

**Loretta C. Johnson**  
**Biology, 312 Ackert Hall**  
**Kansas State University**  
**Lab site: [lorettajohnsonlab.weebly.com](http://lorettajohnsonlab.weebly.com)**  
**Email [Johnson@ksu.edu](mailto:Johnson@ksu.edu)**  
**Twitter [@LorettaCJohnso1](https://twitter.com/LorettaCJohnso1)**

## Education

Connecticut College, New London, CT	Zoology/Field Biology	B.A., 1979
University of Connecticut	Ecology and Evolutionary Biology	Ph.D. 1992
Ecosystem Center, Marine Biol. Lab.	Post-doctoral Associate	1992- 1995

## Appointments

2015-present Professor, Division of Biology, Kansas State University  
2017-present Director, Ecological Genomics Institute, [www.ecogen.ksu.edu](http://www.ecogen.ksu.edu)  
2003-2017 Co-Director, Ecological Genomics Institute, [www.ecogen.ksu.edu](http://www.ecogen.ksu.edu)  
2002- 2015 Associate Professor, Division of Biology, Kansas State University,  
1995- 2002 Assistant Professor, Division of Biology, Kansas State University Manhattan, KS  
1992-1995 Postdoctoral Fellowship, Ecosystems, Marine Biological Lab, Woods Hole, MA  
1991-1992 Lectureship, University of Connecticut  
1987-1990 Graduate Teaching Assistant, University of Connecticut  
1985-1986 Fulbright and American Scandinavian Fellowships, University of Lund, Sweden

## Synergistic Activities

- **Director, KSU Ecological Genomics Institute.** The institute ([www.ecogen.ksu.edu](http://www.ecogen.ksu.edu)) is a broad interdisciplinary center that provides a fertile intellectual environment, state-of-the-art facilities and develops the technical expertise necessary to allow Ecological Genomic research to flourish at KSU. This interdisciplinary EG Institute now involves over 26 faculty, post-docs, and students in five departments and three colleges at KSU. Goals and activities of the Ecological Genomics Institute include providing funding for research through seed grants, support to hire three new tenure-track EG faculty, facilitating the development of infrastructure to enhance EG activities, continuing the annual “Genes in Ecology, Ecology in Genes” Symposium, developing an interdisciplinary curriculum in EG, establishing technical and synthesis workshops, and the initiation of visiting scholar, seminar, and international collaborative programs.
- **Director of the KSU Dept of Education GAANN Fellowship Program** in Ecology, Evolution, and Genomics ([www.ksu.edu/eeg](http://www.ksu.edu/eeg)) 2009-2014, 2016-2019
- **High impact news release from <https://www.k-state.edu/media/newsreleases/2017-10/bluestem101017.html> based on Smith et al. 2017 paper.** The news appeared in 125 media outlets including Houston Chronicle, Star Tribune, Washington Times, US

News, Seattle Times, Science Daily amongst others including radio outlets and interviews such as NPR. Collectively, the media coverage potentially reached nearly 125 million people and had an ad-value equivalent of nearly \$1.2 million.

- **Gordon conference chair 2011, Ecological and Evolutionary Functional Genomics**, Biddeford Maine, Vice chair, 2009, Tilton NH
- **Spearheaded** newand ConGenomics Initiatives.
- **NSF Workshop on Biological Tool Development for the 21st Century**. Convened by Gene Robinson, Mar 2009.
- **NSF Panels**: Ecosystems Panel, 2002-2006, NSF-IOB Panel, 2009, 2011, 2019, EPSCor Reverse Site Visit 2020

### **Sigma Xi Activities**

2014 President-Elect of the KSU Chapter of the Scientific Honor Society Sigma Xi.  
2015 President of the KSU Chapter of the Scientific Honor Society Sigma Xi  
2015 Established KSU chapter charitable donation status through the KSU Foundation  
2019 Outstanding Scientist Award of the KSU Chapter of the Scientific Honor Society Sigma Xi  
2019-21 Executive Committee of the KSU Chapter of the Scientific Honor Society Sigma Xi  
2019-present-Nominations Committee for the National Office of Sigma Xi, selects nominees for President

### **Professional Associations**

Sigma Xi  
Society for the Study of Evolution  
Association for Plant Biology  
Ecological Society of America  
Botanical Society of America  
American Association for University Women

### **Selected Publications (total 67, H index=31, 6500 citations on Microsoft Academic)**

Matthew Galliard, Sofia Sabates, Hannah Tetreault, Angel DeLaCruz, Johnny Bryant, Jake Alsdurf, Mary Knapp, Nora M. Bello, Sara G. Baer, Brian R. Maricle, Gibson DA, Jesse Poland, Paul St Amand, **Loretta Johnson**. 2020. Adaptive genetic potential and plasticity of trait variation in an ecological foundation prairie grass *Andropogon gerardii* across US Great Plains' climate gradient: Implications for climate change and restoration. *Evolutionary Applications*. DOI: 10.1111/eva.13028

**Loretta Johnson**, Matthew Galliard, Jake Alsdurf, Nora M. Bello, Sara G. Baer, Brian R. Maricle, David J. Gibson. *Journal of Ecology* Invitation for Special issue. Synthesis of common

gardens to detect local adaptation in grassland species: Challenges and opportunities in the genomic era. In revision. Whole issue submission planned for February 2021

Pittenger Madison S., Keri L. Maricle, Sara G. Baer, **Loretta C. Johnson**, and Brian R. Maricle 2020. No difference in herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*) Transactions of the Kansas Academy of Science. In press.

**Loretta Johnson**, Anna Nagel, Rory Reichelt, Paige Wiebe, Brian R Maricle, and Matthew Galliard. Intraspecific variation in big bluestem *Andropogon gerardii* populations in response to experimental drought: Mechanisms of adaptation in a dominant prairie grass of the Great Plains. American Journal of Botany. In Review

Galliard, M., Bello, N., Knapp, M., Poland, J., St Amand, P., Baer, S., ... & **Johnson, L.** (2019). Local Adaptation, Genetic Divergence, and Experimental Selection in a Foundation Grass across the US Great Plains' Climate Gradient. *Global Change Biology*. 10.1111/gcb.14534 Online Nov 18, 2018.

Nick A. Varvel, Christina J. Hilt, Sara G. Baer, **Loretta C. Johnson**, and Brian R. Maricle 2018. Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) Environmental and Experimental Botany, 155, 477-487.

Sara G. Baer, David J. Gibson, **Loretta C. Johnson**, 2018. Restoring Grassland in the Context of Climate Change in "Grasslands and Climate Change" edited by Gibson and Newman, Cambridge University Press. In Press.

Diedre M Kramer; Keri L Maricle; Christina J Hilt; Nicole M Martin; Adam D Urban; Cera M Smart; Sara G Baer; **Loretta C Johnson**; Brian R. Maricle . 2018. Drought tolerance in ecotypes of big bluestem (*Andropogon gerardii*) relates to above-ground surface area: Results from a common garden experiment. *Flora*. Volumes 246–247, September 2018, Pages 52-60

Theodore J. Morgan, Michael A. Herman, **Loretta C. Johnson**, Bradley J.C.S. Olson, and Mark C. Ungerer 2018. Ecological Genomics: Genes in Ecology and Ecology in Genes. Introduction to the Special Issue of Genome dx.doi.org/10.1139/gen-2018-0022

Adam B. Smith, Jacob Alsdurf, Mary Knapp, Sara G. Baer, **Loretta C. Johnson**. 2017. Phenotypic distribution models corroborate predictions of decline from species distribution models of a dominant prairie grass. *Global Change Biology*. 23:4365–4375.

BR Maricle, K Caudle, K Lindsey, S Baer, and **LC Johnson**. 2017. Effects of extreme drought on photosynthesis and water potential of *Andropogon gerardii* (big bluestem) ecotypes in common gardens across Kansas. *Tran Kansas Acad of Science*. Vol. 120, no. 1-2: 1-16.

Ke Zhang, Donghai Wang, Wengai Yuan, **Loretta Johnson**. 2017. Development of near-infrared spectroscopy models for quantitative determination of cellulose and hemicellulose contents of big bluestem. *Renewable Energy*. Vol 109:101-109.

David J. Gibson, Juliette M. Donatelli, Amer AbuGhazaleh, Sara G. Baer and **Loretta C. Johnson** 2016. Ecotypic variation in forage nutrient value of a dominant prairie grass across a precipitation gradient. *Grassland Science*. doi: 10.1111/grs.12131

Laurel R. Wilson, David J. Gibson, Sara G. Baer, **Loretta C. Johnson**. 2016 Plant community response to regional sources of dominant grasses in grasslands restored across a longitudinal gradient. *Ecosphere* 7(4):e01329. 10.1002/ecs2.1329

Seth Raithel; **Loretta Johnson**; Mathew Galliard; Susan Brown; Jennifer Shelton; Nicolae Herndon; Nora M Bello 2016 Inferential considerations for low-count RNA-seq transcripts: a case study on an edaphic subspecies of dominant prairie grass *Andropogon gerardii* *BMC Genomics*. 17:140 DOI 10.1186/s12864-016-2442-7

Mendola, M, S G Baer, **LC Johnson** and BR Maricle. 2015. The role of ecotypic variation and the environment on biomass and nitrogen in a dominant prairie grass. *Ecology*. 96:2433-2445.

**Johnson Loretta**, Olsen Jacob T, Tetreault Hannah, DeLaCruz Angel, Bryant John, MorganTed, Knapp Mary, Bello Nora, Baer Sara, Maricle Brian R. Intraspecific variation of a dominant grass and local adaptation in reciprocal garden communities along a US Great Plains' precipitation gradient: implications for grassland restoration with climate change *Evolutionary Applications*. 8 (2015) 705–723

Ke Zhang, **Loretta Johnson**, P.V. Vara Prasad, Zhijian Pei, Wenqiao Yuan, Donghai Wang . 2015. Comparison of big bluestem with other native grasses: Chemical composition and biofuel yield. *Energy* 83 (2015) 358-3

Gray MM, St. Amand P, Akhunov ED, Knapp M, Garrett KA, Morgan TJ, Baer SG, Maricle BR, **Johnson LC**. 2014. Ecotypes of an ecologically dominant grass (*Andropogon gerardii*) exhibit genetic divergence across the U.S. Midwest environmental gradient. *Molecular Ecology*.

Caudle, K.L., **L.C. Johnson**, S.G. Baer, and B.R. Maricle. 2014. A comparison of seasonal foliar chlorophyll change among ecotypes and cultivars of *Andropogon gerardii* (Poaceae) by using non-destructive and destructive methods. Manuscript in press: *Photosynthetica* 1-8.

K. Zhang, **L. Johnson**, R. Nelson, W. Yuan, Z.J. Pei, and D. Wang. 2014. Thermal properties of big bluestem as affected by ecotype and planting location along the precipitation gradient of the Great Plains. *Energy* 64(2014) 164-171, 2014.

Zhang K.; **Johnson L.**; Yuan W.; Pei Z.; and Wang D.2014. Glucan yield from enzymatic hydrolysis of big bluestem as affected by ecotype and planting location along the precipitation gradient of the Great Plains *BioEnergy Research*1-12.

Zhiyong Yang, Zhengxing Shen, Hannah Tetreault, **Loretta Johnson**, Bernd Friebe, Taylor Frazier, Lin-kai Huang, Bin Xu, Caitlin Burklew, Xin-Quan Zhang, Bingyu Zhao, 2013.

Production of autopolyploid lowland switchgrass lines through in vitro chromosome doubling. *Bioenergy Research* 7(1):232-242.

Jacob T. Olsen, Keri L. Caudle, **Loretta C. Johnson**, Sara G. Baer, Brian R. Maricle 2013. Variation in leaf anatomy among populations of *Andropogon gerardii* along a precipitation gradient. *American Journal of Botany* 100(10):1957.

Gibson, D.J., Sandor, G., Donatelli, J., Baer, S.G., **Johnson, L.** Reproductive effort of *Andropogon gerardii* ecotypes in an Illinois common garden. 2013. *Torrey Botanical Club Journal*. 140(3):269

Gan Jing, Wenqiao Yuan, **Loretta Johnson**, Donghai Wang, Richard Nelson, Ke Zhang. 2012 Hydrothermal conversion of big bluestem for bio-oil production: The effect of ecotype and planting location. *Bioresource Technology* 116 (2012) 413–420.

Zhang, Ke **Loretta Johnson**, Richard Nelson, Wenqiao Yuan, Zhijian. Pei, and Donghai Wang\*. 2012. Chemical and elemental composition of big bluestem as affected by ecotype and planting location along the precipitation gradient of the Great Plains. *Industrial Crops and Products* 40: 210–218.

G. E. Robinson, J. A. Banks, D. K. Padilla, W. W. Burggren, C. S. Cohen, C. F. Delwiche, V. Funk, H. E. Hoekstra, E. D. Jarvis, **L. Johnson**, M. Q. Martindale, C. Martinez del Rio, M. Medina, D. E. Salt, S. Sinha, C. Specht, A. C. Spradling, K. Strange, J. E. Strassmann, B. J. Swalla, L. Tomanek. 2010. Empowering 21 Century Biology. *Bioscience* 60 (11):923-930.

Walker, J, M Bill, **L. Johnson**, N Simpson, A Jumpponen, 2010. Application of fungistatics in soil reduces N uptake by an arctic ericoid shrub (*Vaccinium vitis-idaea*)" *Mycologia*.102(4):822.

M. Ungerer, **L. Johnson** and M. Herman. Ecological genomics: finding gene functions in the natural environment. 2008. Special ecological genomics issue of *Heredity*. *Heredity*. 1-6.

McKinley, D.C., M.D. Norris, **L.C. Johnson**, and J.M. Blair. 2008. Biogeochemical changes associated with *Juniperus virginiana* encroachment into grasslands. Pages 170-187 In *Ecological Studies Series 196 - Western North American Juniperus Communities: A Dynamic Vegetation Type* (O.W. Van Auken ed.), Springer-Verlag, NY

J. Kammenga, M. Herman, J. Ouborg, **L. Johnson**, and R. Breitling. 2007. Microarray challenges in ecology *Trends in Ecology and Evolution*. 22: 273-279. 97(6):1177.

Norris, M.A., J.M. Blair and **L.C. Johnson**. 2007. Altered ecosystem nitrogen dynamics as a consequence of land cover change in tallgrass prairie. *American Midland Naturalist* 158:432-445.

Jumpponen, A. and **Johnson, LC**. 2005. Can rDNA analysis of diverse fungal communities in soil and roots detect effects of environmental manipulations-a case study from tallgrass prairie. *Mycologia*. 97(6): 1177-1194.

Jumpponen, A. Trowbridge, J., Mandyam, K.G. and **Johnson, L.C.** 2005. Nitrogen deposition affects AM root colonization minimally but shifts community structure. *Biology and Fertility of Soils*. 41:217-224.

Craine, J., B. Lee, **L. Johnson**, W. Bond, W.D. Williams. 2005. Roots of the world. *Ecology*. 86:12-19.

Loya, W., **L.C. Johnson**, K. Nadelhoffer (2004). Annual dynamics of leaf and root derived carbon in arctic tundra soils. *Soil Biology and Biochemistry* 36(4):655-666.

Smith, D.L. and **L.C. Johnson**. 2004. Changes in soil carbon cycling as forests expand into grassland: Vegetation-mediated changes in microclimate reduces soil respiration. *Ecology*. 85 (12): 3348-3361.

Smith, D.L. and **L.C. Johnson** (2003). Expansion of *Juniperus virginiana* in the Great Plains: Changes in Soil Organic Carbon Dynamics. *Global Biogeochemical Cycles* 17(2):1-12.

McKane, R., **L.C. Johnson**, B. Fry, G. Shaver, K. Nadelhoffer, E. Rastetter, B. Fry, A. Giblin, K. Kielland, B. Kwaitkowski, J. Laundre, and G. Murray (2002). Resource-based niches provide a basis for species diversity and dominance in an arctic plant community. *Nature* 415:68-71.

Loya, W., **L. C. Johnson**, K. Nadelhoffer, G. Kling, J. King, W. Reeburgh (2002). Pulse-labeling studies of carbon cycling in Arctic tundra ecosystems: the contribution of photosynthate to soil organic matter. *Global Biogeochemical Cycles*. 16(4).

K.J. Nadelhoffer, **L.C. Johnson**, J. Laundre, A. Giblin. and G. Shaver. 2002. Fine root production and nutrient use in wet and moist arctic tundras as influenced by chronic fertilization. *Plant and Soil*. 242 (1): 107-113.

Norris, M., J. Blair, and **L.C. Johnson** (2002). Changes in plant biomass, productivity, and nutrient stores following *Juniperus* expansion into grasslands. *Can. J. Forestry Research* 31:1940-1946.

King, J., W. Reeburgh, K. Nadelhoffer, \*G. Kling, W. Loya, and **L.C. Johnson** (2002). Contribution of photosynthate of methane emission in tundra: A <sup>14</sup>C labeling approach. *Global Biogeochemical Cycles* 4 (doi: 10.1029/2001GB001456).

Hoch, G., J. Briggs, and **L. Johnson** (2002). Assessing the rate, mechanisms, and consequences of conversion of tallgrass prairie to *Juniperus virginiana* forest. *Ecosystems* 5:578-586.

Wessman, C., SA Archer, **LC Johnson**, and G. Asner. Woodland expansion in US Grassland: Assessing Land cover Change and Biogeochemical Impacts. Peer-reviewed Book Chapter. *Land Use and Land Cover Change*. Kluwer Publishing.

**L. C. Johnson** and J.R. Matchett. 2001. Fire and grazing regulate belowground processes in tallgrass prairie. *Ecology*. 82(12):3377-3389

M. Norris, J. Blair, and **L.C. Johnson**. 2001. Land cover change in eastern Kansas: litter dynamics of closed-canopy eastern redcedar forests in tallgrass prairie. *Can. J. Botany*. 79:214-222.

**Johnson, L.C.**, G. Shaver, D. Cades, A. Stanley, K. Nadelhoffer, A. Giblin. 2000. Plant carbon-nutrient interactions control CO<sub>2</sub> exchange in Alaskan wet sedge tundra ecosystems. *Ecology* 81:453-469.

A.K. Knapp, J.M. Blair, J.M. Briggs, S.L. Collins, D.C. Hartnett, **L.C. Johnson**, and E.G. Towne. 1999. The keystone role of bison in North American tallgrass prairie. *Bioscience* 49: 39-50.

David U. Hooper and **L.C. Johnson**. 1999. Nitrogen limitation in arid and semi-arid ecosystems: Response to geographic and temporal variation in precipitation. *Biogeochemistry* 46:247-293.

Shaver, G. R., **L.C. Johnson**, D.H. Cades, G. Murray, J.A. Laundre, E.B. Rastetter, K. J. Nadelhoffer, and A.E. Giblin. 1998. Biomass and CO<sub>2</sub> flux in wet sedge tundras: Responses to nutrients, temperature, and light. *Ecological Monographs* 68(1): 75-92.)

Williams, M, E. B. Rastetter, D. N. Fernandez, M. Goulden, **L. C. Johnson**, G. R. Shaver. 1997. Predicting gross primary productivity in terrestrial ecosystems. *Ecological Applications* 7(3): 882-894.

**Johnson, L.C.**, G.R. Shaver, K.J. Nadelhoffer, A. E. Giblin, E.B. Rastetter, J.A. Laundre, G.L. Murray. 1996. The effects of enhanced drainage and elevated temperature on carbon balance in tussock tundra microcosms. *Oecologia* 108: 737-748.

Nadelhoffer, K., G. R. Shaver, B. Fry, A. Giblin, **L. Johnson**, and R. McKane. 1996. Variation in <sup>15</sup>N natural abundance in arctic tundra as an indicator of plant species N-use patterns *Oecologia* 107: 386-394.

**L Johnson** and A Damman. 1993. Decay and its regulation in Sphagnum peatlands. *Advances in Bryology* 5:249-296.

**L Johnson** and A Damman. 1991. Species-controlled Sphagnum decay on a South Swedish Raised bog. *Oikos*, 234-242.

**L Johnson** and A Damman., N Malmer. 1990. Sphagnum macrostructure as an indicator of decay and compaction in peat cores from an ombrotrophic south Swedish peat-bog. *Journal of Ecology*. 633-647.

## **Recent Invited Presentations-last 10 years**

**University of Liverpool, Nov 7, 2020** (remote seminar) Local Adaptation, Genetic Divergence, and Experimental Selection in a Foundation Grass across the US Great Plains' Precipitation

Gradient Loretta Johnson, Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello, Mary Knapp, Sara G. Baer, Brian R. Maricle

**University Nebraska, Omaha Nov 6, 2019** Local Adaptation, Phenotypic Variation, and Genetic Divergence in a Foundation Grass across the US Great Plains' Precipitation Gradient  
Loretta Johnson, Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello, Mary Knapp, Sara G. Baer, Brian R. Maricle

**International Switchgrass Genomics Meeting. Champaign Urbana IL. July 2019.** Local Adaptation, Genetic Divergence, and Experimental Selection in a Foundation Grass across the US Great Plains' Precipitation Gradient

**Sigma Xi Outstanding Scientist Lecture.** Linking ecology and genomics in a dominant prairie grass across the Great Plains climate gradient. April 2018.

**University of Oklahoma, Microbiology and Plant Biology. Nov 6, 2017.** Adaptive variation in response to climate change in the foundation grass *Andropogon gerardii* across the Great Plains.

**University of South Dakota, Biology, Mar 2017.** Adaptive genetic differentiation and local adaptation of dominant prairie grass *Andropogon gerardii* along the precipitation gradient of the Midwest

**Science On Tap,** Samantha Sharpe, Rapid Evolution to Heavy Metals in Contaminated Environments. Mar 15, 2017. TED style talk Manhattan KS

**International Switchgrass Genomics Meeting. Lincoln NE. Sept 2017.** Rapid evolution in a contaminated environment. Evolutionary response of native grass *Andropogon gerardii* to heavy metals in an abandoned mine site. Samantha Sharpe, Loretta Johnson, Nora Bello, Statistics, Olivia Parrish, Matthew Galliard

**Plant Animal Genome meeting, Population and Conservation Genomics Workshop. Jan 14, 2017.** Predicting Phenotypic and genotypic response of the dominant grass *Andropogon gerardii* to climate change in the Central Grasslands. Loretta Johnson; Jacob Alsdurf; Matt Galliard; Sara G Baer; Mary Knapp; Adam Smith

**International Switchgrass Genomics Meeting. Knoxville, Tennessee Oct 2015.** Adaptive genetic differentiation and local adaptation of dominant prairie grass *Andropogon gerardii* along the precipitation gradient of the Midwest: Implications for climate change Galliard, Matt, St Amand, Paul; Brown, Susan J, Poland, Jesse, Baer, Sara; Maricle, Brian

**Science on Tap,** Matt Galliard, Nature vs Nurture in a Sea of Grass. Oct 2016, Taphouse, TED style talk, Manhattan KS

**Science Café, Sigma Xi Public Lecture,** April 2016, Samantha Sharpe, Rapid Evolution to Heavy Metals in Contaminated Environments. TED style talk Manhattan KS



**Ecological Genomics Symposium. Invited Poster Abstract Talk. November 2015** Adaptive ecotypic variation and genetic divergence of a widespread grass *Andropogon gerardii* across the Great Plains' climate gradient. Galliard, M.; Poland, J.; St. Amand, P.; Bello, N.; Morgan, T.; Knapp, M.; Baer, S.; Gibson, D.; Maricle, B.; Johnson, L.

**Plant Animal Genome meeting, Conservation and population genomics Workshop, Jan, 2015. San Diego.** Gray, Miranda St Amand Paul Galliard, Matt; Susan J Brown, Poland, Jesse, Baer, Sara; Maricle, Brian Genetic differentiation, transcriptome variation, and local adaptation of dominant prairie grass *Andropogon gerardii* along the climate gradient of the US Midwest: Implications for climate change and restoration.

**Adaptation Genomics Satellite Meeting of SMBE, Montpellier, France, May, 2015.** Gray, Miranda St Amand Paul Galliard, Matt; Susan J Brown, Poland, Jesse, Baer, Sara; Maricle, Brian Genetic differentiation, transcriptome variation, and local adaptation of dominant prairie grass *Andropogon gerardii* along the precipitation gradient of the US Midwest: Implications for climate change.

**Ecological Society of America. Organized Session in Adaptation to Climate Change. Baltimore, Aug, 2015.** Loretta Johnson. Genetic differentiation and local adaptation of dominant prairie grass *Andropogon gerardii* along the climate gradient of the US Midwest: Implications for climate change

**Ecological Society of America. Organized Session in Ecological Genomics. Sacramento, Aug, 2014.** Loretta Johnson. Linking ecology and genomics: Phenotypic differentiation, genetic diversity, and transcriptome variation of an ecologically dominant prairie grass *Andropogon gerardii* along the Great Plains' climate gradient.

**Argonne National Laboratory. Feb.4, 2014** Loretta Johnson Gray, Miranda St Amand Paul Gailliart, Matt; Susan J Brown, Poland, Jesse, Baer, Sara; Maricle, Brian Linking ecology and genomics: Phenotypic differentiation, genetic diversity, and transcriptome variation of an ecologically dominant prairie grass *Andropogon gerardii* along the Great Plains' climate gradient.

**Plant Animal Genome meeting, Jan 14, 2014.** Loretta C Johnson, Miranda Gray, Alina Akhunova, Susan J. Brown, Sanjay Chellapilla, Theodore Morgan, Karen Garrett, Hanquan Liang and Eduard Akhunov, Transcriptome variation in xeric and mesic ecotypes of a dominant biofuel and forage grass big bluestem *Andropogon gerardii*.

**Ecology and Evolutionary Biology, University of Chicago Nov 4, 2013** Loretta C Johnson Gray, Miranda St Amand Paul Galliard, Matt; Susan J Brown, Poland, Jesse, Baer, Sara; Maricle, Brian Linking ecology and genomics: Phenotypic differentiation, genetic diversity, and transcriptome variation of an ecologically dominant prairie grass *Andropogon gerardii* along the Great Plains' climate gradient.

**Biological Engineering, Northwestern University Nov 3, 2013** Loretta C Johnson Gray, Miranda, St Amand Paul Gailliart, Matt; Susan J Brown, Poland, Jesse, Baer, Sara; Maricle, Brian Linking ecology and genomics: Phenotypic differentiation, genetic diversity, and

transcriptome variation of an ecologically dominant prairie grass *Andropogon gerardii* along the Great Plains' climate gradient.

**5th World Conference of Ecological Restoration, Madison, WI, October 2013** Baer, S.G., B.R. Maricle, N. Bello, K.L. Caudle, M. Galliard, D.J. Gibson, M. Gray, R.K. Goad, E. McCrea, M.L. Mendola, J.T. Olsen, S. Sabates, H. Tetreault, L. Wilson, and L.C. Johnson. Discerning the presence and ecological consequence of ecotypic variation: A dilemma for restoration. Invited presentation at the symposium, "Changing prairies: science and practice in grassland restoration and reconstruction"

**Switchgrass Genomics Conference. Madison, WI, Sept 9-10, 2013** Johnson, L, S.G. Baer, B.R. Maricle, M. Gray<sup>†</sup>, H. Tetreault<sup>†</sup>, N. Bello, S. Brown, T. Morgan, J. Shelton<sup>†</sup>, and S. Chellapilla. Genetic differentiation, transcriptome variation, and local adaptation of an ecologically dominant prairie grass *Andropogon gerardii* (big bluestem) occurring along the climate gradient in Midwest U.S. grasslands.

**America's Grasslands WWF national meeting, Manhattan, KS, August 2013** Johnson, L, M. Gray, H. Tetreault, K. Garrett, E. Akhunov, P. St. Amand, N. Bello, J. Bryant, N. An, B.R. Maricle, J. Olsen, S.G. Baer, R.K. Goad, A. De La Cruz, T. Morgan, and M. Knapp. Ecotypic variation in drought tolerance and genetic diversity of the ecologically dominant grass big bluestem (*Andropogon gerardii*) across the Great Plains precipitation gradient: Implications for climate change and restoration.

**Energy Sustainability Conference. KSU April 2013** Loretta Johnson, Biology Dr. Wengao Yuan, Biol. and Ag. Engineering Dr. Donghai Wang, Biol. and Ag. Engineering Dr. Richard Nelson, Center for Sustainable Energy. Big bluestem as a potential bioenergy grass.

**European Science Federation ConGenOmics Network Programme, Seville, Spain, February 2012** Johnson, L.C., S.G. Baer, and B.R. Maricle. Ecotypic and genetic variation in a dominant prairie grass: Implications for grassland conservation in a changing climate.

**Switchgrass Workshop, Nobel Foundation, Ardmore, OK. April 2012.** Ecotypic and genetic variation in a dominant prairie grass: Implications for grassland conservation in a changing climate.

**Plant Pathology Department, KSU, Feb 2012.** Gray, Miranda St Amand Paul Galliard, Matt; Susan J Brown, Poland, Jesse, Baer, Sara; Maricle, Brian Phenotypic and genetic variation in an ecologically dominant grass *Andropogon gerardii* along the Great Plains' precipitation gradient: A reciprocal garden approach. Invited Speaker for Loretta Johnson. Phenotypic and genetic variation in an ecologically dominant grass *Andropogon gerardii* along the Great Plains' precipitation gradient: A reciprocal garden approach

**Ecological Genomics Symposium, Oct 26-28, 2012. KC.** Loretta Johnson, Invited Speaker, Gray, Miranda St Amand Paul Gailliart, Matt; Susan J Brown, Poland, Jesse, khBaer, Sara; Maricle, Brian Phenotypic and genetic variation in an ecologically dominant grass *Andropogon gerardii* along the Great Plains' precipitation gradient: A reciprocal garden approach.

**Energy Sustainability Conference. KSU. April, 2011.** Loretta Johnson, Wengao Yuan, Donghai Wang, Richard Nelson, Center for Sustainable Energy. Midwest Grasslands and Biofuels.

**Plenary Speaker, Mount Desert Island Biological Laboratory-Course in Ecological Genomics. Aug 19-25, 2011.**Loretta Johnson. Ecological Genomics: Theory and Practice.

**Functional Genomics Consortium, KSU,** Loretta Johnson<sup>1</sup>, Jennifer Shelton<sup>1</sup>, Richard Jeannotte, Janneke Ravenek, Zhihong Song, Basil Nikolau, and Marek Domin, P. Roxanne Steele. Phenotypic divergence of cuticle chemistry, leaf morphology, and physiology of big bluestem and sand bluestem: A model system for the study of plant adaptation. April, 2011

**Ecology and Evolutionary Biology seminar, KSU.**Janneke Ravenek, L.C Johnson, and Jennifer Shelton. September 2010. The ultimate ecotype: Morphological and functional differences between big bluestem and sand bluestem

**Ecology and Evolutionary Biology seminar, KSU.** Loretta Johnson September 2010. Ecotypic variation in big bluestem (*Andropogon gerardii*) across the Great Plains precipitation gradient.

**Science café, Public talk, Hays Kansas.** Loretta Johnson. Jun 16, 2010. Big Bluestem Research: Making a Difference in Conservation and Climate Change

**Haskell Tribal University, Lawrence KS.** Loretta Johnson. Ecotypes of the dominant prairie big bluestem across the natural precipitation gradient of the Great Plains and under simulated rainfall: genetic and ecological response to climate change Nov 4, 2009

## **Recent Contributed Presentations (Oral and Poster)-last 10 years**

**Rhizobiome Diversity and Its Impact on Drought Resistance in *Andropogon gerardii*** Abigail Kamke, Shiva Thapa, Qinghong Ran, Kaitlyn Ward, Lauren Anderson, Matthew Galliard, Loretta Johnson, Sonny T M Lee Capitol Research Forum, one of ten selected from KSU undergrads to present at the KS Statehouse in Topeka. Feb. 2020.

**Intraspecific variation in the dominant prairie grass big bluestem across the rainfall gradient of the Great Plains: Response to experimental drought** Loretta Johnson, Paige Wiebe, Megan Keenan, Matthew Galliard, Jake Alsdurf, Kansas State University, Manhattan, KS, USA. Botanical Society of America, July 2020, online.

**Intraspecific variation in the dominant prairie grass big bluestem across the rainfall gradient of the Great Plains: Response to experimental drought** Megan Keenan, Loretta Johnson, Paige Wiebe, Matthew Galliard, Jake Alsdurf. Kansas State University, Manhattan, KS, USA. MHS and KSU Developing Scholar Symposium. March 2020.

**The role of host ecotype of a dominant prairie grass and rainfall regime on microbiome diversity across the Great Plains precipitation gradients** Shiva Thapa, Abigail Kamke,

Kaitlyn Ward, Qinghong Ran, Lauren Anderson, Matthew Galliard, Loretta Johnson. Ecological Society of America, Aug 2020, Meeting online

**Intraspecific variation in the dominant prairie grass big bluestem across the rainfall gradient of the Great Plains: Response to experimental drought** Paige Wiebe, Loretta Johnson, Megan Keenan, Matthew Galliard, Jake Alsdurf, Kansas State University, Manhattan, KS, USA. Association of Plant Biologists, Aug. 2020, online.

**Grazing drives genetic differentiation of the dominant grass and increases community diversity in tall grass prairie** Loretta Johnson, Allison Louthan, Matthew Galliard, and Jake Alsdurf Division of Biology, Kansas State University, Manhattan, KS, USA. Ecological Society of America, Aug 2020, Meeting online

**Rhizobiome Diversity and Its Impact on Drought Resistance in *Andropogon gerardii*** Abigail Kamke<sup>1</sup>, Shiva Thapa, Qinghong Ran, Kaitlyn Ward, Lauren Anderson, Matthew Galliard, Loretta Johnson, Sonny T M Lee Division of Biology, Kansas State University, Fort Hays State University Ecological Society of America, Aug 2020, Meeting online

**Intraspecific variation in the dominant prairie grass big bluestem across the rainfall gradient of the Great Plains: Response to experimental drought** Loretta Johnson, Paige Wiebe, Megan Keenan, Matthew Galliard, Jake Alsdurf, Kansas State University, Manhattan, KS, USA Ecological Society of America, Aug 2020, Meeting online

**Intraspecific variation in the dominant prairie grass big bluestem across the rainfall gradient of the Great Plains: Response to experimental drought** Megan Keenan, Loretta Johnson, Paige Wiebe, Matthew Galliard, Jake Alsdurf. MHS Honor Program Research Scholar Symposium (online may 2020).

**Grassland restoration reveals the importance of ecotypic variation on community assembly along a longitudinal aridity gradient** Zhe Ren, David J. Gibson, Sara G. Baer, Loretta C. Johnson and Laurel R. Wilson Ecological Society of America, Aug 2020, Meeting online

**BioBonanza Presentation**, 2 min short talk, event organized by Eve McCullough, Division of Biology, Oct. 2020. Online.

**Grassland restoration reveals the importance of ecotypic variation on community assembly along a longitudinal aridity gradient** Zhe Ren, David J. Gibson, Sara G. Baer, Loretta C. Johnson<sup>3</sup> and Laurel R. Wilson<sup>1</sup> British Society of America Annual Meeting, Dec. 2020, Meeting online

**Mechanisms of Local Adaptation in *Andropogon gerardii* Big Bluestem Ecotypes Across a Midwest Precipitation Gradient.** Paige Wiebe, Rory Reichelt, Matthew Galliard, Anna Nagel, Loretta Johnson Undergraduate Research Forum, April 2019. Poster Presentation.

**Experimental natural selection of big bluestem ecotypes across the Great Plains' climate gradient** Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello, Mary Knapp, Sara G.

Baer, Brian R. Maricle, Loretta Johnson Evolution meeting, Poster Presentation. June 2019, Providence RI

**Experimental natural selection of big bluestem ecotypes across the Great Plains' climate gradient** Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello, Mary Knapp, Sara G. Baer<sup>6</sup>, Brian R. Maricle<sup>5</sup>, Loretta Johnson Switchgrass V. Switchgrass and Native Grasses Meeting. July, 2019, Champagne Urbana Poster Presentation.

**Mechanisms of Local Adaptation in *Andropogon gerardii* Big Bluestem Ecotypes Across a Midwest Precipitation Gradient.** Paige Wiebe, Rory Reichelt, Matthew Galliard, Anna Nagel, Loretta Johnson Johnson Switchgrass V. Switchgrass and Native Grasses Meeting. **July, 2019**, Champagne Urbana Poster Presentation.

**Mechanisms of Local Adaptation in *Andropogon gerardii* Big Bluestem Ecotypes Across a Midwest Precipitation Gradient.** Paige Wiebe, Rory Reichelt, Matthew Galliard, Anna Nagel, Loretta Johnson Ecological Society of America, Louisville, **KY Aug 2019** Poster Presentation.

**Experimental natural selection of big bluestem ecotypes across the Great Plains' climate gradient** Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello, Mary Knapp, Sara G. Baer, Brian R. Maricle, Loretta Johnson Ecological Society of America, Louisville, KY Aug 2019 Poster Presentation.

**BioBonanza Presentation**, 2 min short talk, event organized by Eve McCullough, Division of Biology, Oct. 2019.

**Intraspecific variation in tall grass big bluestem *A. gerardii* populations across a precipitation gradient of the Central US grasslands: Response to experimental drought.** Paige Wiebe, Megan Keenan, Jake Alsdurf, Matt Galliard, Loretta Johnson. Submitted to Research and the State Undergraduate Poster Competition. Nov 2019

**Climate structures genetic diversity and phenotypes in a dominant prairie grass across the US Central Grasslands: A modeling approach** ESA Symposium Baer, Sara G., Manning George, Blair John, Collins Scott, Gibson David J., Maricle Brian, Johnson Loretta., New Orleans, LA, August 2018

**Climate structures genetic diversity and phenotypes in a dominant prairie grass across the US Central Grasslands: a modeling approach.** Loretta Johnson, Jacob Alsdurf, Adam B. Smith, Matt Galliard, Sara Baer, Mary Knapp, ESA, New Orleans, LA, August 2018

**Experimental natural selection of big bluestem grass ecotypes across the Great Plains' climate gradient.** Loretta C Johnson <sup>1</sup>; Matthew Galliard; Nora Bello; Jesse Poland; Paul St Amand; Mary Knapp; Brian Maricle; Sara Baer Poster abstract PEG-abstract PgmNr 222M, May 2018, Madison, WI

**Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in an abandoned Lead and Zinc mine**

Loretta Johnson, Samantha Sharpe, Nora Bello, Matthew Galliard, Olivia Parrish BSA, July 2018, Rochester MN

**Mechanisms of Local Adaptation in *Andropogon gerardii* Big Bluestem Ecotypes Across a Midwest Precipitation Gradient.**Rory Reichelt, Matthew Galliard, Anna Nagel, Loretta Johnson BSA, **July 2018**, Rochester MN

Madison Pittenger Keri Maricle Sara Baer Loretta Johnson Brian Maricle Herbivory Preferences Among Ecotypes of Big Bluestem (*Andropogon gerardii*) BSA, July 2018, Rochester MN

Madison Pittenger Keri Maricle Sara Baer Loretta Johnson Brian Maricle Herbivory Preferences Among Ecotypes of Big Bluestem (*Andropogon gerardii*) KAS, April, **2018**.

**KSU Research and the State.** Manhattan, KS. **Galliard, M.**; St Amand, P.; Poland, J.; Bello, N.; Knapp, M.; Baer, S.; Maricle, B.; Johnson, L. Experimental Natural Selection of Big Bluestem Ecotypes Across the Great Plains: A Novel Test for the Strength of Local Adaptation. Poster Presentation. October 2017. One of ten selected to present at the State Capitol.

**KSU Research KGRAD.** Manhattan, KS. **Galliard, M.**; St Amand, P.; Poland, J.; Bello, N.; Knapp, M.; Baer, S.; Maricle, B.; Johnson, L. Experimental Natural Selection of Big Bluestem Ecotypes Across the Great Plains: A Novel Test for the Strength of Local Adaptation. Poster Presentation. 2017.

**KSU Research KGRAD.** Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines Samantha Sharpe, Nora Bello, Olivia Parrish, Matt Galliard, Loretta Johnson (oral). 2017

**KSU Biology Research Forum.** Manhattan, KS. **Galliard, M.**; St Amand, P.; Poland, J.; Bello, N.; Knapp, M.; Baer, S.; Maricle, B.; Johnson, L. Experimental Natural Selection of Big Bluestem Ecotypes Across the Great Plains: A Novel Test for the Strength of Local Adaptation. Oral Presentation. March 2017.

**KSU Biology Research Forum.** Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines Samantha Sharpe, Nora Bello, Loretta Johnson. Samantha won the award for best junior student presentation.

**Kansas Academy of Science, Hays KS.** Galliard, M.; St Amand, P.; Poland, J.; Bello, N.; Knapp, M.; Baer, S.; Maricle, B.; Johnson, L. Experimental Natural Selection of Big Bluestem Ecotypes Across the Great Plains: A Novel Test for the Strength of Local Adaptation. Oral Presentation. April 2017.

**Kansas Academy of Science, Hays KS.** Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy

metals in abandoned Lead and Zinc mines Samantha Sharpe, Nora Bello, Olivia Parrish, Matt Galliard, Loretta Johnson (oral). April 2017.

**Three Minute Thesis Competition. KSU, Manhattan, KS. Galliard, M.;** Johnson, L. Experimental Natural Selection of Big Bluestem Across the Great Plains: A Novel Test for the Strength of Local Adaptation. Oral Presentation. February 2017.

**Three Minute Thesis Competition. KSU, Manhattan, KS** Genetic and phenotypic variation of the dominant prairie grass *Andropogon gerardii* and its association with climate across the Central Grasslands. Jake Alsdurf, Loretta Johnson, Matt Galliard, Mary Knapp, Paul St. Amand, Jesse Poland, Adam Smith

**Three Minute Thesis Competition. KSU, Manhattan, KS.** Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines Manhattan, KS Samantha Sharpe, Nora Bello, Olivia Parrish, Matt Galliard, Loretta Johnson (oral).

**Kansas Academy of Science Annual Meeting, Hays, KS, April 2017.** Varvel, N.A., C.J. Hilt, S.G. Baer, L.C. Johnson, and **B.R. Maricle.** Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes. (oral)

**Botanical Society of America, July 2017, Fort Worth** Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines Samantha Sharpe, Nora Bello, Olivia Parrish, Matt Galliard, Loretta Johnson (poster)

**Botanical Society of America, July 2017, Fort Worth.** Experimental natural selection of big bluestem grass ecotypes across the Great Plains Climate Gradient Matt Galliard, Jesse Poland, Paul St. Amand, Nora M. Bello, Mary Knapp, Sara G. Baer, Brian R. Maricle, Loretta Johnson (oral)

**Botanical Society of America, July 2017, Fort Worth.** Genetic and phenotypic variation of the dominant prairie grass *Andropogon gerardii* and its association with climate across the Central Grasslands. Jake Alsdurf, Loretta Johnson, Matt Galliard, Mary Knapp, Paul St. Amand, Jesse Poland, Adam Smith (oral)

**Botanical Society of America Annual Meeting, Fort Worth, TX, June 2017.** Pittenger, M.S., K.L. Caudle, S.G. Baer, L.C. Johnson, and B.R. Maricle. Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*). (poster)

**Botanical Society of America Annual Meeting, Fort Worth, TX, June 2017** Varvel, N.A., C.J. Hilt, S.G. Baer, L.C. Johnson, and **B.R. Maricle.** Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes. Presented at the Botanical Society of America Annual Meeting, Fort Worth, TX, June 2017 (poster)

**Fort Hays State University's John Heinrichs Scholarship and Creative Activities Day,** Hays, KS, April 2017. Pittenger, M.S., K.L. Caudle, S.G. Baer, L.C. Johnson, and B.R.

Maricle. Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*). [People's Choice Award for best poster]

**Fort Hays State University's John Heinrichs Scholarship and Creative Activities Day, Hays, KS, April 2017.** Varvel, N.A.\*, C.J. Hilt, S.G. Baer, L.C. Johnson, and B.R. Maricle. Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes. (poster)

**Kansas Academy of Science Annual Meeting, Hays, KS, April 2017.** Pittenger, M.S., K.L. Caudle, S.G. Baer, L.C. Johnson, and B.R. Maricle. Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*). [3rd place poster by an undergraduate student] (poster)

**Kansas State University Biology Graduate Student Forum, Galliat, M., P. St. Amand, J. Poland, N.M. Bello, M. Knapp, S.G. Baer, B.R. Maricle, and L. Johnson.** Experimental natural selection of big bluestem grass ecotypes across the Great Plains climate gradient. Presented at the Manhattan, KS, March 2017 (poster)

**Kansas Natural Resources Conference, Wichita, KS, January 2017** Varvel, N.A., C.J. Hilt, S.G. Baer, L.C. Johnson, and B.R. Maricle. Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes. (poster)

**Ecological Society of America, Portland OR, Aug 2017. ESA Ignite.** What are ecotypes adapted to? Insights from common garden experiments across geographic gradients. David J. Gibson, Sara G. Baer, and Travis J. Neal, Department of Plant Biology, Southern Illinois University Carbondale, Carbondale, IL, and Loretta C. Johnson, Kansas State University, Manhattan, KS.

**Ecological Society of America, Portland OR, Aug 2017. ESA.** Extending the "species distribution model" paradigm to phenotypes Adam B. Smith, Jacob Alsdurf, Mary Knapp, Sara G. Baer, Loretta C. Johnson

**International Switchgrass Genomics Meeting. Lincoln NE. Sept 2017** Experimental Natural Selection of Big Bluestem Ecotypes Across the Great Plains: A Novel Test for the Strength of Local Adaptation. Galliat, M.; St Amand, P.; Poland, J.; Bello, N.; Knapp, M.; Baer, S.; Maricle, B.; Johnson, L. Poster Presentation.

**International Switchgrass Genomics Meeting. Lincoln NE. Sept 2017.** Genetic and phenotypic variation of the dominant prairie grass *Andropogon gerardii* and its association with climate across the Central Grasslands. Jake Alsdurf, Loretta Johnson, Matt Galliat, Mary Knapp, Paul St. Amand, Jesse Poland, Adam Smith (poster)

**Society for the Study of Evolution, Portland OR, June 2017.** Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines. Samantha Sharpe, Nora Bello, Olivia Parrish, Matt Galliat, Loretta Johnson (poster)



**oSTEM Conference.** Chicago, IL Dec 2017. Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines Samantha Sharpe, Nora Bello, Olivia Parrish, matt Galliard, Loretta Johnson (poster)

**KSU Research and the State.** Manhattan, KS. Galliard, M.; St Amand, P.; Poland, J.; Bello, N.; Knapp, M.; Baer, S.; Maricle, B.; Johnson, L. Experimental Natural Selection of Big Bluestem Ecotypes Across the Great Plains: A Novel Test for the Strength of Local Adaptation. Poster Presentation. October 2016.

**Ecological Genomics Symposium.** Kansas City, KS. Galliard, M.; St Amand, P.; Poland, J.; Bello, N.; Knapp, M.; Baer, S.; Maricle, B.; Johnson, L. Experimental Natural Selection of Big Bluestem Ecotypes Across the Great Plains: Evaluating Local Adaptation Under Realistic Conditions. Poster Presentation. October 2016.

**Botanical Society of America Conference.** Savannah, GA. \*Johnson, L.; Galliard, M.; St Amand, P.; Poland, J.; Bello, N.; Sabates, S.; Morgan, T; Knapp, M.; Baer, S.; Gibson, D.; Maricle, B. Adaptive Ecotypic Variation and Genetic Divergence of an Ecologically Dominant Prairie Grass across the Great Plains' Precipitation Gradient. Oral Presentation. July 2016

**American Genetics Association Presidential Symposium.** Asilomar, CA. Galliard, M.; St Amand, P.; Poland, J.; Bello, N.; Sabates, S.; Morgan, T; Knapp, M.; Baer, S.; Gibson, D.; Maricle, B.; Johnson, L. Adaptive Ecotypic Variation and Genetic Divergence of a Widespread Grass Big Bluestem Across a Great Plains' Climate Gradient. Poster Presentation. July 2016

**Evolution Conference.** Austin, TX. Galliard, M.; Johnson, L.; Sabates; Bello, N.; Baer, S.; Maricle, B. Adaptive Ecotypic Variation and Genetic Divergence of an Ecologically Dominant Prairie Grass across the Great Plains Precipitation Gradient. Oral Presentation. June 2016.

**K-State Graduate Research, Arts, and Discovery Forum.** Manhattan, KS. Galliard, M.; St Amand, P.; Poland, J.; Bello, N.; Sabates, S.; Morgan, T; Knapp, M.; Baer, S.; Gibson, D.; Maricle, B.; Johnson, L. Divergence in Phenotypes and Genomes Among Ecotypes of a Widespread Grass, Big Bluestem, Across a Great Plains' Climate Gradient. Poster Presentation. March 2016

**Three Minute Thesis Competition.** Manhattan, KS. Galliard, M.; Johnson, L. Experimental Natural Selection of Big Bluestem Across the Great Plains: A Novel Test for the Strength of Local Adaptation. Oral Presentation. February 2016.

**KSU Research and the State** Kansas State University, November 2, 2016 Reduced rainfall predicts diminished big bluestem growth across the prairies of Kansas Jacob Alsdurf; Loretta Johnson; Nora Bello; Mary Knapp; Adam Smith

**Ecological Genomics Symposium,** Kansas City, MO October 28-30, 2016 Predicting phenotypic and genotypic response of the dominant prairiegrass *andropogon gerardii* to climate change in the central us grasslands. Jacob Alsdurf; Matt Galliard; Mary Knapp; Sara G Baer; Adam B. Smith; Loretta Johnson

**Ecological Society of America**, Ft. Lauderdale, FL August 7-12 phenotypic variation of the dominant prairie grass *Andropogon gerardii* and its predicted response to climate change across the midwest grasslands' climate gradient Alsdurf, Jacob, Johnson, Loretta, Smith, Adam, Bello, Nora, Knapp, Mary

**Ecological Genomics Institute Research Forum**, Konza Research Station, Summer 2016 phenotypic variation of the dominant prairie grass *Andropogon gerardii* and its predicted response to climate change across the midwest grasslands' climate gradient Alsdurf, Jacob, Johnson, Loretta, Smith, Adam, Bello, Nora, Knapp, Mary

**Graduate Student Research Forum**, Kansas State University, Summer 2016 Phenotypic variation of the dominant prairie grass *Andropogon gerardii* and its predicted response to climate change across the midwest grasslands' climate gradient Alsdurf, Jacob, Johnson, Loretta, Smith, Adam, Bello, Nora, Knapp, Mary

**KSU Graduate Research Forum**, Kansas State University, Spring 2016 (Award Winner Best Oral Presentation) Phenotypic variation of the dominant prairie grass *Andropogon gerardii* and its predicted response to climate change across the Midwest grasslands' climate gradient Alsdurf, Jacob, Johnson, Loretta, Smith, Adam, Bello, Nora, Knapp, Mary

**Kansas Academy of Science Annual Meeting**, McPherson College, April 2, 2016 Phenotypic variation of the dominant prairie grass *Andropogon gerardii* and its predicted response to climate change across the midwest grasslands' climate gradient Alsdurf, Jacob, Johnson, Loretta, Smith, Adam, Bello, Nora, Knapp, Mary

**oSTEM National Conference**. Denver, CO. Poster: Sharpe, S.; Parrish O.; Humphrey P.; Johnson L. Rapid adaptation in a contaminated environment: evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in an abandoned Lead and Zinc Mine. November 2016. (Best Poster Award)

**Ecological Genomic Symposium**. Kansas City, MO. Poster: Differential enzyme and physiological response to heavy metal stress in mine and old field populations of *Andropogon virginicus* Nielsen, Kara; Sharpe, Samantha; Johnson, Loretta Grinnell College (KN); Kansas State University, Division of Biology (SS); Kansas State University, Division of Biology (LJ)

**Ecological Genomic Symposium**. Kansas City, MO. Poster: Sharpe, S.; Parrish O.; Humphrey P.; Johnson L. Rapid adaptation in a contaminated environment: evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in an abandoned Lead and Zinc Mine. October 2016.

**American Genetics Association President's Symposium Local Adaptation: From Genotype, to Phenotype, to Fitness**. Asilomar, CA. Poster: Sharpe, S.; Johnson L. Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines. July 2016.

**Evolution**, Austin, TX. Poster: Sharpe, S.; Johnson L. Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines. June 2016.

**K-GRAD**, Manhattan KS. Poster: Sharpe, S.; Johnson L. Rapid adaptation in a contaminated environment: Evolutionary adaptive response of old field grass *Andropogon virginicus* to heavy metals in abandoned Lead and Zinc mines. March 2016.

**Botanical Society of America Annual Meeting**, Savannah, GA, August 2016 Caudle, K.L., C.J. Hilt, C.M. Smart, A.D. Urban, D.L. Kramer, N.M. Martin, S.G. Baer, L.C. Johnson, and B.R. Maricle. Does environment or genetics influence leaf level physiology? Measuring photosynthetic rates of native big bluestem (*Andropogon gerardii*) grown in common gardens across a precipitation gradient. [Li-Cor Prize for best student presentation in the Physiological section]

**Kansas Academy of Science Annual Meeting**, McPherson, KS, April 2016 Caudle, K.L., C.J. Hilt, C.M. Smart, A.D. Urban, D.L. Kramer, N.M. Martin, S.G. Baer, L.C. Johnson, and B.R. Maricle. 2015. Does environment or genetics influence leaf level physiology? Measuring photosynthetic rates of native big bluestem (*Andropogon gerardii*) grown in common gardens across a precipitation gradient. [3rd place oral presentation by a graduate student]

**Kansas Natural Resources Conference**, Wichita, KS, January 2017 Varvel, N.A., C.J. Hilt, S.G. Baer, L.C. Johnson, and B.R. Maricle. Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes.

**Botanical Society of America Annual Meeting**, Savannah, GA, August 2016 Varvel, N.A., C.J. Hilt\*, S.G. Baer, L.C. Johnson, and B.R. Maricle. Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes.

**Botanical Society of America Annual Meeting**, Savannah, GA, August 2016 Pittenger, M.S., K.L. Caudle†, S.G. Baer, L.C. Johnson, and B.R. Maricle. Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*).

**Fort Hays State University's John Heinrichs Scholarship and Creative Activities Day**, Hays, KS, April 2016 Tamang, T.M., J. Alsdurf, L.C. Johnson, S.G. Baer, and Maricle, B.R. Determination of evolutionary history of big bluestem ecotypes through chloroplast DNA analysis.

**Fort Hays State University's John Heinrichs Scholarship and Creative Activities Day**, Hays, KS, April 2016 Pittenger, M.S.\* , K.L. Caudle†, S.G. Baer, L.C. Johnson, and B.R. Maricle. Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*).

**Kansas Academy of Science Annual Meeting**, McPherson, KS, April 2016 Varvel, N.A., C.J. Hilt\*, S.G. Baer, L.C. Johnson, and B.R. Maricle. Genetic and environmental influences on stomates of big bluestem (*Andropogon gerardii*) ecotypes. [2nd place poster by an undergraduate student]

**Kansas Academy of Science Annual Meeting**, McPherson, KS, April 2016 Pittenger, M.S., K.L. Caudle, S.G. Baer, L.C. Johnson, and B.R. Maricle. Herbivory preferences among ecotypes of big bluestem (*Andropogon gerardii*).

**Kansas Academy of Science Annual Meeting**, McPherson, KS, April 2016 Tamang, T.M., J. Alsdurf, L.C. Johnson, S.G. Baer, and B.R. Maricle. Determination of evolutionary history of big bluestem ecotypes through chloroplast DNA analysis. [2nd place poster by a graduate student]

**Kansas Academy of Science Annual Meeting**, McPherson, KS, April 2016 Kramer, D.L., K.L. Caudle<sup>†</sup>, C.J. Hilt, N.M. Martin, A.D. Urban, S.G. Baer, L.C. Johnson, and B.R. Maricle. Morphological differences in ecotypes of big bluestem (*Andropogon gerardii*) grown in common gardens across a precipitation gradient.

**America's Grasslands Conference**. Genetic differentiation and local adaptation of dominant prairie grass *Andropogon gerardii* along the climate gradient of the US Midwest: Modeling shifts in distribution of ecotypes with climate change Jacob Alsdurf, Jacob Alsdurf, Johnson , Loretta; Smith, Adam; Bello, Nora; Knapp, Mary; St. Amand, Paul; Gray, Miranda; Galliard, Matt; Poland, Jesse; Baer, Sara; Maricle, Brian., Ft. Collins, CO. September 29 - October 1 2015

**Sigma Xi National Meeting**, Reproductive Trait variation in big bluestem (*Andropogon gerardii*) ecotypes across the great plains: a multi-year reciprocal garden study Parrish, O.; McChesney, A.; Galliard, Matthew; Baer, Sara; Bello, Nora; Caudle, Keri; Maricle, Brian; McCrea, Evan; Sabates, Sofia Gibson, David, Wilson, Laurel, and Johnson, Loretta Oct 2015.

**Sigma Xi National Meeting**, Genetic differentiation and local adaptation of dominant prairie grass *Andropogon gerardii* along the climate gradient of the US Midwest: Modeling shifts in distribution of ecotypes with climate change Jacob Alsdurf, Johnson , Loretta; Smith, Adam; Bello, Nora; Knapp, Mary; St. Amand, Paul; Gray, Miranda; Galliard, Matt; Poland, Jesse; Baer, Sara; Maricle, Brian., KC Missouri, Oct 2015.

**Sigma Xi National Meeting** Adaptive ecotypic variation and genetic divergence of a widespread grass *Andropogon gerardii* across the Great Plains' climate gradient. Galliard, M.; Poland, J.; St. Amand, P.; Bello, N.; Morgan, T.; Knapp, M.; Baer, S.; Gibson, D.; Maricle, B.; Johnson, L. Poster. KC Missouri, Oct 2015.

**Ecological Genomics Symposium** Loretta Johnson; Jennifer Shelton ; Nora M. Bello ; Seth Raithel; Matthew Galliard; Susan J Brown; Nicolae Herndon; Ruth Welti; Basil Nikolau; Thilani Samarakoon; Zhihong Song; Richard Jeannotte Divergent epicuticular wax and transcriptomes edaphically differentiated *Andropogon* grasses in US Midwest prairies Manhattan KS Nov 2015

**Ecological Genomics Symposium**. Genetic differentiation and local adaptation of dominant prairie grass *Andropogon gerardii* along the climate gradient of the US Midwest: Modeling shifts in distribution of ecotypes with climate change Jacob Alsdurf, Johnson , Loretta; Smith, Adam; Bello, Nora; Knapp, Mary; St. Amand, Paul; Gray, Miranda; Galliard, Matt; Poland, Jesse; Baer, Sara; Maricle, Brian., Manhattan KS Nov 2015

**Ecological Genomics Symposium.** Adaptive ecotypic variation and genetic divergence of a widespread grass *Andropogon gerardii* across the Great Plains' climate gradient. Galliard, M.; Poland, J.; St. Amand, P.; Bello, N.; Morgan, T.; Knapp, M.; Baer, S.; Gibson, D.; Maricle, B.; Jonson, L. Poster. Manhattan KS Nov 2015

**Ecological Genomics Symposium.** reproductive trait variation in big bluestem (*andropogon gerardii*) ecotypes across the great plains: a multi-year reciprocal garden study Parrish, O.; McChesney, A. ; Galliard, Matthew; Baer, Sara; Bello, Nora; Caudle, Keri; Maricle, Brian; McCrea, Evan; Sabates, Sofia, Gibson, David, Wilson, Laurel, and Johnson, Loretta Manhattan KS Nov 2015

**SMBE meeting, Vienna, July 2015 (poster)** Gray, Miranda; St Amand Paul Gailliart, Matt; Susan J Brown ,Poland, Jesse ,Baer, Sara; Maricle, Brian Genetic differentiation, transcriptome variation, and local adaptation of dominant prairie grass *Andropogon gerardii* along the precipitation gradient of the US Midwest: Implications for climate change.

**Evolution Meeting, Brazil, June 2015 (oral)** Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello Sofia Sabates, Hannah Tetreault, Angel DeLaCruz, Johnny Bryant, Theodore J. Morgan, Mary Knapp, Sara G. Baer, David Gibson, Laurel Wilson, Brian R. Maricle, Loretta Johnson Adaptive Trait Variation and Genetic Divergence of a Widespread Grass *Andropogon gerardii* across a Great Plains' Climate Gradient.

**ASPB, Minneapolis, MN, July, 2015 (poster** Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello Sofia Sabates, Hannah Tetreault, Angel DeLaCruz, Johnny Bryant<sup>1</sup>, Theodore J. Morgan, Mary Knapp, Sara G. Baer, David Gibson, Laurel Wilso<sup>6</sup>, Brian R. Maricle, Loretta Johnson Adaptive Trait Variation and Genetic Divergence of a Widespread Grass *Andropogon gerardii* across a Great Plains' Climate Gradient.)

**Plant Animal Genome, San Diego, Jan 2015** Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello· Sofia Sabates, Hannah Tetreault, Angel DeLaCruz, Johnny Bryant, Theodore J. Morgan, Mary Knapp, Sara G. Baer, David Gibson, Laurel Wilson, Brian R. Maricle Loretta Johnson Adaptive Trait Variation and Genetic Divergence of a Widespread Grass *Andropogon gerardii* across a Great Plains' Climate Gradient..

**Plant Animal Genome, San Diego, Jan 2015.** Loretta Johnson; Jennifer Shelton ; Nora M. Bello ; Seth Raithel; Matthew Galliert; Susan J Brown; Nicolae Herndon; Ruth Welti; Basil Nikolau; Thilani Samarakoon; Zhihong Song; Richard Jeannotte Divergent epicuticular wax and transcriptomes edaphically differentiated *Andropogon* grasses in US Midwest prairies.·

**Ecological Genomics Symposium, Kansas City, Nov 2014 (poster).** Matthew Galliard, Paul St Amand, Jesse Poland, Nora M. Bello Sofia Sabates, Hannah Tetreault, Angel DeLaCruz, Johnny Bryant, Theodore J. Morgan, Mary Knapp, Sara G. Baer, David Gibson, Laurel Wilson, Brian R. Maricle, Loretta Johnson Adaptive Trait Variation and Genetic Divergence of a Widespread Grass *Andropogon gerardii* across a Great Plains' Climate Gradient.

**Ecological Genomics Symposium, Kansas City, Nov 2014.** (poster). Seth Raithel; Loretta Johnson; Matthew Galliert; Sue Brown; Jennifer Shelton and Nora M. Bello Assessing gene

filtering strategies in RNA-Seq differential expression analysis of an edaphic subspecies of dominant prairie grass *Andropogon gerardii*.

**Botanical Society of America Annual Meeting, Boise, ID, July 2014 (oral)** Maricle, B.R., K.L. Caudle, J.T. Olsen, J. Bryant, A. de la Cruz, A. Jensen, S.G. Baer, N.M. Bello, and L.C. Johnson. A possible mechanism for increased performance of a xeric adapted big bluestem (*Andropogon gerardii*) ecotype: Photosynthesis, nitrogen, and chlorophyll concentration of leaves in reciprocal gardens across the Great Plains.

**Botanical Society of America Annual Meeting, Boise, ID, July 2014 (oral)** Galliard, M., L. Johnson, S. Sabates, H. Tetreault, A. DeLaCruz, J. Bryant, T.J. Morgan, M. Knapp, N.M. Bello, S.G. Baer, D. Gibson, L. Wilson, K.L. Caudle, and B.R. Maricle. Adaptive potential and trait variation of a widespread grass *Andropogon gerardii* across Great Plains climate gradient: Implications for climate change.

**Botanical Society of America Conference. Boise, ID. Poster Presentation. July 2014** Gaffney, J.; Galliard, M.; Sabates, S.; Baer, S.; Maricle, B.; McCrea, E.; Bello, N.; Johnson, L.. Variations in polyploidy in Big Bluestem (*Andropogon gerardii*) ecotypes across the Great Plains.

**Evolution 2014 Conference, Raleigh, NC, June 2014(oral)** Galliard, M., L. Johnson, N.M. Bello, S.G. Baer, B.R. Maricle, D. Gibson, H. Tetreault, and S. Sabates. Adaptive potential and trait variation of a widespread grass *Andropogon gerardii* across a Great Plains climate gradient: Implications for climate change.

**Kansas Academy of Science Annual Meeting, Emporia, KS, April 2014(oral)** Galliard, M.\* , L. Johnson, S. Sabates, H. Tetreault, A. DeLaCruz, J. Bryant, T.J. Morgan, M. Knapp, N.M. Bello, S.G. Baer, D. Gibson, L. Wilson<sup>†</sup>, K.L. Caudle, and B.R. Maricle. Adaptive potential and trait variation of a widespread grass *Andropogon gerardii* across a Great Plains climate gradient: Implications for climate change.

**America's Grasslands meeting, Manhattan, KS, August 2013(oral)** Johnson, L, M. Gray, H. Tetreault, K. Garrett, E. Akhunov, P. St. Amand, N. Bello, J. Bryant, N. An, B.R. Maricle, J. Olsen, S.G. Baer, R.K. Goad, A. De La Cruz, T. Morgan, and M. Knapp. Ecotypic variation in drought tolerance and genetic diversity of the ecologically dominant grass big bluestem (*Andropogon gerardii*) across the Great Plains precipitation gradient: Implications for climate change and restoration.

**Evolution 2013 Meeting, Snowbird, UT, June 2013 (oral)** Johnson, L, S.G. Baer, B.R. Maricle, M. Gray, H. Tetreault, N. Bello, S. Brown, T. Morgan, J. Shelton, and S. Chellapilla. Genetic differentiation, transcriptome variation, and local adaptation of an ecologically dominant prairie grass *Andropogon gerardii* (big bluestem) occurring along the climate gradient in Midwest U.S. grasslands.

**Kansas Academy of Science Annual Meeting, Overland Park, KS, April 2013(oral)** Maricle, B.R., K.L. Caudle\*, K.J. Lindsey, S.G. Baer, and L.C. Johnson. Effects of extreme drought on photosynthesis and water potential of *Andropogon gerardii* (big bluestem) ecotypes in common gardens across Kansas.

**America's Grasslands Conference. Manhattan, KS Poster Presentation. August**

**2013** Galliard, M.; Sabates, S.; Baer, S.; Bello, N.; Caudle, K.; Maricle, B.; McCrea, E.; Gibson, D.; Wilson, L.; and Johnson, L. How does phenology and seed production of big bluestem (*Andropogon gerardii*) vary across the climate gradient of the Great Plains? A reciprocal garden approach to distinguish roles of site and ecotype.

**K-State Biology REU/URM Research Symposium. Manhattan, KS Poster Presentation.**

**August 2013** Galliard, M.; Sabates, S.; Baer, S.; Bello, N.; Caudle, K.; Maricle, B.; McCrea, E.; Gibson, D.; Wilson, L.; and Johnson, L. How does phenology and seed production of big bluestem (*Andropogon gerardii*) vary across the climate gradient of the Great Plains? A reciprocal garden approach to distinguish roles of site and ecotype.

**K-State Joint REU Poster Session. Manhattan, KS. Poster Presentation. August 2013**

Galliard, M.; Sabates, S.; Baer, S.; Bello, N.; Caudle, K.; Maricle, B.; McCrea, E.; Gibson, D.; Wilson, L.; and Johnson, L. How does phenology and seed production of big bluestem (*Andropogon gerardii*) vary across the climate gradient of the Great Plains? A reciprocal garden approach to distinguish roles of site and ecotype.

**Botanical Society of America Conference. New Orleans, LA. Poster Presentation. July 2013**

Galliard, M.; Sabates, S.; Baer, S.; Bello, N.; Caudle, K.; Maricle, B.; McCrea, E.; Gibson, D.; Wilson, L.; and Johnson, L. How does phenology and seed production of big bluestem (*Andropogon gerardii*) vary across the climate gradient of the Great Plains? A reciprocal garden approach to distinguish roles of site and ecotype.

**Evolution Conference. Snowbird, UT. Poster Presentation. June 2013**

Galliard, M.; Sabates, S.; Baer, S.; Bello, N.; Caudle, K.; Maricle, B.; McCrea, E.; Gibson, D.; Wilson, L.; and Johnson, L. How does phenology and seed production of big bluestem (*Andropogon gerardii*) vary across the climate gradient of the Great Plains? A reciprocal garden approach to distinguish roles of site and ecotype.

**K-State Research Forum. Manhattan, KS. Poster Presentation. March 2013**

Sabates, S.; \*Galliard, M.; Baer, S.; Caudle, K.; Maricle, B.; McCrea, E.; Gibson, D.; Wilson, L.; Johnson, L. Phenology and fitness in Big Bluestem (*Andropogon gerardii*) ecotypes in Great Plains reciprocal gardens: the role of site and ecotype.

**Ecological Genomics Symposium. Kansas City, KS. Poster Presentation. October 2013**

Sabates, S.; Galliard, M.; Baer, S.; Caudle, K.; Maricle, B.; McCrea, E.; Gibson, D.; Wilson, L.; Johnson, L. Phenology and fitness in Big Bluestem (*Andropogon gerardii*) ecotypes in Great Plains reciprocal gardens: the role of site and ecotype.

**SMBE Meeting, July, 2013, Chicago. (poster)**

Johnson, L\*, S.G. Baer, B.R. Maricle, M. Gray, H. Tetreault, N. Bello, S. Brown, T. Morgan, J. Shelton, and S. Chellapilla. Genetic Differentiation, Transcriptome Variation, and Local Adaptation of an Ecologically Dominant Prairie Grass *Andropogon gerardii* (Big Bluestem) Occurring Along the Climate Gradient in Midwest US Grasslands.

**Evolution 2013 Meeting**, Snowbird, UT, June 2013 (oral) Johnson, L, S.G. Baer, B.R. Maricle, M. Gray, H. Tetreault, N. Bello, S. Brown, T. Morgan, J. Shelton, and S. Chellapilla. Genetic differentiation, transcriptome variation, and local adaptation of an ecologically dominant prairie grass *Andropogon gerardii* (big bluestem) occurring along the climate gradient in Midwest U.S. grasslands.

**Kansas Academy of Science**, April 5-6, Overland Park, Kansas; Botanical Society of America Annual Meeting, July 27-August 1, New Orleans, Louisiana; and America's Grasslands Conference, August 13-14. Manhattan, Kansas. Maricle, B. R., K. L. Caudle, K. J. Lindsey, S. G. Baer, and L. C. Johnson. 2013. Effects of extreme drought on photosynthesis and water potential of *Andropogon gerardii* (big bluestem) ecotypes in common gardens across Kansas.

**Annual Meetings of the Ecological Society of America, August 4-9, Minneapolis, Minnesota. (oral)** Wilson, L. R., D. J. Gibson, S. G. Baer, and L. Johnson. 2013. Plant community response to regional sources of dominant grasses restored across a precipitation gradient.

**Botanical Society of America Annual Meeting, July 27-August 1, New Orleans, Louisiana. Evolution Meeting, Snowbird, UT, June ,2013 (poster)** Sabates, S., M. Galliard, S. Baer, N. Bello, K. Caudle, B. Maricle, E. McCrea, D. Gibson, L. Wilson, and L. Johnson. 2013. How does phenology and seed production of big bluestem (*Andropogon gerardii*) vary across the climate gradient of the Great Plains? A reciprocal garden approach to distinguish roles of site and ecotype.

**Botanical Society of America Annual Meeting, July 27-August 1, New Orleans, Louisiana and America's Grasslands Conference, August 13-14. Manhattan, Kansas. (poster)** Maricle, B. R., M. M. Gray, J. Bryant, A. Jensen, A. de la Cruz, K. L. Caudle, J. T. Olsen, S. G. Baer, M. Knapp, and L. C. Johnson. 2013. A possible mechanism for increased performance of a xeric adapted big bluestem (*Andropogon gerardii*) ecotype: Nitrogen and chlorophyll content of leaves in reciprocal gardens across the Great Plains.

**Botanical Society of America Annual Meeting, July 27-August 1, New Orleans, Louisiana and America's Grasslands Conference, August 13-14. Manhattan, Kansas. (poster)** Caudle, K. L., L. C. Johnson, S. G. Baer, and B. R. Maricle. 2013. Influence of precipitation on trichome densities in big bluestem (*Andropogon gerardii*) ecotypes in Great Plains reciprocal gardens.

**Presented at the America's Grasslands meeting, Manhattan, KS, August 2013. (poster)** Johnson, L\*, M. Gray, H. Tetreault, K. Garrett, E. Akhunov, P. St. Amand, N. Bello, J. Bryant, N. An, B.R. Maricle, J. Olsen†, S.G. Baer, R.K. Goad, A. De La Cruz, T. Morgan, and M. Knapp. Ecotypic variation in drought tolerance and genetic diversity of the ecologically dominant grass big bluestem (*Andropogon gerardii*) across the Great Plains precipitation gradient: Implications for climate change and restoration.

**Presented at the Kansas Academy of Science Annual Meeting, Overland Park, KS, April 2013 (oral)** Maricle, B.R., K.L. Caudle, K.J. Lindsey, S.G. Baer, and L.C. Johnson. Effects of



extreme drought on photosynthesis and water potential of *Andropogon gerardii* (big bluestem) ecotypes in common gardens across Kansas.

**A reciprocal garden approach to distinguish roles of site and ecotype. KSU University Wide Research Forum, Best poster award.** Sabates, S., M. Gallart, S. Baer, N. Bello, K. Caudle, B. Maricle, E. McCrea, D. Gibson, L. Wilson, and L. Johnson. 2013. How does phenology and seed production of big bluestem (*Andropogon gerardii*) vary across the climate gradient of the Great Plains?

**2013 Plant Animal Genome (PAG), San Diego.(poster)**Loretta C Johnson Miranda Gray, Alina Akhunova, Susan J. Brown, Sanjay Chellapilla, Theodore Morgan, Karen Garrett, Hanquan Liang and Eduard Akhunov, Loretta Phenotypic and genetic variation in a dominant forage and biofuel grass along the Great Plains' precipitation gradient: a reciprocal garden approach.

**2013 PAG, San Diego. (poster)**Shelton, Jennifer, Miranda Gray, Susan J Brown, Sanjay Chellapilla, Alina Akhunova, Eduard Akhnov, Hanquan Liang, Loretta Johnson *De novo* transcriptome profiling of two edaphically and phenotypically divergent grasses: dominant forage grass big bluestem *Andropogon gerardii* and drought- sand bluestem *Andropogon gerardii* ssp. *Hallii*.

**ASPB, Oral Presentation, Lincoln Nebraska, March 2012.**Thilani N. Samarakoon, Jennifer M. Shelton, Richard Jeannotte, Zhihong Song, Nora Bello, Basil Nikolau, Ruth Welti, Loretta Johnson. A Gas Chromatography/Mass Spectrometry Reveals Contrasts in Epicuticular Wax Composition of Big Bluestem (*Andropogon gerardii*) and edaphic variety Sand Bluestem (*A. gerardii* var *hallii*.)

**ASPB, Poster Presentation, Lincoln Nebraska, March 2012.**Shelton, Jennifer M, Ravenek Janneke, Samarakoon Thilani, Jeannotte Richard, Welti Ruth, Nikolau, Basil J, Song Zhihong, and Johnson, Loretta. Divergence in leaf morphology and physiology in *Andropogon gerardii* var. *hallii* (sand bluestem) a locally adapted variety of *Andropogon gerardii* (big bluestem)

**Presented at the Botanical Society of America Annual Meeting, Columbus July 2012 (oral presentation)**Olsen, J.T., H.M. Tetrault, R.K. Goad, M.L. Mendola, L.C. Johnson, S.G. Baer, and B.R. Maricle. Photosynthetic variation of big bluestem and sand bluestem influenced by ecotype and precipitation.

**Presented at the Ecological Society of America Annual Meeting, Portland, OR, August 2012. (oral)**Johnson, L, M. Gray, H. Tetreault, K. Garrett, E. Akhunov, P. St. Amand, N. Bello, J. Bryant, N. An<sup>†</sup>, B.R. Maricle, J. Olsen, S.G. Baer, R.K. Goad, A. De La Cruz, T. Morgan, and M. Knapp. Ecotypic variation in drought tolerance and genetic diversity of the ecologically dominant grass big bluestem (*Andropogon gerardii*) across the Great Plains precipitation gradient.

**Presented at the Botanical Society of America Annual Meeting, Columbus, OH, July 2012. (oral)**Olsen, J.T., R.K. Goad, M.L. Mendola, H.M. Tetrault, L.C. Johnson, S.G. Baer, and B.R. Maricle. Photosynthetic gas exchange of big bluestem (*Andropogon gerardii*) ecotypes across a precipitation gradient of the Great Plains.

**Presented at the Kansas Academy of Science Annual Meeting, Wichita, KS, March 2012 (oral)**Olsen, J.T. , R.K. Goad, M.L. Mendola, H.M. Tetreault, L.C. Johnson, S.G. Baer, and B.R. Maricle. Gas exchange of *Andropogon gerardii* (big bluestem) ecotypes across a climatic gradient of the Great Plains.

**Botanical Society of America. Columbus July 2012 (oral Presentation)** Gray, Paul St. Amand, Loretta Johnson, Eduard Akhunov, Karen Garrett, Mary Knapp, Alina Akhunova, Sanjay Chellapilla, Ted Morgan, Guihua Bai. Genetic differentiation of *Andropogon gerardii*(big bluestem) ecotypes along a natural precipitation gradient Miranda

**KSU Graduate School SUROP** (Summer Undergraduate Research Opportunities) seminar, July, 2012. Jessica Gaffney, Variations in polyploidy in Big Bluestem (*Andropogon gerardii*) ecotypes across the Great Plains (oral)

**KSU Graduate School REU** (Summer Undergraduate Research Opportunities) seminar, July, 2012. Amber Jensen\*, Big bluestem ecotypic differences in leaf nitrogen content as a possible mechanism for increased performance of western Kansas ecotypes in reciprocal gardens planted across the Great Plains..(oral)

**KSU URM** (Undergraduate Research Mentoring Opportunities) Sofia Sabates. July 2012 Phenology and seed production in Big Bluestem (*Andropogon gerardii*) ecotypes in Great Plains reciprocal gardens: the role of site and ecotype (poster)

**ASABE Annual Meeting, 6/29 to 7/1, 2012, Dallas, TX. Paper No.121338462** K. Zhang\*, L. Johnson, R. Nelson, W. Yuan, ZJ. Pei, and D. Wang. 2012. Chemical and elemental composition of big bluestem as affected by ecotype and planting location along the precipitation gradient of the Great Plains.

**Ecological Society of America. Portland Oregon, Aug. 2012. (oral)** Gray\*, Miranda, St Amand Paul, Tetreault, Hannah; Baer, Sara; Maricle, Brian; Morgan, Ted; Goad, Rachel; Olsen†, Jake and Johnson, Loretta. Ecotypic variation in drought tolerance and genetic diversity of an ecologically dominant grass big bluestem (*Andropogon gerardii*) across the Great Plains precipitation gradient

**Ecological Society of America. Portland Oregon, Aug. 2012.** Meredith L Mendola, Sara G Baer, Loretta C Johnson. Ecotype and climate controls on belowground ecosystem processes. Oral Presentation.

**DOT SunGrant Conference, Oct 2012. New Orleans** Oral Presentation, Gan Jing, Wenqiao Yuan, Loretta Johnson, Donghai Wang a, Richard Nelson, Ke Zhang. Hydrothermal conversion of big bluestem for bio-oil production: The effect of ecotype and planting location.

**DOT SunGrant Conference, Oct 2012. New Orleans** Oral Presentation, Zhang, Ke Loretta Johnson, Richard Nelson, Wenqiao Yuan, Zhijian. Pei, and Donghai Wang. Chemical and elemental composition of big bluestem as affected by ecotype and planting location along the precipitation gradient of the Great Plains.

**Ecological Genomics Symposium, Oct 26-28, KC. Poster,** Gray, Miranda, St Amand Paul, Tetreault, Hannah; Baer, Sara; Maricle, Brian; Morgan, Ted; Goad, Rachel; Olsen, Jake and Johnson, Loretta Phenotypic and genetic variation in a dominant prairie grass along the Great Plains' precipitation gradient: a reciprocal garden approach.

**Poster, Ecological Genomics Symposium, Oct 26-28, 2012 KC. (poster)** Gaffney, Jessica; Sabates, Sofia; Baer, Sara; Maricle, Brian; McCrea, Evan; Bello, Nora and Johnson, Loretta Variations in polyploidy in Big Bluestem (*Andropogon gerardii*) ecotypes across the Great Plains.

**Poster, Ecological Genomics Symposium, Oct 26-28, 2012. KC (poster).** Sabates, Sofia; Baer, Sara; Caudle, Keri; Harmony, Keith; Maricle, Brian; McCrea, Evan; and Johnson, Loretta. Phenology and seed production in Big Bluestem (*Andropogon gerardii*) ecotypes in Great Plains reciprocal gardens: the role of site and ecotype

**Major extramural grants funded** Total LJ lead \$6,857,156, LJ Co-PI \$15,030,794

**Major extramural grants funded**

**Project/Proposal Title:** Genetic and phenotypic variation of a dominant forage grass across the Great Plains climate gradient and predicted response to drought.

Johnson (lead PI) , S G Baer, E Zeng, BRMaricle, A Smith

**Source of Support:** USDA-NIFA Physiology of Plants (Johnson-Lead PI)

**Project Location:** Kansas State University

**Total Award Amount:** \$500,000 **Award Period:** 12/15/2020-12/14/2024

**Person-Months Committed:** 1

**Project/Proposal Title:**

USDA NIFA Linking plant genetic diversity in a foundation forage grass species to soil microbiome function and ecosystem process across the Great Plains. \$750,000 **Source of**

**Support:** USDA-NIFA Agricultural Microbiome (Lee-Lead PI) S. Lee, L Johnson, Ari Jumpponen, S G Baer, A Smith

**Project Location:** Kansas State University

**Total Award Amount:** \$750,000 **Award Period:** 9/15/2020-9/14/2024

**Person-Months Committed:** 1

**Project/Proposal Title:**

Training Program in Ecology, Evolution, and Genomics in Changing Environments

**Source of Support:** Dept of Education-Graduate Assistance in Areas of National Need (Johnson-Lead PI)

**Project Location:** Kansas State University

**Total Award Amount:** \$590,556 **Award Period:** 8/15/2016-8/14/2019

**Person-Months Committed:** NA

**Project/Proposal Title:** NSF Graduate Research Fellowship to Matt Galliard (Johnson advisor)

**Source of Support:** NSF

**Project Location:** Kansas State University

**Total Award Amount:** \$134,000      **Award Period:**09/1/15-9/1/18  
**Person-Months Committed:** NA

**Project/Proposal Title:** Ecotypic variation and functional genetic responses of a dominant prairie grass under natural and reduced precipitation: Genes to ecosystem response (Johnson lead)

**Source of Support:** USDA  
**Project Location:** Kansas State University  
**Total Award Amount:** \$349,000      **Award Period:**09/1/08-09/1/2013  
**Person-Months Committed:** 0.5 summer

**Project/Proposal Title:** Ecotypic differences in big bluestem biofuel potential (Wang lead, Johnson co-PI)

**Source of Support:** DOT-SunGrant (lead PI-Wang)  
**Project Location:** Kansas State University  
**Total Award Amount:** \$75,000      **Award Period:**1/1/11-1/2/2013  
**Person-Months Committed:** NA

**Project/Proposal Title:**

Training Program in Ecology, Evolution, and Genomics in Changing Environments  
**Source of Support:** Dept of Education-Graduate Assistance in Areas of National Need (Johnson-Lead PI)  
**Project Location:** Kansas State University  
**Total Award Amount:** \$783,000      **Award Period:** 8/15/09-8/15/2014  
**Person-Months Committed:** NA

**Project/Proposal Title:**

NSF Conference Award for Ecogen symposium.  
**Source of Support:** NSF (Morgan Lead)  
**Project Location:** Kansas State University  
**Total Award Amount:** \$25,000      **Award Period:** 09/01/09-9/1/2010  
**Person-Months Committed:** NA

**Project/Proposal Title:**

Diversity of ericoid mycorrhizal fungi and its significance in plant nitrogen acquisition in the arctic. Jumpponen, A. (PI), Johnson, L.C.  
**Source of Support:** NSF-Polar Programs  
**Project Location:** Kansas State University  
**Total Award Amount:** \$717,794      **Award Period:** 05/01/03-4/3/2010  
**Person-Months Committed:** NA

**Project/Proposal Title:** NSF EPSCOR-Ecological Genomics

**Source of Support:** NSF –Johnson and Herman, Cohen (KU)  
**Project Location:** Kansas State University  
**Total Award Amount:** \$3,743,109      **Award Period:** 2003-2006  
**Person-Months Committed:** 1

**Project/Proposal Title:**Scaling Up the Consequences of Forest Expansion in the Great Plains: L. Johnson (PI), K. Price (KU), J. Blair, and R. B. McKane (EPA).

Funding Agency: NASA Land-Use and Land-Cover Change Program  
Duration: Aug 1, 2001-Jul 31, 2004  
Amount: **\$575,000**

**Project/Proposal Title:**Long-term Ecological Research Program in Tallgrass Prairie: The Konza Prairie LTER Program. J.M Blair, A.K. Knapp, J. M. Briggs, D.C. Hartnett, L.C. Johnson (Co-PI), and W.K. Dodds.

Funding Agency: NSF Long-term Ecological Research Program  
Duration: October 15, 2002-October 14, 2008  
Amount: **\$4,680,000**

**Project/Proposal Title:**Belowground C and nutrient dynamics in arctic tundra under changing climates. K.J. Nadelhoffer, L.C. Johnson (Co-PI), G. Kling, E. Rastetter.

Funding agency: NSF- Arctic System Science Program  
Duration: March 2000-Feb. 2004  
Amount: **\$2,008,000 (275K subcontract)**

**Project/Proposal Title:** Long-term Ecological Research Program in Tallgrass Prairie: The Konza Prairie LTER Program. A.K. Knapp (PI), J. M. Briggs, J.M Blair, D.C. Hartnett, L.C. Johnson (Co-PI), D.W. Kaufman, and W.K. Dodds.

Funding Agency: NSF Long-term Ecological Research Program  
Duration: October 15, 1996-October 14, 2002  
Amount: **\$3,360,000**

**Project/Proposal Title: Acquisition of Stable Isotope Ratio Mass Spectrometer.** L.Johnson (PI), J. Blair, W. Dodds, M. Vinton, V. Terwilliger, and G. McPherson.

Funding Agency: NSF, Major Research Instrumentation Grant  
Duration: June 1999-June 2000 (2001 no cost time-extension)  
Amount: **\$169,400**

**Project/Proposal Title:Land-cover Change in the Great Plains: Predicting impacts of regional forest expansion on biogeochemical processes:** L. Johnson (PI), J. Briggs, J. Blair, C. Rice, J. Ham, R. B. McKane, C. Owensby.

Funding Agency: NASA Land-Use and Land-Cover Change Program  
Duration: May. 1, 1997-Dec. 31, 2000  
Amount: **\$485,000**

**Project/Proposal Title:Belowground sources and sinks for C in arctic ecosystems.** K.J. Nadelhoffer, L.C. Johnson (co-PI), G. Kling, W. Reeburgh.

Funding agency: NSF- Arctic System Science Program  
Duration: April 1 1997-March 31 2000  
Amount: **\$400, 000**

**Project/Proposal Title:Acquisition of Two Controlled Environment Chambers.** L. Johnson (PI), A. Knapp, J. Blair, T. Todd, D. Hartnett.

Funding Agency: USDA NRICGP, Strengthening Program  
Duration: June 1996-July 1997  
Amount: **\$49,900** (plus \$49,900 from University matching)

**Project/Proposal Title:** **The role of amino acid uptake by mycorrhizal ericaceous shrubs in the N economy of nutrient-deficient peat-bogs.** L.C. Johnson (PI) and A. Damman.

Funding Agency: NSF/Ecosystems Program  
Duration: May 1, 1996-April 31, 1999  
Amount: **\$241,000**

### **Major intramural grants**

**Project/Proposal Title:** Building the Ecological Genomics Institute (Johnson and Herman Co-PIs)

**Source of Support:** Kansas State University Targeted Excellence Award  
**Project Location:** Kansas State University  
**Total Award Amount:** \$2,700,000. **Award Period:** 2006-2011  
**Person-Months Committed:** 1

### **Small grants**

**Project/Proposal Title:**

KUMC Sequencing Grant.  
**Source of Support:** KUMC  
**Project Location:** Kansas State University  
**Total Award Amount:** \$6,000 **Award Period:** 08/01/13-8/1/2014  
**Person-Months Committed:** NA

**Project/Proposal Title:** Long-term field selection of big bluestem ecotypes in reciprocal gardens planted across the Great Plains precipitation gradient

**Source of Support:** Kansas Academy of Science Award to Student Matthew Galliard  
**Project Location:** Kansas State University  
**Total Award Amount:** \$1000 **Award Period:** 9/01/13-9/1/2014  
**Person-Months Committed:** NA

**Project/Proposal Title:** Long-term field selection of big bluestem ecotypes in reciprocal gardens planted across the Great Plains precipitation gradient

**Source of Support:** Botanical Society of America Award to Student Matthew Galliard  
**Project Location:** Kansas State University  
**Total Award Amount:** \$200 **Award Period:** 9/01/13-9/1/2014  
**Person-Months Committed:** NA

**Project/Proposal Title:** Long-term field selection of big bluestem ecotypes in reciprocal gardens planted across the Great Plains precipitation gradient

**Source of Support:** Sigma Award to Student Matthew Galliard  
**Project Location:** Kansas State University

**Total Award Amount:** \$400 **Award Period:** 9/01/13-9/1/2014  
**Person-Months Committed:** NA

**Project/Proposal Title:** Long-term field selection of big bluestem ecotypes in reciprocal gardens planted across the Great Plains precipitation gradient  
**Source of Support:** ASPB Award to Student Matthew Galliard  
**Project Location:** Kansas State University  
**Total Award Amount:** \$5000 **Award Period:** 5/01/14-9/1/2014  
**Person-Months Committed:** NA

**Project/Proposal Title:**

Bringing Genomics Outdoors: A Look into the Drought Transcriptome and Differential Physiological Response of Dominant Prairie Grass Phenotypic Variants from Opposing Precipitation Regimes.

**Source of Support:** Kansas Native Plant Award to Student Miranda Gray  
**Project Location:** Kansas State University  
**Total Award Amount:** \$1000 **Award Period:** 12/01/12-12/1/2013  
**Person-Months Committed:** NA

**Project/Proposal Title:**

Bringing Genomics Outdoors: A Look into the Drought Transcriptome and Differential Physiological Response of Dominant Prairie Grass Phenotypic Variants from Opposing Precipitation Regimes.

**Source of Support:** Sigma XI Award to Student Miranda Gray  
**Project Location:** Kansas State University  
**Total Award Amount:** \$400 **Award Period:** 12/01/12-12/1/2013  
**Person-Months Committed:** NA

**Recent Student Grants- Total \$139,500**

**Matt Galliard** NSF GRFP, 2015-2018, \$134,000

**Matt Galliard** June 2016 - Kansas Native Plant Society Research Grant. Experimental natural selection of big blue ecotypes across the Great Plains. **\$1,000**

**Matt Galliard**-January2016 - Sigma XI GIAR. Experimental natural selection of big bluestem ecotypes across the Great Plains: A novel test for the strength of local adaptation. **\$1,000**

**Matt Galliard** March 2016 – Kansas Academy of Science Research Grant. Experimental Natural Selection of Big Bluestem Ecotypes Across the Great Plains: A Novel Test for the Strength of Local Adaptation. **\$1,500**

**Jake Alsdurf.** Sigma XI Grants-in-Aid of Research Award (\$1000) Fall 2016

**Jake Alsdurf**-Kansas State University GRAD forum Award (\$500) Spring 2016

**Samantha Sharpe** BGSA Travel Grant, American Genetics Association Local Adaptation Symposium \$500 July 2016

**Samantha Sharpe** Sigma Xi Grant in Aid of Research \$500 June 2016

**Samantha Sharpe** KSU Sigma XI Chapter Grants in Aid of Research \$400 January 2016

**Samantha Sharpe** Kansas Academy of Science Student Research Scholarship \$1500 March 2015



