BIOGRAPHICAL SKETCH

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NAME: Eskridge, Kent M.

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POSITION TITLE: Professor of Statistics

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Missouri-Kansas City	B.S.	05/1976	Mathematics
University of Missouri-Kansas City	B.A.	05/1976	History
University of Missouri-Columbia	M.A.	05/1981	Statistics
University of Nebraska-Lincoln	Ph.D.	08/1987	Biometry

A. Personal Statement

My primary interests are design of experiments and modeling of biological data. I teach graduate statistics classes in: (1) advanced experimental design, (2) the theory of experimental design, (3) multivariate methods, and (4) the theory of multivariate analysis. I have been working as a statistician in biological research in a university setting for over 30 years. In this project, I will provide expertise on experimental design, data analysis, and analytical interpretation to help realize the aims of the project. The purpose of the statistical analysis in this application will be to examine the relationships between birth defects and agrichemicals in drinking water and in particular nitrate-nitrosatable compounds which have been shown to have deleterious impacts on human health. We are also refining and developing new statistical methods for finding the 'bad actors' in mixtures that have the largest impact on birth defects.

B. Positions and Honors

1976 – 1978 *Statistician*, U.S. Bureau of Labor Statistics
1978 – 1981 *Graduate Assistant*, Department of Statistics, Iowa State, University of Missouri
1981 *Statistician*, Missouri Department of Natural Resources
1981 – 1983 *Research Associate*, Human Resource Data Systems
1983 – 1987 *Statistical Consultant/Manager*, University of Nebraska-Lincoln
1987 – present *Assistant, Associate, and Professor of Statistics*, University of Nebraska-Lincoln

C. Contribution to Science

My primary contributions have been in the development and application of statistical methodology in the biological sciences regarding: (1) specialized statistical designs and analysis, (2) biological and laboratory sciences, and (3) plant sciences. In all of these areas, I have worked as the statistician on the research team in the development of new statistical methods and the application of existing methods.

1. ***Specialized statistical designs and analyses:*** a. Co-originated and directed development D-optimal design in causal models. b. Developed specialized group screening design based on incomplete block designs c. Provided statistical support with design and analysis. d. Co-originated and directed development of supersaturated split-plot designs e. Provided statistical design and analysis expertise. f. Originated/ directed work in development of optimal designs for pharmacokinetic models without explicit form in evaluating drug metabolism.

a) Kmail, Z., & **Eskridge, K**. 2022. D-Optimal Design for a Causal Structure for Completely Randomized and Random Blocked Experiments. *Journal of Probability and Statistics*. https://doi.org/10.1155/2022/7299086
b) **Eskridge, K.M.**, Gilmour, S.G. and Posadas, L.G., 2019. Group screening for rare events based on incomplete block designs. *Biotechnology progress*, 35(2).
c) Li, M., **Eskridge, K**., Liu, E. and Wilkins, M., 2019. Enhancement of polyhydroxybutyrate (PHB) production by 10-fold from alkaline pretreatment liquor with an oxidative enzyme-mediator-surfactant system under Plackett-Burman and central composite designs. *Bioresource technology*, *281*, pp.99-106.
d) W. Koh, **K. M. Eskridge** and M. A. Hanna. 2013. Supersaturated split-plot designs. *Journal of Quality Technology* 45(1):61-73.
e) A. Bianchini, J.Stratton, S.Weier, T.Hartter, B. Plattner, G. Rokey, G.Hertzel, L. Gompa, B. Martinez, **K.M. Eskridge**. 2012. Validation of Extrusion as a Killing Step for *Enterococcus faecium* in a Balanced Carbohydrate-Protein Meal Using a Response Surface Design. *Journal of Food Protection*. 75(9):1646-1653.
f) Y. Wang, **K. M. Eskridge** and S. Nadarajah. 2012. Optimal design of mixed-effects PK/PD models based on differential equations. *Journal of Biopharmaceutical Statistics* 22(1):180-205.

2. ***Biological and laboratory sciences:*** Example contributions: a,c,& d . Developed/applied specialized statistical methods and design of in support of work; b. Co-directed development of statistical approach. e. Developed/applied specialized statistical design and analysis for optimizing cell cultures of recombinant monoclonal antibodies for therapeutic use in neutralizing Botulinum A neurotoxin;
a) Brandon Z. McDonald, Aria W. Tarudji, Haipeng Zhang, Sangjin Ryu, **Kent M. Eskridge**, Forrest Kievit. 2024. Traumatic Brain Injury Heterogeneity Affects Cell Death and Autophagy. *Experimental Brain Research*. 242:1645–1658.
b) Zhang, Y., **Eskridge, K. M.,** Zhang, S., & Lu, G. 2022. Identifying host-specific amino acid signatures for influenza A viruses using an adjusted entropy measure. *BMC Bioinformatics*. *23*(1). 1-15.
c) I. Martinez, D. Perdicaro, A. Brown, S. Hammons, T. Carden, T. Carr, **K. Eskridge** and J. Walter. 2013. Diet-induced alterations of host cholesterol metabolism are likely to affect gut microbiota composition in hamsters. Applied and Environmental Microbiology 79(2):516-524.
d) M. G. Rhoades, J. M. Meza, C. L. Beseler, P. J. Shea, A. Kahle, J. M. Vose, **K. M. Eskridge** and R. F. Spalding. 2013. Atrazine and nitrate in public drinking water supplies associated with non-Hodgkin lymphoma in Nebraska, USA. Environmental Health Insights 7:15-27.
e) A. Parampalli, **K. M. Eskridge**, L. Smith, M. M. Meagher, M. C. Mowry and A. Subramanian. 2007. Development of serum-free media in CHO-DG44 cells using a central composite statistical design. *Cytotechnology* 54(1):57-68.

3. ***Plant sciences:*** Example contributions: a. Co-directed and provided statistical support, b. Provided statistical expertise in terms of design and analysis. c. Aided with developing specialized statistical methods in the analysis of long term genetic selection experiment; d. Developed specialized statistical methods for use in analysis of historical crop yield trends; e. Aided with development and application of specialized marker screening methods of use in detection of gene-gene interactions.
a) Jason Adams, Yumou Qiu, Luis Posadas**, Kent Eskridge** and George Graef . 2021. Phenotypic trait extraction of soybean plants using deep convolutional neural networks with transfer learning. *Big Data and Information Analytics*. 6(bigdia-06-003), 26-40. doi: 10.3934/bdia.2021003
b) Chikoti Mukuma, Graciela Godoy-Lutz1, **Kent Eskridge**, James Steadman, Carlos Urrea, and Kennedy Muimui. 2020. Use of culture and molecular methods for identification and characterization of dry bean fungal root rot pathogens in Zambia. Tropical Plant Pathology. 45:385–396.
c) L.G. Posadas, **K.M. Eskridge**, J.E. Specht, G.L. Graef. 2014. Elite Performance for Grain Yield from Unadapted Exotic Soybean Germplasm in Three Cycles of a Recurrent Selection Experiment. *Crop Science* 56:2536-2546.
d) P. Grassini, **K. M. Eskridge** and K. G. Cassman. 2013. Distinguishing between yield advances and yield plateaus in historical crop production trends *Nature Communications*. 4:2918.
e) D. Wang, **K. M. Eskridge** and J. Crossa. 2011. Identifying QTLs and epistasis in structured plant populations using adaptive mixed LASSO. *Journal of Agricultural, Biological, and Environmental Statistics* 16(2):170-184.

4. ***Refereed Journal Articles***: 268 total