

Doris M. Benbrook, Ph.D.
CURRICULUM VITAE

University of Oklahoma Health Sciences Center
Department of Obstetrics and Gynecology
Section of Gynecologic Oncology
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EDUCATION

1977 to 1981 North Central College, Naperville, IL
Bachelor of Arts, majors in Biology and Chemistry, minor in German.

1981 to 1985 Loyola University Medical Center
2001 South First Ave., Maywood, IL 60101
Ph.D. in Biochemistry, Mentor: Robert V. Miller, Ph.D.

POSTDOCTORAL EXPERIENCE

1985 to 1988 In the laboratory of Magnus Pfahl, Ph.D.
La Jolla Cancer Research Foundation,
10901 North Torrey Pines Road, La Jolla, CA 92037

1988 to 1991 In the laboratory of Nicholas C. Jones, Ph.D.
Imperial Cancer Research Fund, P.O. Box 123,
44 Lincolns Inn Fields, London WC2A. 3PX

UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER APPOINTMENTS

Department of Obstetrics and Gynecology, Gynecologic Oncology Section

2004 to present Professor and Director of Research
2009 to present Endowed Chair in Gynecologic Oncology
1997 to 2004 Associate Professor and Director of Research
1991 to 1997 Assistant Professor
1993 to present Director of Research

Department of Biochemistry and Molecular Biology

2005 to present Adjunct Professor
1997 to 2005 Adjunct Associate Professor
1993 to 1997 Adjunct Assistant Professor

Department of Genetic Counseling 2011- present Adjunct Professor

Graduate Faculty 1993 to present Associate Member

AWARDS AND HONORS

2011 North Central College Sesquicentennial Medal. Presented at the Rall Symposium "In recognition of your distinguished scientific career and gratitude for your service to our alma mater".

2009 First Place for best business plan in Oklahoma Governors Cup Competition. Submitted by a team of OU undergraduate interns, called Renephron, to commercialize Dr. Benbrook's Flex-Het drugs for polycystic kidney disease (PKD).

- 2009 Second Place for best business plan in the W. Reynolds Tri-State Collegiate Business Plan competition in May '09 in Las Vegas. Submitted by Renephron to commercialize Dr. Benbrook's Flex-Het drugs for polycystic kidney disease (PKD).
- 2005 Innovator of the Year On the Brink Award, *The Journal Record*
- 2004 Oklahoma Scientist of the Year awarded by the Oklahoma Academy of Science
- 2004 Woman of the Year Nominee awarded by the *Journal Record*.

Editor-in-Chief

Biologics: Targets & Therapy, Dove Medical Press, 2008-present

EDITORIAL AND ADVISORY 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

Native Americans in Biological Sciences Advisory Board (NABS), Oklahoma State University, 2005-2007.

Procter & Gamble Consultant, 1999-2002

Ad Hoc reviewer for *American Journal of Obstetrics and Gynecology*, *American Journal of Pathology*, *Analytica Chimica Acta*, *Anticancer Agents in Medicinal Chemistry*, *BBA - Molecular Cell Research*, *Biochemical Journal*, *Bioinformatics and Biology*, *Biomed Central Cancer*, *Blood*, *Cancer*, *Cancer Biology*, *Targets and Therapy*, *Cancer Chemoprevention and Pharmacology*, *Cancer Cell*, *Cancer Epidemiology*, *Cancer Cytopathology*, *Biomarkers & Prevention*, *Cancer Investigation*, *Cancer Investigation*, *Cancer Letters*, *Cancer Prevention Research*, *Cancer Research*, *Clinical Cancer Research*, *Clinical Ovarian Cancer*, *CRC Press*, *Experimental Cell Research*, *Current Cancer Therapy Reviews*, *Current Medicinal Chemistry*, *Fertility and Sterility*, *Gene*, *Gynecologic and Obstetrics Investigations*, *Gynecologic Oncology*, *International Journal of Cancer*, *International Journal of Molecular Science*, *Journal of Biochemistry*, *Journal of Cell Death*, *Journal of the National Cancer Institute*, *Journal of Neurochemistry*, *Journal of Reproductive Medicine*, *Journal of Surgical Oncology*, *Open Medicinal Chemistry Journal*, *Minireviews in Medicinal Chemistry*, *Molecular Cancer Therapeutics*, *Molecular and Cellular Endocrinology*, *Nutrition and Cancer*, *Oncogene*, and *Pharmaceutical Research*.

NATIONAL COMMITTEES AND SOCIETIES (2006 – PRESENT)

Member, Drug Discovery and Molecular Pharmacology (DMP) Study Section, 2009 – 2012

Chair, Session on 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

Chair, Cancer Diagnostics and Therapeutics SBIR/STTR AED Review, 2009

NCI Oncology Fellowship and AREA grants, NIH CSR, VED, 2005 – present, Chair (06/08, 09/08)

External Advisory Board Reviewer, New Mexico Cancer Center, 2009

Reviewer, Drug Discovery and Molecular Pharmacology (DMP) Study Section, 2008 - 2009

Member of NCI ZRG1 Cancer Biomarkers Study Section (CBSS), 2004 – 2008

Chair, Review Committee of NIH SBIR Topics 238, 239 and 270, 2009

Chair, Review Committee of NIH SBIR Topics 242 and 243, 2008

Chair, Review Committee of NIH SBIR Topics 238 and 239, 2007

Oak Ridge Associated Universities (ORAU) Center of Excellence Award Reviews, 2007 - present

Center for Disease Control (CDC), Improving Public Health Practice through Translation Research, (R18), 2007
Reviewer for U.S. Civilian Research & Development Foundation (CRDF) Cooperative Grants Program (CGP) competition, 2007
Reviewer for Phillip Morris External Research Program, 2003-2007
Drug Discovery and Molecular Pharmacology (DMP) Study Section, 2006
Session Chair: Retinoids and Cancer, FASEB Retinoid Meeting, 2006
Mock Study Section in Grant Writing Workshop for Clinicians, American Association for Cancer Research (AACR) Professional Advancement Series Section, 2006, 2009
Reviewer for NCI SBIR grants (ZCA1 SRRB-U (C1)), 2006
Co-Chair of Translational Research Session of the Ovarian Cancer State of the Art Meeting, sponsored by CTEP and GOG, 2005.
Chair of the National Cancer Institute (NCI) Chemoprevention Committee, Subcommittee E, Cancer Epidemiology, Prevention and Control, 2003-2005. Ad hoc review 2006.
Member of NCI Chemoprevention Committee, Subcommittee E, Cancer Epidemiology, Prevention and Control, 2000-2005.
Gynecological Oncology Group (GOG), Member of the Experimental Medicine Committee (CEM) (since 1992) and Member of Chemoprevention Committee (since 2000).
Chair, Developmental Therapeutics Subcommittee of the GOG CEM Committee, 2006 - present
Substitute Chair and Reviewer for SPORE in Ovarian-GYN Cancer, 2005
Substitute Chair and Reviewer for Early Detection Research Network, Clinical Epidemiology and Validation Centers, 2004
Reviewer, Eppley NCI-Designated Cancer Center Site Visit, January, 2004
Reviewer of Department of Defense Ovarian Cancer Grants, 2002 - 2004.
Department of Veterans Affairs' Medical Research Branch ad hoc grant reviewer since 1992 and nominated for their National Advisory Committee, 2002.
NCI Reviewer for "Clinical Nutrition Research Units", December 2001
Co-Chair of Chemoprevention Workshop for the Gynecologic Cancer Translational Research Retreat II, Chantilly, Virginia May 5-7, 2000.
NCI Scientific Review Group Subcommittee E, Cancer Epidemiology, Prevention and Control Temporary Member, April 2000.
NCI Reviewer for "Molecular Target Drug Discovery", 2000.
NCI Reviewer for "The Early Detection Research Network- Clinical and Epidemiologic Centers."
NCI Reviewer for "Chemoprevention in Genetically-Identified High-Risk Groups: Interactive Research and Development Projects".
NCI Chemoprevention Committee Site Visit Reviewer, June 1999 and January, 2000.
Consultant to Procter & Gamble, 1999-2002
American Association for Cancer Research, Chairman of State Legislative Committee.
American Society of Clinical Oncologists (ASCO), Cancer Genetics Trainer

NATIONAL WORKSHOPS

NCI Phase 0 Trials in Oncologic Drug Development, September 5, 2007
NCI Clinical Development of Small Molecules Workshop January 15, 2008

INTERNATIONAL GRANT REVIEWS

Reviewer, World Cancer Research Fund International, 2010-11
Reviewer for University Grants Committee, University of Hong Kong, 2006
Referee Biotechnology and Biological Sciences Research Council (BBSRC), 2006
Referee for the Italian Research Council, 2002 - 2005
Reviewer of grants for Cancer Research UK (United Kingdom), 2002

UNIVERSITY OF OKLAHOMA CANCER INSTITUTE (OUCI) APPOINTMENTS

2011 to present Co-Chair, Women's Cancer Program
2006 to 2009 Co-Chair, Scientific Advisory Committee
2007 to 2009 Director, Women's Cancer Program
2001 to 2006 Co-Director, Gynecologic Cancer Program
2002 to present Scientific Review Board Member
2006 to present OUCI Biospecimen Core Operations Committee

UNIVERSITY OF OKLAHOMA CLINICAL AND TRANSLATIONAL SCIENCE AWARD (CTSA)

2009 to Present Co-Director, "Med into Grad" PhD Specialization Program
2006 to 2008 Member, CTSA Grant Planning Committee
2007 to 2008 Chancellor, Clinical and Translational Science Society (CTSS)
2007 to 2008 Member, Clinical and Translational Science MS Program Executive Committee

UNIVERSITY OF OKLAHOMA COMMITTEES

Faculty Advisory Committee for the Core Laboratories, 2006
Chair, Research and Graduate Student Affairs Committee, 2006-2009
Member, CTSA 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, Internal Review Committee of the Epidemiology Graduate Program, 2006
Clinical & Translational Science Awards (CTSA) Degree and Curriculum Committee, 2006
Co-Chair, Translational Working Group, Clinical & Translational Science Awards (CTSA), 2005
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, 2000-2001

DEPARTMENTAL COMMITTEES

Obstetrics and Gynecology
 Director of Research, 1995 – present
 Promotions Committee – 2003 - present
 Environmental Health and Safety Training Coordinator, 1995- 2003
 Tuberculosis Coordinator, 1996- 2003
 Research Administration Liaison – 1994 - 2003
Biochemistry Department
 Graduate Program Curriculum/Review Committee, 1995-97
 Adjunct Faculty Review and Evaluation Committee, 1997-2000
 Student Recruitment Committee, 2000-01
 General Examination Committee, 2001-02
 Student Advisory Committee, 2001-02
 Student Admissions and Advisory Committee, 2002-2003
 Dental/Pharmacy Course Curriculum Committee, 2003-2004
 Student Admissions and Recruitment Committee, 2004-2007
 Graduate Student Awards Committee, 2007-2010
 Faculty Search Committee, 2008-2010

TEACHING AND EDUCATIONAL ADMINISTRATION

Translational Research Certificate for PhD Degrees (Director)

- Assisted Dean of the Graduate College to develop infrastructure and submit CTSA grant section to support this specialty.

Med into Science Initiative

- Service on committee to develop a Medical Speciality Certificate for PhD students and submit a grant to the Howard Hughes Medical School to Support this initiative.
- Developed Course “Clinical Validation of Basic Science Results”

Medical School Curriculum

- Molecular and Cellular Systems, Committee to Revise Curriculum for systems based learning approach 2007 – 2008

Clinical and Translational Science Award (CTSA) Summer Scholar Program 2007-present.

- Clinical and Translational Science (2 hours)
- The University of Oklahoma Cancer Institute (1 hour)

Clinical Bioinformatics (RADI5403, RADI5413)

Assisted in development of this new course in 2005 and lectured in:

- Structural Biology (1.5 hrs)
- Carcinogenesis, Chemoprevention and Cancer Genetics (1.5 hrs)
- Angiogenesis, molecular targets for treatment, diagnosis, monitoring & imaging (1.5 hrs)
- Cancer Metastasis and Immunity, treatment, diagnosis, monitoring & imaging (1.5 hrs)
- Lunch and Learn (2 hrs)

Integrated Graduate Student Curriculum.

- CSI and CSII, Cellular Systems, Apoptosis (1.5 hours) 2007-2009, Cell Death (2 hrs) 2011
- BMSC 5221 Cancer Journal Club (4 hours) 2002-2003, 2005-present
- BMSB 6100 Laboratory Rotations (20 hours) 2 students per year.
- BMSB6121 Molecular Mechanisms of Disease
 - Carcinogenesis and Chemoprevention (2 hours), 2004-2006
 - Molecular Mechanisms of Cancer (1 hour), 2006
- CELL 6331 Cancer Genetics/Biomarkers (1.5 hours) 2004- present
- Regulation of Gene Expression (4.5 hours), 2002 - 2003
- Oncogenes and Tumor Suppressor Genes (4 hours), 2001- 2003
- Nucleic Acids: RNA Splicing Mechanisms (4 Hours), 2000
- Current issues in Biomedical Research: Clinical Trials (2 Hours), 2000 – 2003

Biochemistry and Molecular Biology Department (Current).

- BIOC 6321 Glycobiology 1, Biomarkers (1.2 hours)
- BIOC 6221-002, Cellular and Molecular Biology Journal Club (1 hour)
- BIOC 6980 Research Project (Full time PhD thesis research of two students)

Biochemistry Curriculum prior to 2000.

- Biochemistry 6234: DNA tumor viruses and Chemical Carcinogenesis (4 hours)
- Biochemistry 5224: DNA Sequencing and EMSA (2 hours)
- Biochemistry 6224: 7 week laboratory rotations for Graduate Students.
- Biochemistry 6980: Chair of Ph.D. thesis committee of Shennan Lu.
- Biochemistry 6980: Chair of Ph.D. thesis committee of Suresh Guruswamy.
- Biochemistry 6502: Advanced Topics in Human Molecular Genetics (2 hours)
- Biochemistry 5970: Student Research Seminar, 1 hour per week

Other Curriculum.

- Dental Biochemistry: Carcinogenesis, 1 hour, 1999-2001
- Annual Lectures, Oncogenes and Tumor Suppressor Genes, Departments of Pathology and Radiological Sciences, 1993 - 2004.
- Ph.D. comprehensive qualifying written exams and qualifying oral examination committees
- Annual Obstetrics and Gynecology Grand Rounds Lectures with various topics.
- ASCO trainer in Cancer Genetics

GRADUATE STUDENTS MENTORED, CHAIR OF THESIS COMMITTEE

Shennan Lu, PhD	Biochemistry and Molecular Biology Currently NIH Employee	Ph.D. 2001
Suresh Guruswamy, PhD	Biochemistry and Molecular Biology Currently Academic Faculty	Ph.D. 2002
Shylet Chenedza, PhD	Biochemistry and Molecular Biology Currently Postdoc. Fellow.	Ph.D. 2009
Patience Masamha, PhD	Biochemistry and Molecular Biology Currently Postdoc. Fellow.	Ph.D. 2010
Pavrihtra Premkumar, BA	Genetic Counseling	M.S. in progress
Andrew Long	Biochemistry and Molecular Biology	Ph.D. in progress

POSTDOCTORAL FELLOWS

Tongzu Liu, MD, PhD	Currently in Dr. Benbrook's lab
Arindam Dhar, PhD	Postdoctoral Fellow in Dr. Benbrook's Lab, 1997-2000 Fellow, Interagency Oncology Task Force, (NCI/FDA) 2005-2008 Cancer Research Training Associate, (NCI) 2000-2005 GlaxoSmithKelin, Phase I Trial Director, 2008-present
Shennan Lu, PhD	Postdoctoral Fellow in Dr. Benbrook's Lab, 2001-2002 Currently NIH Employee

CLINICAL FELLOW RESEARCH MENTORED (40% Currently in Academia)

Evelyn Rosas Nuñez, M.D.	Gynecologic Oncology	1994-1995
Rick Erikson MD	Otorhinolaryngology	1994-1995
Cole Flanagan, M.D.	Gynecologic Oncology	1995-1996
Janet Larsen, M.D.	Maternal Fetal Medicine	1995-1996
Tim Zacheis, M.D.	Otorhinolaryngology	1995-1996
Jane Shen-Gunther, M.D.	Gynecologic Oncology	1996-1997
Paul A DiSilvestro, M.D.	Gynecologic Oncology	1996-1997
Todd Ivey, M.D.	Gynecologic Oncology	1997-1998
Michael Gold, M.D.	Gynecologic Oncology	1998-1999
Scott Kamelle, M.D.	Gynecologic Oncology	1999-2000
Avi Khafif, MD,	Otorhinolaryngology	1999-2000
Dennis Scribner, M.D.	Gynecologic Oncology	2000-2001
Todd Tillmanns, M.D.	Gynecologic Oncology	2000-2001
Natalie Gould, M.D.	Gynecologic Oncology	2001-2002
Teresa Rutledge, M.D.	Gynecologic Oncology	2001-2002
Camille Falkner, M.D.	Gynecologic Oncology	2002-2004
Daynelle Dearnley, M.D.	Gynecologic Oncology	2004-2005
Johnny Hyde, M.D.	Gynecologic Oncology	2005-2006
Granger Lanneau, M.D.	Gynecologic Oncology	2005-2006
Tashana Myers, M.D.	Gynecologic Oncology	2006-2007
Erin Tuller, M.D.	Gynecologic Oncology	2007-2008
Kathleen Moxley, M.D.	Gynecologic Oncology	2008-2009
Erin Bishop, M.D.	Gynecologic Oncology	2010-2011

SERVICE ON OTHER DISERTATION/THESIS COMMITTEES

Todd Corn	Biochemistry and Molecular Biology	Ph.D. 1995
Kim Kyker	Biochemistry and Molecular Biology	M.S. 1996
Shankar Sachithanandam	Radiological Sciences	Ph.D. 1997
Ahmed Mohamed Mahmoud Abou-Eisha,	Cairo University	Ph.D. 2000
Dustin Smith	Biochemistry and Molecular Biology	Ph.D. 2005
Richard Langeras	Biochemistry and Molecular Biology	Ph.D. transf.
Mathew S. Gibson	Cell Biology	Ph.D. 2007
Staphanie Si Liu	Biochemistry, University of Hong Kong	Ph.D. 2003
Chaitali Tophkhane	Pathology	Ph.D. 2007
Amy Knoll	Cell Biology	Ph.D., 2010
Bin Zhang	Cell Biology	Ph.D., 2010
Ann R. Howell	Pharmacy	PharmD/M.S. 2009
Krysten Farjo	Cell Biology	Ph.D. 2010
Feng Li	Biochemistry	Ph.D. 2010
Monica Draper	Cell Biology	Ph.D. transf.
Wei Wu	Cell Biology	Ph.D. 2011
Liao Xiaoyun	Pathology, University of Hong Kong	Ph.D. 2008
Madhu Unnikrishnan	Pathology	Ph.D. transf.
Jason Kesinger	Pharmacy	PharmD/M.S. 2011
Feng He	Biochemistry	Ph.D.
William Berry	Cell Biology	Ph.D.
Ravillha Durgadevi	Pathology	Ph.D.
Andrea Patterson	Microbiology and Immunology	Ph.D.
Shuai Wang	Pathology	Ph.D.

CLINICAL FACULTY MENTORED

Raffit Hassan, MD	Hematology Oncology	Assistant Professor	1999-2002
Karl Hanson, MD	Reproductive Endocrinology	Assistant Professor	2003-present
Abbas Shoberi, MD	Urogynecology	Assistant Professor	2003-present
Mark F. Naylor, MD	Dermatology	Member, OMRF	2004-2005
Kathleen Moore, MD	Gynecologic Oncology	Assistant Professor	2007-present
Wei-Qun Ding, PhD	Pathology	Assistant Professor	2007-present
Franklin Hays, PhD	Biochemistry	Assistant Professor	2010-present

GRADUATE RESEARCH PROJECTS MENTORED

Coy Heldermon	Biochemistry	1992
Kent Rodgers	Biochemistry	1993
Terry Kay Epperson	Biochemistry	1994
Hai Ying Qui	Biochemistry	1996
Shennan Lu	Biochemistry	1996
Suresh Guruswamy	Biochemistry	1997
Xiaohong Zhong	Biochemistry	1997
Bahara Ebadifar	Graduate Program in Biomedical Sciences (GPiBS) Research	Rotation 2003
Anne Murray	GPiBS Research Rotation	2003
Julie Scott	GPiBS Research Rotation	2003
Shylet Chenedza	GPiBS Research Rotation	2005
Patience Masamaha	GPiBS Research Rotation	2006
William Berry	GPiBS Research Rotation	2006
Laura Russell	GPiBS Research Rotation	2006
Yanfang Pan	Biochemistry Research Rotation	2007
Alysha Ann Rauhauser	University of Central Oklahoma	2007
Feng He	Biochemistry Research Rotation	2007-8

Xiaolei Liu

GPIBs Research Rotation`

2011

RESIDENT RESEARCH PROJECTS MENTORED

Dana Stone, M.D.	Obstetrics and Gynecology Resident	1997–1998
Carla Spencer, M.D.	Obstetrics and Gynecology Resident	1998-1999
Nefertiti DuPont, M.D.	Obstetrics and Gynecology Resident	1999–2003

MEDICAL STUDENT RESEARCH PROJECTS MENTORED

Rod Rogers	Medical Student Research Project	1992
Cassandra Onofre	Medical Student Summer Research Project	1993
Virginia Fishburne	Medical Student Summer Research Project	1997
Marylin Webster	Medical Student Summer Research Project	1998
Margaret P. O'Connell	Medical Student Summer Research Project	2005
Lauren Ritterhouse	MD/PhD Program Research Rotation	2006
Larissa Hines	Clinical and Translational Summer Scholar	2008
Christina Highley	Clinical and Translational Summer Scholar	2009
Mira Georgey	Clinical and Translational Summer Scholar	2009
Nasim Maryam Niroumand	Medical Student Summer Research Project	2010

UNDERGRADUATE STUDENT RESEARCH PROJECTS MENTORED

Amy Noll, B.S.	Summer Pre-graduate Student	2003
Ashley Hopkins	Summer Undergraduate Research Experience (SURE)	2003
Jen'nea Ose, B.S.	Biomedical Research Infrastructure Network (BRIN)	2003
Barbara Jeske	Summer Undergraduate Research Experience (SURE)	2004
Lance Gill	Oklahoma Biomedical Research Infrastructure Network	2004-5
Ann Nelson	Oklahoma Biomedical Research Infrastructure Network	2005-6
Chasity Jackson	Undergraduate Biomedical Education Program (UBEP)	2005
Oba Hughes	Oklahoma Biomedical Research Infrastructure Network	2007
Sheree McDaniel	Langston's Integrated Network College (LINC)	2008

HIGH SCHOOL STUDENT/TEACHER RESEARCH PROJECTS MENTORED

Anjan Shah	High School Student, Summer Academy	1992
Lulla Moore Wilson	Minority Program, High School Teacher, Summer	1992
Anjan Shah	School of Math and Science, Winter Semester	1992
Mary Ruth Boone	Minority Program, High School Student, Summer	1993
Kelly Jester	Summer Academy, Summer	1993
Regina Harper	Summer Academy, Summer	1994
Jacqueline Maliwat	Summer Minority Program,	1996
Ebony Allen	Summer Minority Program	1996
Kayla Brooks	Science Fair Project, Regional Winner	2001
Kelsie Brooks	Science Fair Project, Regional Winner	2003
Frank Han	Oklahoma School of Math and Science, Fall Semester	2008
Margaret Wang	Oklahoma School of Math and Science, Fall Semester	2008

PATENTS

Co-inventors: K. Darrell Berlin, PhD, Doris M. Benbrook, PhD, Eldon C. Nelson, PhD

Title: Heteroarotinoids containing urea or thiourea linker

US Patent No. 6,586,460

Issued: July 1, 2003

Co-Inventors: Doris M. Benbrook, PhD, Suresh Guruswamy, PhD, Martin Turmin, MD

Title: Treatment and Inhibition of Disease Conditions Using Flexible Heteroarotinoids

US Patent No. 7,612,107

Issued: November 3, 2009

Inventor: Doris Benbrook

Title: Treatment and Inhibition of Disease Conditions (Angiogenesis) Using Flexible Heteroarotinoids

Docket No. : 5864.042

Disclosure No.: 05HSC037

Co-inventor: Novel Orphan Receptor Interacting With Retinoid/Thyroid Hormone Receptor Subfamily
(Ref. No. 1212.017)

Co-inventor: Heteroarotinoids-Anticancer Agents with Receptor Specificity and TGase Activity.
Provisional Patent Docket No: OKL053/96897

CURRENT FUNDING

Oklahoma INBRE (IDeA Network of Biomedical Research Excellence) NIH/NCRR (P20RR016478)

PI: Darrin Akins, Ph.D

Role: Mentor of Wei-Qun Ding's Junior Faculty Award,

2009-2014, \$20,000 for percent effort over 4 years, (\$13,312,160 total direct cost)

PAST FUNDING

National Cancer Institute, National Institutes of Health (R01)

Mechanism of SHetA2 in Ovarian Cancer

Role: Principal Investigator

06/01/2005 – 05/31/2010, \$987,500

Rapid Access to Preventive Intervention Development (RAPID)

"Flexible Heteroarotinoids for Chemoprevention"

Role: Principal Investigator

2007 to 2011

University of Oklahoma Growth Fund

"Flex-Het Treatment for Polycystic Kidney Disease"

Role: Principal Investigator

2009 - 2011: \$50,000

Presbyterian Health Foundation - Equipment Grant

"Bringing OU Research to New Dimensions with Multiplex Technologies"

09/01/2008 – 08/31/2009, \$50,000.00

Role: Principal Investigator

Gynecologic Oncology Group (GOG)

"A Phase II Evaluation of Enzastaurin in the Treatment of Persistent or Recurrent Epithelial Ovarian
or Primary Peritoneal Carcinoma"

Role: Principal Investigator

2007 to completion, \$17,279

Gynecologic Cancer Foundation

The Role of Ribonucleotide Reductase Regulatory Subunit 1 (RRM1) and Excision Repair Cross Complementation Group 1 (ERCC1) in Determining Chemosensitivity for Advanced Ovarian Cancer
Principal Investigator: Kathleen Moore, MD
Role: Co-Investigator
2007-2008, \$50,000

American Cancer Society

Search for the Potential Targets for the Prevention of Carcinogenesis
Parent Grant: Marie Hanigan
Principal Investigator: Igor Dozmorov
Role: Collaborator
07/01/08 – 06/30/09, \$25,000, no cost extension to 06/30/10

Oklahoma INBRE (IDeA Network of Biomedical Research Excellence)

“Investigations of SHetA2 mediated Mitochondrial changes”
Principal Investigator: William Kelly, Ph.D., Southwestern Oklahoma State University
Role: Collaborator
05/01/07 – 04/30/08, \$50,000, \$15,383 subcontract to Dr. Benbrook

University of Central Oklahoma Basic Research Grant to Faculty

“Effects of heteroarotinoids on PKC activation and apoptosis in ovarian carcinoma organotypic cultures”
Principal Investigator: Dana Rundel, PhD, University of Central Oklahoma
Role: Collaborator
06/01/2007 to 05/31/2008, \$10,000

National Cancer Institute, National Institutes of Health (R01)

“A Murine Model of Endometrial Tumorigenesis.”
Principal Investigator: Paul Goodfellow at Washington University in Saint Louis
Role: Co-Investigator
04/01/04 – 03/31/07, \$74,996 subcontract to Dr. Benbrook’s lab

National Cancer Institute Program Planning Grant for NCI Cancer Research Centers

“Cancer Center Planning Grant.” (P20)
Director: Robert S. Mannel, MD
Role: Co-Director of the Women’s Cancer Program
7/01/02-6/30/08 \$925,084, no cost extension

National Cancer Institute, National Institutes of Health

“Gene Regulation of Glycan Antigen in Cancer Cells”
Principal Investigator: Richard Cummings, Ph.D.
Role: Collaborator
04/01/05 – 03/31/07, \$200,000

Gynecologic Oncology Group

“Lab Analysis for GOG0207 Phase II Trial of Celecoxib for CINIII”
Role: Principal Investigator
04/01/05 to 03/31/07, \$64,028

Rapid Access to Intervention Development (RAID)

“SHetA2 will Inhibit Cancer Recurrence Without Retinoid-Associated Toxicities.”

Role: Principal Investigator

\$2,083,000 for preclinical testing of SHetA2., 2003-2006

Oklahoma INBRE (IDeA Network of Biomedical Research Excellence)

“Investigations of SHetA2 mediated Mitochondrial changes”

Principal Investigator: William Kelly, Ph.D.

Role: Collaborator

06/01/06 – 12/31/06, \$50,000, \$15,383 subcontract to Dr. Benbrook

National Cancer Institute, National Institutes of Health (R03)

“Steroids and Stem Cells in Carcinogenesis.”

Role: Principal Investigator

09/30/04 – 08/31/06, \$100,000

Mary Kay Ash Charitable Foundation

“Mechanism of ER Activation in Thyroid Hormone Administration in Breast Cancer Survivors.”

Role: Principal Investigator

07/01/04 - 06/30/06, \$100,000

Oklahoma Center for the Advancement of Science and Technology (OCAST)

“Does HPV16 E5 affect EGF Receptor Endocytosis and Signaling?”

Principal Investigator: Brian Ceresa, Ph.D.

Role: Co-Investigator

07/01/03-06/30/05, \$100,000

Oklahoma INBRE (IDeA Network of Biomedical Research Excellence)

“Investigations of SHetA2 mediated Mitochondrial changes in Human Cancer Organotypic Cultures”

Principal Investigator: William Kelly, Ph.D., Southwestern Oklahoma State University

Role: Collaborator

06/01/05 – 12/31/05, \$50,000, \$15,383 subcontract to Dr. Benbrook

Gynecologic Oncology Group

“Analysis for GOG229-B, GOG230-B, GOG-231-B Stage I”

Role: Principal Investigator

07/01/02 to 06/30/04 \$25,290

Proxima Concepts LTD, London, England, UK

“Agreement Using Proxima Technology to Screen Libraries of Recombinant Probes”

Role: Principal Investigator

12/22/04 – 5/31/05, \$6,078

National Cancer Institute, National Institutes of Health (R01)

“Mechanism & Potential of Retinoid & DNA Damage Therapy.”

Role: Principal Investigator

07/01/99 – 06/30/04 \$310,555 direct

Oklahoma Biomedical Research Infrastructure Network (BRIN) Collaborative Grant

“Is Retinoid Induced Cell Apoptosis Mediated by Superoxide Radical Anion Production?”

Principal Investigator: William J. Kelly, Ph.D., Southwestern Oklahoma State University

Role: Collaborating Investigator

02/01/04-06/30/04, \$50,000, \$15,383 subcontract to Dr. Benbrook

Novartis Pharmaceutical through PRA International
Phase II Trial of Gleevec (Imatinib Mesylate Formerly Known as STI571) in Patients with CD1q17(+)
Gynecologic Malignancies
Principal Investigator: D. Scott McMeekin, M.D.
Role: Co-Investigator
November 1, 2002-October 31, 2004, \$65,882

Procter & Gamble
"Determination of Retinoid X Receptor Ligand Structure-Function Properties"
Role: Principal Investigator
02/01/02 – 06/15/02 \$48,000

Cancer Research Foundation of America (CRFA) Fellowship
"Human Papillomavirus and Epidermal Growth Factor Receptor as Biomarkers of Retinoid Cervix
Cancer Chemoprevention"
Postdoctoral Fellow: Shennan Lu
Role: Principal Investigator
01/15/00 – 01/14/03 \$60,000

NeoPharm
"Develop and Perform ELISA's for Neo-MS-02 Clinical Trial"
Role: Principal Investigator
05/01/2000- 06/30/02, \$72,000

Procter & Gamble
"Determination of Retinoid Receptor Transactivation Properties"
Role: Principal Investigator
07/01/99 – 09/01/99, \$8890

Mary Kay Ash Charitable Foundation
"Development of Retinoids and Response Biomarkers for Ovarian Cancer."
Role: Principal Investigator
07/01/98 - 06/30/00 \$90,864 direct, \$9,136 indirect

American Institute for Cancer Research (AICR)
"Ligand Activation of Peroxisome Proliferator-Activated Receptors in Rodent Mammary Tumor
Models.",
Principal Investigator: Stephen Glore, Ph.D.
Role: Collaborator
01/01/98-12/01/00 \$100,000

National Cancer Institute, National Institutes of Health (R01)
"Biological Activity of Heteroarotinoids."
08/01/96 - 11/30/99 \$981,456 direct, \$170,000 indirect
Principal Investigator: Eldon C. Nelson, Ph.D., Oklahoma State University
Role: Co-investigator
08/01/96 – 12/01/99 \$269,761 direct, \$124,190 indirect

American Institute of Cancer Research, 94A63
"Carotenoid Effects on Transcription and Growth in Tumors."
Role: Principal Investigator
07/01/94 - 06/30/96 \$100,000 direct, \$10,000 indirect.

The Presbyterian Health Foundation,
"Radiation and Retinoid Effects on Cervical Cancer."
Role: Principal Investigator
01/01/94 - 01/01/95 \$25,000 direct

National Science Foundation, MCB-9209479,
"DNA Binding Specificities of cJun Dimers."
Role: Principal Investigator
08/01/92 - 01/31/94 \$16,200, \$1,800 indirect.

Milheim Foundation for Cancer Research, 92-14
"Retinoids, cJun and Cervical Cancer."
Role: Principal Investigator
07/01/92 - 06/30/93 \$14,000 direct

Oklahoma Medical Alumni Association,
"Retinoids, cJun and Cervical Cancer."
Role: Principal Investigator
09/01/92 - 08/31/93 \$20,000 awarded, \$11,000 accepted due to overlap with other funding.

Presbyterian Health Foundation, Research Equipment Repair Fund,
Role: Principal Investigator
1992, \$5,000 for repair of an ultracentrifuge.

ONGOING CLINICAL TRIALS AND TRANSLATIONAL RESEARCH

A Phase II evaluation of Brivanib (BMS582664), an oral, multitargeted growth factor tyrosine kinase inhibitor in the treatment of recurrent or persistent endometrial carcinoma.
Gynecologic Oncology Group (GOG) Protocol #0229
Study Chair: Matthew Powell, MD
Scientific Collaborator: Doris M. Benbrook, Ph.D.

A Randomized Double-Blind Phase II Trial of Celecoxib, a Cox 2 Inhibitor, in the Treatment of Patients with Cervical Intraepithelial Neoplasia 3 (CIN3).
Gynecologic Oncology Group (GOG) Protocol #0207
Study Chair: Janet Rader, M.D., Translational Research Chair: Doris M. Benbrook, Ph.D.

A Randomized, Controlled Phase II Evaluation of Megestrol in Different Dose and Sequence in the Treatment of Endometrial Intraepithelial Neoplasia (EIN) From A Referred Cohort of Atypical Endometrial Hyperplasia (AEH) or EIN
Gynecologic Oncology Group (GOG) Protocol #0224
Study Chair: Michael Method, MD
Collaborating Scientist: Doris M. Benbrook, PhD

A Phase II Evaluation of Brivanib (BMS582664), an Oral, Multitargeted Growth Factor Tyrosine Kinase Inhibitor in the Treatment of Recurrent or Persistent Endometrial Carcinoma
Gynecologic Oncology Group (GOG) Protocol #0229
Study Chair: Matthew Powell, MD
Scientific Collaborator: Doris M. Benbrook, PhD

A Randomized Phase III trial of maintenance chemotherapy comparing 12 monthly cycles of single agent paclitaxel or Xyotax (CT-2103) (IND#70177) versus no treatment until documented relapse in women with advanced ovarian or primary peritoneal cancer who achieve a complete clinical response to primary platinum/Taxane chemotherapy. Gynecologic Oncology Group (GOG) Protocol #0212

Study Chair: Maurie Markman, M.D.

Scientific Collaborator: Doris M. Benbrook, Ph.D.

COMPLETED CLINICAL TRIALS AND TRANSLATIONAL RESEARCH

A Phase II Evaluation of Enzastaurin in the Treatment of Persistent or Recurrent Epithelial Ovarian or Primary Peritoneal Carcinoma, Gynecologic Oncology Group (GOG) Protocol #170J

Study Chair: Lydia Usha, M.D., Scientific Collaborator: Doris M. Benbrook,

A phase II evaluation of thalidomide in the treatment of recurrent or persistent endometrial carcinoma.

Gynecologic Oncology Group (GOG) Protocol #0229-B

Study Chair: Scott McMeekin, M.D.

Translational Research Chair: Doris M. Benbrook, Ph.D.

A phase II evaluation of thalidomide in the treatment of recurrent or persistent carcinosarcoma of the uterus.

Gynecologic Oncology Group (GOG) Protocol #0230-B

Study Chair: Scott McMeekin, M.D.

Translational Research Chair: Doris M. Benbrook, Ph.D.

A phase II evaluation of thalidomide in the treatment of recurrent or persistent leiomyosarcoma of the uterus.

Gynecologic Oncology Group (GOG) Protocol #0231-B

Study Chair: Scott McMeekin, M.D.

Translational Research Chair: Doris M. Benbrook, Ph.D.

A randomized study of tamoxifen versus thalidomide in patients with biochemical-recurrence-only epithelial ovarian cancer, cancer of the fallopian tube, and primary peritoneal cancer after first line chemotherapy.

Gynecologic Oncology Group (GOG) Protocol # 0198

Study Chair: Jean A. Hurteau, M.D.

Translational Research Chair: Doris M. Benbrook, Ph.D.

Comparison of Glycoprotein Expression and T-Synthase Function in Primary versus Metastatic Tumors.

Gynecologic Oncology Group (GOG) Protocol #0221

Study Chair: Michael Gold, M.D.

Study Co-Chairs: Doris M. Benbrook, Ph.D., Richard Cummings, Ph.D., William Rodgers, M.D.

Phase II Trial of Gleevec (Imatinib Mesylate Formerly Known as STI571) in Patients with CD1q17(+) Gynecologic Malignancies

Principal Investigator: D. Scott McMeekin, M.D.,

Translational Research Scientist Doris M. Benbrook, Ph.D.

DATA SAFETY AND MONITORING BOARDS

2005-2009 Chair, "Laser and TLR-Agonist Immunotherapy: A Novel Autologous Melanoma Vaccine Strategy" Principal Investigator: Mark F. Naylor, MD, Co-Investigators: Kent Teague, Ph.D, Wei Chen, Ph.D. Meets every 6 months.

PUBLICATIONS

1. Benbrook, D.M. and Miller, R.V. (1986) Effects of Norfloxacin on DNA metabolism in pseudomonas aeruginosa. *Antimicrobial Agents and Chemotherapy*, **29**: 1-6. PMID:3015000.
2. Benbrook, D. & Pfahl, M. (1987) A Novel Thyroid Hormone Receptor Encoded by a cDNA Clone from a Human Testis Library. *Science*, **238**: 788-791. PMID:3672126.
3. Pfahl, M. & Benbrook, D. (1987) Nucleotide Sequence of cDNA Encoding a Novel Thyroid Hormone Receptor. *Nucleic Acids Research*, **15**: 9613. PMID:3684612.
4. Benbrook, D., Lernhardt, E. & Pfahl, M. (1988) A New Retinoic Acid Receptor Identified from a Hepatocellular Carcinoma. *Nature*, **333**: 669-672. PMID:2836738.
5. Benbrook, D.M. & Jones, N.C. (1990) The Heterodimerization of Creb and Jun. *Oncogene*, **5**: 295-302. PMID:2138276.
6. Benbrook, D.M. & Jones, N.C. (1994) Different Binding Specificities and Transactivation of Variant CRE's by CREB complexes. *Nucleic Acids Research*, **22**: 1463-1469. PMID:8190638.
7. Apfel, R., Benbrook, D., Lernhardt, E., Ortiz, M.A., and Pfahl, M. (1994) A novel orphan receptor specific for a subset of thyroid hormone-response elements and its interaction with the retinoid/thyroid hormone receptor subfamily. *Molecular and Cellular Biology*, **14**: 7015-7035. PMID:7935418.
8. Benbrook, D., Rogers, R., Medlin, M., and Dunn, S.T. (1995) Immunohistochemical analysis of differentiation and proliferation in organotypic cultures of cervical tumor cell lines. *Tissue and Cell*, **27**(3): 269-274. PMID:7645007.
9. Benbrook, D. M., Shen-Gunther, J., Nuñez, E.R., Dynlacht, J.R. (1997) Differential retinoic acid radiosensitization of cervical carcinoma cell lines. *Clinical Cancer Research*, **3**: 939-945. PMID:9815769.
10. Johnson, G.A., Mannel, R.S., Khalifa, M., Walker, J.L., Wren, M., Min, K.-W., Benbrook, D.M. (1997) Epidermal growth factor receptor in vulvar malignancies and its relationship to metastasis and patient survival. *Gynecological Oncology*, **65**: 425-429. PMID:9190969.
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12. Miller, A.M., Sahl, W.J., Brown, S.A., Young, S.K., Quinlan, C.M., Patel, P.R., Benbrook, D.M., Naylor, M.F. (1997) The role of human papillomavirus in the development of pyogenic granulomas. *International Journal of Dermatology*, **38**: 101-105. PMID:9352408.
13. Benbrook, D.M., Madler, M.M., Spruce, L.W., Birckbichler, P., Nelson, E.C., Subramanian, S., Weerasekare, G.M., Gale, J.B., Patterson, Jr., M.K., Wang, B., Wang, W., Lu, S., Rowland, T.C., DiSilvestro, P., Berlin, K.D., Lindamood, C., Hill, D.L. (1997) Biologically active heteroarotinoids exhibit anticancer activity and decreased toxicity. *Journal of Medicinal Chemistry*, **40**: 3567-3583. PMID:9357524.
14. Madler, M.M., Klucik, J., Soell, P.S., Brown, C.W., Liu, S., Berlin, K.D., Benbrook, D.M., Birckbichler, P.J., Nelson, E.C. (1998) Lithium hypochlorite-chlorox as a novel oxidative mixture for methyl ketones and methyl carbinols. *Organic Preparations & Procedures International*, **30**: 230-234.

15. Benbrook, D.M., Subramanian, S., Gale, J.B., Liu, S., Brown, C.W., Boehm, M.F., Berlin, K.D. (1998) Synthesis and characterization of heteroarotinoids demonstrates structure-specificity relationships. *Journal of Medicinal Chemistry*, **41**: 3753-3757. PMID:9733501.
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18. Liu, S. Berlin, K.D., Simms-Kelley, M.D., Nelson, E.C., and Benbrook, D.M. (1999) Optimization and Synthesis of (*E*)-4-[2-(3,4-Dihydro-4,4-dimethyl-2*h*-1-benzopyran-6-yl)-1-propenyl]benzoic Acid-11-[¹⁴C]. *Journal of Labelled Compounds and Radiopharmaceuticals*, **42**: 789-796.
19. Dhar, A., Liu, S., Berlin, K.D., Madler, M.M., Ivey, R.T., Birckbichler, P.J., Lu, S., Zacheis, D., Brown, C.W., Klucik, J., Nelson, E.C., Benbrook, D.M. (1999) Synthesis and Structure-Activity Relationships of Nitrogen Heteroarotinoids. *Journal of Medicinal Chemistry*, **42**: 3602-3614. PMID:10479291.
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23. Guruswamy, S., Lightfoot, S., Gold, M., Hassan, R., K. Darrell Berlin, Ivey, T.R., Benbrook, D.M. (2001) Effects of Retinoids on the Cancer Phenotype and Apoptosis in Organotypic Cultures of Ovarian Carcinoma. *Journal of the National Cancer Institute*, **93**: 516-525. PMID:11287445.
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30. Liu, S., Brown, C.W., Berlin, K.D., Dhar, A., Guruswamy, S., Brown, D., Gardner, G.J., Birrer, M., J., Benbrook, D.M. (2004) Synthesis of flexible sulfur-containing heteroarotinoids that induce apoptosis and reactive oxygen species with discrimination between malignant and benign cells. *Journal of Medicinal Chemistry*, **47**: 999-1007. PMID:14761202.
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35. Zhang Y. Hua Y. Benbrook D.M. Covey J.M. Dai G. Liu Z. Chan K.K. High performance liquid chromatographic analysis and preclinical pharmacokinetics of the heteroarotinoid antitumor agent, SHetA2. (2006) *Cancer Chemotherapy & Pharmacology*. **58**(5):561-9, 2006. PMID:16534614.
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59. Hurteau, J., Brady, M.F., Darcy, K.M., McGuire, W.P., Edmonds, P., Pearl, M.L. Ivanov, I., Tewari, K.S., Mannel, R.S., Zanotti, K., Benbrook, D.M. (2010) Randomized Phase III Trial of Tamoxifen versus Thalidomide in Women with Biochemical-Recurrent-Only Epithelial Ovarian, Fallopian Tube or Primary Peritoneal Carcinoma after a Complete Response to First-Line Platinum/Taxane Chemotherapy with an Evaluation of Serum Vascular Endothelial Growth Factor (VEGF): A Gynecologic Oncology Group Study. *Gynecologic Oncology*, **119**:444-450. PMID:20846715
60. Zheng, J., Lou, J.R., Zhang, X.-X., Benbrook, D.M., Hanigan, M.H., Lind, S.E., Ding, W.Q. (2010) N-acetylcysteine interacts with copper to generate hydrogen peroxide and selectively induce cancer cell death. *Cancer Letters*, **298**(2):186-94, PMID: 20667650
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62. Usha, L., Sill, M. W., Darcy, K. M., Benbrook, D. M., Hurteau, J. A., Michelin, D. P., Mannel, R. S., Hanjani, P., De Geest, K., Godwin, A. K. (2011) A Gynecologic Oncology Group phase II trial of the protein kinase C-beta inhibitor, enzastaurin and evaluation of markers with potential predictive and prognostic value in persistent or recurrent epithelial ovarian and primary peritoneal malignancies. *Gynecologic Oncology* **121**:455-461. PMID:21414654
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REVIEWS

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BOOK CHAPTERS

1. Pfahl, M., Payne, J., Benbrook, D. & Wu, K.C. (1988) Differential Activation of a Hormone-Responsive Element in Various Cell Lines. *Steroid Hormone Action*, pp. 161-168.
2. Benbrook, D.M., Tonetti, D.A. & Miller, R.V. (1989) DNA Gyrase of *Pseudomonas Aeruginosa*: Inhibition by Quinolones. *Proceedings International Telesymposium on Quinolones*, Fernandez, P.B. (Ed.) J.R. Prous Science Publishers, pp.171-186.
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ABSTRACTS AND MEETING PRESENTATIONS

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5. Benbrook, D. M., Heldermon, C., Nunez, E.R., and Waliszewski, P. (1994) Retinoic acid receptor RAR β effects in cervical tumor cell lines. *Diet and Cancer: Molecular Mechanisms of Interactions, American Institute of Cancer Research.*
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65. Ju, T., Lanneau, G.S., Gautam, T., Wang, Y., Xia, B., Stowell, S.R., Willard, M.T., Benbrook, D.M. Hanigan, M.H.. Cummings, R. D. Human tumor antigens arising from mutations in Cosmc Proceedings of the American Association for Cancer Research 48:406, 2007
66. Chenedza, S. Liu, T., Benbrook, D.M. SHetA2 Effects on Thymidine Phosphorylase and NF- κ B activity. AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics, October 22-26, 2007

67. Masamha, C. P., Liu, T., Benbrook, D.M. SHetA2 targets cyclin D1 for proteasomal degradation through a GSK3 β -independent mechanism leading to G1 cell cycle arrest. AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics, October 22-26, 2007. Published in *Molecular Cancer Therapeutics* 6(12):3372S-3372S, Dec. 2007
68. Liu, T. Masamha, C.P., Chenedza, S., Benbrook, D.M. Regulation of apoptosis, cell cycle progression and differentiation by SHetA2 in renal cancer cells is associated with alterations in Bcl-2, Cyclin D1 and E-Cadherin proteins. AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics, October 22-26, 2007
69. Chenedza, S., Benbrook, D.M. Effects of SHetA2 on I κ B α and NF- κ B in Ovarian Cancer. NF-kappaB Keystone Symposium, February 12-17, 2008. Published in *Molecular Cancer Therapeutics*, 6 (12): 3442S-3443S, Dec. 2007
70. Masamha, C.P. Liu, T. Benbrook, D.M. Elucidation of the roles of cyclin D1 and up- and down-stream effectors in the mechanism of SHetA2 induced G1 cell cycle arrest. 2008. Abstract # 143. The Cell Cycle. Cold Spring Harbor Laboratory, Cold Springs Harbor, New York. p142
65. Chenedza, S., Benbrook, D. M. Inhibition of NF- κ B Activity By SHetA2 Overcomes Tumor Necrosis Factor-Alpha Resistance in Ovarian Cancer Cells. Poster Presentation. Third Annual NIH National Graduate Student Research Festival. September 11 - 12, National Institutes of Health, Bethesda, MD.
66. McDaniel, S., Benbrook, D. M. Deciphering Structural Features Important for Heteroarotinoid Growth Inhibition Activity in Normal and Cancerous Ovarian Cells. Poster Presentation at 2008 Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) National Conference being held in Atlanta, GA, October 23-27, 2008.
67. Ju, T.Z., Lanneau, G.S., Gautam, T., Wang, Y.C., Xia, B.Y., Stowell, S.R., Willard, M.T., Wang, W.Y., Xia, J.Y., Zuna, R.E., Laszik, Z., Benbrook, D.M., Hanigan, M.H., Cummings, R.D. Anticancer Research, 28(5C): 3337-3337, Meeting Abstract: 315, Sep-Oct, 2008
67. Moxley, K. Dozmorov, I., Lightfoot, S., Benbrook, D.M. Dynamics of DMBA-induced transformation and gene expression in endometrial organotypic cultures. Proceedings of the AACR 100th Annual Meeting 2009 in Denver, CO, Abstract #3305.
68. Masamha, P. Benbrook, D.M. p21 prevents aberrant cyclin E2 expression from interfering with G1 arrest caused by SHetA2-induced cyclin D1 loss in ovarian cancer cell lines. roceedings of the AACR 100th Annual Meeting 2009 in Denver, CO, Abstract #1280.
69. Chenedza, S., Benbrook, D.M. Sensitization of ovarian cancer cell lines to death receptor ligands by the flexible heteroarotinoid (Flex-Het), SHetA2. AACR 100th Annual Meeting 2009 in Denver, CO, Abstract #5121.
71. Usha, L., Sill, M.W., Darcy, K.M., Benbrook, D.M., Hurteau, J., Michelin, D.P., Mannel, R.S, Hanjani, P., DeGeest, K., Godwin, A. A Gynecologic Oncology Group phase II trial of the protein kinase C-beta inhibitor, enzastaurin and evaluation of markers with potential predictive and prognostic value in persistent or recurrent epithelial ovarian and primary peritoneal malignancies. *Gynecologic Oncology* 116:S16-S16 Suppl. 1, 2010.
71. Hurteau, J., McGuire, W., Darcy, K., Pearl, M.L., Ivanov, L., Tewari, K., Mannel, R. S., Zanotti, K.M., Benbrook, D. M. A Randomized Phase III Trial of Tamoxifen versus Thalidomide in Women with Biochemical-Recurrent Only Epithelial Ovarian, Fallopian Tube or Primary Peritoneal Carcinoma with

an Evaluation of Serum Vascular Endothelial Growth Factor: A Gynecologic Oncology Group Study. Society of Gynecologic Oncology 2010

72. Moxley, K., Benbrook, D., Moore, K., Zuna, R. The role of single-nucleotide polymorphisms in the ERCC1 gene in predicting the sensitivity of epithelial ovarian carcinoma to platinum-based chemotherapy and overall patient survival *Gynecologic Oncology* 116: S154-S155 Suppl. 2010
73. Zakharov, A.D., Kabirov, K.K., Nikolić, D., Chen, L., Mankovskaya, I., van Breemen, R.B., Benbrook, D.M., Kapetanovic, I.M., Lyubimov, A.V. Analysis of a new chemo preventative agent SHetA2 and its metabolites in Beagle dog liver, American Association for Cancer Research Annual Meeting, Chicago, IL March-April, 2012.

INVITED LECTURES

1. "Interaction of CREB and Jun transcription Factors" September 1991
Department of Microbiology, Oklahoma State University
2. "Interaction of CREB and Jun Transcription Factors" September 1991
Department of Biochemistry and Molecular Biology, University of Oklahoma
3. "Effects of Retinoids on Organotypically Grown Tumors" 1993
Department of Biochemistry and Molecular Biology, Oklahoma State University
4. "The Influence of Diet and Retinoic Acid on Cancer" 1993
Science Forum, Combined NIH Training Grants Meeting
Oklahoma Memorial Research Foundation
5. "Retinoid Effects on Organotypically Grown Cervical Tumor Tissue" 1993
Department of Anatomy, University of Oklahoma
6. "Radiation and Retinoid Effects on Cervical Cancer" 1994
Department of Pathology , University of Oklahoma
7. "Drug Discovery and Design" 1994
Premed Club, University of Oklahoma Undergraduate School, Norman, Oklahoma
8. "Translational Research: Studying the Relationship Between Nutrition and Cancer"
November 1995, Obstetrics and Gynecology Grand Rounds, University of Oklahoma
9. "The Food You Eat Can Change You" November 1997
The Science Forum at the Oklahoma Medical Research Foundation
10. "Oncogenes and Tumor Suppressor Genes" May 1997
Obstetrics and Gynecology Grand Rounds, University of Oklahoma
11. "Oncogenes and Tumor Suppressor Genes" June 1997
Cancer Conference at INTEGRIS Baptist Medical Center, Oklahoma City, Oklahoma
12. "Prevention and Treatment of Cervical Cancer with Synthetic Retinoids" July 1997
Drug Dynamic Institute, University of Texas at Austin, Texas
13. "Cancer Genetics" October 1997
Womens Health Symposium, Marriot Hotel, Oklahoma City, Oklahoma
14. "Potential and Molecular Markers for 4HPR in Chemoprevention of Ovarian Cancer"
July 1998, Gynecological Oncology Group Semi-annual Meeting, Toronto, Ontario

15. "Translational Research to Develop Retinoids for Gynecological Cancers" September 1998
Department of Cellular Biology, Louisiana State University, Shreveport, LA
16. "Translational Research to Develop Retinoids for Gynecological Cancers" September 1998
Department of Biochemistry and Molecular Biology, University of Oklahoma HSC
17. "Translational Research to Develop Retinoids for Gynecological Cancers" September 1998
Department of Cellular and Molecular Medicine, University of Ottawa, Ottawa, Ontario
18. "Translational Research to Develop Retinoids for Gynecological Cancers" October 1998
Oklahoma Memorial Research Foundation, Oklahoma City, OK
19. "Anti-AP1 activity of Retinoids: Correlation with Growth Inhibition and Radiosensitization"
February 1999, Steroid Hormone Receptor Group, Oklahoma City, OK
20. "Organotypic Culture Models of Gynecological Cancer and Disease" March 1999
Obstetrics and Gynecology Grand Rounds University of Oklahoma HSC
21. "Adenoviral p53 Gene Therapy for Ovarian Cancer" February 2000
"Health Check" News Channel 4
22. "Molecular Biological Techniques" February, 2000
Obstetrics and Gynecology Grand Rounds University of Oklahoma HSC
23. "Molecular Advances in Cancer Therapy" March, 2000
Academy of Medicine, Oklahoma City, OK
24. "Molecular Mechanisms of Retinoids Against Gynecologic Cancers" June 2000
Federation of the American Association of Experimental Biology (FASEB)
Special Meeting on Retinoids, Copper Mountain Colorado
25. "Retinoids, not just for Acne Anymore" September 2000
Oklahoma Memorial Research Foundation, Oklahoma City, OK
26. "Molecular Mechanisms of Retinoid Drugs" October 2000
Shanghai Institute of Biochemistry, Shanghai, China
27. "Tumor Suppressor Genes and DNA Tumor Viruses" April, 2001
Annual Spring Meeting of the Texas Section of the American Association for Clinical Chemistry.
Sam Noble Historical Museum, Norman, OK
28. "Retinoids, Apoptosis and Cancer", June 7, 2001
Policlinico P. Giaccone, Palermo, Italy
29. "Development of Retinoids for Chemoprevention" June 21, 2001
Dip. Sc. Farmaceutiche, Ferrara, Italy
30. "Refining Retinoids with Heteroatoms" March 14, 2002
Procter & Gamble, Cincinnati, OH
31. "Relations of Differentiation, Apoptosis and MUC1 in Retinoid Growth Inhibition of
Ovarian Cancer" June 24th, 2002
2002 FASEB Summer Research Conferences, Retinoids, Tucson, AZ

32. "Molecular Biology of Endometrial Cancer" December 5-6, 2002
Controversies in the Management of Gynecologic Malignancies Conference 3, Washington, D.C.
33. "Organotypic Models of Carcinogenesis", December 13, 2002
Cancer Group, Oklahoma Memorial Research Foundation, Oklahoma City, OK
34. "Biomarkers, Histology & Stem Cells in Endometrial Cycling & Cancer", February 19, 2003
Gynecologic Oncology Program of the OU Cancer Center Meeting
Oklahoma Medical Research Foundation (OMRF)
35. "Understanding Cancer and Developing New Prevention and Treatment Strategies",
February 21, 2003
Womens Health Center Research Meeting, University of Oklahoma HSC
36. "SHetA2 Regulation of Growth, Differentiation and Apoptosis in Cancer Cells and Tumors
without Evidence of Toxicity", April 1, 2003
National Cancer Institute Rapid Access to Intervention and Development (RAID) Program,
National Cancer Institute, Bethesda, MD
37. "Carcinogenesis and Chemoprevention of Gynecologic Cancers", April 30, 2003
Department of Biochemistry and Molecular Biology
University of Oklahoma Health Sciences Center, Oklahoma City, OK
38. "Development of Chemoprevention Drugs that Regulate Growth, Apoptosis and
Differentiation in Cancer Cells without Toxicity". May 6th
Breast Cancer Program of the OU Cancer Center Meeting
University of Oklahoma Health Sciences Center
39. "Translational Research and the Dawn Hope Tissue Bank", May 12, 2003
Aventis Site Visit, Section of Gynecologic Oncology, Department of Obstetrics and Gynecology
University of Oklahoma Health Sciences Center
40. "Development of Heteroarotinoids for Chemoprevention", May 19, 2003
Encore Site Visit
Free Radical Biology Section
Oklahoma Medical Research Foundation, Oklahoma City, OK
41. "How to Get an NCI Grant", September 5, 2003
Grant Writing Workshop
OU Cancer Center,
Oklahoma City, OK
42. "Preclinical Development of SHetA2 for Cancer", October 10, 2003
Huntsman Cancer Center, Ovarian Cancer Research Group
Salt Lake City, Utah
43. "Mechanism of Differentiation and Apoptosis Induction in Cancer Cells by a Retinoid Receptor-
Independent Heteroarotinoid, SHetA2" FASEB Summer Research Conference on Retinoids,
June 12-17, 2004
44. "Preclinical Development of SHetA2 for Cancer", August 23, 2004
Department of Medicine Grand Rounds, University of Oklahoma HSC
Oklahoma City, OK

45. "Preclinical Development of Flex-Hets", December 16, 2004
Section of Endocrinology Grand Rounds, Department of Medicine, University of Oklahoma
HSC, Oklahoma City, OK
46. "Drug Development in Oklahoma" Aired on January 5th and 6th, 2005
Oklahoma Innovations Radio Show
KCCU, KLCU, KYCU, KCCU, KTOK, KRMG and KMCU
Oklahoma and Texas (AM and FM).
47. "Development of Drugs that Target Mitochondria", January 10, 2005
Department of Microbiology
Oklahoma State University, Stillwater, OK
48. "Flex-Hets" Meet the Scientist, i2E, Oklahoma City, OK, January 26, 2005
49. "How to make a Chemical into a Drug", Chemistry Club, Southwestern Oklahoma State
University, Weatherford, OK, March 10, 2005
50. "Mitochondria and Gene Expression in Flex-Het Induction of Apoptosis in Cancer versus
Normal Cells". Winship Cancer Center, Emory University, Atlanta, GA, July 15, 2005
51. "Glycoproteins in Cervical Cancer Metastases" OU Cancer Center Cell Biology Program.
November 8, 2005
52. "Angiogenesis Biomarkers in GOG Thalidomide Trials" Gynecologic Oncology Group
(GOG) semi-annual meeting, January 21, 2006.
53. "Developing Drugs and Biomarkers for Cancer" Biochemistry and Cell Biology Seminar
Series, University of Oklahoma Health Sciences Center, May 10, 2006.
54. "Flex-Het Regulation of Gene Expression, Angiogenesis and Apoptosis" Federation for the
American Association of Experimental Biology (FASEB) Conference on Retinoids,
55. "Angiogenesis targeting in Ovarian Cancer" 7th Annual International Conference on
Ovarian Cancer, November 30, 2006.
56. "Molecular Mechanisms of Apoptosis and Angiogenesis Regulation by Flex-Het Drugs",
University of Maryland, December 11, 2006.
57. "Reversal of Abnormal Differentiation in Cancer and Polycystic Kidney Disease by Flex-Hets"
University of Oklahoma Health Sciences Center, Pathology Grand Rounds, October 1, 2007.
58. "Translating Flex-Het Drug and Biomarker Research to Clinical Application"
MD Anderson Cancer Center, Gynecologic Oncology Grand Rounds, November 7, 2007.
59. "Translating Flex-Het Drug and Biomarker Research to Clinical Application"
University of Oklahoma Health Sciences Center, College of Pharmacy, Research Seminar
November 8, 2007.
60. "Developing a Pill for Cancer Prevention",
Newspaper articles: The Tulsa World, The Oklahoman,
Television News: NewsChannel 9 (KWTN), NewsChannel 4 (KFOR) January 31, 2008; OETA
February 1, 2008, Tulsa World Editorial, February 3, 2008, Edmond Sun, February 11th.

61. "Signal Transduction Mechanisms of Flex-Het Therapeutic and Chemoprevention Activity"
University of Illinois at Chicago, March 18, 2008
62. "Systems Biology of Flex-Het Drugs and Cancer Biomarkers in Experimental Models and Clinical Trials", Notre Dame, Indiana, May 13th, 2008.
63. Oklahoma Sunday Magazine Interview aired by Citadel Radio on various stations, including KATT-FM, KYIS-FM, WWLS-FM & AM and KKWD, August 24, 2008.
64. Interview with Robing Decken-Kite about my research on Community Talk Radio aired on KTLR AM890 September 30, 2008.
74. "Systems Biology and Translation of an Organotypic Model of Carcinogenesis and Chemoprevention", Department of Physiology, University of Oklahoma HSC, Sep 11, 2008
75. "OU Medicine Minute", 04/08/09 06:06:15AM Oklahoma City (KWTW) 01:00 News 9 This Morning; 04/08/09 05:17:19PM Oklahoma City (KWTW) 01:00 News 9 @ 5pm; 04/09/09 04:43:56PM Oklahoma City (KWTW) 01:00 News 9 @ 4pm; 04/10/09 12:04:09PM Oklahoma City (KWTW) 01:00 News 9 @ Noon; 04/10/09 06:03:24PM Oklahoma City (KWTW) 01:00 News 9 @ 6pm; 04/11/09 06:12:05AM Oklahoma City (KWTW) 01:00 News 9 Saturday Morning; 04/12/09 10:06:14PM Oklahoma City (KWTW) 01:00 News 9 @ 10pm Sunday
76. "Translation of Biological Systems Driving Experimental Carcinogenesis and Chemoprevention to Clinical Application" University of Louisiana Shreveport Cancer Center, April 30, 2009.
77. "We're Betting on a Cure" Speaking part in thirty second media commercial, produced by Skyline Media Group, Inc., aired May, 2009.
78. "Oklahoma Students Care", video production, June 2009.
79. "Preclinical Development of SHetA2" College of Veterinary Sciences, Oklahoma State University, Stillwater, OK, February 4, 2010
80. "Progress Report on Development of SHetA2 for Chemoprevention", HOPE Ovarian Cancer Survivor Group, April 3, 2010
81. "Development of Flex-Het Drugs for Prevention and Treatment of Cancer: From basic laboratory science to clinical trials." University of Cape Town, Cape Town, South Africa, June 23, 2010.
82. "Development of a Flex-Het Drug and Biomarkers for a Chemoprevention Clinical Trial", International Cancer Research Symposium 2010: Defining & Translating Science Behind Disease. Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, Kerala, India, December 21, 2010
83. "Before You Can Shoot, You Need to Know What the Target Is" Symposium on Drug Design and Molecular Pharmacology. University of Southern California, February 9, 2011.
84. "Collaboration in Drug Discovery and Translation to Clinical Trials" The 14th annual Rall Symposium for Undergraduate Research, North Central College, Naperville, IL, May 17, 2011
85. "How to know which targets to hit in the fight against cancer" Departments of Biochemistry & Molecular Biology and Cell Biology Seminar Series, University of Oklahoma Health Sciences Center, June 15, 2011

86. "Development of a cancer prevention pill" Ovarian Cancer Support Group, Bartlesville, OK, October 22, 2011