



**PROFESSIONAL EXPERIENCE AND ACADEMIC APPOINTMENTS:**

- 1992-present Professor of Veterinary Integrative Biosciences, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University, College Station, Texas.
- 1987-1992 Associate Professor of Veterinary Anatomy, Texas A&M University, College Station, Texas.
- 1980-1987 Assistant Professor of Cell Biology, The University of Texas Health Science Center at Dallas Southwestern Medical School.
- 1979 Assistant Instructor of Cell Biology, The University of Texas Health Science Center at Dallas Southwestern Medical School.
- 1978-1979 Postdoctoral Research Fellow in Reproductive Biology, The University of Texas Health Science Center at Dallas Southwestern Medical School.
- 1974-1978 Graduate Research Assistant as Ph.D. Candidate, Colorado State University.
- 1971-1974 Graduate Research Assistant as M.S. Candidate, Virginia Polytechnic Institute and State University.

**CLINICAL SPECIALTY/BOARD CERTIFICATION: N/A**

**AWARDS AND HONORS:**

NIH New Investigator Research Award, 1983-1986; 1988 Young Andrologist Award, from the American Society of Andrology; Invited speaker (Spermatogenesis, Animal Species and Humans) at 1988 International Symposium on Gamete Physiology, Serono Symposia, USA; Invited speaker (Spermatogenesis in humans and animal species), 1990 Japan Society of Andrology; Invited speaker (Spermatogenesis in domestic animals and approaches to its enhancement) at the XI Brazilian Congress of Animal Reproduction 1995; Invited speaker (Efficiency of Spermatogenesis in Humans), College of Medicine, University of Utrecht, The Netherlands, 1996; Invited speaker (Transplantation on Spermatogenesis: Sperm Decline in Humans), La Federation Francaise Pour L'etude de la Reproduction, 1997; Research Career Development Award 1991-1996; Editorial Boards of Biology of Reproduction (1989-1995), of AGE (1992-1995), and Journal of Andrology (1997-present); University-level teaching award from TAMU Honors Undergraduate Program, 1996; College-level Teaching Award in Biomedical Science Undergraduate Program, 1999; The KINDER Award (Kids in Need of Drug Evaluation and Rx Treatment Clinic in Houston, TX) for contributions to the well being of children at risk, 2001, through our Partnership for Environmental Education and Rural Health Program (<http://peer.tamu.edu>); Local Texas A&M University Chapter of Sigma Xi Science Communication Award, 2001. Association of Former Students Distinguished Achievement Award for Extension and Outreach from Texas A&M University, 2007. Bush Award, 2009. Named Executive Director of TAMU Chapter of Sigma Xi, 2010.

**PROFESSIONAL ORGANIZATIONS AND SERVICE:**

American Association for the Advancement of Science, American Society of Andrology, American Society of Animal Science, Society for Study of Fertility, Society for Study of Reproduction

**Honorary Society:** Sigma Xi; Past President of TAMU Chapter, 1999-2000;  
Chair of the Award Committee, 1997;  
Member of Science Promotion Committee, 2001-present;  
Sigma Xi; Executive Director of TAMU Chapter, 2010-present;

**EDITORIAL BOARDS:**

Member of the Editorial Board of Journal of Andrology (1997-2006)

Member of the Editorial Board of Biology of Reproduction (1989-1995)

Member of the Editorial Board of the Journal of the American Aging Association (1989-1995)

**MAJOR COMMITTEE ASSIGNMENTS:**

1. Served on the Advisory Panel to the Office of Technology Assessment of the Congress of the United States for the assessment of "Reproductive Hazards in the Workplace" 1983-1984.
2. Served on NIA grant review panel for a program of projects, 1992, 1993, 1994.
3. Speaker at the EPA workshop on "Sperm Measures and Reproductive Success," 1988.
4. Served on USDA panel for Competitive Research in Reproduction of Animals.
5. Served on NIH grant review panel for biochemical endocrinology, 1993.
6. Member of Education Committee for Society for the Study of Reproduction.
7. Served on NIH review panel - member of NIEHS panel to review educational materials for middle schools produced by Biological Sciences Curriculum Study (BSCS) of Colorado on a contract from NIEHS, 2000.
8. National grant review panel - member of the FETAX Expert Panel for NIEHS to evaluate the value of frog eggs for toxicology screening assay, 2000.
9. National Review Panel - NIOSH Study Section for Agricultural Disease and Injury Research, Education, and Prevention, 2001.
10. Served on NIH Grant Review Panel - Member of National Institute of Alcohol and Abuse Review Panel for K-12 Alcohol Grants, 2004.
11. Served on National Science Foundation GK-12 Grant Review Panel, 2004.
12. Served on National Science Foundation GK-12 Grant Review Panel, 2005.
13. National grant review panel: NIOSH study section for agricultural disease and injury research, education, and prevention, 2006.
14. Served on National Science Foundation GK-12 grant review panel, 2006.
15. Served on National Science Foundation GK-12 grant review panel, 2007.

13. Currently Serving National grant review panel: NIOSH study section for agricultural disease and injury research, education, and prevention, 2011.
14. Currently Serving on NIH/NIMHD Grant Review Panel - Member of National Institute of Minority Health and Health Disparities Review Panel for R-25 Grants, 2011.

**MANUSCRIPT REVIEW FOR JOURNALS:**

Ad hoc reviewer: American Journal of Anatomy, Animal Science, Anatomical Record, Biology of Reproduction, Endocrinology, Journal of Andrology, Journal of Experimental Zoology, Journal of Reproduction and Fertility, New England Journal of Medicine, Reproductive Toxicology, Human Reproduction, Life Sciences, Journal of Applied Physiology, and Journal of Cell Physiology

**GRANT REVIEW COMMITTEES:**

1. Ad hoc reviewer for U.S. Department of Agriculture, Competitive Research Grants Program in the area of Reproductive Efficiency, 1985, 1988. 1993.
2. Ad hoc reviewer of grants for the March of Dimes, 1989, 1990, 1991.
3. Ad hoc reviewer of grants for the Veterans' Administration, 1990, 1991, 1993, 1994, 1995.
4. Ad hoc reviewer of grants for the National Institutes of Health, 1991.
5. Reviewer for NIEHS (Department of Health and Human Services Public Health Service) final reports, 1998.
6. National Review Panel - NIOSH Study Section for Agricultural Disease and Injury Research, Education, and Prevention, 2001.
7. NIH National Institute for Alcohol and Abuse Review Panel for K-12 Alcohol Grants, 2004.
8. NSF Review Panel for Graduate K-12 (training-like) Grants, 2004-present.

**TEACHING EXPERIENCE:**

Undergraduate:

<u>Course Title</u>	<u>Institution</u>	<u>Credit Hr</u>	<u>% of Course</u>	<u>Formal Contact Hr</u>	<u>Dates</u>
VIBS 443 Biology of Mammalian Cells & Tissues	TAMU	4	80%	90	1998- Present
VIBS 343 Histology	TAMU	4	80%	90	1998- 2004

VIBS 489 Special Study	TAMU	3/4	80%	30/student	1998- Present
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Professional:

<u>Course Title</u>	<u>Institution</u>	<u>Credit Hr</u>	<u>% of Course</u>	<u>Formal Contact Hr</u>	<u>Dates</u>
VIBS 948 Communication for Veterinary students through K-12	TAMU	1	20%	15	2007-Present

Graduate:

<u>Course Title</u>	<u>Institution</u>	<u>Credit Hr</u>	<u>% of Course</u>	<u>Formal Contact Hr</u>	<u>Dates</u>
VIBS 602 Histology	TAMU	4	80%	90	1998- Present
VIBS 443 Biology of Mammalian cells and Tissues	TAMU	4	80%	90	
VMID 686 Scientific Ethics (Taught every other year)	TAMU	1	20%	1	1998- Present

Graduate Students:

<u>Name</u>	<u>Degree</u>	<u>Advisor or Institution Committee Member</u>	<u>Dates</u>
Andrew J. McDougal	PhD	Member	1998-2000
Gabby Foxworth	PhD	Member	1998-2000
Betty Pauline Carrell	MS	Member	1998-2000
Kelcey Baker	PhD	Member	2000-2003
Indira Kuriocham, ENDO	PhD	Member	2001-2005
Monica Raquel Trevino-Anderson, AGED	MS	Member	2003-2004
Noah Heningen, ANSC	PhD	Member	2000-2005
Heather (Shannan) Degenhart, AGED	MS	Member	2004-Pres.
Diane Mowen, AGED	MS	Member	2004-Pres.

Jessica Hamm, VTPB	MS	Member	2005-2009
Josh Johnson, VTPB	MS	Member	2008-2009
Jared Dabney VTPB	MS	Member	2008-Pres.
Misha Kidambi VIBS	MS	Member	2009
Emily Roberge (White) VIBS	MS	Member	2010
Barbara Mendoza VIBS	MS	Member	2010
George Hale VIBS	MS	Member	2011

Residents/Interns/Postdoctoral Fellows:

<u>Name</u>	<u>Institution</u>	<u>Advisor or Committee Member</u>	<u>Dates</u>
Dr. Christopher Staub	TAMU	Post-Doc Advisor	9/1/00 - 2002

Predocctoral Fellows:

<u>Name</u>	<u>Institution</u>	<u>Dates</u>
None		

**TEACHING PROGRAMS**

- Prepared elaborate set of notes and slides for histology class.
- Developed a study interactive program used in the AT laboratory for students in histology on all tissues/EMs covered in my undergraduate, honors undergraduate, and graduate histology classes.
- Produced a CD of that program for students to study at home.
- Coordinated a scientific ethics course.
- Provided students via VAPH 485 courses the opportunity to learn how to teach histology.
- Presentation to 100 4H students and parents on Anatomy and Physiology.
- Essay and drawing contests for public school students relating to the University Lecture Series and Provost's Office.
- PEER outreach scientists' visits to rural schools (250 students and 8 teachers visited last year in their classrooms) and interacted with TAMU Financial Aid to recruit minority students.
- Participated in Summer Honors Invitational Program (SHIP) to recruit top students to TAMU's Honors Program.
- Duke TIP program on "Introduction to Veterinary Medicine" in summer of 2009. We had two three-week programs in which collaboration of 20 CVM faculty were involved to broaden the impact of their programs.
- Directed two full time teachers to develop curricula, run a summer vet camp, and train teachers.

**RESEARCH ACTIVITIES:**

NIH. AG02260 "Biology of the aging human testis" \$333,000 for 9-1-1983 to 12-31-1988. William B. Neaves, Principal Investigator; Larry Johnson, Co-Principal Investigator.

NIH. HD16773 "Modulation of spermatogenesis" \$263,000 for 4-1-1983 to 3-31-1992. Larry Johnson, Principal Investigator.

- NIH. Institutional Grant. RR07175 "Post-mitotic attrition of germinal cells during spermatogenesis in humans" \$4,000 for 8-1-1980 to 7-31-1981. Larry Johnson, Principal Investigator.
- U.S. Air Force Contract C-0616. "Testicular function and the effects of microwave radiation" \$50,607 for 4-1-1983 to 3-31-1985. Robert Lebovitz, Principal Investigator; Larry Johnson Co-Principal Investigator.
- IBT-ERA. Cellular Regulation of stage-specific Sertoli cell gene expression & cyclic AMP production. \$18,000/year for 1989-1991. Larry Johnson, Principal Investigator.
- TAES-ERA. Effects of gossypol-containing cotton products on bovine reproduction. \$40,000 1989-1991 (\$5,000 for Dr. Johnson's part). Ron Randel, Principal Investigator; Gary Williams and Larry Johnson, Co-Principal Investigators.
- College Research Enhancement Grant. "Establishment of a laboratory for stallion reproduction studies" \$26,833 for 1989-1991. Larry Johnson, Principal Investigator.
- TAES Research Enhancement Program Grant. (a) Signaling in the control of reproductive processes." \$174,000 for 1991-1993. Larry Johnson, Principal Investigator and coordinator of this program of projects (\$9,000/yr. to Johnson laboratory). (b) "Further development of the equine Sertoli model for male reproductive studies." \$20,000 for 1992-1993. Larry Johnson, Principal Investigator.
- NIH AG00465-01 (RCDA) "Biology of the aging human testis" \$320,000 direct for 6/01/1991-11/30/98. Larry Johnson, Principal Investigator.
- NIH AG11093-10 (R01) "Control of Sertoli cell number and testicular size" \$240,000 direct for 6/01/1992-11/30/1998. Larry Johnson, Principal Investigator.
- NIH T32-ES07273 "Toxicology of Environmental Contaminants" \$140,000 (Project Direct Cost) 07/01/97 - 06/30/02. Stephen Safe, Principal Investigator.
- NIH P30-ES09106 Center for Environmental and Rural Health" \$400,000 (Project Direct Cost) 04/01/98-03/31/02. Stephen Safe, Principal Investigator.
- NIH N01-HD-8-3281 Declining Sperm Counts: Autopsy Study" \$172,561 (Project Annual Direct Cost) 09/01/98 - 12/31/02 Larry Johnson, Principal Investigator.
- NIH R25-ES10443-01 Environmental and Rural Health Education Partnership (Phase 1)" \$600,000 (Direct for 1999-2002) Larry Johnson, Principal Investigator.
- NIH R25-ES10735-01 Integrating Environmental Health Science in Rural Schools " \$1,750,000 (Project Direct Cost) 09/01/00 - 08/31/2007 Larry Johnson, Principal Investigator.
- NIH R25-ES10735-01 Supplement. Pre-service and Novice teacher training and mentoring " \$99,000 (09/01/04 - 08/30/06).
- NSF GK-12 0-338310 Fellows Integrate Science/Math in Rural Middle Schools " \$1,590,000 (Direct Cost) 01/01/04 - 12/31/06) Larry Johnson, Principal Investigator.
- NSF GK-12 03-338310. Supplement. Fellows Integrate Science/Math in Rural Middle Schools " \$60,000. (01/01/04 - 12/31/06).
- NSF GK12 grant "Continuation: Fellows Integrate Science in Rural Middle Schools, Larry Johnson, PI, 2007-2011, \$1,700,000.
- NIH NCRR R25RR022711-01A2 "Science Promotion in Rural Middle Schools: Phase I and II." 09/01/2007- 06/30/2012 \$1,351,569.
- NIEHS 10735002 R25, "Integrating Environmental Health Science into Rural Schools," Larry Johnson, PI. 2000-2008 \$1,750,000 direct.

NSF GK12 grant “Fellows Integrate Science in Rural Middle Schools,” Larry Johnson, PI, 2004-2008 \$1,600,000.

NIH NCRR R25RR022711-01A2 “Science Promotion in Rural Middle Schools: Phase I and II.” Larry Johnson, PI. Supplement \$133,000 2010-2011.

**GRANT APPLICATIONS PENDING: (submitted 2011)**

NIAID Research Promotes Interest in Science, Outreach, and K-12 Education Reform, Larry Johnson, PI, 12/01/2011-11/30/2016, \$936,550.

NIAAA Science Teachers Experience and Communicate Alcohol Abuse, and Alcoholism Research, Larry Johnson, PI, 05/01/2011-04/30/2016, \$537,465.

NIH NCRR R25RR022711-01A2 “Science Promotion in Rural Middle Schools: Phase I and II.” Larry Johnson, PI. Supplement \$133,000 2011-2012.

Neuroscience Research Promotes Interest in Science, Outreach, and K-12 Education Reform, Larry Johnson, PI, 9/01/2011-8/30/2016, \$1,250,000.

**BIBLIOGRAPHY:**

**Publications in Refereed Journals:** (journals only)

1. Johnson, L., W.E. Berndtson, and B.W. Pickett. 1976. An improved method for evaluating acrosomes of bovine spermatozoa. *J. Animal Sci.* 49:951-956.
2. Amann, R.P., L. Johnson, D.L. Thompson, Jr., and B.W. Pickett. 1976. Daily spermatozoal production, epididymal spermatozoal reserves and transit time of spermatozoa through the epididymis of the Rhesus monkey. *J. Androl.* 15:586-2.
3. Amann, R.P., L. Johnson, and B.W. Pickett. 1977. Connection between the seminiferous tubules and the efferent ducts in the stallion. *Am. J. Vet. Res.* 38:1571-1579.
4. Johnson, L., R.P. Amann, and B.W. Pickett. 1978. Scanning electron and light microscopy of the equine seminiferous tubule. *Fertil. Steril.* 29:208- 215.
5. Johnson, L., R.P. Amann, and B.W. Pickett. 1978. Scanning electron microscopy of the epithelium and spermatozoa in the equine excurrent duct system. *Am. J. Vet. Res.* 39:1428-1434.
6. Johnson, L., R.P. Amann, and B.W. Pickett. 1980. Maturation of equine epididymal spermatozoa. *Am. J. Vet. Res.* 41:1190-1196.
7. Johnson, L., C.S. Petty, and W.B. Neaves. 1980. A comparative study of daily sperm production and testicular composition in humans and rats. *Biol. Reprod.* 22:1233-1243.
8. Johnson, L., C.S. Petty, and W.B. Neaves. 1980. The relationship of biopsy evaluations and testicular measurements to overall daily sperm production in human testes. *Fertil. Steril.* 34:36-40.
9. Johnson, L. and W.B. Neaves. 1981. Age-related changes in the Leydig cell population, seminiferous tubules, and sperm production in stallions. *Biol. Reprod.* 24:703-712.

10. Johnson, L., C.S. Petty, and W.B. Neaves. 1981. A new approach to quantification of spermatogenesis and its application to germinal cell attrition during human spermiogenesis. *Biol. Reprod.* 25:217-226.
11. Johnson, L. 1982. A re-evaluation of daily sperm output of men. *Fertil. Steril.* 37:811-816.
12. Johnson, L. and W.B. Neaves. 1983. Enhanced daily sperm production in the remaining testis of aged rats following hemicastration. *J. Androl.* 4:162-166.
13. Lebovitz, R.M. and L. Johnson. 1983. Testicular function of rats following exposure to microwave radiation. *Bioelectromagnetics.* 4:107-114.
14. Johnson, L., C.S. Petty, and W.B. Neaves. 1983. Further quantification of human spermatogenesis. Germ cell loss during post-prophase of meiosis and its relationship to daily sperm production. *Biol. Reprod.* 29:207-215.
15. Johnson, L. and D.L. Thompson, Jr. 1983. Age-related and seasonal variation in the Sertoli cell population, daily sperm production, and serum concentrations of follicle stimulating hormone, luteinizing hormone, and testosterone in stallions. *Biol. Reprod.* 29:777-789.
16. Johnson, L., C.S. Petty, and W.B. Neaves. 1984. Influence of age on sperm production and testicular weights in men. *J. Reprod. Fertil.* 70:211-218.
17. Johnson, L., R.M. Lebovitz, and W.K. Samson. 1984. Germ cell degeneration in normal and microwave irradiated rats: Potential sperm production rates at different developmental steps in spermatogenesis. *Anat. Rec.* 209:501-507.
18. Neaves, W.B., L. Johnson, J.C. Porter, C.R. Parker, and C.S. Petty. 1984. Leydig cell numbers, daily sperm production and serum gonadotropin levels in aging men. *J. Clin. Endocrin. and Metab.* 55:756-763.
19. Johnson, L., C.S. Petty, J.C. Porter, and W.B. Neaves. 1984. Germ cell degeneration during postprophase of meiosis and serum concentrations of gonadotropins in young adult and older adult men. *Biol. Reprod.* 31:779-784.
20. Johnson, L., R.S. Zane, C.S. Petty, and W.B. Neaves. 1984. Quantification of the human Sertoli cell population: Its distribution, relation to germ cell numbers, and age-related decline. *Biol. Reprod.* 31:785-795.
21. Johnson, L. 1985. Increased daily sperm production in the breeding season of stallions is explained by an elevated population of spermatogonia. *Biol. Reprod.* 32:1181-1190.
22. Neaves, W.R., L. Johnson, and C.S. Petty. 1985. Age-related change in numbers of other interstitial cells in the human testis: Evidence bearing on the fate of Leydig cells lost with increasing age. *Biol. Reprod.* 33:259-269.
23. Bartke, A., C.A. Sweeney, L. Johnson, D.V. Castracane, and P.C. Doherty. 1985. Hyperprolactinemia inhibits development of Leydig cell tumors in aging Fischer rats. *Exp. Aging Res.* 11:123-128.
24. Johnson, L. and H.B. Nguyen. 1986. The annual cycle of the Sertoli cell population in adult stallions. *J. Reprod. Fertil.* 76:311-316.
25. Thompson, D.L., Jr., L. Johnson, R.L. St. George, and F. Garza, Jr. 1986. Concentrations of prolactin, luteinizing hormone and follicle stimulating hormone in pituitary and serum of horses: Effect of sex, season and reproductive state. *J. Animal Sci.* 63:854-860.

26. Johnson, L. 1986. A new approach to quantification of Sertoli cells that avoids problems associated with the irregular nuclear surface. *Anat. Rec.* 214:231-237.
27. Johnson, L., C.S. Petty, and W.B. Neaves. 1986. Age-related variation in seminiferous tubules in men: A stereologic evaluation. *J. Androl.* 7:316-322.
28. Johnson, L. and D.L. Thompson, Jr. 1986. Seasonal variation in Leydig cell volume in stallions is explained by variation in cell number rather than cell size. *Biol. Reprod.* 35:971-979.
29. Johnson, L., F.W. George, W.B. Neaves, I.M. Rosenthal, R.A. Christensen, A. Decristoforo, H.U. Schweikert, M.V. Sauer, M. Leshin, J.E. Griffin, and J.D. Wilson. 1986. Characterization of the testicular abnormality in 5 alpha-reductase deficiency. *J. Clinical Endocrin. and Metab.* 63:1091-1099.
30. Lebovitz, R.M., L. Johnson, and W.K. Samson. 1987. Effects of pulse modulated microwave radiation and conventional heating on sperm production in the rat. *J. Appl. Physiol.* 62:245-252.
31. Lebovitz, R.M. and L. Johnson. 1987. Acute, whole body microwave exposure and testicular function of rats. *Bioelectromagnetics.* 8:37-43.
32. Neaves, W.B., L. Johnson, and C.S. Petty. 1987. Seminiferous tubules and daily sperm production in older adult men with varied numbers of Leydig cells. *Biol. Reprod.* 36:301-308.
33. Thompson, D.L., Jr. and L. Johnson. 1987. Effects of age, season and active immunization against estrogen on serum prolactin concentrations in stallions. *Domestic Animal Endocrinol.* 4:17-22.
34. McConnell, J.D., D.K. Stone, L. Johnson, and J.D. Wilson. 1987. Partial purification and characterization of dynein ATPase from bovine sperm. *Biol. Reprod.* 37:385-393.
35. Johnson, L., H.B. Nguyen, C.S. Petty, and W.B. Neaves. 1987. Quantification of human spermatogenesis: Effect of age on germ cell degeneration during spermatocytogenesis and meiosis. *Biol. Reprod.* 37:739-749.
36. Johnson, L., K.S. Matt, A. Bartke, H.B. Nguyen, and H.T. Le. 1987. Effect of photoperiod on the size of the Leydig cell population and the rate of recruitment of Leydig cells in adult Syrian hamsters. *Biol. Reprod.* 37:727-738.
37. Johnson, L. and D.L. Thompson, Jr. 1987. Effect of seasonal changes in Leydig cell number on the volume of smooth endoplasmic reticulum in Leydig cells and intratesticular testosterone content in stallions. *J. Reprod. Fertil.* 81:227-232.
38. Johnson, L., J.G. Abdo, C.S. Petty, and W.B. Neaves. 1988. Effect of age on the composition of seminiferous tubular boundary tissue and on the volume of each component in humans. *Fertil. Steril.* 49:1045-1051.
39. Johnson, L. and D. Varner. 1988. Effect of daily spermatozoan production but not age on transit time of spermatozoa through the human epididymis. *Biol. Reprod.* 39:812-817.
40. Johnson, L. and M.E. Tatum. 1989. Temporal appearance of seasonal changes in numbers of Sertoli cells, Leydig cells, and germ cells in stallions. *Biol. Reprod.* 40:994-999.

41. Blanchard, T.L., D.D. Varner, S.P. Brinsko, S.A. Meyers, and L. Johnson. 1989. Effects of postparturient uterine lavage on uterine involution in the mare. *Theriogenology*. 32:527-535.
42. George, F.W., L. Johnson, J.D. Wilson. 1989. The effect of a 5 alpha- reductase inhibitor on androgen physiology in the immature male rat. *Endocrinology*. 125:2434-2438.
43. Johnson, L., J.S. Grumbles, S. Chastain, H.F. Goss, Jr., and C.S. Petty. 1990. Leydig cell cytoplasmic content is related to daily sperm production in men. *J. Androl.* 11:155-160.
44. Johnson, L., V.B. Hardy, and M.T. Martin. 1990. Staging equine seminiferous tubules by Nomarski optics in unstained histologic sections and in tubules mounted *in toto* to reveal the spermatogenic wave. *Anat. Rec.* 227:167-174.
45. Johnson, L., J.S. Grumbles, A. Bagheri, and C.S. Petty. 1990. Increased germ cell degeneration during postprophase of meiosis is related to increased serum FSH concentrations and reduced daily sperm production in aged men. *Biol. Reprod.* 42:281-287.
46. Johnson, L., A.F. Kattan-Said, V.B. Hardy, and W.L. Scrutchfield. 1990. Isolation and staging equine seminiferous tubules by transillumination. *J. Reprod. Fertil.* 89:689-696.
47. Varner, D.D., S.D. Vaughan, and L. Johnson. 1991. Use of a computerized system for evaluation of equine spermatozoal motility. *Amer. J. Vet. Res.* 52:224-230.
48. Johnson, L. and A. Bartke. 1991. Effects of photoperiod on the rate of *in vivo* recruitment of epididymal principal cells in adult Syrian hamsters. *J. Exptl. Zool.* 258:89-94.
49. Johnson, L. 1991. Seasonal differences in equine spermatogenesis. *Biol. Reprod.* 44:284-291.
50. Johnson, L., D.D. Varner, and D.L. Thompson, Jr. 1991. Effect of age and season on the establishment of spermatogenesis in the horse. *J. Reprod. Fert. Supp.* 44:87-97.
51. Bartke, A., E.M. Narr, L. Johnson, M.R. May, M. Cecim, J.S. Yun, and T.E. Wagner. 1992. Effects of expression of human or bovine growth hormone genes on sperm production and male reproductive performance in four lines of transgenic mice. *J. Reprod. Fert.* 95:109-118.
52. Johnson, L., D.D. Varner, M.E. Tatum, and W.L. Scrutchfield. 1991. Season but not age affects Sertoli cell number in adult stallions. *Biol. Reprod.* 45:404-410.
53. Johnson, L., M.R. May, D.L. Busbee, and J.D. Williams. 1992. Effect of age and dietary restriction on daily sperm production and number and transit time of epididymal spermatozoa in the mouse. *AGE.* 15:65-71.
54. Varner, D.D., J.A. Bowen, and L. Johnson. 1992. Capacitation and acrosome reaction of equine spermatozoa by heparin. *Molecular Androl.* 4:81-99.
55. Johnson, L., P.K. Chaturvedi, and J.D. Williams. 1992. Missing generations of spermatocytes and spermatids in seminiferous epithelium contribute to low efficiency of spermatogenesis in humans. *Biol. Reprod.* 47:1091-1098.
56. Johnson, L., S.H. Safe, and R. Dickerson. 1992. Effect of 2,3,7,8-tetrachlorodibenzo-p-dioxin on spermatogenesis and Leydig cell volume in adult rats. *Chemosphere Dioxin '91 proceedings.*

57. Silva, P.J., L. Johnson, and B.P. Fitzgerald. 1992. Immediate changes in the hypothalamic-hypophyseal axis of the mare relative to the winter solstice. *J. Reprod. Fert.* 96:195-202.
58. Johnson, L., R. Dickerson, S.H. Safe, C.L. Nyberg, R.P. Lewis and T.H. Welsh, Jr. 1992. Reduced Leydig cell volume and function in adult rats exposed to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin without a significant effect on spermatogenesis. *Toxicology.* 76:102-118.
59. Chaturvedi, P.K. and L. Johnson. 1993. Architectural arrangement of stages within human seminiferous tubules is related to efficiency of spermatogenesis. *Cell and Tissue Res.* 273:65-70.
60. Johnson, L., G.K. Carter, D.D. Varner, T.S. Taylor, T.L. Blanchard, and M.S. Rembert. 1994. The relationship of daily sperm production with Sertoli cell number or testicular size begins with primitive spermatogonia in adult horses. *J. Reprod. Fertil.* 100:315-321.
61. Johnson, L., C.E. Wilker, S.H. Safe, B.Scott, D.D. Dean, and P. White. 1994. 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin reduces the number, size, and organelle content of Leydig cells in adult rat testes. *Toxicology.* 89:49-65.
62. Johnson, L. 1994. A new approach to study the architectural arrangement of spermatogenic stages revealed little evidence of a wave along the length of human seminiferous tubules. *J. Androl.* 15:435-441.
63. Wilker, C.E., T.H. Welsh Jr., S.H. Safe, T.R. Narasimhan, and L. Johnson. 1995. Human chorionic gonadotropin protects Leydig cell function against 2,3,7,8-tetrachlorodibenzo-*p*-dioxin in adult rats: role of Leydig cell cytoplasmic volume. *Toxicology.* 95:93-102.
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  18. Johnson, L., D.L. Thompson Jr, and D.D. Varner. 2008. Role of Sertoli cell number and function in regulation of spermatogenesis. Symposium: Mammalian Spermatozoa in the 21<sup>st</sup> Century. *J. Anim. Reprod.* 105:23-51.

**Editorial Notes:**

1. Silber, S.J., L. Johnson, G. Verheyen, and A. Van Steirteghem. 2000. Round spermatid injection. *Fertility and Sterility*. 73:897-900.

**Encyclopedia Publications:**

1. Johnson, L., G.U. Falk, and G.E. Keillor, 1999. Male reproductive systems, non-human mammals. *Encyclopedia of Reproduction*, vol. 4:49-60.
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**Publication prepared for USAF School of Aerospace Medicine:**

Lebovitz, R.M., L. Johnson, and J. Orr. 1986. Testicular function and the effects of microwave radiation. Aerospace Medical Division (AFSC) Brooks Air Force Base, Texas 78235-5301.

**Education Presentations:**

1. Johnson, L. 2000. Integrating Environmental Health Science in Rural Schools. 2000 Annual Meeting/Joint Conference of School Science and Mathematics Association/New Mexico Science Teachers Assoc./Envir. Education Assoc. of New Mexico, Albuquerque, NM.
2. Johnson, L., D.T. Kochevar, J.F. Hunter, W.R. Klemm, J.B. Kracht, K.C. Donnelly, I.N. Ramos, C.C. Farnsworth, and V.B. Hardy. 2002. Problem-solving adventures integrate environmental health science into rural middle school curricula. Annual NIEHS K-12 Grantees Meeting, New Jersey.
3. Johnson, L., J.J. Denton, W.R. Klemm, J.F. Hunter, T.J. Davis, K.C. Donnelly, I.N. Ramos, C.C. Farnsworth, B.L. Smith, and V.B. Hardy. 2002. Enhancing rural middle school science education with teacher training, school visits, and web-based environmental health curriculum. Annual NIEHS K-12 Grantees Meeting, New Jersey.
4. Johnson, L. and I.N. Ramos. 2002. CERH Community Outreach Education Program. Houston Town Meeting Follow-up Meeting of NIEHS.
5. Johnson, L. 2003. Scientists' visits to public school: How to get an invitation, what to present,

- what to expect, and why you are needed. Society of Toxicology Annual Meeting. 2003. Salt Lake City.
- 6-9. Johnson, L. and V. Hardy. 2003. Integrative 6<sup>th</sup> grade curriculum centered around world adventures (given twice). Integrative 8<sup>th</sup> grade curriculum centered around USA adventures. Integrating environmental health science. The Science Teachers Association of Texas. Conference for the Advancement of Science Teaching (CAST), Houston, TX.
  10. Johnson, L., C. Gibson, J. Kracht, T. Hockenberry, M.B. Davis, D. Jones, and F. Richards. 2003. On-line interviews inform rural middle-schoolers of university academic careers. Texas A&M University System Regents Academy of Teaching Excellence, College Station, TX.
  11. Johnson, L., J. Kracht, W. Klemm, D. Kochevar, J. Hunter, J. Lindner, G. Wingenbach, K. Donnelly, C. Sumaya, S. Akton, and V. Hardy. 2004. Bioterrorism then and now: Three rivers, three nations. Texas A&M University System Regents Academy of Teaching Excellence, College Station, TX. NIEHS Annual Meeting for the Integrative Context Grantees. Baltimore, MD.
  12. Johnson, L., J. Kracht, W. Klemm, D. Kochevar, J. Hunter, J. Lindner, G. Wingenbach, K. Donnelly, C. Sumaya, S. Akton, and V. Hardy. 2004. Bioterrorism then and now: Three rivers, three nations. NSF Annual Meeting for the NSF GK-12 Grantees. Washington, D.C.
  13. Johnson, L., J. Kracht, W. Klemm, D. Kochevar, J. Hunter, J. Lindner, G. Wingenbach, K. Donnelly, C. Xumaya, V. Traweek, V. Hardy, and J. McNichols. 2004. Communicating environmental health science in rural middle schools: Past and present contagious diseases integrate science, mathematics, English language arts, and social studies. The Centers Meeting for NIEHS, Triangle Park, North Carolina.
  14. Johnson, L. and W. Klemm. 2004. Bioterrorism then and now: Advancing science literacy through history. The Science Teachers Association of Texas, Conference for the Advancement of Science Teaching, Corpus Christi, TX.
  15. Klemm, W. and L. Johnson. 2004. Web-based life-science curriculum for middle schools. The Science Teachers Association of Texas, Conference for the Advancement of Science Teaching, Corpus Christi, TX.
  16. Johnson, L., J. Kracht, W. Klemm, D. Kochevar, J. Hunte,r J. Lindner, G. Wingenbach, K. Donnelly, C. Sumaya, S. Aktar, and V. Hardy, 2004. Bioterrorism Then and Now: Three Rivers, Three Nations. NSF Annual Meeting for the NSF GK-12 Grantees, Washington, DC.
  17. Johnson, L. and J. Kracht. 2005. PEER Integrative curriculum for rural middle schools. Three presentations at Texas Middle School Association.
  18. Johnson, L., J. Kracht, W. Klemm, D. Kochevar, J. Hunter, J. Lindner, G. Wingenbach, K.

- Donnelly, C. Sumaya, S. Akton, and V. Hardy. 2004. Bioterrorism then and now: Three rivers, three nations. 2005. NSF GK-12 Abstract and Annual Meeting.
19. 2005 and 2006. NIEHS Abstract and Annual Meeting. PEER Perspectives and Products.
  20. 2005. National Science Teachers Association Presentation on Distance Learning and COEP booth related to CERH outreach. Distribute PEER materials and services and advertizing Texas A&M University.
  21. 2004, 2005, 2006, 2007, 2008 NSF GK-12 annual meeting and poster presentations.
  22. 2007, 2008 Annual Meetings of NCRR SEPA grant and poster presentation.
  23. 2008 Sigma Xi National Meeting. These posters were presented from the PEER group. 2008 Presentation to Girl Scouts on science and science careers at TAMU medical school.
  24. Johnson, L. 2007. Scientists in the (K-12) classroom. Department of Animal and Poultry Sciences and Virginia Tech- STEM Initiative. Blacksburg, VA.
  25. 2009 NSF GK-12 grantee's annual meeting  
2009 NIH NCRR SEPA grantee's annual meeting
  26. 2010 NSF GK-12 grantee's annual meeting – three presentations
  27. 2010 NIH NCRR SEPA grantee's annual meeting
  28. Broadening Science Promotion in Rural Schools through veterinary partnerships seminar given to VTPB at their weekly seminar series.
  29. Presented science and careers in science to numerous middle and high school students on campus as a recruiting strategy of, and in collaboration with, the TAMU financial aid office.

**Abstracts:**

1. Johnson L., M.L. O'Connor, P.T. Chandler, T.N. Meacham, and R.G. Saacke. 1974. Optima of glycerol, Tris and thaw rate in freezing ram semen. *J. Animal Sci.* 39:213.
2. Johnson, L., W.E. Berndtson, and B.W. Pickett. 1975. Acrosomal evaluation of fixed bovine spermatozoa. *J. Animal Sci.* 41:360.
3. Johnson, L., R.P. Amann, and B.W. Pickett. 1976. SEM of equine seminiferous tubules. *J. Animal Sci.* 43:290.
4. Johnson, L., R.P. Amann, and B.W. Pickett. 1976. SEM of equine testis and epididymis. *J. Animal Sci.* 43:291.
5. Johnson, L., D.L. Thompson, Jr., G.E. Seidel, Jr., and B.W. Pickett. 1977. Maturation of equine epididymal spermatozoa. *Proc. Am. Soc. Animal Sci.*, p. 172.
6. Johnson, L. 1979. The testis by Nomarski optics. *Proc. Am. Soc. Animal Sci.*, p. 306.
7. Johnson, L. and W.B. Neaves. 1980. Comparative development of testicular interstitium in

- post-pubertal and adult stallions and in adult zebras. *Biol. Reprod.* (Suppl. 1) 22:89.
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**Other Publications, Abstracts and Posters or Presentations, Science Education:**

1. Southwest Regional NSF GK-12 program. Presented on the PEER GK-12 program. 2007.
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  - a. "Fun with Physical Changes". Melena McClure, Julia Hoyle, and Megan Stussi.

- Southwest Regional NSF GK-12 Meeting Nov. 9-10, 2007. Texas A&M University, College Station, TX
- b. "Discrepant Events: This Resident Scientist's Favorite Teaching Tool". Jennifer Koop, David Wilson, and Pamela Donald. Southwest Regional NSF GK-12 Meeting Nov. 9-10, 2007. Texas A&M University, College Station, TX
- c. "Mayan Numbers". Virginia Malloy. Southwest Regional NSF GK-12 Meeting Nov. 9-10, 2007. Texas A&M University, College Station, TX
8. B. Sanchez, W. Klemm, L. Johnson, C. Johnston, N. Maxey, V. Hardy, A. Gilmore, B. Lawrence, A. Perez, R. Rowntree, and K. Hardy, STEM Fellows Share Research With Middle School Students, Southwest Regional NSF GK12 Conference, Forth Worth, Texas, November 13-14, 2009.
9. B. Bell, L. Johnson, W. Klemm, R. Rowntree, and J. Dabney, Bioterrorism then and now: Three Rivers, Three Nations, Southwest Regional NSF GK12 Conference, Forth Worth, Texas, November 13-14, 2009.
10. B. Sanchez, W. Klemm, V. Hardy, C. Tatum, J. Wardlaw, K. Damborsky, R. Mullins, C. Prigmore, K. Polzer, S. Junek, and L. Johnson, Students Become Scientists: Enhancing STEM Education with Graduate Fellow Research, NSF GK12 Grantee's Annual Meeting, Washington D. C., March 26-28, 2010.
11. B. Sanchez, W. Klemm, V. Hardy, C. Tatum, J. Wardlaw, K. Damborsky, R. Mullins, C. Prigmore, K. Polzer, S. Junek, and L. Johnson, Goals and Roles of the PEER GK-12 Program, NSF GK12 Grantee's Annual Meeting, Washington D. C., March 26-28, 2010.
12. B. Sanchez, C. Tatum, W. Klemm, V. Hardy, J. Wardlaw, K. Damborsky, R. Mullins, C. Prigmore, K. Polzer, S. Junek, and L. Johnson, Feedback for Fellows: Ensuring Success in the Classroom, NSF GK12 Grantee's Annual Meeting, Washington D. C., March 26-28, 2010.
13. R. Rowntree, H. Schlachter, W. Klemm, V. Hardy, and L. Johnson, Veterinarians' Black Bag Project, Sigma Xi Annual Meeting, Washington, D. C., November 12-15, 2010.
14. M. Ward, T. Fernandez, R. Rowntree, B. Sanchez, W. Klemm, V. Hardy, and L. Johnson, Veterinary and Science Partnerships, NIH NCRR SEPA Grantee's Annual Meeting, April 11-14, 2010.

**PATENTS AND RELATED DISCOVERY ACTIVITIES:** None

**OTHER SCHOLARLY ACTIVITY AND RESEARCH PROMOTION**

**Conferences, Symposia: Organized/Chaired (examples)**

1. Johnson, L. 1986. Spermatogenesis and aging in the human. Post-graduate course on impotence, diagnosis and management: the aging testis and its consequences.

- American Society of Andrology.
2. Johnson, L. 1988. Evaluation of human testis and its age-related dysfunction. Workshop on the "Relationship between sperm measures and reproductive success" sponsored by Institute for Health Policy Analysis and the Environmental Protection Agency. Aspen Institute at Wye Plantation in Queenstown, MD.
  3. Johnson, L. 1988. Spermatogenesis (animal species and humans). International Symposium on Gamete Physiology. Serono Symposia, USA. Newport Beach, CA.
  4. Johnson, L. 1989. Is the Sertoli Cell Population Stable in the Adult? Seminar in Reproductive Biology sponsored by The University of Texas Health Science Center, Houston, TX.
  5. Johnson, L. 1990. Spermatogenesis in humans and animal species, the Japan Society of Andrology, Chiba, Japan; the Department of Developmental biology, National Institute for Basic Biology, Okazaki, Japan; and the Department of Animal Science, College of Agriculture, Kyoto University, Kitashirakawa Kyoto City, Japan.
  6. Johnson, L. 1990. Is the Sertoli cell population stable in the adult? Department of Anatomy, School of Medicine, Chiba University, Chiba, Japan; the Research Institute for Microbial Diseases, Osaka University, Osaka, Japan; and the Department of Biology, University of Tokyo, Komaba, Tokyo, Japan.
  7. Johnson, L. 1990. The Blood Vascular System (informal presentation) Azabu University School of Veterinary Medicine, Kanagawa, Japan.
  8. Johnson, L. 1993. Spermatogenesis: an overview of approaches to its enhancement. Satellite Flow Cytometry Seminar for evaluation of spermatozoa and enhanced spermatogenesis in mammals. 1993 Annual Meeting of the Society for the Study of Reproduction.
  9. Johnson L. 1993. Effect of Age on Human Spermatogenesis. Seminars in Reproductive Biology Program, Department Ob/Gyn and Reproductive Sciences. The University of Texas Health Science Center at Houston.
  10. Johnson L. 1994. Spermatogenesis in the Bull. 15th Technical Conference on Artificial Insemination and Reproduction. National Association of Animal Breeders.
  11. Johnson L. 1994. Role of Sertoli Cell Number in Regulation of Spermatogenesis. Reproductive Group. Department of Animal Science, Louisiana State University, Baton Rouge, Louisiana.
  12. Johnson L. 1995. Spermatogenesis in the bull. Southern Section American Society of Animal Science.
  13. Johnson L. 1995. Spermatogenesis and epididymal function. Annual meeting of the Society of Gynecological Investigation in Chicago.
  14. Johnson L. 1995. Presented the following invited talks at XI Brazilian Congress of Animal Reproduction in Belo Horizonte, Brazil. "Spermatogenesis and approaches to its enhancement", "Local initiation and the establishment of spermatogenesis in the horse", and "Age-related changes in spermatogenesis."
  15. Johnson L. 1996. Spermatogenesis/Factors affecting spermatozoan production. Second International Symposium on stallion semen in Amersfoot, The Netherlands.
  16. Johnson L. 1996. Efficiency of spermatogenesis in humans. College of Medicine, University of Utrecht, The Netherlands.
  17. Johnson, L. 1997. General reproductive physiology and capacity of the beef bull. Improving reproductive performance. Beef Improvement Federation. The National Association of Animal Breeders. Dickerson, North Dakota. p. 1-6.

18. Johnson, L., G.U. Falk, L.C. Suggs, D.J. Henderson, G.E. Spoede, S.W. Brown, T.A. McGowen, H. Meguerditchian, and J.J. Barnard. 1997. Heterotopic transplantation as a model to study the regulation of spermatogenesis; some histomorphological considerations about sperm decline in humans. 2<sup>nd</sup> Emes Journees de la Federation Francaise pour L'etude de la Reproduction.
19. Johnson, L., N.H. Ing, T.H. Welsh, D.D. Varner, W.L. Scrutchfield, and M.T. Martin. 1999. Efficiency of spermatogenesis in animals and humans. XXIV Biennial Symposium on Animal Reproduction. Am. Soc. Anim. Sci. Indianapolis, Indiana.
20. Johnson, L. 2006. Shaping Sperm: role of Sertoli cell biology. Symposium on Mammalian Spermatozoa in the 21<sup>st</sup> Century. Colorado State University December 15-17, 2006.
21. Johnson, L. 2007. Role of Sertoli cell number and function on regulation of spermatogenesis. Equine Science Society. Horse Country Md.
22. Johnson, L. 2009 Scientific Ethics. Presented to 55 university faculty in various colleges. TAMU Commerce, Commerce, TX.
23. Johnson, L. 2010. Organized the Sigma Xi Chapter Scientific research expo to get undergraduates to learn of research opportunity and meet TAMU faculty.

### **Activities and accomplishments of PEER for science promotion in rural schools**

#### **3. Project Achievements and Products.** The project resulted in several major achievements.

1. The personal interaction between graduate Fellows, K-12 students, and teachers. Indeed, our evaluation indicated that these interactions positively influenced all parties and, in turn, helped in forging sustainable partnerships between participating schools and Texas A&M University. To extend the impact to more rural schools, a
2. Distance Learning Community of trained teachers was developed who communicate through our
3. Teacher Requested Resources (TRR) (see [http://peer.tamu.edu/DLC/NSF\\_Resources.asp](http://peer.tamu.edu/DLC/NSF_Resources.asp)). The TRR allows teachers in remote locations to request lesson plans, activities, and websites as they inform us of their needs and direct our development. Once the response has been produced by the Fellows, it is evaluated for content by STEM faculty and for public school and age appropriateness by middle school teachers. The TRR contain
4. 279 lesson plans that our graduate Fellows and the management team have produced and tested in their schools. These customized, mostly 50-minute, school-tested lessons are available to other GK-12 programs nationwide and will be sustained after the project.
5. Graduate Fellows produced mini-modules (<http://peer.tamu.edu/MiniMods.asp>) of the PEER integrative curriculum (science, math, English, and social studies) by subdividing sets of PowerPoint slides into mini-lessons with activities, worksheets, and questions about STEM.
6. Our group organized and hosted, the first and second Southwest Regional NSF GK-12 Conferences, which were attended by 10 and 16 GK-12 groups from 5 and 8 states, respectfully, as well as by Dan Carpenter, Kevin Swanson and Sonia Ortega from NSF.
7. Following the first meeting in October 2005, our group launched the *Southwest Regional NSF GK-12 website* (<http://southwestGK-12.tamu.edu/>) which enables other GK-12 groups to upload lesson plans from their GK-12 programs. The site is designed so that users can search a substantial collection of lesson plans; indeed to date, 443 lesson plans have been posted to the site.
8. A Regional Threaded Discussion forum was developed by the group whereby Fellows, teachers,

administrators, and evaluators could select the specific type of communication in which they wanted to participate.

9. Our general GK-12 website (<http://peer.tamu.edu/>) has been developed to submit graduate and undergraduate applications online, facilitate weekly scheduling of both undergraduate and graduate Fellows, promote weekly journaling by both Fellows and Lead Teachers, and include postings of upcoming meetings, activities, and deadlines.

10. An entire group of 15 Fellows from our previous cohort had posters-and some had two posters-and 13 of the 15 Fellows and two Lead Teachers presented specific activities, evaluation findings, and successful strategies at the Southwest Regional NSF GK-12 Conference.

11. In addition, faculty and teachers presented GK-12 data at teacher conferences and at state and national meetings (6 to 12 per year).

12. Fellows produced introductory videos of themselves in their research labs to show to the K-12 classes they would be entering to show students that scientists are normal people and to get their cutting edge STEM research into K-12 classes.

13) Fellows' streaming videos ([http://peer.tamu.edu/NSFPages/NSF\\_Interviews.shtml](http://peer.tamu.edu/NSFPages/NSF_Interviews.shtml)) are online.

14. Also, the program has led to the development of GK-12 Fellows training materials in preparation for their interaction in middle schools,

15. development of project evaluation instruments for Fellows, Lead Teachers, and K-12 students and of a career tracking system for previous Fellows, and

16. development of science and math courses (VIBS 689 and MATH 689) to train other interested graduate students who are not part of the GK-12 program.

17. Funds have been leveraged from the University Honors Program which finances three undergraduate Fellows per year (\$9,000), and from the Division of Research and Graduate Studies, which has provided cost sharing of over \$479,421.

18. We also laid the groundwork for institutionalizing of the GK-12 concept; specifically we created an interface with the Sigma Xi Educational Outreach Committee to ensure that university outreach is sustained and to prepare to interweave the international and dissemination components into the proposed project.

Our Fellows introduced Lead Teachers and their students to the seven products of our NIH project including: (1) online life science and (2) integrative curriculum, (3) virtual scientist, mathematician, and (4) educator interviews, (5) teacher workshops (1,510 teachers given two-day workshops including technology training and providing curricular materials and e-Mentoring opportunity), (6) scientists' visits to over 38,000 students and 1,727 teachers in rural areas, and (7) our Distance Learning Community and TRR made possible by GK-12 undergraduate and graduate Fellows. The main PEER website (<http://peer.tamu.edu>) is currently enjoying over 2,200 pages being viewed each day, with over 85 downloads per day for integrative curricula and over 450 downloads per day for TRR