

CURRICULUM VITAE

Brooks A. Keel, Ph.D.

Address: Office of the President
Augusta University
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Present Positions: **President, Augusta University***
CEO, AUHealth System*
Professor of Obstetrics and Gynecology
Professor of Biological Sciences

(Formerly Georgia Regents University, and Georgia Regents Health System)

Augusta University is one of only four public comprehensive research institutions in the state. Founded in 1828, the university includes nine colleges and schools with nearly 9,000 students, over 1,000 full-time faculty and nearly 13,000 staff. It houses the nation's 9th-largest and 13th-oldest medical school (Medical College of Georgia), and the state's sole dental college (Dental College of Georgia). With a campus of approximately 150 buildings, the university is a \$1.5 billion-plus enterprise with state-wide and national reach. MCG includes a partnership campus in Athens, Ga., and satellite campuses in Albany, Rome, Brunswick and Savannah. AUHealth System consists of the 478-bed AU Medical Center, the 154-bed Children's Hospital of Georgia including the region's only Level IV NICU, the AU Medical Associates, more than 80 outpatient practice sites in one convenient setting, and the Critical Care Center, housing a 13-county regional Level I trauma center.

*Augusta University is the result of a 2012 merger of Augusta State University and Georgia Health Sciences University (MCG). The resulting merged institution was named Georgia Regents University. In September, 2015, the name of the merged university was changed to Augusta University, and the Health System changed to AUHealth shortly thereafter.

Personal: United States Citizen

Education:

Undergraduate: Augusta College (now Augusta University), Augusta, GA; B.S. Biology/Chemistry, 1978

Graduate: Department of Endocrinology, Medical College of Georgia (now Augusta University), Augusta, GA; Ph.D. in Reproductive Endocrinology, 1982. Major advisor, Dr. Thomas O. Abney

Postdoctoral: 1982-1983: Department of Reproductive Medicine and Biology, University of Texas Medical School at Houston, TX; Postdoctoral Fellow with Dr. H.E. Grotjan, Jr.

1983-1985: Department of Physiology and Pharmacology, University of South Dakota, School of Medicine, Vermillion, SD; Research Associate continuing work with Dr. H.E. Grotjan, Jr.

Professional Certification:

American Board of Bioanalysis, 1987-present, High-complexity Clinical Laboratory Director (HCLD)

Academic Appointments:

University of Kansas School of Medicine-Wichita

- 1985-1988: Assistant Professor, Department of Obstetrics and Gynecology, University of Kansas School of Medicine-Wichita
- 1988-1992: Associate Professor, Department of Obstetrics and Gynecology, University of Kansas School of Medicine-Wichita
- 1991-1993: Adjunct Associate Professor of Biological Sciences, The Wichita State University
- 1986-1997: Adjunct Professor of Medical Technology, The Wichita State University
- 1991-2002: Associate Dean for Research, University of Kansas School of Medicine-Wichita
- 1992-2002: Professor, with tenure, Department of Obstetrics and Gynecology, University of Kansas School of Medicine-Wichita
- 1992-2002: Professor, Department of Pediatrics, University of Kansas School of Medicine-Wichita
- 1993-2002: Adjunct Professor of Biological Sciences, Graduate Faculty, The Wichita State University
- 1995-2001: Daniel K. Roberts Distinguished Professor, Department of Obstetrics and Gynecology, University of Kansas School of Medicine-Wichita

Florida State University

- 2002-2006: Professor with tenure, Department of Biomedical Sciences, College of Medicine, FSU
- 2002-2006: Associate Vice President for Research, FSU

Louisiana State University

- 2006-2009: Professor with tenure, Department of Biological Sciences, LSU
- 2006-2009: Vice Chancellor for Research and Economic Development, LSU

Georgia Southern University

- 2010-2015: President, Georgia Southern University

Augusta University

- 2015 : President, Augusta University
- 2015 : CEO, AU Health System
- 2015 : Professor, Department of Obstetrics and Gynecology (Non-tenure)
- 2015 : Professor, Department of Biological Sciences (Non-tenure)

Administrative Responsibilities and Committee Appointments:

University of Kansas School of Medicine-Wichita

- 1985-1991: Research Committee, University of Kansas School of Medicine-Wichita (UKSM-W)
- 1988-2002: UKSM-W, Human Subjects Committee (ex officio 1991-2002)
- 1988-1991: Chair, Human Subjects Committee, UKSM-W
- 1987-1993: Co-Chair 1st-6th Midwest Reproductive Colloquium, Wichita, KS
- 1989-1992: Institutional Animal Care and Use Committee, Veterans Administration Medical Center, Wichita, KS
- 1992-1993: Executive Vice President, The Women's Research Institute, Wichita, KS
- 1992-1996: Kansas University Research Institute, Board of Directors

- 1997-1998: Associate Dean for Research Search Committee, KUMC, Kansas City
- 1999: Chair, Executive Director Search Committee, Wesley Medical Research Institutes (WMRI), Wichita, KS
- 1987-2002: Projects Committee, WMRI, Wichita, KS
- 1988-2002: Chair, Projects Committee, WMRI
- 1988-2002: Board of Directors, WMRI
- 1988-2002: HCA/Wesley Medical Center Teaching Staff, Wichita, KS
- 1991-2002: Research and Development Committee, Veterans Administration Medical Center, Wichita, KS
- 1993-2002: Board of Directors, Women's Research Institute
- 1993-2001: President and Chief Executive Officer, The Women's Research Institute, Wichita, KS
- 1994-2002: Scientific Director, WMRI
- 1994-2002: President, Reproductive Medicine Laboratories, Wichita, KS
- 1999-2002: Executive Cabinet (Deans Advisory Group), UKSM-W
- 2000-2002: Research Compliance Committee, KUMC
- 2001-2002: Chancellor Task Force on Conflicts of Interest and Technology Transfer, KUMC

Florida State University

- 2002-2006: Biomedical Advisory Committee
- 2002-2006: Council on Research and Creativity (ex officio)
- 2003-2006: FSU Liaison, Oak Ridge Associated Universities, Oak Ridge National Laboratory
- 2004-2006: Member of the Provost Senior Staff
- 2004-2006: Vice President, Florida State University Research Foundation
- 2005-2006: Small Business Participation Council

- 2005-2006: Pathways to Excellence Executive Committee
- 2005-2006: Member of Search Committee for the President of the FSU Foundation

Louisiana State University

- 2006-2007: The Women's Ovarian Health Task Force (created by the State of Louisiana Senate); member representing LSU
- 2006-2009: Chancellor's Executive Cabinet
- 2006-2009: Louisiana Business and Technology Center; Advisory Board
- 2006-2008: Louisiana Research Park Corporation; Board of Directors
- 2006-2009: LSU Honorary Degree Committee
- 2006-2009: Coastal Restoration and Enhancement through Science and Technology (CREST); Member of the Executive Board
- 2007: Governor-Elect Jindal Working Group on Higher Education
- 2008: Chair, Search Committee for the Dean of the E.J. Ourso College of Business

LSU Research Centers and Institutes Administratively Reporting to Dr. Keel as the Vice Chancellor

- Center for Advanced Microstructures and Devices
- Center for Biomolecular Multi-Scale Systems
- Center for Computation and Technology
- Center for Energy Studies (including the Louisiana Geological Survey, Minerals Processing Research Institute and the Louisiana Applied and Educational Oil Spill and Development Program)
- Center for French and Francophone Studies
- Center for Geoinformatics
- Hurricane Center
- Institutional Review Board
- Life Course and Aging Center
- Louisiana Sea Grant Program
- Louisiana Space Grant Program
- National Center for Security Research Training (including the National Center for Biomedical Research and Training, Fire and Emergency Training Institute, and Law Enforcement Online)

Georgia Southern University

- 2010-2015: Board of Directors, Georgia Southern University Research and Service Foundation
- 2010-2015: Board of Trustees, Georgia Southern University Foundation
- 2010-2015: Board of Directors, Georgia Southern University Housing Foundation
- 2015: Executive Council Member “*oneusg*”, a University System of Georgia shared services governing council, appointed by the Chancellor

Augusta University

- 2015- : CEO and Chairman of the Board, AU Health System.
- 2015- : Chairman of the Board, AU Medical Center.
- 2015- : Chairman of the Board, Roosevelt Warm Springs Rehabilitation and Specialty Hospitals, Inc.
- 2015- : Chairman of the Board, Augusta University Research Institute, Inc.
- 2015- : Board of Trustees, MCG Foundation, Georgia Health Sciences Foundation, and the Augusta University Foundation.

Professional Organizations (Member) and National Committees:

- Society for the Study of Reproduction
- American Society for Reproductive Medicine (ASRM)
- The Endocrine Society
- American Association for the Advancement of Science
- American Board of Bioanalysis
- American Association of Bioanalysts
- Society for Gynecologic Investigation, full member

- 1985-1987: Bylaws Committee, The Society for the Study of Reproduction (SSR)
- 1986-1987: Chair, Bylaws Committee, SSR
- 1990-1994: Professional Development Committee, Reproductive Biology Special Interest Group (RBSIG), ASRM
- 1993-1994: Chair, Professional Development Committee, RBSIG

- 1994-1995: Administrative Secretary, Midwestern Region, AAB
- 1994-1997: Future Meeting Sites Committee, SSR
- 1995-1996: Chair, Future Meeting Sites Committee, SSR
- 1995-1996: Program Chair, Reproductive Biology Professional Group (RBPG, formally RBSIG), American Society for Reproductive Medicine (ASRM, formally AFS)
- 1996: Technical Consultant on Personnel Requirements for Embryo Laboratories, CDC
- 1995-1997: 1st and 2nd Vice President, American Association of Bioanalysts (AAB)
- 1995-1998: Chair, Midwestern Region, AAB
- 1996-1997: Vice Chair, RBPG, ASRM
- 1997-1999: Chair, RBPG, ASRM
- 1997-1998: President-Elect, AAB
- 1998-1999: President, AAB
- 1999-2000: Past-President, Secretary/Treasurer, AAB
- 1994-2000: Board of Directors, AAB
- 1998-2009: Board of Directors, AAB Board of Registry
 - 1999: Organized/Co-Chaired *Challenges and Strategies in Assisted Reproductive Technology: An ART Workshop*; Cozumel, Mexico
 - 2000: Organized/Co-Chaired *ART in Y2K: Challenges and Strategies in Assisted Reproductive Technology*; Kona, Hawaii
 - 2001: Organized/Co-Chaired *2001: An ART Odyssey. Challenges and Strategies in Assisted Reproductive Technology*; Waikoloa, Hawaii
- 1999-2001: Executive Council Member, Society for Assisted Reproductive Technology (SART)
- 2002: Organizing Committee, *Sustainable Campus Security: The Path Forward*, Oak Ridge Associate Universities National Conference, Atlanta, GA
- 2004-2005: Programming Committee, Oak Ridge Center for Advanced Studies (ORCAS), Oak Ridge National Laboratory

- 2004-2013: Vice Chair, Board of Directors, ABB
- 2006-2009: Executive Committee Member, Council on Research Policy and Graduate Education (CRPGE), National Association of State Universities and Land Grant Colleges (NASULGC)
- 2006-2009: Executive Board Member, Louisiana Universities Marine Consortium
- 2006-2009: Board Member and Executive Committee Member, Research Partnership to Secure Energy for America (RPSEA)
- 2006-2009: Board of Trustees Member, Southeastern Universities Research Association (SURA)
- 2007-2009: Board of Directors, Oak Ridge Associated Universities (ORAU)
- 2008-2009: Vice Chair of the Board, ORAU
- 2008-2009: Chair, Search Committee for the President, ORAU
- 2008-2014: Emerging Technology and Research Advisory Committee (ETRAC), United States Department of Commerce, Bureau of Industry and Security
- 2010-2014: Co-Chair, ETRAC
- 2010-2016: Board of Directors, XYTEX Cryo International
- 2012-2015: Board of Trustees, East Georgia Regional Medical Center
- 1992- : Board of Directors, American Board of Bioanalysis (ABB)
- 1992- : Board of Scientific Advisors, AAB Proficiency Testing Program
- 2011- : Board of Directors, Georgia Chamber of Commerce
- 2013- : Chair, Board of Directors, ABB
- 2015- : Board of Trustees, Georgia Research Alliance

Grant and Contract Awards:

Medical College of Georgia (as a graduate student)

- 1981-1982: Steroid Binding Characteristics of Alphafetoprotein, Brooks A. Keel, Principal Investigator. A Grant in Aid of Research from Sigma Xi, 1981, \$200, 1 year.

1982-1983: Effects of Alphafetoprotein on the Ontogeny of the Rat Testicular Cytoplasmic Estrogen Receptor, Brooks A. Keel, Principal Investigator. A Grant in Aid of Research from Sigma Xi, 1982, \$150, 1 year.

University of Kansas School of Medicine-Wichita

1986-1988: Women's Research Institute Seed Grant for the Establishment of the Institute, Bobby W. Webster and Brooks A. Keel, Program Directors. Hospital Corporation of America, through the Wesley Medical Center, Wichita, KS, \$1,050,000 direct costs, 1/1/86-12/31/88.

1986-1986: Aging and Gonadotropin Heterogeneity, Brooks A. Keel, Principal Investigator. Wesley Medical Research Institutes, Wichita, KS, \$10,000 direct costs, 1/1/86-12/31/86.

1986-1989: Microheterogeneity of Human Alphafetoprotein, Brooks A. Keel, Principal Investigator. Wesley Medical Research Institutes, Wichita, KS, \$5,000 direct costs 6/1/86-5/31/89.

1987-1996: Microheterogeneity of Human Alphafetoprotein, Brooks A. Keel, Principal Investigator. NIH R01 HD22465, \$525,422 direct costs, 9/1/87-1/31/96.

1989-1991: Women's Research Institute Three Year Expansion Grant to Equip Laboratories and Recruit Faculty for the Institute, Bobby W. Webster and Brooks A. Keel, Program Directors. Wesley Foundation, Wichita, KS, \$1,200,000 direct costs, 1/1/89-12/31/91.

1989-1990: Microheterogeneity of Human Carcinoma Alphafetoprotein, Brooks A. Keel, Principal Investigator. University of Kansas Cancer Center West Fund, \$18,000 direct costs, 7/1/89-6/30/90.

1990-1990: Developmental Characterization of Human Alpha Fetoprotein, Brooks A. Keel, Principal Investigator. Wesley Medical Research Institutes, Wichita, KS, \$5,000 direct costs, 1/1/90-12/31/90.

1990-1991: Minority High School Student Research Apprentice Program, Brooks A. Keel, Principal Investigator. NIH 1 S03 RR03519, \$7,500 direct costs, 3/1/90-2/28/91.

1990-1991: Minority High School Student Research Support, Brooks A. Keel, Principal Investigator. Wesley Medical Research Institutes, \$3,000 direct costs, 1/30/90-2/28/91.

1990-1991: Small Instrumentation Grant, Brooks A. Keel, Principal Investigator. NIH 1 S15 HD27658, \$5,000 direct costs, 9/1/90-8/31/91.

- 1990-1991: Interim Funding of Research Salary, Brooks A. Keel. University of Kansas School of Medicine-Wichita, \$10,760 salary support, 11/11/90-3/31/91.
- 1991-1991: Minority High School Student Research Support, Brooks A. Keel, Principal Investigator. Wesley Medical Research Institutes, \$13,000 direct costs, 6/01/91-12/31/91.
- 1992-1994: Women's Research Institute Three Year Transition Grant to Support the Laboratories and Faculty for the Institute, Brooks A. Keel and Bobby W. Webster, Program Directors. Wesley Foundation, Wichita, KS, \$1,867,812 direct costs, 1/1/92-12/31/94.
- 1992-1992: Minority High School Student Research Support, Brooks A. Keel, Principal Investigator. Wesley Medical Research Institutes, \$15,000 direct costs, 6/01/92-12/31/92.
- 1993-1993: Minority High School Student Research Support, Brooks A. Keel, Principal Investigator. Wesley Medical Research Institutes, \$15,000 direct costs, 6/01/93-12/31/93.
- 1994-1999: Biomedical Research Initiative Through Education Excellence (B.R.I.T.E.²), Brooks A. Keel, Ph.D., Program Director. Howard Hughes Medical Institute 1994 Precollege Science Education Initiative for Biomedical Research Institutions, \$175,000 total costs, 6/01/94-5/31/99.
- 1996-1998: Signal Transduction in the Granulosa Cell, Brooks A. Keel, Principal Investigator. WMRI, \$20,000 direct costs, 3/1/96-12/31/98.

Florida State University

- 2002: Eliminating Disparities in Perinatal Health, Brooks A. Keel, Ph.D., Project Director. HHS, HRSA 6 H49 MC 00056-02, \$750,000 total costs, 6/1/02-5/31/03. Dr. Keel served as interim project director for this grant during 2002. Total project period: 7/1/01-5/31/05; total project costs \$3,000,000.
- 2003-2005: Staffing for Behavioral Risk Factor and Youth Tobacco Data Analysis Project, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$250,249 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for Child Care Food Program Training and Technical Assistance, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$140,878 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for Injury Control Epidemiology, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$152,956 direct costs, 07/01/03 – 06/30/05.

- 2003-2005: Staffing for the Bureau of Chronic Disease Prevention, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$996,772 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for Maternal and Child Health Technical Issues, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$2,111,896 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for Improvement of Infant Health Care for Florida's Medicaid-Eligible Population, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$220,735 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for Improvement of Infant Health Care for Florida's Medicaid-Eligible Population, Brooks A. Keel, Ph.D., Principal Investigator. Agency for Health Care Administration, \$373,894 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for the Training and Education for Public Health Preparedness, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$956,440 direct costs, 08/31/03 – 08/30/05.
- 2003-2005: Staffing for the Division of Information Technology, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$1,619,526 direct costs, 07/03/03 – 06/30/05.
- 2003-2005: Staffing for the Office of the Inspector General, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$171,968 direct costs, 08/07/03 – 06/30/05.
- 2003-2005: Staffing for the Division of Health Awareness and Tobacco, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$1,053,772 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for Research and Collaboration on Public Health Issues, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$422,679 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for HIV Prevention and Early Intervention, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$1,345,555 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing for CMS Early Intervention Project, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$523,442 direct costs, 07/01/03 – 06/30/05.
- 2003-2005: Staffing the Division of Information, Technology for the Bio-Terrorism and Public Health Infrastructure Initiatives, Brooks A. Keel, Ph.D., Principal

- Investigator. Florida Department of Health, \$951,479 direct costs, 09/01/03 – 06/30/05.
- 2003-2005: Staffing the Division of Sexually Transmitted Diseases, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$207,456 direct costs, 10/01/03 – 09/30/05.
- 2003-2005: Staffing the Office of Communications, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$360,039 direct costs, 09/29/03 – 08/30/05.
- 2003-2005: Staffing the Bureau of Statewide Pharmaceutical Services, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$44,506 direct costs, 10/01/03 – 06/30/05.
- 2003-2005: Staffing the James and Esther King Biomedical Research Program, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$147,954 direct costs, 10/01/03 – 06/30/05.
- 2003-2005: Staffing the Florida Department of Financial Services, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Financial Services, \$302,266 direct costs, 09/29/03 – 08/30/05.
- 2003-2005: Staffing Preventive Health Block Grant, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$94,927 direct costs, 11/07/03 – 06/30/05.
- 2003-2005: FSU/USGS Cooperative Research Program, Brooks A. Keel, Ph.D., Principal Investigator. Dr. Keel was appointed PI to this project in February, 2004. U.S. Geological Survey, \$576,235 direct costs, 02/24/03 – 09/30/05.
- 2003-2005: Staffing for Emergency Preparedness for Department of Health Nurses, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$998,351 direct costs, 06/19/03 – 06/30/05.
- 2003-2005: Staffing for Florida Department of Financial Services #2, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Financial Services, \$789,684 direct costs, 01/28/03 – 11/27/05.
- 2004-2005: Staffing for Florida Aquatic Toxins Programs, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$498,825 direct costs, 01/14/04 – 06/30/05.
- 2004-2005: Staffing for the Community Health Assessment Program, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$138,572 direct costs, 07/01/04 – 06/30/05.

- 2004-2005: Staffing for the Bureau of Epidemiology, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$2,018,274 direct costs, 07/01/04 – 06/30/05.
- 2004-2005: Staffing for the Bureau of HIV/AIDS, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$1,382,756 direct costs, 07/01/04 – 06/30/05.
- 2004-2005: Staffing for Children's Medical Services, Bureau of Early Interventions, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$645,317 direct costs, 07/01/04 – 06/30/05.
- 2004-2005: Staffing for the Division of Family Health Services, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$593,781 direct costs, 07/01/04 – 06/30/05.
- 2004-2005: Staffing for Florida Environmental Health Tracking, Brooks A. Keel, Ph.D., Principal Investigator. Florida Department of Health, \$602,282 direct costs, 01/14/04 – 06/30/05.
- 2005: Graduate Education in the Responsible Conduct of Research and Creativity, Dianne Harrison, Ph.D., Principal Investigator; Brooks A. Keel, Ph.D., Co-Principal Investigator. Council of Graduate Schools through the Office of Research Integrity, \$15,000 direct costs, 01/01/05 - 12/31/05
- 2003-2006: UT-Battelle Core Universities Partnership, Kirby W. Kemper, Ph.D., Principal Investigator; Brooks A. Keel, Ph.D., Co-PI. UT-Battelle, LLC, \$105,000 direct costs, 11/10/03 – 09/30/06.
- 2005: Survival Skills and Ethics Start-Up Grants, Nancy Marcus, Ph.D., Principal Investigator; Brooks A. Keel, Ph.D., Co-Principal Investigator. University of Pittsburgh, \$2,000 direct costs, 11/01/05 - 10/31/06.

Clinical Laboratory Experience:

- 1975-1978: Technician, St. Joseph Hospital, Augusta, Georgia. On-the-job training and experience in phlebotomy, immunohematology, hematology, chemistry, serology and microbiology.
- 1978-1979: Supervisor, XYTEX Corporation, Augusta, Georgia. Experience in hematology, serology, microbiology, semen cryopreservation, semen analysis and infertility testing.
- 1985-1986: Supervisor, Reproductive Medicine Laboratories. Experience in hematology, chemistry, serology, microbiology, semen cryopreservation, semen analysis, infertility testing and radioimmunoassay.

1986-2002: Director and Clinical Consultant, Reproductive Medicine Laboratories and Diagnostic Laboratory Services.

Honors:

National Research Service Award, under an institutional grant from the National Institutes of Health, 1982.

Fellowship from the Robert A. Welch Foundation, for postdoctoral training, 1983.

Investigator Recognition Award, from the University of Kansas School of Medicine, 1991.

Daniel K. Roberts Distinguished Professorship, an endowed chair in Obstetrics and Gynecology, University of Kansas School of Medicine-Wichita, 1995.

1999 Distinguished Alumnus Award, School of Graduate Studies, Medical College of Georgia.

The 2003 Lucien Dean Hertert Memorial Award from the American Association of Bioanalysts.

2015 Distinguished Alumnus and Presidential Alumnus Award, College of Science and Mathematics, Georgia Regents University (now Augusta University).

Named one of the "100 Most Influential Georgians" by *Georgia Trend Magazine*, 2015, 2016, 2017.

Named one of the "James' Most Influential" by *JAMES Magazine*, 2016.

Other Appointments:

Editorial Boards: ARCHIVES OF ANDROLOGY, Member 1987-1990.
 BIOLOGY OF REPRODUCTION, Member 1990-1995.
 ARCHIVES OF ANDROLOGY, Member 2000-2003.

Journal Reviewer:
(Ad hoc) FERTILITY AND STERILITY
 ENDOCRINOLOGY
 J OF CLINICAL ENDOCRINOLOGY AND METABOLISM
 BIOLOGY OF REPRODUCTION
 JOURNAL OF REPRODUCTION AND FERTILITY
 HUMAN REPRODUCTION
 MOLECULAR AND CELLULAR NEUROSCIENCES
 AMERICAN JOURNAL OF PHYSIOLOGY
 PROC SOC EXP BIOL AND MEDICINE
 DOMESTIC ANIMAL ENDOCRINOLOGY
 MOLECULAR REPRODUCTION AND DEVELOPMENT

ASIAN JOURNAL OF ANDROLOGY
CLINICAL CHEMISTRY AND LABORATORY MEDICINE
CLINICA CHIMICA ACTA

Grant Reviewer:
(*Ad hoc* External
Reviewer)

THE NATIONAL SCIENCE FOUNDATION
THE MARCH OF DIMES
USDA
OFFICE OF RESEARCH INTEGRITY (ORI) Resource
Development Program
PENNSYLVANIA DEPARTMENT OF HEALTH
PERFORMANCE REVIEW
IDAHO HIGHER EDUCATION RESEARCH COUNCIL,
One-Time Research Grant Program

Federal Review

NATIONAL INSTITUTES OF ENVIRONMENTAL HEALTH
Panel Member SCIENCES, Special Emphasis Panel
Member for Review of RFA on Centers for Children's
Environmental Health and Disease Prevention, March
1998.

Postdoctoral Fellows Trained: Juan A. Leal, Ph.D. 1988-1990
: Yongsheng He, Ph.D. 1992-1994

Courses Organized and Taught at Florida State University:

Compliance and Research Administration Training and Education (CReATE): comprehensive 20 hr. training program in various aspects of research administration compliance, offered to office of research and departmental administrative staff across campus. Dr. Keel was responsible for designing, organizing and coordinating this course.

Responsible Conduct of Research and Creativity: 1.0 hour graduate level course on responsible conduct of research. Offered one semester per year to graduate students (course capped at 100 students) across all academic disciplines. Dr. Keel was the Instructor of Record for this course.

Dr. Keel also served as guest lecturer to 1st and 2nd year medical students at FSU on the topics of male and female reproductive physiology, contraception and fertility drugs.

Publications, Peer Reviewed Papers:

1. Keel BA (1979) The semen analysis: an important diagnostic evaluation. Lab Med 4:686-688.
2. Keel BA, Karow AM Jr (1980) The motility characteristics of human spermatozoa nonfrozen and cryopreserved. Arch Androl 4:205-212.

3. Keel BA, Black JB (1980) Reduced motility longevity in thawed human spermatozoa. *Arch Androl* 4:213-215.
4. Keel BA, Abney TO (1980) Influence of bilateral cryptorchidism in the mature rat. Alterations in testicular function and serum hormone levels. *Endocrinology* 107:1226-1233.
5. Keel BA (1981) Cervical mucus analysis: major component in evaluation of infertility. *Lab Med* 12:161-164.
6. Keel BA, Abney TO (1981) Alterations of testicular function in the unilaterally cryptorchid rat. *Proc Soc Exp Biol Med* 166:489-495.
7. Keel BA, Abney TO (1982) Effects of estradiol administration in vivo on testosterone production in two populations of rat Leydig cells. *Biochem Biophys Res Comm* 107:1340-1348.
8. Grotjan HE Jr, Leveque NW, Berkowitz AS, Keel BA (1984) Quantitation of LH subunits within and released by rat anterior pituitary cells in primary culture. *Mol Cell Endocrinol* 35:121-129.
9. Keel BA, Abney TO (1984) The kinetics of estrogen binding to rat alphafetoprotein. *Experientia* 40:503-505.
10. Keel BA, Abney TO (1984) Ontogenetic relationships between two estrogen binding moieties in the male rat: alphafetoprotein and the testicular cytoplasmic estrogen receptor. *Arch Androl* 12:217-223.
11. Keel BA, Melner MH, Abney TO (1984) Effects of the anti-estrogen CI-628 on hCG-induced desensitization of testosterone in purified Leydig cells. *Arch Androl* 13:71-75.
12. Keel BA, Grotjan HE Jr (1984) Characterization of rat lutropin microheterogeneity using chromatofocusing. *Anal Biochem* 142:267-270.
13. Keel BA, Grotjan HE Jr (1985) Influence of bilateral cryptorchidism on luteinizing hormone charge microheterogeneity. *Biol Reprod* 32:83-89.
14. Keel BA, Abney TO (1985) Oestrogenic regulation of testicular androgen production throughout development in the rat. *J Endocrinol* 105:211-218.
15. Keel BA, Grotjan HE Jr (1985) Characterization of rat luteinizing hormone charge microheterogeneity in male and female rats using chromatofocusing: effects of gonadectomy. *Endocrinology* 117:354-360.
16. Grotjan HE Jr, Berkowitz AS, Keel BA (1985) Minimal quantities of FSH beta subunit are released by rat anterior pituitary cell in primary culture. *Mol Cell Endocrinol* 4:205-209.

17. Vasquez JM, Ben-Nun I, Greenblatt RB, Mahesh VB, Keel BA (1986) Correlation between follicle stimulating hormone, luteinizing hormone and prolactin with sperm cell concentration and sperm motility. *Obstet Gynecol* 67:86-90.
18. Abney TO, Keel BA, Myers RB (1986) Depletion - replenishment of the testicular estrogen receptor: sensitivity to cycloheximide and actinomycin D. *J Steroid Biochem* 24:989-995.
19. Abney TO, Keel BA (1986) Temporal nature of the effects of diethylstilbestrol administration in vivo on testosterone production in Leydig cells. *Arch Androl* 17:79-86.
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 62. Keel BA, Hildebrandt JM, May JV, Davis JS (1995) Effects of EGF on the coupling of Grb2, Shc and Sos in porcine granulosa cells. Biol Reprod 52 (Suppl):145.
 63. Davis JS, May JV, Keel BA (1995) Secretion of TGF β 1 by luteal cells: regulation by PGF2 α and mediation by protein kinase C and mitogen-activated protein (MAP) kinase. Biol Reprod 52(Suppl):96.
 64. Webert SK, Tjaden BL, Grainger DA, Roberts VM, Keel BA (1995) Red blood cell contamination causes erroneously elevated serum estradiol levels. 51st Ann. Mtg. of the American Society for Reproductive Medicine p.259.
 65. Davis, JS, Chen D-B, Keel BA, Fong HW (1996) Epidermal growth factor (EGF) activates the Raf-1 signaling cascade and increases c-Fos expression in bovine luteal cells. Biol Reprod 54(Suppl):142.
 66. Keel BA, Davis JS, Chen D-B, Fong HW (1996) Epidermal growth factor (EGF) activates the Raf-1 signaling cascade and subsequently stimulates mitogen-activated protein (MAP)kinase in porcine granulosa cells. Biol Reprod 54 (Suppl):143.
 67. Davis JS, Chen D-B, Fong HW, Westfall SD, Keel BA, May JV (1996) Prostaglandin

- (PG) F2 α signaling cascades in porcine theca cells: activation of mitogen-activated protein kinase (MAPK) and proto-oncogene *c-fos* expression. XIth Ovarian Workshop: Ovarian Cell Growth, Apoptosis and Cancer, London, Ontario, Canada pp.19.
68. Sisco KR, Davis JS, Keel BA (1997) Epidermal growth factor (EGF) stimulates active mitogen-activated protein kinase (MAPK) in freshly isolated porcine granulosa cells. *Biol Reprod* 6956(Suppl):204.
 69. Schalue TK, Grainger DA, Tjaden BL, Keel BA (1997) Analysis of 4114 ejaculates collected from infertility patients over an eleven year period. *J Assist Reprod Genetics* 14(Suppl):66S.
 70. Keel BA, Schalue TK, Webert SK, Rognsvoog LM, Schlitter CS, Tjaden BL, Grainger DA (1997) Correlation of the bovine cervical mucus penetration test with human sperm characteristics in 1406 ejaculates. *Proceedings of the 53rd Ann. Mtg. of the American Society for Reproductive Medicine*, S213.
 71. Schalue TK, Webert SK, Rognsvoog LM, Schlitter CS, Grainger DA, Tjaden BL, Keel BA (1997) Monthly variation among semen samples from 4114 infertility patients. *Proceedings of the 53rd Ann. Mtg. of the American Society for Reproductive Medicine*, S214.
 72. Schalue TK, Tjaden BL, Grainger DA, Keel BA (1997) Within subject variation of semen analysis parameters from patients attending an infertility clinic. *ART: State of the Art, Serono Intl. Symposium*.
 73. Nguyen VT, Fong H-W, Chen D-B, Davis JS and Keel BA (1998) Tumor necrosis factor alpha (TNF α) and epidermal growth factor (EGF) activates JNK in porcine theca cells. *Biol Reprod* 58(Suppl):127.
 74. Keel BA, Schalue TK, Quinn P, Schmidt CF, Serafy NT Jr, Serafy NT (1998) Results of the American Association of Bioanalysts (AAB) andrology proficiency testing (PT) program. *Fertil Steril* 70(Suppl. 1):S297.
 75. Quinn P, Keel BA, Serafy NT Jr, Serafy NT, Schmidt CF, Horstman FC (1998) Results of the American Association of Bioanalysts (AAB) embryology proficiency testing (PT) program. *Fertil Steril* 70(Suppl. 1):S100.
 76. Keel BA, Stembridge TW, Pineda G, Serafy NT Sr. (2001) Standardization in the performance of the semen analysis among laboratories in the United States. *Fertil Steril* 76(Suppl. 1):S21.
 77. Keel BA, Schalue TK (2003) Within subject variation of semen parameters in infertile men and normal semen donors. *Fertil Steril* 80(Suppl. 3):S300.
 78. Keel BA, Vanderslice WE (2004) Comparison of sperm counting chambers used by participants in a national andrology proficiency testing program. *Fertil Steril* 82(Suppl. 2):S329.

79. Rollene NL, Morbeck DE, Pomeroy KO, Keel BA, Quinn P (2008) Sensitivity of sperm and embryo bioassays in the American Association of Bioanalysts proficiency testing program. *Fertil Steril* 90(Suppl. 1):S351-S352.

Invited Testimony to Legislative Committees:

1. Keel BA (2013) The Role of Georgia Southern University's Center for Excellence in Financial Services in Support of Community Banking. Testimony before the Georgia House of Representatives Banks and Banking Committee, Atlanta, GA, February 5, 2013.
2. Keel BA (2013) Overview of Georgia Southern. Testimony before the Georgia House of Representatives Medicare Reform Committee, Statesboro, GA, October 28, 2013.
3. Keel BA (2014) The Need for the Workforce-Grant University: Preparing the 21st Century Workforce. Testimony before the U.S. House of Representatives Committee on Education and the Workforce, Washington, DC, April 2, 2014.

Invited Presentations to Professional Audiences:

1. Keel BA, Abney TO (1984) Ontogenic Relationships Between Two Estrogen Binding Moieties in the Male Rat; Alpha-Fetoprotein and the Testicular Estrogen Receptor. Alphafetoprotein as a Modulator of Estrogen Response, a Satellite Symposium of the 7th International Congress of Endocrinology.
2. Keel BA, Webster BW (1986) Male Factor Infertility. Also Keel BA, Garner CH, Sperm/Cervical Mucus Interaction. The Female Patient. Reproductive Endocrinology-Advances in Technology, Seventh Annual OB-GYN Update, Wichita, KS.
3. Keel BA, Cho S (1986) Characterization of Human Alphafetoprotein (AFP) by Chromatofocusing. Alpha-fetoprotein as a Regulator and a Regulated Substance, 3rd Annual Symposium of Biological Activities of Alpha-1-Fetoprotein, Albany, NY.
4. Keel BA (1986) Laboratory Evaluation and Treatment of Infertility. American Society of Medical Technologists Region VI Meeting, Topeka, KS.
5. Keel BA (1986) Male Infertility Testing. Insights into Infertility, Wichita, KS.
6. Keel BA (1988) Biochemistry of Reproductive Biology. Wesley Medical Research Institutes 28th Ann. Members Meet. Wichita KS.
7. Keel BA (1988) Sperm Banking: Process/Issues. 5th Annual North Central Kansas Oncology Conference, Salina, KS.
8. Keel BA (1989) Laboratory Evaluation of Fertility. Kansas Society for Medical

Technology Annual Meeting, Wichita, KS.

9. Keel BA (1989) The Physiological Role and Biochemical Basis of Micro-Heterogeneity of Glycoproteins. American Assoc. of Pharmaceutical Scientists Eastern Regional Meeting, East Brunswick, NJ.
10. Keel BA (1990) An Introduction to Sperm Banking and Issues Involved. Midwest Cancer Conference, American Cancer Society, Wichita, KS.
11. Keel BA (1990) Biology and Biochemistry of Alpha Fetoprotein. Grand Rounds Program, Department of Obstetrics and Gynecology, Johns Hopkins Medical Institutions, Baltimore, MD.
12. Keel BA (1990) Alpha Fetoprotein as a Modulator of Cell Proliferation. 25th Anniversary of the Endocrine Graduate Program, Medical College of Georgia Symposium, Augusta, GA.
13. Keel BA (1990) Male Infertility - AIH, DI. Concepts in Infertility, Hays, KS.
14. Keel BA (1990) Alpha Fetoprotein as a Modulator of Cell Proliferation. Visiting Scientist Series, Department of Animal Science, University of Nebraska-Lincoln, Lincoln, NE.
15. Keel BA (1990) Male Infertility Testing and Treatment. Concepts in Infertility 1990, Wichita, KS.
16. Keel BA, Grotjan HE Jr (1991) Data Reduction Methods for Radioimmuno- and Immunochemical Assays. 17th National Meeting of the Clinical Ligand Assay Society, Chicago, IL.
17. Keel BA (1991) Modulation of cell proliferation by alpha fetoprotein. Department of Anatomy, Kansas University Medical Center, seminar series, Kansas City, KS.
18. Keel BA (1991) Control of Cell Growth. Interaction of Alpha Fetoprotein and Growth Factors. Department of General Pharmacology, Abbott Laboratories, Abbott Park, IL.
19. Keel BA (1991) The Andrology Laboratory, Performance of Tests and Certification of Procedures. Kansas Society for Medical Technology Annual Meeting, Hutchinson, KS.
20. Keel BA (1992) Human Alpha Fetoprotein as a Modulator of Cell Proliferation. Oregon Regional Primate Research Center, Beaverton, OR.
21. Keel BA (1992) Human Alpha Fetoprotein as a Modulator of Cell Proliferation and Differentiation. Adeza Biomed, Sunnyvale, CA.
22. Keel BA (1993) Human Alpha Fetoprotein as a Modulator of Cell Proliferation and Differentiation. Department of Biological Sciences, The Wichita State University, Wichita, KS.

23. Keel BA (1993) Effects of Alpha Fetoprotein on Cellular Proliferation and Differentiation. Department of Biological Sciences, Emporia State University, Emporia, KS.
24. Keel BA (1993) Sperm Function Assays: Do They Provide Relevant Information Regarding Male Fertility? Controversies in Reproductive Biology and Technology, Post Graduate Course of the American Fertility Society, Montreal, Canada.
25. Keel BA (1993) Preparation of the Andrology Laboratory for Inspection, CLIA '88 and the CAP Checklist. Accreditation of the Andrology and ART Laboratories: Understanding the Legislation, Administration and Implementation, Post Graduate Course of the American Fertility Society, Montreal, Canada.
26. Keel BA (1993) Male Infertility, Evaluation and Treatment. Concepts in Infertility: 1993, Wichita, KS.
27. Keel BA (1994) In Vitro Fertilization. New Technologies That Are Revolutionizing Laboratory Testing, 38th Annual Meeting of the American Association of Bioanalysts, Kailua-Kona, HI.
28. Keel BA (1994) Maternal Serum Screening: A Program Not a Laboratory Procedure. Ground Rounds, Department of Obstetrics and Gynecology, Kansas University Medical Center, Kansas City, KS.
29. Keel BA (1994) Alpha Fetoprotein: A Biochemical Curiosity or Biological Phenomenon. Department of Biological Sciences, Wichita State University, Wichita, KS.
30. Keel BA (1994) CLIA'88 Accreditation Update. Laboratory Accreditation: Experience of the Inspector and the Inspectee, Postgraduate Course of the American Fertility Society, San Antonio, Texas.
31. Keel BA (1994) CLIA'88-Experiences of the Inspectee. Laboratory Accreditation: Experience of the Inspector and the Inspectee, Postgraduate Course of the American Fertility Society, San Antonio, Texas.
32. Keel BA (1995) Control of Ovarian Cellular Proliferation and Differentiation: Role of Growth Factors and MAP Kinase. Interdisciplinary Reproductive Biology Group Seminar, Department of Animal Sciences, University of Florida, Gainesville, Florida.
33. Keel BA (1995) Assisted Reproductive Technology: The State of the A.R.T. Future Trends in The Laboratory Industry, 39th Ann. Meet of the American Association of Bioanalysts, Las Vegas, NE.
34. Keel BA (1995) Effects of Alpha Fetoprotein on Cellular Proliferation and Differentiation. Department of Physiology, University of Oklahoma Health Science Center, Oklahoma City, OK.
35. Keel BA (1996) The Physician-Lab Relationship. Andrology and Embryology-Back to Basics, AAB Eastern Regional Workshop, London, Ontario, Canada.

36. Keel BA (1996) Coordination of Lobbying Efforts – Panel Discussion, American Association of Tissue Banks, Reproductive Council Meeting, Washington, DC.
37. Keel BA (1996) CLIA, CDC, SART, CAP, AAB and ABB: What is the Current State of the ART? St. Louis ART Group Meeting, St. Louis, MO.
38. Keel BA (1997) CLIA'88: A Review. AAB Andrology and Embryology Review Course, San Diego, CA.
39. Keel BA (1997) Overview of Male Reproduction. AAB Andrology and Embryology Review Course, San Diego, CA.
40. Keel BA (1997) The Semen Analysis. AAB Andrology and Embryology Review Course, San Diego, CA.
41. Keel BA (1997) The Semen Analysis. Kansas Medical Technology Society Annual Meeting, Wichita, KS.
42. Keel BA (1997) To Be Regulated, or Not To Be Regulated; That Is The Question!! Northern California Association of Reproductive Biology, San Francisco, CA.
43. Keel BA (1997) Banking of Gametes and Reproductive Tissues: Should There be More Regulation? Workshop, American Association for Reproductive Medicine Annual Meeting, Cincinnati, OH
44. Keel BA (1997) ART: To Be Regulated, or Not To Be Regulated; That Is The Question. Eastern Regional Meeting of the American Association of Bioanalysis, Cherry Hill, NJ.
45. Keel BA (1998) The Basics of Laboratory Quality Control and Quality Assurance. Primer Taller de la Region Norteamericana y del Caribe de la Red Latinoamericana de Reproduccion Asistida (First Workshop of the North American and Caribbean Region of the Network of Latin American Assisted Reproduction), Mexico City, Mexico.
46. Keel BA (1998) Quality Control and Quality Assurance in the Embryology Laboratory. Primer Taller de la Region Norteamericana y del Caribe de la Red Latinoamericana de Reproduccion Asistida, Mexico City, Mexico.
47. Keel BA (1998) Quality Control and Quality Assurance in the Andrology Laboratory. Primer Taller de la Region Norteamericana y del Caribe de la Red Latinoamericana de Reproduccion Asistida, Mexico City, Mexico.
48. Keel BA (1998) General Laboratory Management. AAB Andrology and Embryology Review Course, Chicago, IL.
49. Keel BA (1998) Andrology Checklist. CAP Surveyor Training Workshop, Charleston, SC.

50. Keel BA (1998) MAPing EGF Action in the Ovary: The Role of Mitogen Activated Protein Kinase. Symposium on Reproductive Biology and Hormone Action, Augusta, GA.
51. Keel BA (1999) Quality Control in the ART Laboratory. Serono Simposio de Medicina Reproductiva, Mexico City, Mexico.
52. Keel BA (1999) Quality Control of High Technology. Serono Simposio de Medicina Reproductiva, Mexico City, Mexico.
53. Keel BA (1999) Quality Control in the Clinical Endocrinology Laboratory. Serono Simposio de Medicina Reproductiva, Mexico City, Mexico.
54. Keel BA (1999) Reproductive Technologies: Is More regulation Needed? Ethics at the Beginning of Life: Nurturing Life in its Early Stages. Kansas Health Ethics Ann. Conference, Wichita, KS.
55. Keel BA (1999) How to Prepare ART Laboratories for Inspection. Challenges and Strategies in Assisted Reproductive Technology: An ART Workshop, Cozumel, Mexico.
56. Keel BA (1999) From the Testis to the Ovary: 20 Years of Study, a Lifetime of Rewards. School of Graduate Studies, Medical College of Georgia, Augusta, GA.
57. Keel BA (1999) Andrology Checklist. CAP Surveyor Training Workshop, Toronto, Canada.
58. Keel BA (1999) Basic Conditions of an Assisted Reproductive Laboratory. Red Latinoamericana de Reproduccion Asistida Preparation Workshop for the Accreditation of the Centers. Mexico City, Mexico.
59. Keel BA (1999) Low Complexity: Minimum Conditions of an Assisted Reproduction Laboratory. Red Latinoamericana de Reproduccion Asistida Preparation Workshop for the Accreditation of the Centers. Mexico City, Mexico.
60. Keel BA (1999) Embryo Transfer: The Embryologists Point of View. Red Latinoamericana de Reproduccion Asistida Preparation Workshop for the Accreditation of the Centers. Mexico City, Mexico.
61. Keel BA (1999) Laboratory Information Registry System. Red Latinoamericana de Reproduccion Asistida Preparation Workshop for the Accreditation of the Centers. Mexico City, Mexico.
62. Keel BA (2000) American Board of Bioanalysis Certification of Embryology and Andrology Laboratory Directors. Florida Board of Clinical Laboratory Personnel. Jacksonville, FL.
63. Keel BA (2000) General Laboratory Management. AAB Andrology and Embryology Review Course. Chicago, IL

64. Keel BA (2000) Clinical Laboratory Improvement Amendments of 1988: A Review. AAB Andrology and Embryology Review Course. Chicago, IL.
65. Keel BA (2000) Overview of the ABB Certification and Examination Process. AAB Andrology and Embryology Rev. Course. Chicago, IL.
66. Keel BA (2000) Board Certification of Personnel and Accreditation of Assisted Reproductive Technology Laboratories in the United States. ART in Y2K: Challenges and Strategies in Assisted Reproductive Technology. Kona, HI.
67. Keel BA (2001) Using the Computer and Internet for Business and Personal Tasks. American Association of Bioanalysts Annual Meeting and Educational Conference, Las Vegas, NV.
68. Keel BA (2001) Are Sperm Counts Declining? 2001 An ART Odyssey: Challenges and Strategies in Assisted Reproductive Technology. Waikoloa, HI.
69. Keel BA (2001) Accreditation of Laboratories, Certification of Personnel. 1st Annual Meeting of the Assisted Reproductive Medical Technology Program, Tokyo, Japan.
70. Keel BA (2001) Are Sperm Counts Declining? St. Luke Medical Clinic and Hospital, Oita City, Japan.
71. Keel BA (2002) What Impact Does HIPAA Have on Human Subjects Research? HARK HIPAA Summit, Topeka, KS.
72. Keel BA (2002) Are Sperm Counts Declining in Midwestern Men? Department of Biological Sciences Seminar Program, Wichita State University, Wichita, KS.
73. Keel BA (2002) Are Sperm Counts Declining in Men? Department of Biology Natural Sciences Seminar Series, Florida State University, Tallahassee, FL.
74. Keel BA (2002) Establishing Productive University/Industry Relationships: Transferring Technology While Protecting Academic Freedom, Graduate Students: Face-to-Face With Intellectual Property Protection and Commercialization Issues, American Chemical Society Southeast Regional Meeting, Charleston, SC.
75. Keel BA (2003) The Sperm Chronicles: Confessions of a Clinical Andrologist. College of Medicine Seminar Series, Florida State University, Tallahassee, FL.
76. Keel BA (2003) Protecting America's Secrets, While Maintaining Academic Freedom. Sustainable Campus Security: The Path Forward, Oak Ridge Associate Universities National Conference, Atlanta, GA.
77. Keel BA (2003) The Semen Analysis. AAB Andrology and Embryology Review Course. Chicago, IL.
78. Keel BA (2003) Lab Management (HCLD Level), Part I and II. AAB Andrology and

- Embryology Review Course. Chicago, IL
79. Keel BA (2003) Overview of the ABB Certification and Examination Process. AAB Andrology and Embryology Review Course. Chicago, IL.
 80. Keel BA (2003) The Andrology Laboratory: How to Do it *Wrong*. 2003 Annual Scientific Meeting of the Society for the Study of Male Reproduction, Chicago, IL
 81. Keel BA (2003) The Semen Analysis. AAB Annual Meeting, Denver, CO.
 82. Keel BA (2003) Establishing productive university/industry relationships: transferring technology while protecting academic freedom. Face-to-Face with Intellectual Property Protection and Commercialization Issues. 226th National Meeting of the American Chemical Society, New York, NY.
 83. Keel BA (2003) Protecting America's Secrets While Maintaining Academic Freedom. University Security Workshop, Clemson University, Clemson, SC.
 84. Keel BA (2004) Semen Analysis. AAB Andrology and Embryology Review Course. Dallas, TX.
 85. Keel BA (2004) Lab Management (HCLD Level), Part I and II. AAB Andrology and Embryology Review Course. Dallas, TX.
 86. Keel BA (2004) The AAB Exam – Logistics, Grading, etc. AAB Andrology and Embryology Review Course. Dallas, TX.
 87. Keel BA (2004) Male Reproductive Physiology. AAB Andrology and Embryology Review Course. Dallas, TX.
 88. Keel BA (2006) Male Reproductive Physiology. AAB Andrology and Embryology Review Course. Dallas, TX.
 89. Keel BA (2006) Antisperm Antibodies and Sperm Cervical Mucus Testing. AAB Andrology and Embryology Review Course. Dallas, TX.
 90. Keel BA (2006) Sperm Function Testing. AAB Andrology and Embryology Review Course. Dallas, TX.
 91. Keel BA (2006) Semen Analysis. AAB Andrology and Embryology Review Course. Dallas, TX.
 92. Keel BA (2006) Lab Management (HCLD Level), Part I and II. AAB Andrology and Embryology Review Course. Dallas, TX.
 93. Keel BA (2006) Teaching RCR: The FSU Experiment. Central States Communication Association Annual Meeting Plenary Lecture, Indianapolis, IN.

94. Keel BA (2006) Authorship: Misconduct or Misbehavior? Handling Conflicts of Interests and Authorship Disputes. Council on Research Policy and Graduate Education Summer Forum, Portland, ME.
95. Keel BA (2006) The Sperm Chronicles: Confessions of a Clinical Andrologist, Seminar to the Department of Biological Sciences, LSU.
96. Keel BA (2008) Establishing Productive University/Industry Relationships. Patenting and Technology Transfer in University-Industry Collaboration: CHAL's 25th Anniversary Series, 235th National Meeting of the American Chemical Society, New Orleans, LA.
97. Keel BA (2008) Male Reproductive Physiology. AAB Andrology and Embryology Review Course. Dallas, TX.
98. Keel BA (2008) Antisperm Antibodies and Sperm Cervical Mucus Testing. AAB Andrology and Embryology Review Course. Dallas, TX.
99. Keel BA (2008) Sperm Function Testing. AAB Andrology and Embryology Review Course. Dallas, TX.
100. Keel BA (2008) Semen Analysis. AAB Andrology and Embryology Review Course. Dallas, TX.
101. Keel BA (2008) Lab Management (HCLD Level), Part I and II. AAB Andrology and Embryology Review Course. Dallas, TX.
102. Keel BA (2008) The Nuts and Bolts of Sponsored Program Administration. Council on Research Policy and Graduate Education Summer Forum. Monterey, CA.
103. Keel BA (2010) Antisperm Antibodies and Sperm Cervical Mucus Testing. AAB Andrology and Embryology Review Course. Dallas, TX.
104. Keel BA (2010) Semen Analysis. AAB Andrology and Embryology Review Course. Dallas, TX.
105. Keel BA (2010) Lab Management (HCLD Level), Part I and II. AAB Andrology and Embryology Review Course. Dallas, TX.
106. Keel BA (2011) Authorship and Publications. University of North Carolina at Greensboro Responsible Conduct of Research Workshop, Greensboro, NC.
107. Keel BA (2011) Mentor and Trainee Responsibilities. University of North Carolina at Greensboro Responsible Conduct of Research Workshop, Greensboro, NC.
108. Keel BA (2013) Spermatogenesis, Fertilization and ICSI. Frontiers in Reproductive Endocrinology: A Comprehensive Review and Update. Arlington, VA.
109. Keel BA (2013) The Semen Analysis. Human Embryology and Andrology for Physicians. ASRM Postgraduate Course. Boston, MA.

110. Keel BA (2013) Antisperm Antibody and Sperm-Cervical Mucus Testing. Human Embryology and Andrology for Physicians. ASRM Postgraduate Course. Boston, MA.
111. Keel BA (2014) Sperm Function, Sperm Cervical Mucus, and Antisperm Antibody Testing. AAB Andrology and Embryology Review Course. Dallas, TX.
112. Keel BA (2014) Semen Analysis. AAB Andrology and Embryology Review Course. Dallas, TX.
113. Keel BA (2014) Lab Management (HCLD Level), Part I and II. AAB Andrology and Embryology Review Course. Dallas, TX.
114. Keel BA (2015) Spermatogenesis, Fertilization and ICSI. Frontiers in Reproductive Endocrinology: A Comprehensive Review and Update. Arlington, VA.
115. Keel BA (2016) Is Clinical Laboratory Andrology a Dying Discipline? The Paul McDonough Lectureship and Symposium. Augusta, GA.
116. Keel BA (2016) Pioneering Green Practices on Campus: President's Panel. Breaking Barriers Through Innovation: 5th Annual University Facilities Summit, The University Financing Foundation. Atlanta, GA.

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