

CURRICULUM VITAE
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WORK

EXPERIENCE: Smithsonian's National Zoological Park, Department of Reproductive Sciences.
September 2009-present.
Fellow of Scholarly Studies, Post-Doctoral Fellowship. I perform research that is designed to study the preservation of cat oocytes by desiccation. This involved retrieving oocytes from cat ovaries then desiccating them by air-drying or controlled-drying. In order to analyze the effect of desiccation, I used the TUNEL assay, Comet assay (both DNA damage assays) and lamin A/C staining (observation of the nuclear envelope). I also observed the effect of preservation of sperm using four different solutions at room temperature and 4°C. This study involved collection of epididymal sperm, investigation of motility, forward progression and DNA damage using the TUNEL assay. During this fellowship I developed a study to increase the percentage of blastocyst obtained from in vitro production of cat oocytes. The current blastocyst rate from in vitro matured oocytes was approximately 20%. This study was able to demonstrate an increase in blastocyst rate to 32% and also increased the percentage of cleaved/fertilized oocytes. Other responsibilities included preparation of media for in vitro maturation, in vitro fertilization and in vitro culture; preparation of epididymal sperm for in vitro fertilization procedures; preparing purchase orders; assisting interns. I have assisted other researchers with their projects, and have worked on a team of other reproductive specialists, along with veterinarians.

Dominion Fertility, May 2011-present.
Data Entry. Enter data from their Natural Cycle IVF patients into a database so analysis can be performed. Assisted in preparing charts and graphs from analyzed data for manuscripts.

East Tennessee State University Physicians and Associates
A.K.A. Medical Education Assistance Corporation
December 2007-August 2009.
Contract assignments August 2009-February 2011.
Andrologist/Jr. Embryologist. I performed all embryology procedures including setting up for procedures, performing in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI), fertilization checks, division checks,

embryo grading, preparation for embryo transfers and blastocyst cryopreservation (vitrification and slow-cooling). I was responsible for ensuring all quality control and quality assurance was implemented and functioned as required in the Embryology Laboratory. I was put in charge of implementing all FDA requirements and keeping compliance up to date. I was also placed in charge of the inspections when the FDA came for inspection.

I was responsible for writing most of the procedures for the Andrology Laboratory as they only had a few procedures when I was hired. I performed manual method semen analysis, intrauterine insemination semen preparations, assisted reproduction semen preparations for in vitro fertilization and ICSI. I was also responsible for ensuring all quality control and quality assurance in the Andrology Laboratory.

Although when I was first hired there was an off-site director, that changed in July of 2008 and the physician became the laboratory director. I then was in charge of writing all procedures for the Embryology Laboratory and was responsible for preparation of the College of American Pathologists (CAP) inspection. I was placed in charge of the inspection when CAP inspected the Embryology Laboratory.

I ordered all supplies for both the Andrology and Embryology Laboratories. I prepared proposals for any new equipment that was needed. I also was responsible for entering SART data and final data entry at the end of the year.

Greenville Hospital System, November 2000-December 2007.

Temporary Status December 2007-July 2010.

Assisted Reproduction Technologist III. I performed plasticware testing for in-vitro procedures, semen analysis both the manual method and computer assisted semen analysis, intrauterine insemination semen preparations, assisted reproduction semen preparations for in vitro fertilization and intracytoplasmic sperm injection (ICSI), semen cryopreservation, ICSI procedures, IVF procedures, assisted hatching procedures, embryo cryopreservation procedures (vitrification and slow-cooling) and endocrine assays using the Immulite 1000. I ensured quality control was performed in the Assisted Reproduction Lab daily, weekly, monthly, quarterly and yearly. I also supervised the day to day activities of the Assisted Reproduction Laboratory for quality assurance, and ensured that the laboratory was prepared for procedures with enough employee coverage for the activities that occurred. I was responsible for being sure all employees have their competency checklist performed every year. This was a system that was formally written out and took many hours for all employees to read through. I revised the system in powerpoint presentations and reduced the time significantly.

Prior to becoming a technologist III, at the technologist II level, I was also responsible for ordering inventory and controlling stock for the Andrology and assisted reproduction labs.

Clemson University, December 1999-July 2002.

Agricultural Animal Assistant II. Provided care and daily upkeep of animals. Assisted in surgeries, anesthesia and other procedures. I was responsible for drug inventories and assisting veterinarians at Clemson University farms.

USA Grocers, July 1999-December 1999.

Senior Cashier. Customer service, cleaned store and performed manager duties when needed.

Amerada Hess Corporation, August 1989-July 1999.
Senior Cashier. Customer service, cleaned store, stocked groceries, ordered merchandise and provided employee schedules. I also filled in as a manager during one-year vacancy.

Clemson Animal Hospital, February 1991-February 1994
Veterinary Technician. Cleaned kennels, assisted with surgery, developed x-rays, blood and fecal lab work, and assisted veterinarian.

Ticehurst Animal Hospital, 1987-1988
Veterinary Assistant. Assisted veterinarian, some lab work, assisted veterinary technicians, secretarial work and receptionist work.

EDUCATION:

Clemson University, PhD, December 2008

Major: Biological Science

Dissertation: Project was comparing vitrification and slow-cooling of two-cell mouse embryos using live-births, blastocyst rates and the Comet Assay.

Experience: The project exposed me to the understanding of cryopreservation and the damage it can cause to mouse embryos. It added to my experience as an Assisted Reproduction Technologist.

Clemson University, MS, 2000

Major: Animal Physiology

Thesis: The Effect of Atrazine on In vitro Maturation and In vitro Fertilization of Bovine Oocytes.

Experience: This project allowed me to be exposed to the realm of in vitro production. I aspirated oocytes from slaughterhouse ovaries, thawed bovine semen and performed concentration and motility assessments to ensure fertilization of oocytes, performed in vitro maturation, in vitro fertilization, in vitro culture to blastocyst, and prepared media. It exposed me to in vitro maturation, in vitro fertilization and the production of culture media. This project also allowed me to take the experience I had and transfer that to a career in the human reproductive laboratory.

Clemson University, BS, 1997

Major: Animal Science

Emphasis: Pre-veterinary Science

Tri County Technical College, AS, 1992

Major: Applied Health Science

Minor: Veterinary Technology

OTHER:

Member of the Southeastern Branch of the American Association for Laboratory Animal Science 2001.

Georgia State Board Veterinary Technician 1992-present.

South Carolina State Board Veterinary Technician
1992-1994.

Member of the American Board of Bioanalysis (ABB) 2008-present

Technical Supervisor (ABB) in Andrology 2008-present

Technical Supervisor (ABB) in Embryology 2008-present

High-complexity Clinical Laboratory Director (ABB) in Andrology and Embryology 2009-present

Member of the Society for the Study of Reproduction 2011-present

PUBLICATIONS:

Graves, JE; Richardson, ME; Bernard, RS; Camper, ND; Bridges, WC. Atrazine Effects on in vitro Maturation and in vitro Fertilization in the Bovine Oocyte. *Journal of Environmental Science and Health*. B37(2), 1-10 (2002).

Graves, JE; Higdon III, HL; Johnson, JE; Blackhurst, DW; Boone, WR. Longevity of Donor Serum. *Journal of Assisted Reproduction and Genetics*. 2004;21(2):51-53.

Graves, JE; Higdon III, HL; Boone, WR; Blackhurst, DW. Developing techniques for determining sperm morphology in today's andrology laboratory. *Journal of Assisted Reproduction and Genetics*. 2005;22(5):219-225.

Graves-Herring, JE; Boone, WR. Blastocyst rates and live births from vitrification and slow-cooled two-cell mouse embryos. *Fertility and Sterility*. 2009;91(3):920-4.

Graves-Herring JE; Boone WR. Comparison of open and closed systems for vitrification. *The Journal of Clinical Embryology*. 2009;12(3):23-7.

Graves-Herring JE; Boone WR. The effect of time in vitrification solution on mouse embryo development, birth rate and DNA damage. *The Journal of Clinical Embryology*. 2009;12(4):21-7.

PRESENTATIONS:

Higdon III, HL; Graves, JE; Boone, WR. Incubator Management: Dual Versus Triple Gas Incubators For In Vitro Production Of Mammalian Embryos. Presented at AAB April 25, 2002.

Graves, JE; Higdon III, HL; Johnson, JE; Boone, WR. Longevity of Donor Serum. Presented at South Carolina Academy of Science April 12, 2002.

Graves, JE; Higdon III, HL; Boone, WR. Sperm Morphology. Presented at South Carolina Academy of Science March 21, 2003.

Higdon III, HL; Graves, JE; Boone, WR. Sperm Morphology: What is normal? Presented at South Carolina Academy of Science March 21, 2003.

Hansen, M; Graves, JE; Higdon III, HL; Boone, WR. Vitrification of mouse embryos in a closed system. Presented at South Carolina Academy of Science March 21, 2003.

Higdon III, HL; Boone, WR; Graves, JE; Blackhurst, DW. Air quality with in the incubator: Will volatile organic compound (VOC) filters make a difference in in vitro fertilization? Presented at ASRM Annual Meeting, October 11-15, 2003, San Antonio, Texas.

Higdon III, HL; Boone, WR; Graves, JE. Incubator Management: Effect of dual versus triple gas incubation on in vitro fertilization of mammalian embryos. Presented at ASRM Annual Meeting, San Antonio, Texas, October 11-15, 2003.

Graves, JE; Higdon, HL III; Boone, WR. A closed-system for vitrification that provides acceptable blastocyst rates. Presented at ASRM Annual Meeting, Philadelphia, PA, October 16-20, 2004.

Graves-Herring, JE; Higdon III, HL; Boone, WR. Extended time in vitrification solution still yields live births. Presented at South Carolina Academy of Science at Winthrop University, SC, March 16, 2005.

Higdon III, HL; Johnson, JE; Graves, JE; Boone, WR; Teitloff, TC. Does time from insemination until zygotes are cryopreserved affect frozen embryo transfer pregnancy rate? Poster presentation at South Carolina Academy of Science at Winthrop University, SC, March 16, 2005.

Kao EK; Higdon III, HL; Graves-Herring, JE; Boone, WR. Devices used to vitrify mammalian embryos. Presented at South Carolina Academy of Science at Winthrop University, March 16, 2005.

Johnson, JE; Higdon III, HL; Graves-Herring, JE; Proctor, JG; Boone, WR. In vitro maturation of human oocytes: Effect of culture with cumulus cells. Sero Symposium International Meeting. Tampa, FL, April 26-28, 2006.

Graves-Herring, JE; Boone, WR. Embryo development after exposure to vitrification solution for 32 minutes. Poster presentation at the Society for the Study of Reproduction, Omaha, Nebraska, July 29-August 1, 2006.

Graves-Herring, JE; Boone, WR. Lengthy exposure to vitrification solution causes an increase in DNA damage. Poster presentation at the American Society Reproductive Medicine, October 21-25, 2006.

Graves-Herring, JE; Boone, WR. A comparison of DNA damage between vitrified and slow-cooled mouse embryos. Platform presentation at the Society for the Study of Reproduction, San Antonio, Texas, July 21-25, 2007.

Graves-Herring, JE; Boone, WR; Higdon III, HL. The effect of bleach on two-cell mouse embryos sealed in Cryo Bio System Straws: a preliminary study. Poster presentation at the American Society Reproductive Medicine, Washington DC, November 2007.

Graves-Herring, JE; Wildt, DE; Comizzoli, P. Novel approaches to preserve the maternal and paternal genomes in felids. Felid TAG Conference, Omaha, Nebraska, May 1-7, 2011.

Graves-Herring, JE; Wildt, DE; Comizzoli, P. Improved in vitro blastocyst production using a single culture condition for combined oocyte maturation, fertilization and embryo development: Lessons from the domestic cat model. Platform presentation at the AAB Annual Meeting and Educational Conference, Austin, Texas, May 11-14, 2011.

Graves-Herring, JE; Wildt, DE; Comizzoli, P. Protective effect of trehalose during desiccation and storage of oocytes: A novel approach to preserve the germinal vesicle using the cat model. Poster presentation at the Society for the Study of Reproduction Annual Meeting, Portland, Oregon, July 31- August 4, 2011.

REFERENCES:

William Boone, Ph.D., H.C.L.D. Laboratory director at Greenville Hospital System.

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H. Lee Higdon, Ph.D., H.C.L.D. Research supervisor at Greenville Hospital System.

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