

Curriculum Vitae

James R. Rayburn
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Employment:

- June 1988 - May 1990 Research Assistant in Developmental Biology and Physiology Oklahoma State University, Stillwater OK 74078.
- May 1990 - May 1994 Research Assistant in Developmental Biology and Toxicology, Oklahoma State University, Stillwater OK 74078
- May 1994- Dec 1994 Research Associate in Developmental Biology, Oklahoma State University, Stillwater OK 74078.
- Jan. 1995- January 1998: National Research Council Postdoctoral Fellow. U.S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL. 32561-5299.
- Jan. 1998- August 1998: Postdoctoral Research Associate with Dr. Kevin Klienow. Louisiana State University, School of Veterinary Medicine Department of Physiology Pharmacology and Toxicology.
- August 1998-August 2004: Assistant Professor, Jacksonville State University Department of Biology, Jacksonville AL.
- August 2004-August 2010 Associate Professor, Jacksonville State University Department of Biology, Jacksonville AL.
- August 2010- Present Professor, Jacksonville State University Department of Biology, Jacksonville AL.

Education

- 1987 B.S. Major; Biology-Chemistry, Minor Math, Honor Graduate; Louisiana College, Pineville LA 71360.
- 1990 Master of Science Zoology (emphasis on Toxicology-Physiology) Oklahoma State University, Stillwater OK 74078. – Thesis- Synergism and antagonism of the developmental toxicity of t-retinoic acid and 6-aminonicotinamide using FETAX with three carrier solvents
- 1994 Ph.D. in Zoology (emphasis on Developmental Toxicology) Oklahoma State University, Stillwater OK 74078. –Dissertation - An Evaluation of the developmental toxicity of potato glycoalkaloids using the Frog Embryo Teratogenesis Assay-Xenopus

Awards

- Dean Service Award – May 2009
McWhorter Outstanding Teacher Award, Jacksonville State University. (May 12, 2015).
Faculty Mentor Training 2015-2016 Academic Year.

Honors

- Presidential Scholarship Award, Louisiana College 1983-1987.
- Dean's List 1983-1984.
- Graduate Student Representative 1991-1992
- Ozark-Prairie SETAC chapter First Place Poster Award 1993
- 1996 Earthday Award - Gulf Ecology Division of the U.S. EPA
- 1997 Earthday Award - Gulf Ecology Division of the U.S. EPA
- Faculty Research Award, JSU, 1998-1999
- Faculty Research Award, JSU, 1999-2000
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- Faculty Research Award, JSU, 2009-2010
- Faculty Research Award, JSU, 2011-2012
- Faculty Research Award, JSU, 2012-2013
- Faculty Research Award, JSU, 2013-2014
- Faculty Research Award, JSU, 2014-2015
- Faculty Research Award, JSU, 2015-2016
- Faculty Research Award JSU, 2017-2108

Scientific Societies and Service

1. Society of Environmental Toxicology and Chemistry. (National, SETAC)
2. Southeastern Regional Society of Environmental Toxicology and Chemistry (SE-SETAC).
3. Association of Southeastern Biologist. (ASB)
4. Alabama Academy of Science. (AAS)
5. Board Member and VP for SE-SETAC. (November 2002).
6. President SE-SETAC (2004-2005)
7. Hosted SE-SETAC in 2005
8. Secretary of Alabama Academy of Sciences (2005-2010)
9. President Faculty Senate (2007-2008)
10. Co-Chair Poster Judging Committee National SETAC (2006-2011)
11. Co-Chair Program Committee for ASB (2008-2009)
12. Audiovisual coordinator for ASB annual meeting (2008-2009)
13. Vice-President SE-SETAC (2009-2010)
14. President SETAC (2010-2011)
15. Co-Chair Hosting Alabama Academy of Sciences meeting (2011)
16. Vice-President SE-SETAC 2012-2013
17. President SE-SETAC 2013-2014

Teaching Experience

- Spring 1988 Embryology Laboratory assistant. Oklahoma State University
- Fall 1993 Biological Sciences 1114 Laboratory Oklahoma State University
- Spring 1994 Embryology Laboratory Assistant Oklahoma State University
- Spring 1997 Adjunct Instructor, General Biology Laboratory, Pensacola Junior College.

Spring 1997 Gamete and Oocyte Collection Workshop. South East Regional Chapter of Society of Environmental Toxicology and Chemistry. Gulf Breeze FL.

Summer 1997 Adjunct Instructor, General Biology Laboratory, Pensacola Junior College.

Fall 1997 Adjunct Instructor, General Biology Laboratory, Pensacola Junior College.

Fall 1998 Assistant Professor; General Biology 101, and BY 488 Jacksonville State University.

Spring 1999 Assistant Professor; Toxicological Chemistry, Instrumental Chemistry Laboratory, Introduction to Research.

Summer 1999 Assistant Professor; General Biology 102, and Seminar in Physiology (Aquatic Toxicology)

Summer 2000 Assistant Professor, Seminar in Developmental Biology

Fall 2000 Assistant Professor, Ecotoxicology

Summer 2001 Assistant Professor, Endocrinology

Fall 2001 Assistant Professor, Environmental Assessment, Laboratory Practicum, Research Methods.

Spring 2002 Assistant Professor, Animal systems Physiology.

Summer 2002 One week (20 hr) workshop at Northwestern Louisiana State University "FETAX workshop 2002"

Spring 2003 Toxicological Chemistry, Environmental Impact Statement.

November 15-16 2002 Completed a National workshop on New Approaches and Techniques for Teaching Science: Addressing Environmental Problems to Stimulate Undergraduate Learning.

MS Students:

Andrea Wolfe - Graduated "A Comparison of teratogenesis vs. Mutagenesis utilizing Environmental Samples from around the Anniston Army Depot (ANAD)." (April 2002)

Kristina Griebeling – Graduated “Role of the Jelly Coat in the Development of two frog species exposed to roundup and diazinon 25% using FETAX” (April 2004)

Bernice Moser – Graduated “Estrogenic Effects in Native Anurans in Local Watersheds” (April 2008)

Kaci Rodgers -- Graduated “A Comparison of Protein Patterns Seen Amongst Three Classes of Cnidarians with Emphasis on *Craspedacusta sowerby*” (Summer 2008)

Lindsey Minton --Graduated “Histological evaluation of the effects of pine tree extract (from Virginia Pine *Pinus virginiana*) on South African Clawed Frogs (*Xenopus laevis*).” (December 2011)

John Russ Williams Graduated: “Acrylimade effects on *Xenopus* embryos.” (December 2013)

Steven Gardner Graduated: “Developmental Toxicity of Arsenic and Chromium and Interactive Effects to Developing *Ambystoma maculatum* Larvae: Toxicity, Teratogenicity, and Uptake," Biology (April 2016)

JSU Service Activities

Animal Care and Use Committee	(1999 - Present)
Science Olympiad Coordinator for JSU (3 years)	(1998 - 2001)
Science Olympiad Co-coordinator for JSU	(2001-2003)
Science Olympiad Score Keeper and Power Point Presentation	(2004-2005)
Director and Chair of Pre-health professionals in the Biology Department (2 year rotation)	(1998 - 2000)
Chair JSU Faculty Research committee	(2002 - 2003)
Safety Committee	(1999 - 2016)
Acting Department Head - June (4 weeks), August (1 week)	(2002)
JSU Faculty Research Committee	(2000-2003)
Molecular Cell Biology Committee	(2001-2009)
Program Committee Ecology/Environmental	(2001-2016)
Marine	(2001-2016)
Pre-Health Professional committee	(1998-2016)
B.A. General Biology	(2001-2016)
B.A. Naturalist	(2001-2016)
Search Committee for Animal Physiologist Position	(1999)

Search Committee for Plant Ecologist May - July (2002)
 Search Committee for vertebrate evolutionist (2005)
 Search Committee for Invertebrate ecologist (2010)
 Committee Member, Search Committee for Invertebrate Ecologist. (2010).
 Committee Member, Department Head Search Committee (Biology). (March 17, 2014 - July 2015).

Research Experience

Summer 1988- 1994 Research Assistant to Dr. John A. Bantle, Associate Dean For
 Research in Arts and Science at Oklahoma State University.
 January 1995- Jan 1998. - Research Associate for the National Research Council at the U.S. EPA NHEERL -
 Gulf Ecology division.
 Responsibilities
 The Development of a Developmental Toxicity Assay using Grass Shrimp Embryos and Larvae.

Grants

National Research Council Fellowship Grant - <u>The Development of Grass Shrimp embryos for Teratogenesis testing.</u>	Jan 1995 - Jan 1996	\$ 35,000.00
National Research Council Fellowship Grant-continued	Jan 1996 - Jan 1997	\$ 36,000.00
National Research Council Fellowship Grant-continued	Jan 1997 - Jan 1998	\$ 37,000.00
Faculty Research Grant JSU. <u>The synergistic effects of glycoalkaloids on Frog and Shrimp embryos.</u>	Oct 1998 - Oct 1999	\$ 3,000.00
Faculty Research Grant JSU <u>The Uptake of Copper and Chromium to <i>Xenopus</i> and <i>P. pugio</i> embryos.</u>	Oct 1999 - Oct 2000	\$ 2,420.00
Faculty Development Grant JSU	Oct. 1999	\$ 500.00
Faculty Development Grant JSU	April 2000	\$ 350.00
Faculty-Student Research Grant- <u>The developmental effects of Meclizine using FETAX.</u>	Nov 1999-Sept 2000	\$ 400.00
ALERT, Alabama Department of Health - <u>The Potential Environmental Risk from the Hazardous Waste Disposal at the Anniston Army Depot - Phase I. 1:1 match</u>	Sept 2000-Aug 2001	\$ 55,861.70
Faculty Research Grant JSU <u>A measure of cytochrome p450 activity in developing embryos of <i>Xenopus laevis</i>(South African Clawed Frog) and <i>Palaemonetes pugio</i> (Grass Shrimp)</u>	Nov 2000-Sept. 2001	\$ 2,395.55
Faculty Development Grant JSU	November 2000	\$ 550.00
Faculty Student Research Grant <u>The Use of Shrimp Embryos to Determine Teratogenic Effects of Meclizine</u>	Jan. 2001- Sept. 2001	\$ 400.00
Calhoun County Community Foundation <u>"Improved pre-health professional education experineces through the use of computer-based physiology laboratories"</u> Co-PI with Dr. Mark Meade 1:1 Match	June 2001-June 2002	\$ 53,850.00
Faculty Research Grant JSU	November 2001	\$ 2,300.00
Faculty Travel Grant JSU	November 2001	\$ 1,200.00

Faculty Travel Grant JSU	March 2002	\$ 277.00
FRG James Rayburn ,George Cline: <u>Phase I Toxicity Identification on samples from at Diveland Park</u>	November 2002	\$ 2,054.68
Faculty Travel Grant JSU	April 2003	\$ 300.00
George Cline, Taba Hamissou, Mark Meade, James Rayburn, and Frank A. Romano III, <u>The comparison of Freshwater Jellyfish (<i>Craspedacusta sowerbii</i>) from four different sites in Alabama/Georgia</u>	June 2004	\$ 623.50
FRG James Rayburn, <u>The Teratogenic effects of Pyrethrin and to frog embryos</u>	November 2004	\$ 2925.36
Faculty Travel Grant JSU	April 2004	\$ 551.50
Faculty Travel Grant JSU	November 2004	\$1,000.00
George Cline and James Rayburn <u>Survey of the Distbution of Eastern Hellbenders (<i>Cryptobranchus alleganiensis</i>) in Alabama.</u> Alabama Dept. Con. Nat. Res. And US Fish and Wildlife Service – Section 6 Program	October 2005- September 2006	\$39,925.53
George Cline and James Rayburn <u>Distribution and habitat analysis of the Eastern Hellbender (<i>Cryptobranchus alleganiensis</i>) in Alabama.</u> Alabama Dept. Con. Nat. Res. And US Fish and Wildlife Service – Section 6 Program 28 November 2006.	November 2006- October 2007	\$41,299.00
Faculty Travel Grant JSU	November 2006	\$803.00
JSU Faculty Research grant James Rayburn <u>Determination of Vitellogenin induction in <i>Xenopus laevis</i> by β-estradiol</u>	November 2006	\$1,524.15
JSU Faculty Travel Grant (Present National Setac)	November 2007	\$751.00
JSU Faculty Research Grant (Metal Contamination and Developmental Toxicity of Pine tree and Pine tree Leachate)	November 2007	\$2,868.00
JSU Faculty Travel Grant (National meeting October 2008, \$500 and Regional meeting March 2009, \$250)	March 2008	\$750.00
Exploratory Research study of Acrylamide and its interaction with select chemicals – Mendel Friedman USDA-MOA	Jan 2009	\$8011.42
The assessment of hydrocarbon and hydrocarbon dispersants impacts on embryos of grass shrimp (<i>Palaemonetes pugio</i>) MESC GRI PROGRAM	Dec 2010	14,637.00
FRG – Do antioxidants alter glutathione levels in frog embryos exposed to Acrylamide?	April – 2011-2012	2,500.00
The effects of Louisiana Sweet Crude oil on embryos of <i>Xenopus laevis</i> .	April 2012-2013	1,011.00
The evaluation of frog embryos in determination of the toxicity of Phthalate Esters	November 1, 2013 - October 31, 2014	800.00
CORE content Expert	June 1, 2014 - December 31, 2014	6,600.00
The Potential environmental impacts of phthalates using embryos of the grass shrimp (<i>Palaemonetes pugio</i>)	October 1, 2014 - August 31, 2015	1,200.00

Detection of DNA strand breaks caused by acrylamide to embryos of <i>Xenopus laevis</i> using the comet assay	October 1, 2015-August 2016	1880.00
The potential protective effects of Docosahexaenoic acid (DHA) on acrylamide induced toxicity to embryos of the African Clawed Frogs (<i>Xenopus laevis</i>)	October 1, 2016-August 2017	1875.00
The comparison of the early developmental toxicity of Perchlorate on a native amphibian species (<i>Anaxyrus americanus</i>) and a model amphibian	October 2017-August 2018	1348.00

Special Skills

Performance of the Frog Embryo Teratogenesis Assay *Xenopus*
 Developmental Biology
 Electron Microscopy
 Statistics - Particularly those used in aquatic bioassays
 Computer modeling
 Aquatic Toxicology

Research Interest

I am interested in developmental toxicology, particularly in determining mechanisms of actions of chemicals. These interests include examining interactions as well as the possibilities of using structure activity relationships to help determine toxicity.

I am interested in investigating new ways to access the developmental toxicity of chemicals both from an environmental and pharmaceutical stand point.

Publications

1. John A. Bantle, Douglas J. Fort, James R. Rayburn, Donna J. DeYoung, and Shirley J. Bush. Further Validation of FETAX: Evaluation of the Developmental Toxicity of Five Known Mammalian Teratogens and Non-teratogens. *Drug and Chemical Toxicology* 13 (4), 267-282, 1990.
2. J. R. Rayburn, D. J. Fort, R. McNew, and J. A. Bantle. Synergism and Antagonism induced by Three Carrier Solvents with *t*-Retinoic Acid and 6-Aminonicotinamide Using FETAX. *Bulletin of Environmental Contamination and Toxicology* 46:625-632, 1991.
3. J.R. Rayburn, D.J. DeYoung, D.J. Fort, R. McNew, and J.A. Bantle. Altered Developmental Toxicity Caused by Three Carrier Solvents. *Journal of Applied Toxicology*, Vol. 11(4), 253-260, 1991.
4. Mendel Friedman, J. R. Rayburn, and J. A. Bantle. Developmental Toxicology of Potato Alkaloids in the Frog Embryo Teratogenesis Assay-*Xenopus* (FETAX). *Food and Chemical Toxicology* - 29(8):537-547, 1991.
5. D.J. Fort, J.R. Rayburn, D.J. DeYoung, and J.A. Bantle. Assessing the Efficacy of an Aroclor 1254-Induced Exogenous Metabolic Activation System for FETAX. *Drug and Chemical Toxicology* 14(1&2) 143-160, 1991.
6. M. Friedman. J.R. Rayburn and J.A. Bantle. Structure-Activity relationships of Solanum alkaloids in the frog embryo (*Xenopus*). *Journal of Agricultural and Food Chemistry*, 40(9): 1617-1624, 1992.
7. J.T. Blankemeyer, B.K. Stringer, J.R. Rayburn, J.A. Bantle, and M. Friedman. Effect of Potato Glycoalkaloids, α -Chaconine and α -Solanine, on membrane potential of frog embryos. *Journal of Agricultural and Food Chemistry*. 40(10): 2022-2025, 1992.
8. Douglas J. Fort, James R. Rayburn, John A. Bantle. Evaluation of Acetaminophen-induced Developmental Toxicity using FETAX. *Drug and Chemical Toxicology*, 15(4), 329-350, 1992.

9. Douglas J. Fort, Enos L. Stover, James R. Rayburn, Mendi Hull, and John A. Bantle. Evaluation of the Developmental Toxicity of Trichloroethylene and Detoxification Metabolites Using *Xenopus*. *Teratogenesis, Carcinogenesis, and Mutagenesis* 13: 35-45 1993.
10. John A. Bantle, Dennis T. Burton, Douglas A. Dawson, James N. Dumont, Robert A. Finch, Douglas J. Fort, Greg Linder, James R. Rayburn, David Buchwalter, Margaret A. Maurice, and Steven D. Turley. Initial Interlaboratory Validation Study of FETAX: Phase I Testing. *Journal of Applied Toxicology* 14(3), 213-223 1994.
11. James R. Rayburn, John A. Bantle, Mendel Friedman. The role of the carbohydrate side chains of potato glycoalkaloids in developmental toxicity. *J. Agric. Food. Chemistry* 42, 511-515 1994.
12. John A. Bantle, Dennis T. Burton, Douglas A. Dawson, James N. Dumont, Robert A. Finch, Douglas J. Fort, Greg Linder, James R. Rayburn, David Buchwalter, Angela M. Gaudet-Hull, Margaret A. Maurice, and Steven D. Turley. FETAX Interlaboratory Validation Study: Phase II Testing. *Environmental Toxicology and Chemistry* Vol. 13, No. 10, 1629-1637, 1994.
13. James R. Rayburn, John A. Bantle, Mendel Friedman. The Synergism in *Xenopus* Embryos on the developmental toxicity caused by two potato glycoalkaloids. *J. Food and Chemical Toxicology* Vol. 33 No. 12, pp. 1013-1019 1995.
14. James R. Rayburn, John A. Bantle, Charles W. Qualls Jr., Mendel Friedman. Glucose-6-phosphate and NADP protection of the developmental toxicity caused by α -chaconine. *J. of Food and Chemical Toxicology* Vol. 33 No. 12, pp. 1021-1025. 1995
15. John A. Bantle, Dennis T. Burton, Douglas A. Dawson, James N. Dumont, Robert A. Finch, Douglas J. Fort, Greg Linder, James R. Rayburn, David Buchwalter, Angela M. Gaudet-Hull, Margaret A. Maurice, and Steven D. Turley. FETAX Interlaboratory Validation Study: Phase III Testing. *Journal of Applied Toxicology*, Vol 16, Iss 6, pp 517-528 1996
16. James R. Rayburn, P.S. Glas, S.S. Foss, W.S. Fisher. Characterization of Grass Shrimp Embryo Toxicity Tests Using the WSF of number 2 fuel oil. *Marine Pollution Bulletin*, Vol. 32, No. 12, pp. 860-866, 1996
17. P.S. Glas, L. Cortney, James R. Rayburn, W.S. Fisher. Embryonic Coat of the Grass Shrimp *Palaemonetes pugio*. *Biological Bulletin*, 192: 231-242, April, 1997.
18. J.R. Rayburn and W.S. Fisher. The Developmental Toxicity of three carrier solvents using embryos of the grass shrimp *Palaemonetes pugio*. *Archives of Environmental Contamination and Toxicology*, Vol. 33, No. 2, 217-221 August 1997
19. S.S. Foss and J.R. Rayburn. Effects of Culture Duration on Toxicity of Ethanol to Developing Embryos of the Grass Shrimp, *Palaemonetes pugio*. *Bulletin of Environmental Contamination and Toxicology*, 59:467-471 1997.
20. D.J. Fort, E.L. Stover, J.A. Bantle, J.R. Rayburn, M.A. Hull, R.A. Finch, DT Burton, S.D. Turley, DA Dawson; G. Linder, D. Buchwalter, J.N. Dumont, M.Kumsher-King, A.M. Gaudet-Hull Phase III interlaboratory study of FETAX, Part 2: Interlaboratory validation of an exogenous metabolic activation system for Frog Embryo Teratogenesis Assay--*Xenopus* (FETAX). *Drug and Chemical Toxicology* Vol. 21 No. 1 pp. 1-14 1998.
21. J.T. Blankemeyer, M.L. McWilliams, J.R. Rayburn, M. Weissenberg, and Mendel Friedman. Developmental Toxicology of Solamargine and Solasonine Glycoalkaloids in Frog Embryos. *Food and Chemical Toxicology* (Vol. 36) 1998 pp. 383-389
22. James Rayburn and W.S. Fisher Developmental Toxicity of Copper Chloride, Methylene Chloride, and 6-aminonicotinamide to embryos of the Grass Shrimp *Palaemonetes pugio*. *Environmental Toxicology and Chemistry* Vol. 18 No. 5 1999 pp. 950-957.
23. Andrea Wolfe and James Rayburn: The Developmental Toxicity of Meclizine Using the Frog Embryo Teratogenesis Assay-*Xenopus* (FETAX). *Alabama Academy of Sciences*. Vol. 72 No. 1 December 2001 pp. 27-38.
24. K.A. Reinsel, P.S. Glas, James Rayburn, M.K. Pritchard and W.S. Fisher. Effects of food availability on survival, growth, and reproduction of the grass shrimp *Palaemonetes pugio*: a laboratory study. *Marine Ecology Progress Series* Vol. 220:231-239, September 2001.

25. J.R. Rayburn and R. Aladdin (2003) Developmental Toxicity of Copper, Chromium and Aluminum using the Shrimp Embryo Teratogenesis Assay-Palaemonid with artificial Seawater. *Bulletin of Environmental Contamination and Toxicology*, Vol. 71 Number 3: 481-488.
26. Gibson, Greg and James Rayburn (2004) Activity of Cytochrome P-450 in *Xenopus laevis* embryos as determined by modified enzyme assay. Vol 76, No. 1, pp. 48-55 *Alabama Academy of Sciences* Jan.
27. McCallum, Malcolm and James Rayburn (2006) A simple method for housing *Xenopus* during oviposition and obtaining eggs for use in FETAX. *Herpetological Review*. 37 (3): 332-332.
28. Moser and Rayburn, (2007) Evaluation of Developmental Toxicity of Interaction between Caffeine and Pseudoephedrine Using Frog Embryo Teratogenesis Assay-Xenopus (FETAX) *Bios* 78(1) 1-9.
29. David Steffy and James Rayburn, Remediation of Lnapi-contaminated sand by using Humic acid as a surfactant. (2008) *The journal of the Alabama Academy of Science*, Jan, Vol. 79 No 1. pp 23-35
30. James R. Rayburn and Mendel Friedman (2010), L-Cysteine, N-Acetyl-L-cysteine, and Glutathione Protect *Xenopus laevis* Embryos against Acrylamide-Induced Malformations and Mortality in the Frog Embryo Teratogenesis Assay *J. Agric. Food Chem.*, 58 (20), pp 11172–11178
31. Graham, Sean P., Eric C. Soehren, George R. Cline, Christina M. Schmidt, William M. Sutton, James R. Rayburn, Sierra H. Stiles and James A. Stiles. (2011) Conservation status of hellbenders (*Cryptobranchus alleganiensis*) in Alabama, USA. *Herpetological Conservation and Biology*, 6(2):242-249
32. Rice, T., Coady, K., Fort, D., Gross, J., Rayburn, J. R. (2012). Section 8930—Amphibians (Proposed). *Standard Methods for the Examination of Water and Wastewater* (22nd ed.). American Public Health Association, American Water Works Association, Water Environment Federation
33. Sauterer, R. A., Rayburn, J. R. (2012) Introducing environmental toxicology in instructional labs: The use of a modified amphibian developmental toxicity assay to support inquiry-based student projects. *The American Biology Teacher*, 74(7), 496-502.
34. Shirey, K., Rayburn, J. R. (2013). Old World vs. New World: The Developmental Toxicity of Tarantula venom from *Grammostola rosea* and *Haplopelma lividum* using frog embryos. *Bios* 84(3) 136-141.
35. Al Hamdani, S. H., Mwebi, N. O., Rayburn, J. R., Schwarzauser, K. (2013). Utilization of Kudzu as a lead phytoremediator and impact of lead on selected physiological responses. *Canadian Journal of Plant sciences*, 93, 951-959. <http://pubs.aic.ca/journal/cjps>
36. Williams, J. R., Rayburn, J. R., Cline, G. R., Sauterer, R. A., Friedman, M. (2014). The Potential Protective Effect of LCysteine again st the Toxicity of Acrylamide and Furan in Exposed *Xenopus laevis* Embryos: An Interaction Study. *Journal of Agricultural and Food Chemistry*, 62(31), 7927-7938. [://dx.doi.org/10.1021/jf5013743](http://dx.doi.org/10.1021/jf5013743)
37. Williams, J. R., Rayburn, J. R., Cline, G. R., Sauterer, R. A., Friedman, M. (2015). Effect of Allyl Isothiocyanate on Developmental Toxicity in Exposed *Xenopus laevis* Embryos. *Toxicology Reports*, 2, 222-227. doi:10.1016/j.toxrep.2014.12.005
38. Gardner, S. T., Lester, R., Wood, A. T., Onkst, P. E., Burnham, N., Perygin, D., Rayburn, J. R. (2016). Assessing Differences in Toxicity and Teratogenicity of three phthalates, Diethyl phthalate, Di-n-propyl phthalate, and Di-n-butyl phthalate, using *Xenopus laevis* embryos. *Journal of Toxicology and Environmental Health, Part A: Current Issues.*, 79(2), 71-82. <http://dx.doi.org/10.1080/15287394.2015.1106994>
39. Gardner, S. T., Cline, G. R., Mwebi, N. O., Rayburn, J. R. (2017). Developmental and interactive effects of arsenic and chromium to developing *Ambystoma maculatum* embryos: toxicity, teratogenicity, and whole-body concentrations. *Journal of Toxicology and Environmental Health, Part A: Current Issues*, 80(2), 91-104.
40. Parker, T. T., Rayburn, J. R. (2017). A comparison of electronic and traditional cigarette butt leachate on the development of *Xenopus laevis* embryos. *Toxicology Reports*, 4, 77-82.

Presentations with Abstract

1. J.R. Rayburn, D.J. Fort, B.L. James and J.A. Bantle. Use of Carrier Solvents as an Acceptable Method of Testing Water Insoluble Compounds with FETAX. Oklahoma Academy of Science, November 1988, Chickasha, OK.
2. J.R. Rayburn, D.J. Fort, B.L. James and J.A. Bantle. Effects of Carrier Solvents in FETAX and a proposed Method of Studying Solvent Interactions. Ozark-Prairie Chapter of the Society of Environmental Toxicology and Chemistry Regional Meeting, May 1989, Columbia, MO.
3. D.J. DeYoung, D.J. Fort, J.R. Rayburn, S.J. Bush, P.K. Work and J.A. Bantle. Validation of FETAX with Known Mammalian Teratogens and Non-teratogens. Ozark-Prairie Chapter of the Society of Environmental Toxicology and Chemistry Regional Meeting, May 1989, Columbia, MO.
4. D.J. DeYoung, D.J. Fort, J.R. Rayburn, P.K. Work and J.A. Bantle. Validation of FETAX with Known Mammalian Teratogens and Non-teratogens. Tenth Annual Society of Environmental Toxicology and Chemistry Meeting, November 1989, Toronto Canada,
5. J.R. Rayburn, D.J. Fort, B.L. James, D.J. DeYoung, R.W. McNew and J.A. Bantle. Synergism and Antagonism of Carrier Solvents with t-Retinoic Acid and 6-Aminonicotinamide in FETAX. Oklahoma Academy of Science, November, 1989, Edmond, OK.
6. D.J. DeYoung, D.J. Fort, J.R. Rayburn, P.K. Work, and J.A. Bantle. Validation of FETAX with Known Mammalian Teratogens and Non-Teratogens. Oklahoma Academy of Science, November, 1989, Edmond, OK.
7. J.R. Rayburn, D.J. Fort, and J.A. Bantle. The synergism and antagonism of the developmental toxicity of t-retinoic acid and 6-aminonicotinamide using FETAX with three carrier solvents. Ozark-Prairie Chapter of the Society of Environmental Toxicology and Chemistry Regional Meeting, May 1990, Stillwater OK.
8. D.J. DeYoung, D.J. Fort, J.R. Rayburn, M. Hull, and J.A. Bantle. Predictive accuracy of the Frog Embryo Teratogenesis Assay: *Xenopus*(FETAX). Ozark-Prairie Chapter of the Society of Environmental Toxicology and Chemistry Regional Meeting, May 1990, Stillwater OK.
9. J.R. Rayburn, D.J. Fort, D.J. DeYoung, and J.A. Bantle. Effects of Solvent-Teratogen interaction on developmental toxicity using FETAX. Eleventh Annual Society of Environmental Toxicology and Chemistry National Meeting, November 1990 Crystal City VA.
10. D.J. DeYoung, D.J. Fort, J.R. Rayburn, M. Hull, and J. A. Bantle. Predictive accuracy of the Frog Embryo Teratogenesis Assay: *Xenopus*(FETAX). Eleventh Annual Society of Environmental Toxicology and Chemistry National Meeting, November 1990 Crystal City, VA.
11. J.R. Rayburn, D.J. DeYoung, and J.A. Bantle. An evaluation of solvent teratogen interactions using FETAX. Symp. on Environmental Toxicology and risk Assessment. American Society of testing and materials, April 1991 Atlantic City, NJ.
12. J.R. Rayburn, M. Hull, L. Homer, and J.A. Bantle. A proposed standardized statistical analysis of FETAX for an Interlaboratory Study. Ozark-Prairie Chapter of the Society of Environmental Toxicology and Chemistry Regional Meeting, May 1991, St. Louis MO.
13. J.R. Rayburn, M. Friedman, and J.A. Bantle. The effects of carbohydrate subunits on the developmental toxicity of naturally occurring alkaloids. Twelfth Annual Society of Environmental Toxicology and Chemistry, November 1991 Seattle WA.
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138. L. Cara, K. King, L. Kirkland, J.R. Rayburn, and F. Romano, Comparison of marine species at St. Andrew State Park and the Dry Tortugas National Park. Association of Southeastern Biologist meeting, Birmingham AL, April 2009
139. Shirey KD, Jones SM, and Rayburn JR. Toxicity of venom from two tarantula species (*Haplopelma lividium* and *Grammostola rosea*) on embryo/larvae of *Xenopus laevis*. Southeastern Society of Environmental Toxicology and Chemistry, Columbus GA, May 2009
140. Jones, SM, Shirey, KD, Rayburn, JR. The Effects of Pine Tree Extract on *Xenopus laevis*. Southeastern Society of Environmental Toxicology and Chemistry, Columbus GA, May 2009 (Best Student Poster).
141. S.M. Jones, K. Shirey, J. Rayburn. Effects of pH on Developmental Toxicity of Pine Tree Extract to the Embryos of *Xenopus laevis*, Jacksonville State University. SETAC North America 30th Annual Meeting, New Orleans, LA Nov 2009.
142. J Rayburn. L-Cysteine Protects Frog Embryos against Acrylamide- Induced Malformations and Mortality. Jacksonville State University. SETAC North America 30th Annual Meeting, New Orleans, LA Nov 2009.
143. K. Shirey, S.M. Jones, J. Rayburn, Preliminary Developmental Toxicity of venom from the tarantula species (*Grammostola rosea*) on embryo/larvae of *Xenopus laevis*. Jacksonville State University.

- SETAC North America 30th Annual Meeting, New Orleans, LA Nov 2009. (National SETAC 3rd place undergraduate poster award).
144. Sunde Jones, Shirey K., James Rayburn Mentor, Effects of pH on the Developmental Toxicity of Pine Tree Extract to the Embryos of *Xenopus laevis* Jacksonville State University College of Arts and Sciences Symposium Feb 2010, Jacksonville AL.
 145. Kristin Shirey S.M. Jones, J. Rayburn Mentor, A History of and Preliminary Developmental Toxicity of Venom from the Tarantula *Grammostola rosea* on Embryo of *Xenopus laevis* (Part II). Jacksonville State University College of Arts and Sciences Symposium Feb 2010, Jacksonville AL.
 146. Lindsey Marie Minton J. Rayburn Mentor, A review of histological methods on the reproductive system of amphibians for application to the African Clawed Frogs (*Xenopus laevis*) Jacksonville State University College of Arts and Sciences Symposium Feb 2010, Jacksonville AL. (Best Graduate Student Presentation in Biology).
 147. Lindsay M. Kirkland J. Rayburn Mentor. The Toxicity of the Aquatic Selective Herbicide, Fluridone to *Gambusia affinis*. Jacksonville State University College of Arts and Sciences Symposium Feb 2010, Jacksonville AL.
 148. Jammeh, Fatou Yvette J. Rayburn Mentor, A proposed comparative study of o,p'-DDT vs. p,p'-DDT Jacksonville State University College of Arts and Sciences Symposium Feb 2010, Jacksonville AL.
 149. Schwarzauer KM, Al-hamdani SH, Mwebi NO, Rayburn JR. The potential use of Kudzu as a lead phytoremediator. Carolinas and Southeast SETAC Joint 2010 Meeting, Athens GA.
 150. Rayburn J., Kirkland L, Jammeh F. Preliminary toxicity of aquatic selective herbicide fluridone to *Gambusia affinis* and *Xenopus laevis*. Carolinas and Southeast SETAC Joint 2010 Meeting, Athens GA.
 151. Shirey KD, Jones SM, Rayburn JR. Preliminary Developmental toxicity and comparison of the tarantula species, *Grammostola rosea* and *Haplopelma lividum*, on embryos of *Xenopus laevis*. Carolinas and Southeast SETAC Joint 2010 Meeting, Athens GA.
 152. Jones SM, Shirey KD, Rayburn JR, Cline GR, and Meade ME. The interaction study effects of Warfarin and Caffiene on the embryos of *Xenopus laevis*. Carolinas and Southeast SETAC Joint 2010 Meeting, Athens GA.
 153. Cline, GR, Rayburn JR, Romano III FA, Gregg KD, Carter RE. Analysis of fish communities: results from student observations. JSU, Alabama Academy of Science 87th annual meeting , March 30-April 1 2010 Normal AL.
 154. Schwarzauer KM, Al-hamdani SH, Mwebi NO, Rayburn JR. The potential use of Kudzu as a lead phytoremediator. Alabama Academy of Science 87th annual meeting , March 30-April 1 2010 Normal AL.
 155. Rayburn, J. and Friedman M., N-acetyl-L-Cysteine protects frog embryos against acrylamide-induced malformations and mortality. Alabama Academy of Science 87th annual meeting , March 30-April 1 2010 Normal AL.
 156. Jones SM, Shirey KD, Rayburn JR, Cline GR, and Meade ME. The interaction study effects of Warfarin and Caffiene on the embryos of *Xenopus laevis*. Alabama Academy of Science 87th annual meeting , March 30-April 1 2010 Normal AL.
 157. Minton, L., Rayburn JR Preliminary evaluation of histological methods examining effects of pine tree extract (from Virginia pine, *Pinus virginiana*) on African clawed frogs (*Xenopus laevis*). Alabama Academy of Science 87th annual meeting , March 30-April 1 2010 Normal AL.
 158. Jammeh F, Rayburn J. A proposed comparative study of o,p DDT vs pp DDT. Alabama Academy of Science 87th annual meeting , March 30-April 1 2010 Normal AL.
 159. James R. Rayburn1 And Mendel Friedman2. Biology Department, Jacksonville State university1, ARS-USDA Western Regional Research Center2. N-acetyal-L Cysteine Protects Frog Embryos against Acrylamide-Induced Malformations and Mortality. Association of Southeastern Biologist 2010 (April) annual meeting, Ashville NC
 160. Kristin Schwarzauer, James Rayburn And Safaa Al-Hamdani. Jacksonville State University. The Potential Use of *Pueraria montana* var. *lobata* in Phytoremediation. Association of Southeastern Biologist 2010 (April) annual meeting, Ashville NC
 161. George R. Cline, James R. Rayburn, Frank A. Romano Iii, Kelly D. Gregg, And Robert E. Carter Jr., Jacksonville State University. Analysis of Fish Communities: Results from Student Observations. Association of Southeastern Biologist 2010 (April) annual meeting, Ashville NC

162. Lindsey Minton And James Rayburn. Jacksonville State University, Biology Department. Preliminary histological evaluation of pine tree extract (from Virginia Pine, *Pinus virginiana*) on African Clawed Frogs (*Xenopus laevis*). Association of Southeastern Biologist 2010 (April) annual meeting, Ashville NC
163. Sunde Jones And Kristin Shirey. Jacksonville State University. Effects of pH on the Developmental Toxicity of Pine Tree Extract to the Embryos of *Xenopus laevis*. Association of Southeastern Biologist 2010 (April) annual meeting, Ashville NC
164. Kristin Shirey S.M. Jones, J. Rayburn Mentor, A History of and Preliminary Developmental Toxicity of Venom from the Tarantula *Grammostola rosea* on Embryo of *Xenopus laevis* BBB Division I&II meeting with the Association of Southeastern Biologist 2010 (April) annual meeting, Ashville NC.
165. Lindsay M. Kirkland J. Rayburn Mentor. The Toxicity of the Aquatic Selective Herbicide, Fluridone to *Gambusia affinis*. BBB Division I & II with the Association of Southeastern Biologist 2010 (April) annual meeting, Ashville NC.
166. J. Rayburn, M. Friedman, L-cysteine, N-Acetyl Cysteine and Glutathione protect frog embryos against Acrylamide toxicity. Society of Environmental Toxicology and Chemistry North America 31st Annual Meeting Bridging Science with Communities Oregon Convention Center | Portland, Oregon 7–11 November 2010
167. K. Shirey, S.M. Jones, J. Rayburn, Preliminary Developmental Toxicity and Comparison of the Tarantula Species, *Grammostola rosea* and *Haplopelma lividium*, on embryos of *Xenopus laevis*. Society of Environmental Toxicology and Chemistry North America 31st Annual Meeting Bridging Science with Communities Oregon Convention Center | Portland, Oregon 7–11 November 2010
168. S.M. Jones, K.D. Shirey, G. Cline, M. Meade, J. Rayburn, The Preliminary Effects of Combinations of Coumadin and Caffeine Mixtures on *Xenopus laevis* Embryos Society of Environmental Toxicology and Chemistry North America 31st Annual Meeting Bridging Science with Communities Oregon Convention Center | Portland, Oregon 7–11 November 2010
169. Brandon Blackburn, Mentor, J. Rayburn, Does Olive Pumice Extract Affect the Developmental Toxicity of Acrylamide to Embryos of *Xenopus laevis*? Jacksonville State University College of Arts and Sciences Symposium Feb 2011.
170. Sunde Jones and Kristin Shirey, Mentors, J. Rayburn, G. Cline, M. Meade Do Coumadin and Caffeine mixtures increase the risk to frog embryos? Jacksonville State University College of Arts and Sciences Symposium Feb 2011
171. Lindsey M Minton, Mentor, J. Rayburn, Evaluation of gross gonadal structure of African Clawed Frogs (*Xenopus laevis*): A comparison of Virginia Pine aqueous extract (*Pinus virginiana*) to Controls. Jacksonville State University College of Arts and Sciences Symposium Feb 2011
172. Kristin Shirey, Sunde Jones Mentor, J. Rayburn, Old World vs. New World: A Preliminary Comparison of the Developmental Toxicity of venom from two Tarantula Species, *Grammostola rosea* and *Haplopelma lividium* using embryos of *Xenopus laevis*. Jacksonville State University College of Arts and Sciences Symposium Feb 2011
173. Lindsey Minton and James Rayburn. Evaluation of aqueous extract of Virginia Pine (*Pinus virginiana*) by examining time to metamorphosis and gross gonadal structure of African Clawed Frogs (*Xenopus laevis*): Does natural pine leachate cause feminization in frogs? Southeast Regional meeting of Society for Environmental Toxicology and Chemistry, held with Alabama Academy of Sciences March 2011 Jacksonville AL.
174. James Rayburn and Mendel Friedman, The determination of antagonistic interactions between acrylamide and selected antioxidants using *Xenopus* embryos Southeast Regional meeting of Society for Environmental Toxicology and Chemistry, held with Alabama Academy of Sciences March 2011 Jacksonville AL.
175. Kristin Shirey and James Rayburn, Do potentially future pharmaceuticals increase environmental risk: preliminary evaluation of the venom from two tarantula species. Southeast Regional meeting of Society for Environmental Toxicology and Chemistry, held with Alabama Academy of Sciences March 2011 Jacksonville AL.
176. Sunde Jones, Kristin Shirey, George Cline, Mark Meade, and James Rayburn. The preliminary effects of Coumadin and caffeine mixtures on *Xenopus laevis* embryos: should they be used together? Southeast Regional meeting of Society for Environmental Toxicology and Chemistry, held with Alabama Academy of Sciences March 2011 Jacksonville AL.

177. Brandon Blackburn, Mendel Friedman, and James Rayburn, The potential for olive pumice extract to reduce the developmental toxicity of acrylamide using the frog embryo Teratogenesis assay-*Xenopus*. Southeast Regional meeting of Society for Environmental Toxicology and Chemistry, held with Alabama Academy of Sciences March 2011 Jacksonville AL.
178. Brandon Blackburn¹, Mendel Friedman² and James Rayburn¹. Does Olive Pumice Extract Affect the Developmental Toxicity of Acrylamide to Embryos of *Xenopus laevis*? Jacksonville State University. Association of Southeast Biologist meeting, April 2011, Huntsville AL.
179. Sunde M. Jones ¹ and James Rayburn The Preliminary Effects of Coumadin and Caffeine Mixtures on *Xenopus laevis* Embryos: Should They be Used Together? Jacksonville State University. Association of Southeast Biologist meeting, April 2011, Huntsville AL.
180. James R. Rayburn¹. Reduction of Acrylamide induced developmental toxicity to *Xenopus laevis* embryos by selected antioxidants. Association of Southeast Biologist meeting, April 2011, Huntsville AL.
181. Lindsey M. Minton¹ and James Rayburn¹. Does natural pine leachate cause feminization in frogs?: Evaluation of aqueous extract of Virginia Pine (*Pinus virginiana*) by examining time to metamorphosis, and gross & histological gonadal structure of African Clawed Frogs (*Xenopus laevis*). Jacksonville State University, Biology Department. Association of Southeastern Biologist meeting, April 2011, Huntsville AL.
182. Kristin D. Shirey¹ and James R. Rayburn¹. Preliminary Comparison of the Developmental Toxicity of venom from two Tarantula Species, *Grammostola rosea* and *Haplopelma lividum*, using embryos of *Xenopus laevis*: Old World vs. New World. Jacksonville State University. Association of Southeast Biologist meeting, April 2011, Huntsville AL.
183. James Rayburn. The interaction effects of natural oil and oil dispersants with delivery system on embryos of *Palaemonetes pugio*. National Society of Environmental Toxicology and Chemistry, North America 32nd Annual Meeting, Boston Nov 2011
184. Lindsey Minton, J. Rayburn, M. Hamissou, G. Cline, Preliminary Histological Examination as a Means to Evaluate the Effects of Aqueous Pine Extract of Virginia Pine on African Clawed Frogs National Society of Environmental Toxicology and Chemistry North America 32nd Annual Meeting Boston Nov 2011
185. James Rayburn Louisiana Sweet Crude oil and dispersant (with delivery system) interaction effects on embryos of *Palaemonetes pugio*. Southeast Society of Environmental Toxicology and Chemistry Regional meeting, Pensacola FL March 2012
186. Williams, J. R. (Author & Presenter), Rayburn, J. R. (Author), JSU Arts and Sciences Symposium, "Developmental Toxicity of Allyl Isothiocyanate in *Xenopus laevis*," JSU, Jacksonville, AL. (February 14, 2013).
187. Lester, R. (Author & Presenter), Rayburn, J. R. (Author), JSU Arts and Sciences Symposium, "Effects of oil dispersants shown in *Xenopus laevis* frog embryos," JSU, Jacksonville, AL. (February 14, 2013).
188. Carlisle, K. T. (Author & Presenter), Rayburn, J. R. (Author), JSU Arts and Sciences Symposium, "Preliminary Developmental Effects of Cold Treatment on embryos of *Xenopus laevis*," JSU, Jacksonville, AL. (February 14, 2013).
189. Cline, G. R. (Author & Presenter), Rayburn, J. R. (Author & Presenter), Tolley-Jordan, L. (Author & Presenter), EEAA Annual Conference, "Alabama's Path to Learning: USDE funded outdoor field trip classroom," Environmental Education Association of Alabama, Little River Canyon Center. (March 9, 2013).
190. Carlisle, K. T. (Author & Presenter), Rayburn, J. R. (Author), Alabama Academy of Sciences, "Developmental effects of cryoprotectants on embryos of *Xenopus laevis*," Southeastern Chapter of Society for Environmental Toxicology and Chemistry, Birmingham AL. (March 21, 2013).
191. Williams, J. R. (Author & Presenter), Rayburn, J. R. (Author), Alabama Academy of Sciences, "Developmental toxicity of allyl Isothiocyanate, Furan, and L-Cysteine in *Xenopus laevis*," Southeastern Chapter of Society for Environmental Toxicology and Chemistry, Birmingham AL. (March 21, 2013).
192. Lester, R. (Author & Presenter), Rayburn, J. R. (Author), Alabama Academy of Sciences, "Effects oil dispersants on *Xenopus laevis* frog embryos," Southeastern Chapter of Society for Environmental Toxicology and Chemistry, Birmingham AL. (March 21, 2013).
193. Rayburn, J. R. (Author & Presenter), Hennings, S. (Author), Alabama Academy of Sciences, "Preliminary evaluation of different conditions to raise *Xenopus laevis* tadpoles," Southeastern Chapter of Society for Environmental Toxicology and Chemistry, Birmingham AL.

194. Carlisle, K. T. (Author & Presenter), Rayburn, J. R. (Mentor), 56 Annual Meeting BBB Southeastern Region, "Potential Problems with Cyroprotectants: Developmental Effects on *Xenopus laevis* embryos," BBB District 1 and 2 with ASB, Charleston, WV. (April 12, 2013).
195. Carlisle, K. (Author & Presenter), Rayburn, J. R. (Author), 74 th Annual Meeting of the Association of Southeastern Biologists, "Preliminary cryopreservation of *Xenopus laevis* embryos," ASB, Charleston, WV. (April 12, 2013).
196. Lester, R. (Author & Presenter), Rayburn, J. R. (Author), 74 th Annual Meeting of the Association of Southeastern Biologists, "The developmental effects of oil dispersants on *Xenopus laevis* frog embryos," ASB, Charleston, WV. (April 12, 2013).
197. Williams, J. R. (Author & Presenter), Rayburn, J. R. (Author), 74 th Annual Meeting of the Association of Southeastern Biologists, "Inhibition of developmental toxicity of acrylamide using l - cysteine in *Xenopus laevis*," ASB, Charleston, WV. (April 11, 2013).
198. Rayburn, J. R. (Author & Presenter), 74 th Annual Meeting of the Association of Southeastern Biologists, "The interaction effects of natural oil and oil dispersants with delivery system on embryos of *Palaemonetes pugio*," ASB, Charleston, WV. (April 11, 2013).
199. Cline, G. R. (Author & Presenter), Marcus, J. (Author), Lagon, s. (Author), Jahn, C. (Author), Hernandez, J. (Author), Hernandez, I. (Author), Rayburn, J. R. (Author), Alabama Partners in Amphibian and Reptile Conservation, "Update on the distribution of Green Treefrogs (*Hyla cinerea*) in Northeastern Alabama," Partners in Amphibian And Reptile Conservation, Andalusia, AL. (October 4, 2013).
200. Williams, J. R. (Author & Presenter), Rayburn, J. R. (Author), Society of Environmental Toxicology and Chemistry North America 34th Annual Meeting, "Developmental Toxicity in *Xenopus laevis* embryos Exposed to Pairwise Mixtures of Acrylamide, Furan, and L-Cysteine," Society of Environmental Toxicology and Chemistry, Nashville, Tennessee. (November 19, 2013).
201. Rayburn, J. R. (Author & Presenter), Society of Environmental Toxicology and Chemistry North America 34th Annual Meeting, "Comparison of Single Concentration Interaction experiments to Concentration Curves using isobole diagrams for Determining the Toxicity of Mixtures," Society of Environmental Toxicology and Chemistry, Nashville, Tennessee. (November 19, 2013).
202. Lester, R. (Author & Presenter), Rayburn, J. R. (Other), Jacksonville State University Arts and Sciences Symposium, "The effects of Diethyl phthalate (DEP) on *Xenopus laevis* frog embryos," JSU college of arts and sciences, Jacksonville Alabama. (February 6, 2014).
203. Gardner, S. (Author & Presenter), Rayburn, J. R. (Other), Perygin, D. (Other), Jacksonville State University Arts and Sciences symposium, "Toxicity of DiButyl Phthalate to developing *Xenopus laevis* embryos," JSU College of Arts and Sciences, Jacksonville Alabama. (February 5, 2014).
204. Cline, G. R., Rayburn, J. R., Triplett, J. K., Alabama Academy of Science, "'BioBlitz' survey of the Calhoun County Career Technical Center property, AL," Alabama Academy of Science, Auburn, AL. (March 14, 2014).
205. Rayburn, J. R., Carlisle, K. T. (Author), Association of Southeastern Biologist 75th meeting, "Developing a cyropreservation protocol for embryos of *Xenopus laevis*, the south African clawed frog," ASB, Spartinburg SC. (April 3, 2014).
206. Gardner, S. (Author & Presenter), Rayburn, J. R., SE-SETAC 2014 Regional meeting, "Toxic effects of Dibutylphthalate on developing *Xenopus laevis* embryos," Southeast Society of Environmental Toxicology and Chemistry, Fort Payne AL. (July 26, 2014).
207. Lester, R. (Author & Presenter), Rayburn, J. R., SE-SETAC 2014 Regional meeting, "Diethylphthalate (DEP) effects on growth and survival of *Xenopus laevis* frog embryos," Southeast Society of Environmental Toxicology and Chemistry, Fort Payne AL. (July 26, 2014).

208. Lester, R. (Author & Presenter), Rayburn, J. R. (Author), Annual Biomedical Research Conference for Minority Students, "Oil Dispersants Alter Development of *Xenopus laevis* Frog Embryos," ABRCMS, San Antonio. (November 13, 2014).
209. Rayburn, J. R., Association of Southeastern Biologist Meeting 2015, "A Comparison of Student Response System Quizzes to Conventional Paper Tests (multiple choice) for General Biology Courses at Jacksonville State University," ASB, Chattanooga, TN. (April 2015).
210. Rayburn, J. R., 92nd Annual Meeting of the Alabama Academy of Science, "Teaching Human Anatomy and Physiology: A Comparison of Student Response System Quizzes to Conventional Paper Tests (multiple choice) at Jacksonville State University," AAS, Livingston, Alabama. (March 2015).
211. Blair, K. (Author & Presenter), Rayburn, J. R., Association of Southeastern Biologist Meeting 2015, "Determination of Altered Toxic Effects of Acetaminophen by Caffeine Using Frog Embryo Teratogenesis Assay--*Xenopus* (FETAX)," ASB, Chattanooga, TN. (April 2015).
212. Gardner, S. (Author & Presenter), Rayburn, J. R., Perygin, D., Association of Southeastern Biologist Meeting 2015, "Teratogenic Effects of Three Phthalates to Developing *Xenopus laevis* Embryos," ASB, Chattanooga, TN. (April 2015).
213. Parker, T. T. (Author & Presenter), Rayburn, J. R., Association of Southeastern Biologist Meeting 2015, "Toxicity of Cigarette Butts and Electronic Cigarette Cartridges, and Their Chemical Components, to *Xenopus laevis* Embryos," ASB, Chattanooga, TN. (April 2015).
214. Rayburn, J. R., CORE Academy 2015, "Science: A comparison of student response system quizzes to conventional paper tests (multiple choice) for general biology courses at Jacksonville State University.," Jacksonville State University, Jacksonville AL. (June 3, 2015).
215. Rayburn, J. R., CORE Academy 2015, "The use and evaluation of student response systems n General Biology and Human Anatomy and Physiology courses.," Jacksonville State University, Jacksonville AL. (June 2, 2015).
216. Rayburn, J. R. (Author), Blair, K. (Author & Presenter), 13th Annual meeting of the Southeastern Chapter of SETAC, "Acetaminophen and Caffeine: Drug interactions on embryos of *Xenopus laevis* using the Frog Embryo Teratogenesis Assay-*Xenopus* (FETAX)," SE-SETAC, Pensacola FL. (September 18, 2015).
217. Gardner, S. (Author & Presenter), Rayburn, J. R. (Author), Cline, G. R. (Author), Mwebi, N. O. (Author), 13th Annual meeting of the Southeastern Chapter of SETAC, "Deleterious effects of hexavalent chromium to developing *Ambystoma maculatum* embryos.," SE-SETAC, Pensacola FL. (September 18, 2015).
218. Rayburn, J. R. (Author & Presenter), Tatum-Parker, T. C. (Author), 93rd Annual Meeting of the Alabama Academy of Science, "A comparison of electronic and traditional cigarette butt leachate on the development of *Xenopus laevis* embryos.," AAS, Florence AL. (February 19, 2016).
219. Humphries, K. (Author & Presenter), Rayburn, J. R., 93rd Annual Meeting of the Alabama Academy of Science, "The effects of DEP on the embryonic stages of grass shrimp, (*Palaemonetes pugio*)," AAS, Florence AL. (February 19, 2016).
220. Gardner, S. (Author & Presenter), Rayburn, J. R., Cline, G. R., Mwebi, N. O., SEPARC 2016 Annual Meeting, "The Effects and Uptake of Arsenic and Chromium in Spotted Salamanders," South Eastern Partners in Amphibian and Reptile conservation, Nauvoo, Alabama. (February 19, 2016).
221. Gardner, S. (Author & Presenter), Rayburn, J. R. (Author), Perygin, D. (Author), 77th Annual Meeting Association of Southeastern Biologists, "Assessing Differences in Toxicity and Teratogenicity of Three Phthalates, Diethyl phthalate, Di-n-propyl phthalate, and Di-n-butyl phthalate, Using *Xenopus laevis* Embryos," ASB, Concord NC. (April 1, 2016).
222. Rayburn, J. R. (Author & Presenter), Southeast Society of Environmental Toxicology and Chemistry 14th Regional Meeting, "The preliminary use of the Comet Assay with Frog embryos

- for detection of DNA damage using Acrylamide," SE-SETAC, Gainesville, FL. (September 23, 2016).
223. Gardner, S. (Author), Cline, G. R. (Author), Mwebi, N. O. (Author), Rayburn, J. R. (Author & Presenter), 7th SETAC World Congress/SETAC North America 37th Annual Meeting, "Developmental and interactive effects of arsenic and chromium to developing *Ambystoma maculatum* embryos: toxicity, teratogenicity, and uptake," Society of Environmental Toxicology and Chemistry, Orlando, Florida. (November 10, 2016).
 224. Gardner, S. T. (Author & Presenter), Rayburn, J. R., Cline, G. R., Mwebi, N. O., SICB Annual Meeting 2017, "The Effects and Uptake of Arsenic and Chromium in Spotted Salamanders," The Society for Integrative and Comparative Biology, New Orleans. (January 6, 2017).
 225. Gardner, S. (Author & Presenter), Cline, G. R., Mwebi, N. O., Rayburn, J. R., 78th Annual Meeting of Association of Southeastern Biologist, "Developmental and interactive effects of arsenic and chromium to developing *Ambystoma maculatum* embryos: Toxicity, teratogenicity, and whole-body concentrations," ASB, Montgomery, AL. (March 30, 2017).
 226. Carlisle, K. (Author & Presenter), Rayburn, J. R., 78th Annual Meeting of Association of Southeastern Biologist, "Preliminary comparison of L-cysteine, N-acetyl-L-cysteine, and apple peel protective effects on acrylamide toxicity in embryos of *Xenopus laevis*," ASB, Montgomery, AL. (March 30, 2017).
 227. Qrareya, A. (Author & Presenter), Carlisle, K., Rayburn, J. R., 78th Annual Meeting of Association of Southeastern Biologist, "The Potential protective effects of L-cysteine on the developmental effects of acetaminophen, caffeine, and sea salt using Frog Embryo teratogenesis Assay- FETAX," ASB, Montgomery, AL. (March 30, 2017).
 228. Rayburn, J. R., 78th Annual Meeting of Association of Southeastern Biologist, "The Use of Student Response Systems to Increase Student Engagement in Human Anatomy and Physiology Courses at Jacksonville State University," ASB, Montgomery, AL. (March 30, 2017).
 229. Qrareya, A. (Author & Presenter), Rayburn, J. R., SETAC Southeastern Region 15th annual meeting, "Evaluation of the developmental toxicity and teratogenicity of antiepileptic drug (AED), carbamazepine using Frog Embryo," Southeastern Society Environmental Toxicology and Chemistry, Brunswick, GA. (September 30, 2017).
 230. Carlisle, K. (Author & Presenter), Rayburn, J. R., SETAC Southeastern Region 15th annual meeting, "Reduction of acrylamide induced toxicity in *Xenopus laevis* embryos by addition of pure chemicals and plant products," Southeastern Society Environmental Toxicology and Chemistry, Brunswick, GA. (September 29, 2017).
 231. Rayburn, J. R., SETAC Southeastern Region 15th annual meeting, "The Potential use of Spotted Salamander (*Ambystoma maculatum*) eggs for use in developmental toxicity assays," Southeastern Society Environmental Toxicology and Chemistry, Brunswick, GA. (September 29, 2017).
 232. Pack, T. (Author & Presenter), Carlisle, K. (Author), Alaa, Q. (Author), Rayburn, J. R., SETAC Southeastern Region 15th annual meeting, "The Protective Effects of L-Cysteine on Sea Salt Induced Toxicity in Frog Embryos," Southeastern Society Environmental Toxicology and Chemistry, Brunswick, GA. (September 29, 2017).
 233. Pack, T. (Author & Presenter), Qrareya, A. (Author & Presenter), Carlisle, K. (Author & Presenter), Rayburn, J. R., 2018 JSU Student symposium, "L-Cysteine's Potential protective effects on sea salt induced toxicity in *Xenopus laevis* embryos," Jacksonville State University, Jacksonville, AL. (February 15, 2018).
 234. McGhee, W. (Author & Presenter), Rayburn, J. R., 2018 JSU Student symposium, "Preliminary analysis: The toxic effects of acrylamide on Grass Shrimp (*Palaemonetes pugio*)," Jacksonville State University, Jacksonville, AL. (February 15, 2018).

235. Partridge, A. (Author & Presenter), Rayburn, J. R., 2018 JSU Student symposium, "Preliminary results of the effect of apple snail egg protein extract on African clawed frog embryos.," Jacksonville State University, Jacksonville, AL. (February 15, 2018).
236. Carlisle, K., Rayburn, J. R., 2018 JSU Student symposium, "Reducing acrylamide toxicity: A study of antioxidant and anti-inflammatory rich compounds on mitigation of acrylamide induced developmental toxicity in embryos of *Xenopus laevis*," Jacksonville State University, Jacksonville, AL. (February 15, 2018).
237. Qrareya, A. (Author & Presenter), Rayburn, J. R., 2018 JSU Student symposium, "Evaluation of the potential protective effects of folic acid on the developmental toxicity and teratogenicity of antiepileptic drug (AED) carbamazepine, using Frog Embryo Teratogenesis Assay-(FETAX)," Jacksonville State University, Jacksonville, AL. (February 14, 2018).

Presentations

1. JR Rayburn, Developmental Toxicology of Shrimp Embryos: an example of assay development for investigating environmental contamination. March 7, 1997, University of Illinois Champaign-Urbana IL. Invited Presentation.
2. JR Rayburn, Developmental Toxicology of Shrimp Embryos: an example of assay development for investigating environmental contamination. April 1, 1997, Tulane University New Orleans, LA. Invited Presentation.
3. JR Rayburn, The Grass Shrimp Developmental Toxicity Assay. May 30, 1997, Cameron University, Lawton OK. Invited Presentation.
4. JR Rayburn, The Grass Shrimp Developmental Toxicity Assay. Aug. 4, 1997, St. John's University, Jamaica NY. Invited Presentation.
5. JR Rayburn, The Grass Shrimp Developmental Toxicity Assay. Dec. 8, 1997, Furman University, Greenville SC. Invited Presentation
6. JR Rayburn, The Grass Shrimp Developmental Toxicity Assay. February 11, 1998, Jacksonville State University, Jacksonville, AL. Invited Presentation.
7. JR Rayburn, The use of the Frog Embryo Teratogenesis Assay – *Xenopus* (FETAX) to evaluate the developmental toxicity of copper and chromium. October 1999. All-Alabama Herpetological meeting in Auburn, AL
8. H. Howell and JR Rayburn Salinity Tolerance in *Xenopus laevis* Embryos. October 1999. All-Alabama Herpetological meeting in Auburn, AL
9. D. Pendergrass and JR Rayburn The effects of ammonia and nitrate on *Xenopus laevis* Embryos. October 1999. All-Alabama Herpetological meeting in Auburn, AL Aladdin RK, Rayburn JR, Aluminum's Toxicity on shrimp and frog embryos. JSU Student Symposium AL April 2000.
10. Pendergrass D, Rayburn JR, The effects of nitrogen compounds on the early development of *Xenopus Laevis*., JSU Student Symposium AL April 2000.
11. Wolfe AH, Rayburn JR, Use of FETAX to determine teratogenic effects of Meclizine. JSU Student Symposium AL April 2000.
12. Pendergrass D, Cline GR, and Rayburn JR, Observations of tadpole deformities from Calhoun County, AL. JSU Student Symposium AL April 2000.
13. Odom, Allison, Andrea Wolfe, And James Rayburn. Dept. of Biology, Jacksonville State University, Jacksonville, AL 36265- Effects of Meclizine on Developing Embryos of the Grass Shrimp *Palaemonetes pugio* JSU Research Symposium 2001.

14. Pendergrass, Darryl C., George Cline And James R. Rayburn, Dept. of Biology, Jacksonville State University, Jacksonville, AL 36265 - Comparison of the Effects Nitrogen Compounds on the Development of *Xenopus laevis* and *Pseudacris crucifer* JSU Research Symposium 2001.
15. Gibson, Greg and James Rayburn PhD. Jacksonville State University -Activity and presence of Cytochrome-P-450 in early *Xenopus laevis* embryos as determined by Modified Nash Assay. JSU Research Symposium 2002.
16. Wolfe, Andrea and James Rayburn .Dept. of Biology, Jacksonville State University, Preliminary developmental effects of TCA using FETAX. JSU Research Symposium 2002.
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