribozymes as novel cancer chemopreventive agents"; W. McGregor, P.I.; W. Zacharias, Co-Investigator, 0% effort, $40,000/yr for 10/01/04 to 9/30/05.

UofL Brown Cancer Center Faculty Pilot Project: "Lymphangiogenesis and metastasis in head & neck cancer"; W. Zacharias & E. Lentsch, Co-P.I.s; 0% effort, $50,000/yr for 08/01/05 to 07/31/06.

UofL Brown Cancer Center Pilot Project: “Quantitation of metastasis dissemination for head & neck carcinoma cells in mice xenografts by micro-PET analysis.” W. Zacharias, P.I.; 0% effort, $1,800/yr for 03/01/06 to 02/28/07.

NIH/NCI 1R01CA090784-01A1: “E2F-1 Cancer Gene Therapy.” K. McMasters, P.I., W. Zacharias, Co-Investigator, 0% effort; $225,000/yr. for 09/01/02 to 08/31/07.

NIH/NCI R25 CA044789 “Cancer Education Grant Program.” N. Burzynski, P.I.; W. Zacharias, Research Mentor; $110,255/yr. for 05/01/02 to 04/30/07.

NIH/NIDCR RO1: “The role of cathepsins in oral cancer invasion and metastasis”; W. Zacharias, P.I.; 40% effort; $993,419 for 09/01/99 to 08/31/06.

Juvenile Diabetes Research Foundation: “Podocyte Specific Antioxidant Protection in Diabetic Nephropathy”. P. Epstein, P.I.; W. Zacharias, Co-Investigator, 0% effort; $150,000 /yr for 02/01/05 to 01/31/08.

NIH RO1 ES 011314-01-A2: “Arsenic Induced Mitotic Arrest Associated Apoptosis.” C.J. States, P.I.; W. Zacharias, Co-Investigator, 5% effort; $200,000/yr, $1,000,000 total cost for 07/01/03 to 06/30/08.

NIH/NCI 1RO3CA112664: “Novel strategies to prevent lung cancer.” G. McGregor, P.I.; W. Zacharias, Co-Investigator, 0% effort; $50,000/yr. for 07/01/05 to 06/30/08.

NIH 1R21ES013821 “Perinatal Breast Cancer Programming - Fat and estrogens”. T. Knudsen, P.I. W. Zacharias, Core Director/Consultant; 0% effort; $107,500/yr for 07/01/05 to 05/31-08.

UofL J.G. Brown Cancer Center Pilot Project: “A Novel Anticancer Compound with Potent Activity and an Intriguing Mechanism”. P. Bates, P.I.; W. Zacharias, Consultant; 0% effort; $75,000/yr for 03/01/07 to 06/30/08.

NIDCR R21 DE016316 “Identifying periodontal antigens by protein microarrays”. D. Darling, P.I.; W. Zacharias, Consultant; 0% effort; $125,000/yr for 07/01/05 to 06/30/08.

NIH/NIDCR RO3 DE015723-01A2 “Role of cystatins in oral cancer metastasis”. N. Vigneswaran, P.I.; W. Zacharias, Co-Investigator; 0% effort; $50,000/yr for 04/01/06 to 03/31/09.

SCHE 671/6□1 DFG (German Research Society) Germany: “Adhesion mechanisms in rheumatoid arthritis”. J. Schedel, P.I.; W. Zacharias, Co-Investigator; 0% effort; $20,000/yr for 07/01/06 to 06/30/09.

NCI 1 R01 CA112197: “Mutagenesis as a novel target for cancer prevention”. W.G. McGregor, P.I.; W. Zacharias, Co-Investigator, 10% effort; $175,000/yr for 4/1/05 to 2/28/10.

NIH 1RO1 DK072032: “Podocytes and oxidative stress in diabetic kidney”. P. Epstein, P.I.; W. Zacharias, Co-Investigator, 7% effort; $250,000 /yr for 7/1/05 to 6/30/10.

Kentucky Lung Cancer Research Program: “Mechanisms for gender differences in lung adenocarcinomas”; C. Klinge, P.I.; W. Zacharias, Co-Investigator; 4% effort/no salary; $68,182/yr. for 6/1/07 to 8/31/10.

Kentucky Lung Cancer Research Program: “The lysosomal pathway of apoptosis as target for lung cancer therapy”; W. Zacharias, P.I.; 20% effort/no salary; $68,182/yr. for 11/1/08 to 08/31/11.

Melanoma Research Foundation, Established Investigator Award: “Develop a Prognostic Scoring System in Node-Negative Patients”. K. M. McMasters, P.I.; W. Zacharias, Co-Investigator, 0% effort; $90,000 for 1/1/10 to 12/31/11.

NIH/NIEHS 1P30 ES014443-01A1: Center for Environmental Genomics and Integrative Biology; K. Ramos, P.I.; W. Zacharias, Co-Investigator; 0% effort; $600,000/yr. for 6/4/07 to 3/31/11.

NIH/NCI R25 CA134283: Univ. of Louisville Cancer Education Grant Program; Hein, D., P.I.; W. Zacharias, Mentor/Investigator, 0% effort; $205,988/yr for 09/14/11 to 08/31/16.

2P20RR018733 NCRR COBRE: “Center of Biomedical Research Excellence in Molecular Targets”; D.M. Miller P.I.; W. Zacharias, Core Director, 10% effort; $1,544,094 /yr. for 09/01/03 to 06/30/13

R.J. Reynolds Tobacco, Inc., Contract project #6521: "Method Development and Assessment of the Effects of Tobacco Products on Oral Cavity Cells". W. Zacharias, P.I., 30% effort; $190,748/yr. for 10/1/09 to 6/30/14.

NIH/NIGMS 1P30 GM106396 COBRE Phase III: "Center of Biomedical Research Excellence in Molecular Targets"; D.M. Miller P.I.; W. Zacharias, Core Director, 10% effort; $1,121,000/yr. for 07/01/13 to 06/30/18.

Current Support: (as of 7/31/18)

NIH/NIGMS KY-INBRE 2P20GM103436: "KY-IDeA Networks of Biomedical Research Excellence". N. Cooper, P.I., W. Zacharias, Co-Investigator; 5% effort; $3,072,285/yr. for 5/1/14 to 4/30/19.

NIEHS 5T32 ES011564**:** Institutional Training Grant: UofL Environmental Health Sciences Training Program; D. Hein, G. Arteel, Co-P.I.s; W. Zacharias, Mentor/Investigator; 0% effort; $133,000/yr. for 4/1/16 to 3/31/21.

NIH/NCI R25 CA134283**:** Institutional Training Grant: UofL Cancer Education Program; D. Hein, L. Kidd, Co-P.I.s; W. Zacharias, Mentor/Investigator; 0% effort; $593,000/yr. for 4/1/17 to 3/31/22.

Pending applications: (as of 7/31/18)

NIH/NIGMS KY-INBRE 2P20GM103436: "KY-IDeA Networks of Biomedical Research Excellence". N. Cooper, P.I., W. Zacharias, Co-Investigator; 12.5% effort; 5-year renewal application

Participation in Meetings and Conferences:

2nd Conversation in Biomolecular Stereodynamics; April 26-29, 1981; Albany, NY.

Cold Spring Harbor Symp.: Structures of DNA; June 2 - 7, 1982; Cold Spring Harbor, NY.

American Cancer Society, 34th Southeastern Regional Meeting; November 3 - 5, 1982; Birmingham, AL.

Gordon Research Conference: Nucleic Acids; June 13-17, 1983; New Hampton, NH.

4th Conversation in Biomolecular Stereodynamics; June 4-8, 1985; Albany, NY.

Gene Activity and Hormonal Regulation (ZMBH Forum on Molecular Biology); May 29-31, 1986; Heidelberg, Germany.

American Chemical Society/American Society for Cell Biology Meeting; June 8-12, 1986; Washington, D.C.

Unusual DNA Structures Symposium; April 5-8, 1987; Gulf Shores, AL.

Workshop on Biological DNA Modification; May 20-23, 1988; Gloucester, MA.

American Rheumatism Association 52nd Annual Scientific Meeting; May 23-28, 1988, Houston, TX.

Local Changes in DNA Structure and Their Biological Implications; July 6-9, 1988; Brno, CSSR.

14th International Congress of Biochemistry; July 10-15, 1988; Prague, CSSR.

2nd New England Biolabs Workshop Biological DNA Modification; September 2-7, 1990; Berlin, Germany

6th Lecture Course on Biophysics and Molecular Biology: Unusual DNA Structures and Their Biological Implications; September 9-15, 1990; Trieste, Italy.

Fellows 40th Anniversary Conference, Arthritis Foundation; June 21-23, 1991; Snowbird, UT

2nd International Workshop on the Molecular and Cell Biology of Autoantibodies and Autoimmunity; September 19-21, 1991; San Diego, CA.

Arthritis Foundation Research Conference; June 18-20, 1993; Phoenix, AZ.

American Society for Biochemistry and Molecular Biology Meeting; May 30-June 3, 1993; San Diego, CA.

Therapeutic Oligonucleotides; November 14, 1999; Louisville, KY.

Genomics and Proteomics Workshop; September 23, 2000, Lexington, KY.

Advances in Research on Tobacco-Related Cancer; December 2, 2000; Louisville, KY.

American Association for Dental Research, 30th Annual Meeting; March 7-10, 2001, Chicago, IL.

Annual Microarray User Meeting, Affymetrix, Inc.; June 5-6, 2001, Chicago, IL

American Association for Cancer Research 93rd Annual Meeting, San Francisco, CA; April 6-10, 2002.

J. G. Brown Cancer Center First Annual Retreat 2002; Louisville, KY, Sept. 18, 2002.

Kentucky Lung Cancer Research Scientists' Seminar; Frankfort, KY; Feb. 21, 2003.

J. G. Brown Cancer Center Second Annual Retreat, Louisville, KY; Sept. 17, 2003.

Kentucky Biomedical Research Infrastructure Network (KBRIN) Bioinformatics Workshop, Louisville, KY; June 12-13, 2003

Kentucky Lung Cancer Research Scientists' Seminar; Lexington, KY; May 12, 2004.

J. G. Brown Cancer Center Third Annual Retreat, Louisville, KY; Sept. 23, 2004.

Intl. Society for Prevention of Tobacco-Induced Diseases 3rd Annual Meeting, Louisville, KY, Oct. 29-Nov. 1, 2004.

J. G. Brown Cancer Center Fourth Annual Retreat, Louisville, KY; Sept. 14, 2005.

1st Louisville Symposium on Environmental Metabolomics; Center for Regulatory & Environmental Analytical Metabolomics, Louisville, KY; Nov. 5-6, 2005.

Kentucky Lung Cancer Research Scientists' Seminar; Louisville, KY; May 2, 2005.

J. G. Brown Cancer Center Fifth Annual Retreat, Louisville, KY; Nov. 29, 2006

J. G. Brown Cancer Center Sixth Annual Retreat, Louisville, KY; Nov. 28, 2007

16th Euroconference on Apoptosis; Bern, Switzerland, Sep 6-9, 2008.

J. G. Brown Cancer Center Seventh Annual Retreat, Louisville, KY; Oct. 29, 2008

Translational Biomarkers Symposia/Workshop “Discovery-to-Application”; UofL Center for Environmental Genomics and Integrative Biology; Louisville, KY; Feb 12, 2009.

2nd International Meeting on Quadruplex DNA; Louisville, KY; April 18-21, 2009.

UofL KBRIN Bioinformatics Retreat; UofL Shelby Campus; Louisville, KY; June 9, 2009.

UofL J. G. Brown Cancer Center 8th Annual Retreat, Louisville, KY; Nov. 6, 2009.

UofL/UK Lung Cancer Symposium; Louisville, KY; Nov. 21, 2009.

UofL Bioinformatics Retreat; UofL Belknap Campus, Louisville, KY; Aug 6, 2010.

64th Tobacco Science Research Conference, Hilton Head Island, SC; Oct 3- 6, 2010.

UofL J. G. Brown Cancer Center 9th Annual Retreat, Louisville, KY; Nov. 5, 2010.

UofL Center for Environmental Genomics and Integrative Biology/Integrated Health Science Facility Core Workshop *"Path from Biomarker Discovery to Commercialization"*; Louisville, KY, Nov 10, 2010.

65th Tobacco Science Research Conference, Lexington, KY; Sept 19-21, 2011.

66th Tobacco Science Research Conference, Concord, NC; Sept 9-12, 2012.

UofL Center for Genetics and Molecular Medicine Symposium "Whole Genome Sequencing: From Lab to Clinic"; Louisville, KY; Nov. 12, 2012.

UofL Center for Environmental Genomics and Integrative Biology/Integrated Health Science Facility Core Workshop*"Path from Biomarker Discovery to Commercialization"*; Louisville, KY, Nov 10, 2010.

International Toxicology Summit & Expo (Toxicology-2012); San Antonio, TX, Nov 26-28, 2012.

UofL Center for Genetics and Molecular Medicine Symposium "Genomics in Medicine"; Louisville, KY; May 15, 2014.

KBRIN Bioinformatics Retreat 2017; Shaker Village, Pleasantville KY; Aug 25, 2017.

Seminars and Lectures Held:

8/25/17: KBRIN Bioinformatics Retreat 2017: "KBRIN Genomics Core." Shaker Village, Pleasantville KY

8/13/13: Invited speaker J. G. Brown Cancer Center Biophysics Seminar Series: "The UofL Genomics Facility". Louisville, KY

4/22/13 Invited Speaker, R. J. Reynolds Tobacco Co.: "Methods development and assessment of the effects of tobacco products on oral cavity cells; Progress Report"; Bowman Gray Technical Center, Winston-Salem, NC.

12/6/12: Invited speaker: "At your service: The UofL Miroarray Facility". UofL Molecular Targets Group, Louisville, KY

11/26/12: Invited Speaker: "Molecular and cellular response of oral cavity cells to tobacco preparations." International Toxicology Summit & Expo (Toxicology-2012); San Antonio, TX.

9/10/12: Session speaker: "Combusted, but not smokeless tobacco product preparations, cause DNA damage in human oral cavity cells." 66th Tobacco Science Research Conference, Concord, NC.

9/15/11 Invited Speaker, R. J. Reynolds Tobacco Co.: "Methods development and assessment of the effects of tobacco products on oral cavity cells; Progress Report"; Bowman Gray Technical Center, Winston-Salem, NC.

11/10/10 Invited Speaker, R. J. Reynolds Tobacco Co.: "Methods development and assessment of the effects of tobacco products on oral cavity cells"; Bowman Gray Technical Center, Winston-Salem, NC.

1/20/11: Periodic Career Review presentation, UofL Dept. of Pharmacol. & Toxicol: "The curious case of TRAIL and Lysosomes".

10/5/10: Session speaker: "Molecular and cellular response of oral cavity cells to tobacco preparations."

64th Tobacco Science Research Conference Hilton Head Island, SC.

8/6/10: UofL Bioinformatics Retreat: “Microarray Facility – Services and Bioinformatics Needs.” Louisville, KY.

3/11/10: UofL J. G. Brown Cancer Center Molecular Targets lecture: “The curious case of TRAIL and lysosomes”. Louisville KY.

11/2/09 Invited Speaker, R. J. Reynolds Tobacco Co.: "The role of lysosomal cathepsin proteases in oral cancer progression"; Bowman Gray Technical Center, Winston-Salem, NC.

5/15/08: Indiana University School of Dentistry, Dept of Oral Biology: “The lysosomal pathway of apoptosis in oral cancer”. Indianapolis, IN.

08/25/05: UofL Dept. of Pharmacol. & Toxicol.: “Cathepsin B – promotor or preventor of oral cancer?” Louisville, KY.

2/22/05: UofL Exp. Therapeutics Group Seminar series: “Microarray Technology”; Louisville, KY.

12/16/04: UofL Brown Cancer Center Molecular Targets Seminar Series: “Cathepsin B – promotor or preventor of oral cancer?” Louisville, KY.

5/12/04: Kentucky Lung Cancer Research Scientists' Seminar; Lexington, KY; “Tumor microenvironment as determinant of protease-mediated malignancy in lung cancer”.

7/29/03: UofL Professional Education Preparation Program (PEEP): “Importance of transitional research in medicine”.

6/12-13/03: Kentucky Biomedical Research Infrastructure Network (KBRIN) Bioinformatics Workshop University of Louisville; “Microarray Technology”.

09/18/02: J. G. Brown Cancer Center First Annual Retreat 2002: “BCC Microarray Core: The first-year experience”. Louisville, KY.

04/07/02: American Association for Cancer Research 2002 Annual Meeting; San Francisco, CA: “Gene expression patterns in dysplastic cell lines from oral leukoplakia”. (replaced as speaker by co-investigator P. Sacks due to necessary surgery)

03/09/01: American Association for Dental Research, 30th Annual Meeting; Chicago, Illinois: “Oligonucleotide Microarray Gene Profiling in Oral Cancer Cell Lines.”

11/02/00: Symposium “Advances in Research on Tobacco-Related Cancer”, Brown Cancer Center, University of Louisville, Kentucky: “Analysis of Gene Expression Patterns in Oral Cancer with DNA Microarrays.”

10/10/00: Center for Genetics and Molecular Medicine, University of Louisville, Kentucky: “Proteases which Contribute to the Invasiveness of Malignant Cells.”

09/07/00: Dept. of Pharmacology-Toxicology, University of Louisville, Kentucky: “Ribozymes as Mechanistic and Therapeutic Tools to Target Disease-related Proteases.”

10/01/99: Department of Medicine, University of Louisville, Kentucky: “Ribozymes as Mechanistic and Therapeutic Tools to Target Disease-related Proteases.”

10/30/97: Department of Medicine/Div. of Hematology-Oncology, University of Alabama at Birmingham, Birmingham, Alabama: “Ribozymes as Gene-specific Therapy Approaches.”

12/10/93 Institute of Biosciences and Technology, Texas A&M University, Houston, Texas: "DNA Structures and the Anti-DNA Response in Lupus."

11/03/93 Department of Biochemistry and Molecular Genetics, University of Alabama at Birmingham, Birmingham, Alabama: "DNA Structures and the Anti-DNA Response in Lupus."

12/2/91 Department of Biochemistry, University of Alabama at Birmingham, Birmingham, Alabama: "*In Vivo* Functions of Z-DNA: The Search Continues."

4/15/91 Department of Biochemistry and Biophysics, Texas A&M University, College Station, Texas: "Left-handed Z-DNA: *In Vivo* Behavior and Antigenic Properties."

9/13/90: Sixth Lecture Course on Biophysics and Molecular Biology, Trieste, Italy: "The Biology and Chemistry of Left-handed Z-DNA and Triplexes."

06/29/89: Polish Academy of Sciences, Warsaw, Poland: "Left-handed Z-DNA: *In Vivo* Existence and Antigenic Properties."

06/28/89: Center of Molecular and Macromolecular Studies, Polish Academy of Sciences, Lodz, Poland: "Left-handed Z-DNA: *In Vivo* Existence and Antigenic Properties."

06/23/89: Centre de Biophysique Moleculaire, CNRS, Orleans Cedex, France: "Left-handed Z-DNA: *In Vivo* Existence and Antigenic Properties."

06/22/89: Institut Gustave Roussy, Villejuif Cedex, France: "Left-handed Z-DNA: *In Vivo* Existence and Antigenic Properties."

07/26/88: Max-Planck Institute for Molecular Genetics, Berlin, FRG: "Properties and *In Vivo* Existence of Z-DNA."

07/11/88: 14th International Congress of Biochemistry, Prague, Czechoslovakia: "Unusual DNA Structures *In Vitro* and *In Vivo*."

07/06/88: Conference "Local Changes in DNA Structure and Their Biological Implications"; Brno, Czechoslovakia: "Unusual DNA Structures *In Vitro* and *In Vivo*."

05/22/88: Workshop on Biological DNA Modification; Gloucester, Massachusetts, USA: "Cytosine Methylation as Effector of Right-handed to Left-handed DNA Structural Transitions."

10/26/87: Biochemistry Seminar, Dept. of Biochemistry, University of Alabama at Birmingham: "Left-handed Z-DNA: Immunogenic Properties and Potential *In Vivo* Functions."

10/08/87: Rheumatology Research Seminars, Dept. of Medicine, Div. of Immunology & Rheumatology, University of Alabama at Birmingham: "Left-handed Z-DNA: Immunogenic Properties and Potential *In Vivo* Functions."

09/28/87: Department of Biology, Faculty of Sciences, Kobe University, Kobe, Japan: "Left-handed Z-DNA: Immunogenic Properties and Potential *In Vivo* Functions."

09/22/87: Faculty of Pharmaceutical Sciences, Okayama University, Okayama, Japan: "Left-handed Z-DNA: Immunogenic Properties and Potential *In Vivo* Functions."

06/29/87: Institute of Clinical Immunology and Rheumatology, University of Erlangen - Nuernberg: "Left-handed Z-DNA: Immunogenic Properties and Potential *In Vivo* Functions."

06/24/87: Institute of Toxicology, University of Mainz, FRG: "Z-DNA Structures: Properties and Potential *In Vivo* Functions."

06/23/83: Max-Planck Institute of Biophysical Chemistry, Goettingen, FRG : "Z-DNA Structures: Properties and Potential *In Vivo* Functions."

06/22/83: Institute of Molecular Biology and Tumor Research, Philipps-University Marburg, FRG: "Z-DNA Structures: Properties and Potential *In Vivo* Functions."

List of Publications:

Peer-reviewed articles: (as of 7/31/18)
(Total career = 70 total; 35 as senior/first author; at UofL = 41 total; 20 as senior author)

1. Follman, H., Kuntz, J., and **Zacharias**, W. (1975) Adenine Nucleosides in Solution: Circular Dichroism Studies and Base Conformation. *Eur. J. Biochem*. 58:31-41. PMID: 1183438

2. Zacharias, W., and Follman, H. (1982) Irregularities in the Circular Dichroism of Oligoribonucleotides. *Z. Naturforsch.* 37C:727-730. PMID: 7136184

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Currently submitted/under review/revision:

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Abstracts: (as of 7/31/18)
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19. N. S. Nagaraj, N. Vigneswaran, and **W. Zacharias**. Hypoxia-mediated apoptosis in oral carcinoma cells occurs *via* two independent pathways (poster). UofL Brown Cancer Center 3. Annual Retreat, Louisville, KY, Sept. 23, 2004.
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21. S. Beckers, S. Waigel, and **W. Zacharias**. If you want to catch some fish, you first have to go fishing: Microarray expression profiling on oral carcinoma cells under hypoxia (poster). UofL Brown Cancer Center 3. Annual Retreat, Louisville, KY, Sept. 23, 2004.
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34. S. Waigel and **W. Zacharias.** The J. G. Brown Cancer Center Microarray Facility (poster). UofL Brown Cancer Center 4. Annual Retreat, Louisville, KY, Sept. 14, 2005.
35. N. S. Nagaraj, N. Vigneswaran, and **W. Zacharias**. Cathepsin B: a novel pro-apoptotic factor in oral cancer (poster). ResearchLouisville Symp., Louisville, KY, Nov. 2, 2005.
36. X. Sun and **W. Zacharias.** Suppression of cathepsin B expression by ribozyme RNA impairs cell migration and invasion in human non-small cell lung cancer cells (poster). ResearchLouisville Symp., Louisville, KY, Nov. 2, 2005.
37. S. Waigel and **W. Zacharias**. The J. G. Brown Cancer Center Microarray Facility (poster). ResearchLouisville Symp., Louisville, KY, Nov. 3, 2005.
38. J. Stallons, C.A. Dumstorf, E, Krishnan, S. Waigel, **W. Zacharias**, H. Bodduluri, and W.G. McGregor. Chronic inflammation does not alter patterns of gene expression in carcinogen-initiated lung cancer (poster). ResearchLouisville Symp., Louisville, KY, Nov. 2, 2005.
39. S. Mukhopadhyay, E. Simon, **W. Zacharias**, and W.G. McGregor. Translesion DNA replication proteins are potential targets for cancer prevention (poster). ResearchLouisville Symp., Louisville, KY, Nov. 2, 2005.
40. R. Goldstein, A. Klarer, E. Stein, A. Agrawal, J. Joshua, L. Mosley, **W. Zacharias**, S. Waigel, S. Ho, and R. Cheng, Clustering of papillary thyroid carcinomas from African American and Caucasian female subjects into distinctly different microarray expression profiles (poster). ResearchLouisville Symp., Louisville, KY, Nov. 3, 2005.
41. S. Brozovic, N. S. Nagaraj, S. Sun, J. Bumpous, E. Lentsch, and **W. Zacharias**. Development of new markers for head & neck cancer progression (poster). UofL J. G. Brown Cancer Center Molecular Targets Retreat; Louisville, KY; May 15, 2006.
42. N.S. Nagaraj, N. Vigneswaran, and **W. Zacharias**. Hypoxia inhibits TRAIL-induced tumor cell apoptosis: evidence for lysosomal involvement (poster). ResearchLouisville Symp., Louisville, KY, Oct 12, 2006.
43. S. D. Thomas, **W. Zacharias**, and D. M. Miller. Targeted H19 expression results in decreased c-Myc promoter activity. ResearchLouisville Symp. (poster). Louisville, KY, Oct 12, 2006.
44. N.S. Nagaraj, N. Vigneswaran, and **W. Zacharias**. Hypoxia inhibits TRAIL-induced tumor cell apoptosis: evidence for lysosomal involvement (poster). UofL J.G. Brown Cancer Center Retreat, Louisville, KY, Nov. 29, 2006.
45. N.S. Nagaraj and **W. Zacharias**. Cigarette smoke condensate induces cathepsin expression and increases invasion in oral carcinoma cells (poster). UofL J.G. Brown Cancer Center Retreat, Louisville, KY, Nov. 29, 2006.
46. J.M. Bumpous, E. Lentsch, S. Brozovic, S. Waigel, and **W. Zacharias**. Development of new markers for head and neck cancer progression (poster). UofL J.G. Brown Cancer Center Retreat, Louisville, KY, Nov. 29, 2006.
47. S. Brozovic, E. Lentsch, J.W. Jr. Lillard, S. Waigel, A. Yalcin, **W. Zacharias**, D. Miller, and J. M. Bumpous. HSP70-affected gene expression profile in primary oral carcinoma cells (poster). UofL J.G. Brown Cancer Center Retreat, Louisville, KY, Nov. 29, 2006.
48. X. Sun, N.S. Nagaraj, S. Waigel, and **W. Zacharias**. Gene expression profile changes induced by standard and low-nicotine cigarette smoke condensate in oral tumorigenesis (poster). Research Louisville Symposium, Louisville, KY; Oct. 17, 2007.
49. S. Waigel, V. Arumugam, and **W. Zacharias**. The UofL Microarray Facility (poster). J. G. Brown Cancer Center 6th Annual Retreat, Louisville, KY, Nov. 28, 2007.
50. S. Waigel, V. Arumugam, and **W. Zacharias**. The UofL Microarray Facility (poster). UofL Institute for Molecular Diversity and Drug Design (IMD3) Symposium, Louisville, KY, March 11, 2008.
51. S. Waigel, X. Li, V. Arumugam, N. Cooper, and **W. Zacharias**. The UofL Microarray Facility (poster). ResearchLouisville Symposium, Louisville, KY; Oct. 22, 2008.

52. S. Waigel, X. Li, V. Arumugam, N. Cooper, and **W. Zacharias**. The UofL Microarray Facility (poster). J. G. Brown Cancer Center 7th Annual Retreat, Louisville, KY, Oct. 29, 2008.
53. Waigel, S., Li, X., Arumugam, V., Cooper, N., and **Zacharias, W**. The UofL Microarray Facility: Merger and New Location. UofL J. G. Brown Cancer Center 8th Annual Retreat, Louisville, KY; Nov. 6, 2009.
54. Sun, X. and **Zacharias, W**. Combination of tumor necrosis factor-related apoptosis-inducing ligand and L-leucyl L-leucine methyl ester synergistically induces apoptosis in lung cancer cells. UofL J. G. Brown Cancer Center 8th Annual Retreat, Louisville, KY; Nov. 6, 2009.
55. Sun, X. and **Zacharias, W**. Combination of tumor necrosis factor-related apoptosis-inducing ligand and L-leucyl L-leucine methyl ester synergistically induces apoptosis in lung cancer cells. UofL/UK Lung Cancer Symposium; Louisville, KY; Nov. 21, 2009.
56. Bandura-Morgan, L., Sun, X.S., and **Zacharias, W.** Combination of tumor necrosis factor-related apoptosis-inducing ligand and L-leucyl L-leucine methyl ester synergistically induces apoptosis in lung cancer cells. ResearchLouisville Symp., Louisville, KY; Oct 13, 2010.
57. Gao, H., Prasad, G.L., and **Zacharias, W.** Molecular and cellular response of oral cavity cells to tobacco preparations. ResearchLouisville Symp., Louisville, KY; Oct 13, 2010.
58. Waigel. S., Li, X., Chen, Y., Arumugam, V., Cooper, N., and **Zacharias, W.** The UofL Microarray Facility: Merger and New Location. ResearchLouisville Symp., Louisville, KY; Oct 13, 2010.
59. Malik, M. T., Rinaldo, F., Shams, M., **Zacharias, W.,** Waigel, S., Arumugam, V., Hasan, N., Hu, C., Xu, B., Hammond, G.B., and Bates, J.P. A novel inhibitor of DNA methylation. ResearchLouisville Symp., Louisville, KY; Oct 13, 2010.
60. Lakshmanan, J., Venkatesh, S.G., Carenbauer, A.L., Waigel, S., Zacharias, W., and Darling, D.S. Xbp1 activates the parotid gland genes Mist1 and PSP. ResearchLouisville Symp., Louisville, KY; Oct 13, 2010.
61. Bandura-Morgan, L., Sun, X.S., and **Zacharias, W.** Combination of tumor necrosis factor-related apoptosis-inducing ligand and L-leucyl L-leucine methyl ester synergistically induces apoptosis in lung cancer cells. J.G. Brown Cancer Center 9th Annual Retreat, Louisville, KY; Nov 5, 2010.
62. Gao, H., Prasad, G.L., and **Zacharias, W.** Molecular and cellular response of oral cavity cells to tobacco preparations. J.G. Brown Cancer Center 9th Annual Retreat, Louisville, KY; Nov 5, 2010.
63. Waigel. S., Li, X., Chen, Y., Arumugam, V., Cooper, N., and **Zacharias, W.** The UofL Microarray Facility: Merger and New Location. J.G. Brown Cancer Center 9th Annual Retreat, Louisville, KY; Nov 5, 2010.
64. Hao, H., Ohlendorf, J., Taylor, D., Gomez-Gutierrez, J., **Zacharias, W.,** and McMasters, K. Identifying exosomal mRNA, microRNA and protein signatures in melanoma cells. J.G. Brown Cancer Center 9th Annual Retreat, Louisville, KY; Nov 5, 2010.
65. Malik, M. T., Rinaldo, F., Shams, M., **Zacharias, W.,** Waigel, S., Arumugam, V., Hasan, N., Hu, C., Xu, B., Hammond, G.B., and Bates, J.P. A novel inhibitor of DNA methylation. J.G. Brown Cancer Center 9th Annual Retreat, Louisville, KY; Nov. 5, 2010. (**3. Prize Award**)
66. Joos, N., Garbett, N., Chaires, B., Bumpous, J., **Zacharias, W.,** and Shumway, B. Serum and Saliva Analysis by Differential Scanning Calorimetry as a Novel Diagnostic Modality in Head and Neck Cancer: A Pilot Study. J.G. Brown Cancer Center 9th Annual Retreat, Louisville KY; Nov. 5, 2010. (**3. Prize Award**)
67. Gao, H., Prasad, G.L., and **Zacharias, W.** Microarray-based gene expression profiles of oral cavity cells exposed to different tobacco preparations. Research!Louisville Symposium, Louisville, KY; Oct 12, 2011.

68. Gao, H., Prasad, G.L., and **Zacharias, W.** Microarray-based gene expression profiles of oral cavity cells exposed to different tobacco preparations. 10th Annual University of Louisville Brown Cancer Center Retreat, Louisville, KY; Oct 28, 2011.
69. Gao, H., Prasad, G.L., and **Zacharias, W.** Combusted but not smokeless tobacco products cause DNA damage in human oral cavity cells. ResearchLouisville Symposium; Louisville, KY; Sep 18, 2012.
70. Waigel, S., Li, X., You, B., Arumugam, V., Cooper, N., and **Zacharias, W.** The UofL Microarray Facility. ResearchLouisville Symposium; Louisville, KY; Sep 19, 2012.
71. Kmetz, D., Xiao, D., Egger, M., Weigel, S., **Zacharias, W.**, Hao, H., and McMasters, K. Identifying urine exosome miRNA profiles in melanoma patients. ResearchLouisville Symposium; Louisville, KY; Sep 18, 2012.
72. Xiao, D., Hao, H., Pan, J., Rai, S., Egger, M., Cambon, A., Chen, Y., Waigel, S., **Zacharias, W.**, and McMasters, K. Sentinel lymph node gene panel to predict prognosis in node-positive melanoma patients. ResearchLouisville Symposium; Louisville, KY; Sep 19, 2012.

73. Gao, H., Prasad, G.L., and **Zacharias, W.** Combusted but not smokeless tobacco products cause DNA damage in human oral cavity cells. J. G. Brown Cancer Center 11th Annual Retreat, Louisville KY; Oct 26, 2012.
74. Waigel, S., Li, X., You, B., Arumugam, V., Cooper, N., and **Zacharias, W.** The UofL Microarray Facility. J. G. Brown Cancer Center 11th Annual Retreat, Louisville KY; Oct 26, 2012.
75. Speller A, Dooley, L., Bumpous, J., **Zacharias, W.**, and Garbett, N. Saliva analysis by differential scanning calorimetry in head and neck cancer. J. G. Brown Cancer Center 11th Annual Retreat, Louisville KY; Oct 26, 2012.
76. Hao, H., Xiao, D., Pan, J., Rai, S., Egger, M., Cambon, A., Chen, Y., Waigel, S., **Zacharias, W.**, and McMasters, K. Sentinel lymph node gene panel to predict prognosis in node-positive melanoma patients. J. G. Brown Cancer Center 11th Annual Retreat, Louisville, KY; Oct 26, 2012.
77. Waigel, S., Arumugam, V., Reddy, S., Cooper, N., and Zacharias, W. (2013) The UofL Genomics Facility. 12th Annual UT-ORNL-KBRIN Bioinformatics Summit 2013; Mar 22-24, 2013; Buchanan, TN. *BMC Bioinformatics* 14:Suppl 17:A1.
78. Barry, S., Xiao, D., Taylor, D., Waigel, S., Zacharias, W., Hao, H., and McMasters, K.M. (2013) Identifying serum exosomal microRNA signatures in melanoma patients. ResearchLouisville, Louisville, KY; Sep 26, 2013.
79. Waigel, S., Arumugam, V., Li, X., You, B., Zhang, Y., Cooper, N., and **Zacharias, W.** The UofL Genomics Facility. ResearchLouisville, Louisville, KY; Sep 25, 2013.
80. Waigel, S., Arumugam, V., Li, X., You, B., Zhang, Y., Cooper, N., and **Zacharias, W.** The UofL Genomics Facility. J. G. Brown Cancer Center 12th Annual Retreat, Louisville KY; Oct 25, 2013.
81. Waigel, S., Arumugam, V., Reddy, S., Cooper, N., and **Zacharias, W.** (2014) The UofL Genomics Facility. 13th Annual UT-KBRIN Bioinformatics Summit; Apr 11-13, 2014; Cadiz, KY. *BMC Bioinformatics* **15:** Suppl 10:P1-36.
82. Waigel, S., Arumugam, V., Reddy, S., Cooper, N., and **Zacharias, W.** (2014) The UofL Genomics Facility. ResearchLouisville Symp., Louisville, KY; Sept. 18, 2014.
83. Waigel, S., Arumugam, V., Reddy, S., Cooper, N., and **Zacharias, W.** (2014) The UofL Genomics Facility. The UofL Genomics Facility. 13th J.G. Brown Cancer Center Retreat, Louisville, KY; Oct. 17, 2014.
84. Waigel, S., Arumugam, V., Reddy, S., Cooper, N., and **Zacharias, W.** (2015) The UofL Genomics Facility. 14th Annual UT-KBRIN Bioinformatics Summit; Mar 20-22, 2015; Paris Landing State Park, Buchanan, TN.
85. Waigel, S., Arumugam, V., Reddy, S., Cooper, N., and **Zacharias, W.** (2016) The UofL Genomics Facility. 15th Annual UT-KBRIN Bioinformatics Summit; Apr 8-10, 2016; Lake Barkley State Resort Park, Cadiz, KY.
86. Waigel, S., Arumugam, V., Gao, H,, Cooper, N., and **Zacharias, W.** (2017) The UofL Genomics Facility. ResearchLouisville Symp., Louisville, KY; Sept. 13, 2017.

Book chapters:

1. Wells, R.D., Erlanger, B.F., Gray, Jr., H.B., Hanau, L.H., Jovin, T.M., Kilpatrick, M.W., Klysik, J., Larson, J.E., Martin, J.C., Miglietta, J.J., Singleton, C.K., Stirdivant, S.M., Veneziale, C.M., Wartell, R.M., Wei, C.F., **Zacharias**, W., and Zarling, D. (1983) Left-handed Z-DNA Helices, Cruciforms, and Supercoiling. Gene Expression, *UCLA Symp. on Molec. and Cellular Biol*., Vol. 8, 3-18 (1983) (A.R. Liss, Inc., New York; Eds. D.H. Hamer, M.J. Rosenberg).

2. Wells, R.D., Amirhaeri, S., Blaho, J.A., Collier, D.A., Hanvey, J.C., Hsieh, W.-T., Jaworski, A., Klysik, J., Larson, J.E., McLean, M.J., Wohlrab, F., and **Zacharias**, W. "Unusual DNA Structures and the Probes Used for Their Detection" in *Unusual DNA Structures* (ed. Robert D. Wells and Stephen C. Harvey), p. 1-21, Springer-Verlag New York, (1988).

3. Wells, R.D., Amirhaeri, S., Blaho, J.A., Collier, D.A., Hanvey, J.C., Jaworski, A., Larson, J.E., Rahmouni, A., Rajagopalan, M., Shimizu, M., Wohlrab, F., and **Zacharias**, W. "Left-handed Z-DNA *In Vivo*" in "Biological Structure, Dynamics, Interactions & Expression", *Proceedings of the Sixth Conversation in Biomolecular Stereodynamics*, Vol. 2 (eds. H. Sarma & M.H. Sarma) Adenine Press, p. 25-31 (1989).

4. Wells, R.D., Amirhaeri, S., Blaho, J.A., Collier, D.A., Dohrman, A., Griffin, J.A., Hanvey, J.C., Jaworski, A., Larson, J.E., Rahmouni, A., Rajagopalan, M., Shimizu, M., Wohlrab, F., and **Zacharias**, W. "Z-DNA and

Triplexes" in *UCLA Symposia on Molecular Mechanisms in DNA Replication and Recombination*. (eds. I. Robert Lehman and Charles C. Richardson) Alan R. Liss, Inc. Publishers, New York, NY p. 79-91 (1990).

5. Wells, R.D., Amirhaeri, S., Blaho, J.A., Collier, D.A., Dohrman, A., Griffin, J.A., Hanvey, J.C., Hsieh, W.-T., Jaworski, A., Larson, J.E., McLean, M.J., Rahmouni, A., Rajagopalan, M., Shimizu, M., Wohlrab, F., and **Zacharias**, W. "Biology and Chemistry of Z-DNA and Triplexes" in *The Bacterial Chromosome* (eds. K. Drlica and M. Riley) Wiley Publishers, New York, New York, p. 187-194 (1990).

6. Zacharias, W. "DNA Methylation In Vivo" in *Methods in Enzymology*: DNA Structures (eds. John N. Abelson and Melvin I. Simon) Academic Press, Inc., Orlando, Florida; 212:336-346 (1992). PMID: 1325602

7. Zacharias, W. Methylation of Cytosine Influences the DNA Structure. In *"DNA Methylation: Biological Significance"* (eds. J.-P. Jost and H.P. Saluz) Birkhauser Verlag, Basel, Switzerland; p.27-38 (1993). PMID: 8418952

8. Nagaraj N.S. and **Zacharias, W.** Cathepsin-regulated cell death pathways: Lysosomes as targets for cancer therapy. In: *Cell Apoptosis and Cancer* (Nova Science Publishers, Inc., New York; A.W. Taylor, Ed.), p.155-180 (2007).

Patents/Inventions:

U. S. Provisional Patent Application Serial No. 61/295,507: “ISOLATION OF CIRCULATING EXOSOMES”; ULRF Ref. No. 10055; C/M Code: UN024/UN158. Inventors: Douglas D. TAYLOR, Cicek Gercel-TAYLOR, Wolfgang ZACHARIAS. Filed 1/15/2010.

Administrative Activities at Univ. of Alabama at Birmingham:

Administrative Committees UAB: (1991 - 2000)

Recruiting Committee, CMB Program, UAB (1993-1994)
Grant Review Committee, Comprehensive Cancer Center, UAB (1992-1993)
Library Committee, Department of Biochemistry, UAB (1992-1996)

Graduate Thesis Committee of Biochemistry Ph.D. candidates, U.A.B. (1991 - 2000)

Mary Reaban (Degree Aug. 1991)
Jay Gee (Degree July 1992)
Henry Gabb (Degree July 1993)
Dennis Sprous (Degree Oct. 1995)
Tod Companion (Degree Nov. 1996)
Jared Ordway (Degree Feb. 1999)
Aruna Subramanian (Degree March 2000)
Divya Chaudhary (Degree Nov. 1996)
Hyang Gyoon Kim (Degree Oct. 1995)
Tom Easterwood (Degree July 1996)
James Reddoch (Degree Feb. 1997)
Traci Hampton (Degree May 1999)
Chin-Hsing Lin (Degree April 2001)

Preliminary Exam Committee (Dept. of Microbiology, U.A.B.) (1991 - 2000)

Srikanth Sampathkumar
Ramakrishnan Sitaraman
Alyce Oliver

Host for Rotation Students (1991 - 2000)

Scott Drouin (CMB; 1992)
Uma Suriyanarayanan (BYC; 1992)
Poornima Iyer (CMB; 1993)
Chin-Hsing Lin (BMG; 1994)
Oon Sunny Ang (BMG; 1995)
Alyce Oliver (CMB; 1992)
Param Hariharan (CMB; 1992)
Janice Lee (CMB; 1993)
Cynthia Vied (CMB; 1995)

Administrative Activities / University of Louisville:

Graduate Ph.D. or Master Thesis Committee, University of Louisville:

Paul Porter; Dept. of Pharmacology & Toxicology (2000 – 2005; Ph.D.)
Purva Gopal; Dept. of Anatomical Sciences & Neurobiology (2000 – 2001; M.S.)
Steve Casey; Dept. of Anatomical Sciences & Neurobiology (2000 – 2002; M.S.)
Purushottam Jha; Dept. of Microbiology & Immunology (2001 – 2003; Ph.D.)
Denise Clark; Dept. of Pharmacology & Toxicology (2001 – 2003; M.S.)
M. Tariq Malik; Dept. of Biochemistry & Molec. Biol. (2002 – 2006; Ph. D.)
Simone Beckers; Master thesis mentor, Visiting Scholar Fachhochschule Giessen-Friedberg, Germany (2003-2005).
Nick Watson; Dept. of Pharmacology & Toxicology (2002 – 2008; Ph.D.)
Chad Dumstorf; Dept. of Pharmacology & Toxicology (2004 – 2007; Ph.D.)
Alex Carrasquer; Dept. of Pharmacology & Toxicology (2005 – 2008; Ph.D.)
Afsoon Moktar; Dept. of Pharmacology & Toxicology (2005 – 2010; Ph.D)
Lindsey J. Stallons; Dept. of Pharmacology & Toxicology (2007 – 2011; Ph.D.)
Pei Hsin (Penny) Cheng; Dept. of Pharmacol. & Toxicol. (2010 – 2014; Ph.D.)
Stephen Wechman; Dept. of Pharmacol. & Toxicol. (2016 – 2017; Ph.D.)

Host for UofL School of Dentistry Summer Research Scholars Program 2003 (Jeff Dickson, Steve Crump)
Host for UofL School of Dentistry Summer Research Scholars Program 2004 (Cohin Kakar, Peter Kik)
Mentor for science projects, Manual High School students (Max Dettliner, Eric Chen) (Oct 2004 – Feb 2005)

Departmental/Institutional Committees, University of Louisville:

Search Committee, DNA Microarray Core Facility Director (2000)
Research Committee, Center for Genomics and Molecular Medicine (2000 – 2003)
Member, Graduate School Faculty, Univ. of Louisville (2000 – present)
Member, Center for Environmental & Occupational Health; Kentucky Institute for the Environment & Sustainable Development (KIESD); 2002 – present.
Laser Capture Microdissection Facility Advisory Committee (2001 - 2003)
Director, Brown Cancer Center Microarray Facility (2001-2007)
Director, UofL Microarray Facility (2007-present)
Member, UofL Center for Environmental Genomics and Integrative Biology (CEGIB) (2007–present)
Tissue Repository Advisory Committee, Univ. of Louisville (2002 – 2005; 2009 -present)
Research!Louisville 2002; judge for faculty posters (Oct. 2002)
Research!Louisville 2004; judge for medical student posters (Nov. 2004)
Research!Louisville 2007; judge for postdoctoral fellows posters (Nov. 2007)
Research!Louisville 2008; judge for medical student posters (Nov. 2008)
Research!Louisville 2009; judge for graduate student posters (Oct. 2009)
Research!Louisville 2010; judge faculty posters (Oct. 2010)
Research!Louisville 2015; judge research associates posters (Oct. 28, 2015)
ResearchLouisville 2016; judge: Masters Students; Medical Students Distinction track (Oct 11, 2016)

Brown Cancer Center Policies & Procedures committee (April 2004 – 2006)
Brown Cancer Center Website Executive committee (Aug. 2004 – 2006)
UofL Service Center Task Force, appointed member; Oct 2010- present
J. G. Brown Cancer Center Protein Core Oversight Committee; Jan 2012 – present
J. G. Brown Cancer Center COBRE Phase III Steering Committee; July 2013 – present
J.G. Brown Cancer Center Cores/Facilities Assessment Committee; Mar 2018 - present

Development, Activities and Directions of the UofL Genomics Facility:

Under my direction, the UofL Genomics Facility evolved from a one man/one instrument setup in 2001 to a comprehensive multi-platform facility that includes four Research Technologists/Specialists. The Facility offers

services for mRNA, microRNA, and SNP profiling as well as NextGen Sequencing based on the Affymetrix and Illumina platforms. The Facility is housed in the CTR Bldg Labs 227F-H.

Local on-site Supply Center for Life Technologies, Inc. products; April 2010 – present

Teaching Experiences:

Teaching Assistant; chemistry courses for medical students, University of Marburg; 1971-1972.

Teaching Assistant; organic chemistry for chemistry students, University of Marburg; 1972-1973.

Instructor; chemistry and biochemistry courses for biology students, Univ. of Marburg; 1979-1980.

Laboratory training and supervision of graduate students; Cellular and Molecular Biology, Biochemistry Ph.D. programs, U.A.B.; 1986-2000.

Cellular and Molecular Biology Course CMB I; U.A.B.: Chemistry and structures of nucleic acids; 1992-1996.

Continuing Medical Education Program, U.A.B.: DNA chemistry and structure; 1992-1993.

Dental Biochemistry, U.A.B.: Nucleic acids and nucleotides; 1993-1996.

Medical Biochemistry, U.A.B.: Nucleic acids, DNA and RNA, molecular biological methods; 1993-1996

University of Louisville Biochemistry 5210-875 (Graduate 675) “Molecular basis of cancer”: Lecture Invasion, migration, and metastasis; 2 hours; 2002.
University of Louisville Pharmacology & Toxicology Graduate Program: Course PHTX665/PHTX673 “Research Methods in Pharmacol. & Toxicol. II”: Microarrays; 2 hours; 2000 - 2015.

University of Louisville MBIO667 “Graduate Cell Biology”: Gene array technology; 2 hours; 2003 – 2013.

University of Louisville PHTX 642 Graduate Pharmacology II; Advanced Genomics Methods in Pharmacology; Fall 2017 - present.

Other Activities:

Peer-Reviewer for journals:
- Arthritis and Rheumatism
- Journal of Immunology
- Analytical Biochemistry
- Gene
- Nucleosides & Nucleotides
- Journal of Chromatography
- Journal of Cellular Pathology
- Oral Oncology
- FEBS Journal
- Chemical Research in Toxicology
- Archives of Biochemistry & Biophysics
- Journal of Oral Pathology & Medicine
- Brit. J. Cancer
- BMC Cancer
- Int. J. Cancer
- BMC Genomics
- Nature Biotechnology

Grant review committees: Ad-hoc peer reviewer for research grant applications:
- Comprehensive Cancer Center, U.A.B.
- Arthritis Society Canada
- Swiss Natl. Fond for Promotion of Scientific Research
- American Chemical Society

UofL CGeMM research proposal review committee; 2000
Philip Morris External Research Program; 2002 - 2007
NSF Intl. Research Fellowship Program; external reviewer, 2005.
Wellcome Trust, UK; external peer reviewer, 2005.
NIH/NIDCR study section ODCS; ad-hoc reviewer, Oct 2002.
NIH/NIDCR study section DSR; ad-hoc reviewer Oct. 2006, June 2007; Feb 2008
NIH/NIDCR study section SEP ZDE1 MK (23); ad-hoc reviewer Apr 2009
NIH/NIDCR study section SEP ZDE1 RK (28); ad-hoc reviewer June 2009
NIH/NCI study section 2010/10 ZCA1 SRLB -5 (O1) R; ad-hoc reviewer June 2010
UofL CEGIB pilot project internal review committee; April 2010
NIH/NIDCR study section SEP ZDE1 MK (16); ad-hoc reviewer May 2010; March 2011; March 2012
NIH/NIDCR study section 2013/08 ZDE1 VH (13) LRP applications; Feb 2013.
NIH/NCI study section ZCA1 RPRB-O J1 S, NCI Omnibus Cancer Biology 3; Nov 20-21, 2013.
NIH/NIDCR study section ZDE1 LC (19) 2016/08, LRP L30, L40; Mar 29, 2016.
NIH/NIDCR study section ZDE1 LC (20) 1, LRP L30; Mar 31, 2017.

Associates:

Hong Jiang, M.D.; Postdoctoral Fellow:	Dec. 1989 - Feb. 1991.
Franz Wohlrab, Ph.D.; Postdoctoral Fellow:	Aug. 1991 - May 1992.
Alexander Zagariya; Postdoctoral Fellow:	June 1992 - June 1993.
Suzie Godby; Research Technician:	Aug. 1991 - Sept. 1996.
Tod Companion; Graduate Student:	Dec. 1991 - Nov. 1996.
Jari Heikkila, Ph.D., Postdoctoral Fellow:	July 1997 - Aug. 1998.
Wei Zhao, M.D., Ph.D.; Postdoctoral Fellow:	Aug. 1998 – July 1999.
Lavona Casson, B.S.; Research Associate:	Aug. 1999 – June 2000.
Lulu Strat, M.D.; Postdoctoral Fellow:	June 2000 – Aug. 2002.
Luminita Panaitescu, Ph.D.; Postdoctoral Fellow:	Aug. 2000 – Aug. 2002.
Eric Lentsch, MD; Ph.D. Graduate Student:	Jan. 2002 – Oct. 2006.
Xiuhua Sarah Sun, Ph.D.; Postdoctoral Fellow:	Sept. 2002 – May 2010
Nalinie Wickramasinghe, Ph.D., Postdoctoral Fellow:	Dec. 2002 – June 2004.
Kasturi Banerjee, Ph.D., Postdoctoral Fellow:	Jan. 2003 – May 2004.
John Mensah, Ph.D., Postdoctoral Fellow:	June 2003 – Aug. 2005.
Nagathihalli Nagaraj, Ph.D. Postdoctoral Fellow:	Sept. 2003 – Feb. 2007.
Jeff Dickson; Dental Student summer research experience:	April - June 2003.
Steve Crump; Dental Student summer research experience:	June – Aug. 2003.
Peter Kik; Dental Student summer research experience:	June – Aug. 2004.
Cohin Kakar; Dental Student summer research experience:	June – Aug. 2004.
Simone Beckers, M.S. Student, Univ. for Applied Sci. Giessen, Germany:	Oct. 2003 – Feb. 2005.
Suzana Brozovic, MD, DDS, Ph.D.; Postdoctoral Fellow:	Feb. 2006 – June 2007.
Laura Bandura-Morgan, Ph.D.; Research Associate:	July 2010 – July 2011.
Sabine Waigel, B.S.; Microarray Core Lab Manager:	May 2002 – present.
Vennila Arumugam; Sr. Research Technologist Genomics Facility:	Oct. 2007 – present.
Hong Gao, Ph.D.; Research Associate:	Oct. 2009 – July 2014.
Sreelatha Reddy, Ph.D.; Research Technologist Genomics Facility:	Oct 2013 – Jan 2016.
Lilibeth Lanceta, M.S.; Sr. Research Technologist Genomics Facility:	Feb 2016 to Dec 2016.
Hong Gao, Ph.D.; Research Technologist Genomics Facility:	Jun 2016 – Sep 2017
Xiamo Wang; Internship Genomics Facility:	Feb 2017 – June 2017.
Mei Zhang, M.D., Ph.D.; Research Technologist Genomics Facility:	Nov 2017 - present
Ashley Wise-Mitchell, M. S.; Sr. Research Technologist Genomics Facility:	Nov 2017 - present