

**Doris M. Benbrook, PhD**  
CURRICULUM VITAE  
Abbreviated

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**EDUCATION:** *Bachelor of Arts*, majors in Biology and Chemistry, minor in German. North Central College, Naperville, IL, 1981; *PhD* in Biochemistry, Loyola University Medical Center, Maywood, IL Mentor: Robert V. Miller, PhD 1985.

**POSTDOCTORAL EXPERIENCE:** *La Jolla Cancer Research Foundation (Currently The Burnham Institute)*, La Jolla, CA, Mentor: Magnus Pfahl, PhD, Subject: Nuclear Receptors in Cancer (1985-1988); *Imperial Cancer Research Fund*, London, England, U.K. Mentor: Nicholas C. Jones, PhD Subject: Interaction of CREB and JUN Transcription Factors (1988-1991).

**OUSHC FACULTY APPOINTMENTS:** *Department of Obstetrics and Gynecology, Gynecologic Oncology Section:* Tenured Professor and Director of Research (2004-present) Associate Professor (1997-2004), Assistant Professor (1991-1997), Director of Research, Gynecologic Oncology (1993-present); *Graduate College:* Associate Member (1993-present); *Department of Pharmaceutical Sciences:* Adjunct Professor (2013-present); *Department of Biochemistry and Molecular Biology:* Adjunct Professor (2005-2013), Adjunct Associate Professor (1997-2005), Adjunct Assistant Professor (1993-1997); *Department of Genetic Counseling:* Adjunct Professor (2011-present).

**AWARDS AND HONORS:** Endowed Chair in Gynecologic Oncology (2009-present), North Central College Sesquicentennial Medal (2011); First Place for best business plan in Oklahoma Governors Cup Competition. Submitted by a team of OU undergraduate internsto commercialize Dr. Benbrook's Flex-Het drugs for polycystic kidney disease (2009); Second Place for best businesss plan in the W. Reynolds Tri-State Collegiate Business Plan competition. Submitted by Renephron to commercialize Dr. Benbrook's Flex-Het drugs for polycystic kidney disease (2009); Innovator of the Year On the Brink Award, *The Journal Record* (2005); Oklahoma Scientist of the Year awarded by the Oklahoma Academy of Science (2004); Woman of the Year Nominee awarded by the *Journal Record* (2004).

**EDITOR-IN-CHIEF:** *Biologics: Targets & Therapy*, Dove Medical Press, 2008-present

**CHAIR OF NATIONAL COMMITTEES:** AREA R15 Review Panels 2008-2015 (one to two panels per year), SBIR/STTR Review Panels 2009; NCI Chemoprevention Committee, Subcommittee E, Cancer Epidemiology, Prevention and Control 2003-2005 (This involved multiple site visits per year).

**PERMANENT MEMBER SERVICE ON NATIONAL COMMITTEES:** Drug Discovery and Molecular Pharmacology (DMP) 2019-2013; Cancer Biomarkers Study Section (CBSS), 2004–2008; NCI Chemoprevention Subcommittee E 2000-2005 (This involved multiple site visits per year).

**ADVISORY BOARDS:** Native Americans in Biological Sciences Advisory Board (NABS), Oklahoma State University 2005-07; New Mexico Cancer Center 2009.

**EDITORIAL BOARDS:** *Cancer Research*, 2010 – 2012, *Journal of Cell Death*, 2008- present, *Open Access Journal of Clinical Trials*, 2008-present, *Biochemical Journal and Biochemical Society Transactions*, 2007-present, *Open Medicinal Chemistry Journal*, 2007-present, *Bioinformatics and Biology Insights*, 2007-present, *Open Reproductive Science Journal*, 2007-present, *Current Medicinal Chemistry*, 2006-present, *Cancer Epidemiology, Biomarkers & Prevention*, 2002-2009

**CONSULTANCIES:** Expert Scientific Witness to Patent Litigation Case, Haynes and Boone, LLP, 2012-2013, Consultant to Procter & Gamble, 1999-2002

**SESSION CHAIR OF NATIONAL CONFERENCES:** Retinoids and Cancer, FASEB Retinoid Meeting, 2006; Translational Research Session of the Ovarian Cancer State of the Art Meeting, sponsored by CTEP and GOG 2005.

**SESSION CHAIR OF INTERNATIONAL CONFERENCES:** “Functional Genomics, Proteomics and Signalomics in Cancer” at the International Cancer Research Symposium 2010: Defining & Translating Science Behind Disease. Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, Kerala, India, December 21, 2010; Stephenson Cancer Center Ovarian Cancer Symposium 2014. “Recent Trends in Biotechnological Therapeutic Applications”. 2<sup>nd</sup> International BAU Drug Design Congress, Istanbul, Turkey, April 17-19, 2014.

**REVIEWER ON NATIONAL COMMITTEES:** NCI Specialized Programs of Research Excellence (SPORE) Grants Panel 2005, 2014; DMP Special Emphasis Panel 2014;CDMRP/DOD 2002-2004, 2014; Cancer Detection, Diagnosis, and Treatment Technologies for Global Health 2014; NCI AREA R21 Grant Review Panels 2005; DMP Study Section 2006, 2008-2009; Oak Ridge Associated Universities (ORAU) Center of Excellence Award Reviews 2007 – present; CDC Improving Public Health Practice through Translation Research (R18) 2007; U.S. Civilian Research & Development Foundation (CRDF) Cooperative Grants Program (CGP) 2007; Phillip Morris External Research Program, 2003-2007; SBIR/STTR Study Section 2006; NCI Chemoprevention Subcommittee E 2006; Substitute Chair and Reviewer for Early Detection Research Network, Clinical Epidemiology and Validation Centers 2004; Eppley NCI-Designated Cancer Center Site Visit 2004; Department of Veterans Affairs’ Medical Research Branch Grant Reviews 1992-1995 (nominated for their National Advisory Committee 2002); Clinical Nutrition Research Units Review Panel 2001; NCI Molecular Target Drug Discovery 2000; NCI Early Detection Research Network (EDRN) - Clinical and Epidemiologic Centers 2000; NCI Chemoprevention in Genetically-Identified High-Risk Groups Interactive Research and Development Projects 2000; NCI Chemoprevention Subcommittee E (as ad hoc, site visits involved) 1999-2000; American Society of Clinical Oncologists (ASCO), Cancer Genetics Trainer.

**OTHER NATIONAL COMMITTEES:** Gynecological Oncology Group (GOG), Member of the Experimental Medicine Committee (CEM) (1992-2010) and Member of Chemoprevention Committee (2000-2009); Chair of Developmental Therapeutics Subcommittee of the GOG CEM Committee 2006-2008; American Association for Cancer Research (AACR), Chairman of State Legislative Committee in the 1990’s.

**NATIONAL WORKSHOPS:** NCI Clinical Development of Small Molecules Workshop 2008; NCI Phase 0 Trials in Oncologic Drug Development 2007; Reviewer on Mock Study Section in Grant Writing Workshop for Clinicians, American Association for Cancer Research (AACR) Professional Advancement Series Section 2006, 2009; Co-Chair of Chemoprevention Workshop for the GOG Gynecologic Cancer Translational Research Retreat II 2000;

**INTERNATIONAL GRANT REVIEWS:** Italian Research Council 2002 – present; World Cancer Research Fund International 2010-11; University Grants Committee, University of Hong Kong 2006; Biotechnology and Biological Sciences Research Council (BBSRC – United Kingdom) 2006; Cancer Research UK (United Kingdom), 2002

**AD HOC REVIEW:** Over 75 Journals.

**STEPHENSON CANCER CENTER (PREVIOUSLY OUCI) APPOINTMENTS:** Scientific Review Committee 2002- present; Gynecologic Cancer Biospecimen Core Committee 2006-present; Co-Leader, Women’s Cancer Program 2011-2014; Co-Chair, Scientific Advisory Committee 2006-2009; Director, Women’s Cancer Program 2007-2009; Co-Director, Gynecologic Cancer Program 2001-2006.

**UNIVERSITY OF OKLAHOMA CLINICAL AND TRANSLATIONAL SCIENCE AWARD (CTSA):** CTSA P20 Planning Grant was Awarded; Co-Director, “Med into Grad” PhD Specialization Program 2009; Member, CTSA Grant Planning Committee 2006-2008; Chancellor of the Clinical and Translational Science Society (CTSS) 2007-2008; Member of the Clinical and Translational Science MS Program Executive Committee 2007-2008; Co-Chair of the Translational Working Group 2005

**UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER COMMITTEES:** Faculty Senate Appeals Committee 2014- present; Faculty Advisory Committee for the Core Laboratories 2006; Chair of Research and Graduate Student Affairs Committee 2006-2009; Clinical and Translational Science (CTS) Executive Committee 2006-present; Search Committee of Deputy Directory of the Basic and Translational Cancer Research Center 2007; Recruitment Committee, College of Pharmacy, Pharmaceutical Sciences Department Chair 2007; Vice Chair of the Institutional Biosafety Committee (IBC) 1995-2006; Chair of the Internal Review Committee of the Biostatistics and Epidemiology Graduate Program 2006; Clinical & Translational Science (CTS) Degree and Curriculum Committee 2006; Search Committee for Cancer Genetics Endowed Chair 2005-2006; Search Committee for Children’s Medical Research Institute Endowed Chair 2005-2006; Faculty Affair Liaison 2002; Outstanding Thesis/Dissertation Committee 2000-2010.

**DEPARTMENTAL COMMITTEES:** *Obstetrics and Gynecology:* Director of Research, Gynecologic Oncology 1995-present; Promotions Committee 2003-2014; Environmental Health and Safety Training Coordinator 1995-2003; Tuberculosis Coordinator 1996- 2003; Research Administration Liaison 1994-2003; *Biochemistry Department:* PhD Qualifying Exam Committees (1-2 per year, 1992-2014); Graduate Student Awards Committee 2007-2013; Faculty Search Committee 2008-2010; Student Admissions and Recruitment Committee 2004-2007; Dental/Pharmacy Course Curriculum Committee 2003-2004; Student Admissions and Advisory Committee 2002-2003; Student Advisory Committee 2001-02; General Examination Committee 2001-02; Graduate Program Curriculum/Review Committee 1995-97; Adjunct Faculty Review and Evaluation Committee 1997-2000; Student Recruitment Committee 2000-01

**EDUCATIONAL ADMINISTRATION:** Prepared grant applications to fund Translational Research Certificate for PhD Degrees (Director of Program); Served on committee to revise curriculum for systems based learning approach for Medical Students 2007 – 2008; Assisted in development of “Clinical and Translational Science Course 2005.

**COURSE DIRECTOR:** Foundations in Translational Research 2015-present.

**TEACHING:** Integrated Graduate Student Curriculum (2007-present) “Cellular Systems, Integration of Cell Death and Survival Pathways” (3 hrs); “Current Topics in Cancer Research Journal Club” (4 hrs) CTS Summer Scholar Program Lectures (2007-2013) “Clinical and Translational Science” (2 hrs, 2007-2013) and “The University of Oklahoma Cancer Institute” (1 hr); Clinical Bioinformatics (6 hrs, 2005); Biochemistry Department (2000-2006) prior to Integrated Curriculum “Laboratory Rotations” (20 hrs, 2 students/year) “Carcinogenesis and Chemoprevention” (2 hrs), “Molecular Mechanisms of Cancer” (1 hour), “Cancer Genetics/Biomarkers” (1.5 hrs), “Regulation of Gene Expression” (4.5 hours), “Oncogenes and Tumor Suppressor Genes” (4 hrs); “RNA Splicing Mechanisms” (4 hrs), “Current issues in Biomedical Research: Clinical Trials” (2 hrs), “Glycobiology (1.5 hrs); Biochemistry Curriculum (1992-2000) “DNA tumor viruses and Chemical Carcinogenesis” (4 hours), “DNA Sequencing and EMSA” (2 hrs), 7 week laboratory rotations for Graduate Students, “Advanced Topics in Human Molecular Genetics” (2 hrs); Dental Biochemistry (1999-2001) “Carcinogenesis” (1 hr); Departments of Pathology and Radiological Sciences (1993-2004) “ Oncogenes and Tumor Suppressor Genes” (1 hr).

**CHAIR OF THESIS/DISSERTATION COMMITTEES:** Five PhD students and two MS students (2001-2014)

**TRAINING OF POSTDOCTORAL FELLOWS:** Three Fellows trained, one currently faculty in academia, one a member of the NCI and another a Phase I Trial Director in Industry.

**GYN ONCOLOGY CLINICAL FELLOWS MENTORED:** (Over 24 fellows trained since 1994, over 40% currently in Academia)

**SERVICE ON OTHER DISERTATION/THESIS COMMITTEES:** Twentyfive PhD Committees (Four current), Three Masters Committees(Two Current) and Two PharMD Committees.

**CLINICAL FACULTY MENTORED:** Seven Assistant Professors mentored (1999-2013) each achieving national grant awards, peer-reviewed publications and academic advancement.

**RESIDENT RESEARCH PROJECTS MENTORED:** Four Residents (1997- 2003).

**MEDICAL STUDENT RESEARCH PROJECTS MENTORED:** Eleven Medical Students (1992-2013).

**UNDERGRADUATE STUDENT RESEARCH PROJECTS MENTORED:** Nine Students, two State-level awards (2003-2008).

**HIGH SCHOOL STUDENT/TEACHER RESEARCH PROJECTS MENTORED:**Twelve students and one teacher mentored. Three regional awards.

**PATENTS:** “Heteroarotinoids containing urea or thiourea linker” US Patent No. 6,586,460 issued 07/01/2003, Co-inventors: K. Darrell Berlin, PhD, Doris M. Benbrook, PhD, Eldon C. Nelson, PhD; “Treatment and Inhibition of Disease Conditions Using Flexible Heteroarotinoids” US Patent No. 7,612,107 issued 11/03/2009, Co-Inventors: Doris M. Benbrook, PhD, Suresh Guruswamy, PhD, Martin Turmin, MD

#### **CURRENT FUNDING**

***MD Anderson Moonshot Program Contract***, “Development of a Vaginal SHetA2 Formulation for Cervical Cancer and Dysplasia”, 2015, Total costs: \$30,000.

***Presbyterian Health Foundation Bridge Grant***, “Sensitization of Ovarian Cancer to DR5 Agonists” Role: PI, 2014-2015, Total direct costs: \$75,000.

***Presbyterian Health Foundation Seed Grant***, “Inhaled SHetA2 dry powder aerosols as novel treatment for tuberculosis” Role: Co-I, 2014-02015, Total direct costs: \$45,000.

***Presbyterian Health Foundation Bridge Grant***, “Optimizing targeting strategy for delivering NIR-activatable prodrugs to peritoneally metastasized ovarian cancers” Role: Co-I, 2014-2015, Total direct costs: \$75,000

***Chapman Foundation Collaboration Grant***, “Autophagy in Ovarian Cancer Therapeutics and Tumor Microenvironment” Role: Co-PI, Other Co-PI: Bulent Ozpolat, PhD at MD Anderson Cancer Center, 2013-2014, Total direct costs to Dr. Benbrook: \$45,000.

***Reynolds Center of Geriatric Nursing Excellence Interdisciplinary Seed Grant***, “Correlates of Quality of Life, Biomarkers, and Physical Activity in Older Women with Ovarian Cancer who Experience Chemotherapy-Induced Peripheral Neuropathy Pain (CIPN)” Role: Co-I, PI: Elana Cuaderes, PhD, R.N., 2014-2015, Total Direct Costs \$30,000.

***Reynolds Center of Geriatric Nursing Excellence Interdisciplinary Seed Grant***, “Descriptive Study of Cognitive Disturbances in Older Breast Cancer Survivors” Role: Co-I, PI: Melisa Craft, PhD APRN-CNS AOCN, 2014-2015, Total direct costs: \$30,000.

***Vice President for Research Seed Grant***, “Memory Consolidation and Cerebral Oxygenation in Elders with Mild Cognitive Impairment” Role: Co-I, PI: Barbara Carlson, R.N., PhD, 2014-2015, Total direct costs: \$29,884.02.

***Norman Faculty Investment Program, Norman Research Council***, “Memory Consolidation and Cerebral Oxygenation in Elders with Mild Cognitive Impairment”, Role: Co-I, PI: Michael J. Wegner, PhD, 2014-2015, Total direct costs: \$15,000.

**NCI U10 National Clinical Trials Network (NCTN)**, This project funds our participation in national clinical trials and translational research. Dr. Benbrook may be asked to perform translational research on some of the trials. Role: Co-I, PI: Robert Mannel, MD, Direct costs variable depending on contracts, 2014-2019.

### **PAST FUNDING.**

**National Research Grants as Principal Investigator.** Two NIH R01 grants, One NIH R03 grants, One NSF grant, One AICR grant and two Charitable Foundation Grants.

**Translational Drug Development Program Grants as Principal Investigator.** One Rapid Access to Preventive Intervention Development (RAPID), and One Rapid Access to Intervention Development (RAID), "grant.

**National Grants as Mentor, One for a Junior Faculty and one for a Postdoctoral Fellow.**

**NIH Center Planning Grants.** Involved in writing P20 grants awarded for NCI Cancer Research Center and NIH Clinical Translational Science Award to the University of Oklahoma Health Sciences Center.

**Five Local Research Grants as Principal Investigator.**

**Six National Research Grants as Co-Investigator.**

**Ten National Research Contracts as Principal Investigator.**

**Two Local Equipment Grants as Principal Investigator. Eight State-Wide Inter-Institutional Collaborative Grants**

**INVESTIGATIONAL NEW DRUG (IND) APPLICATIONS.** A Phase 0 Study of SHetA2 (NSC 72168) in Stage IB2-IVb Cervical Cancer (PIND #: 121262). Prepared by Doris M. Benbrook, PhD, PI: S. Scott McMeekin, MD (Clinical Trial), Co-I's: Doris M. Benbrook, PhD (Pharmacodynamics), Lucila Garcia-Contreras, PhD (Formulation), Sukyung Woo PhD (Pharmacokinetics)

**NATIONAL CLINICAL TRIALS AS TRANSLATIONAL RESEARCH CHAIR.** One ongoing and 12 Completed.

**DATA SAFETY AND MONITORING BOARD.** Chair, "Laser and TLR-Agonist Immunotherapy: A Novel Autologous Melanoma Vaccine Strategy" PI: Mark F. Naylor, MD, Co-I's: Kent Teague, Ph.D and Wei Chen, PhD. The board met bi-annually 2005-2009.

### **PUBLICATIONS.**

**Peer-Reviewed Research Articles, 77.**

**Peer-Reviewed Reviews, 8.**

**Book Chapters, 4.**

**Abstracts at National and International Meetings, >90**

**MORE THAN 100 INVITED LECTURES.**