

PATRICK BREHENY

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EDUCATION

2006-2009	University of Iowa Ph.D., Biostatistics. <i>Received July 2009.</i>	Iowa City, IA
2004-2006	University of Iowa M.S., Biostatistics. <i>Received May 2006.</i>	Iowa City, IA
2002-2004	Iowa State University M.S., Biochemistry. <i>Received August 2004.</i>	Ames, IA
1998-2002	Iowa State University B.S., Mathematics, with honors. <i>Received May 2002.</i> B.S., Physics, with honors. <i>Received May 2002.</i>	Ames, IA

RESEARCH INTERESTS

- Methods for analyzing high-dimensional data
- Methods and algorithms for penalized likelihood models
- Analysis of genomic and genetic data
- Computational statistics

EMPLOYMENT

2017-Present	University of Iowa Associate professor, Department of Biostatistics	Iowa City, IA
2013-2017	University of Iowa Assistant professor, Department of Biostatistics	Iowa City, IA
2009-2013	University of Kentucky Assistant professor, Department of Biostatistics	Lexington, KY
2009-2013	University of Kentucky Assistant professor, Department of Statistics	Lexington, KY
2005-2006	Center for Public Health Statistics, University of Iowa Research assistant	Iowa City, IA

PEER-REVIEWED PUBLICATIONS

- BREHENY, P. J. (2019). Marginal false discovery rates for penalized regression models. *Biostatistics*, **20** 299–314.

- MILLER, R. E. and BREHENY, P. (2019). Marginal false discovery rate control for likelihood-based penalized regression models. *Biometrical Journal*, **61** 889–901.
- DONOVAN, B. M., BREHENY, P. J., ROBINSON, J. G., BAER, R. J., SAFTLAS, A. F., BAO, W., GREINER, A. L., CARTER, K. D., OLTMAN, S. P., RAND, L., JELLIFFE-PAWLOWSKI, L. L. and RYCKMAN, K. K. (2019). Development and validation of a clinical model for preconception and early pregnancy risk prediction of gestational diabetes mellitus in nulliparous women. *PLOS ONE*, **14** 1–21.
- SCOTT, A. T., BREHENY, P. J., KECK, K. J., BELLIZZI, A. M., DILLON, J. S., O’DORISIO, T. M. and HOWE, J. R. (2019). Effective cytoreduction can be achieved in patients with numerous neuroendocrine tumor liver metastases (netlms). *Surgery*, **165** 166 – 175.
- BREHENY, P., STROMBERG, A. and LAMBERT, J. (2018). p -value histograms: Inference and diagnostics. *High-Throughput*, **7** 1–13.
- ZHANG, X., YOON, J.-Y., MORLEY, M., MCLENDON, J. M., MAPUSKAR, K. A., GUTMANN, R., MEHDI, H., BLOOM, H. L., DUDLEY, S. C., ELLINOR, P. T., SHALABY, A. A., WEISS, R., TANG, W. H. W., MORAVEC, C. S., SINGH, M., TAYLOR, A. L., YANCY, C. W., FELDMAN, A. M., MCNAMARA, D. M., IRANI, K., SPITZ, D. R., BREHENY, P., MARGULIES, K. B., LONDON, B. and BOUDREAU, R. L. (2018). A common variant alters SCN5A–miR-24 interaction and associates with heart failure mortality. *The Journal of Clinical Investigation*, **128** 1154–1163.
- HUUSKO, J. M., KARJALAINEN, M. K., GRAHAM, B. E., ZHANG, G., FARROW, E. G., MILLER, N. A., JACOBSSON, B., EIDEM, H. R., MURRAY, J. C., BEDELL, B., BREHENY, P., BROWN, N. W., BDKER, F. L., LITTERMAN, N. K., JIANG, P.-P., RUSSELL, L., HINDS, D. A., HU, Y., THE 23ANDME RESEARCH TEAM, ROKAS, A., TERAMO, K., CHRISTENSEN, K., WILLIAMS, S. M., RMET, M., KINGSMORE, S. F., RYCKMAN, K. K., HALLMAN, M. and MUGLIA, L. J. (2018). Whole exome sequencing reveals HSPA1L as a genetic risk factor for spontaneous preterm birth. *PLOS Genetics*, **14** 1–22.
- DONOVAN, B. M., RYCKMAN, K. K., BREHENY, P. J., GEBRETSADIK, T., TURI, K. N., LARKIN, E. K., LI, Y., DORLEY, M. C. and HARTERT, T. V. (2018). Association of newborn screening metabolites with risk of wheezing in childhood. *Pediatric Research*, **84** 619–624.
- SMITH, C. J., BAER, R. J., OLTMAN, S. P., BREHENY, P. J., BAO, W., ROBINSON, J. G., DAGLE, J. M., LIANG, L., FEUER, S. K., CHAMBERS, C. D., JELLIFFE-PAWLOWSKI, L. L. and RYCKMAN, K. K. (2018). Maternal dyslipidemia and risk for preterm birth. *PLOS ONE*, **13** 1–10.
- KECK, K. J., BREHENY, P., BRAUN, T. A., DARBRO, B., LI, G., DILLON, J. S., BELLIZZI, A. M., O’DORISIO, T. M. and HOWE, J. R. (2018). Changes in gene expression in small bowel neuroendocrine tumors associated with progression to metastases. *Surgery*, **163** 232 – 239.
- BREHENY, P. and BURCHETT, W. (2017). Visualization of regression models using visreg. *The R Journal*, **9** 56–71.

- CHAU, D., REDDY, A., BREHENY, P., YOUNG, A., ASHFORD, E., SONG, M., ZHANG, C., TAYLOR, T., YOUNES, A. and VAZIFEDAN, T. (2017). Revisiting the applicability of adult early post-operative nausea and vomiting risk factors for the paediatric patient: A prospective study using cotinine levels in children undergoing adenotonsillectomies. *Indian Journal of Anaesthesia*, **61** 964–971.
- GRAHAM, M. M., GU, X., GINADER, T., BREHENY, P. and SUNDERLAND, J. J. (2017). ⁶⁸Ga-DOTATOC imaging of neuroendocrine tumors: A systematic review and metaanalysis. *Journal of Nuclear Medicine*, **58** 1452–1458.
- KECK, K. J., CHOI, A., MAXWELL, J. E., LI, G., O’DORISIO, T. M., BREHENY, P., BELLIZZI, A. M. and HOWE, J. R. (2017). Increased grade in neuroendocrine tumor metastases negatively impacts survival. *Annals of Surgical Oncology*, **24** 2206–2212.
- SPRACKLEN, C. N., SMITH, C. J., SAFTLAS, A. F., TRICHE, E. W., BJONNES, A., KEATING, B. J., SAXENA, R., BREHENY, P. J., DEWAN, A. T., ROBINSON, J. G., HOH, J. and RYCKMAN, K. K. (2017). Genetic predisposition to elevated levels of C-reactive protein is associated with a decreased risk for preeclampsia. *Hypertension in Pregnancy*, **36** 30–35. PMID: 27657194.
- ZENG, Y. and BREHENY, P. (2016). Overlapping group logistic regression with applications to genetic pathway selection. *Cancer Informatics*, **15** 179–187.
- PASHKOVA, N., PETERSON, T., KRISHNAMANI, V., BREHENY, P., STAMNES, M. and PIPER, R. (2016). DEEPN as an approach for batch processing of yeast 2-hybrid interactions. *Cell Reports*, **17** 303–315.
- HILL-BURNS, E. M., ROSS, O. A., WISSEMANN, W. T., SOTO-ORTOLAZA, A. I., ZAREPARSI, S., SIUDA, J., LYNCH, T., WSZOLEK, Z. K., SILBURN, P. A., MELICK, G. D., RITZ, B., SCHERZER, C. R., ZABETIAN, C. P., FACTOR, S. A., BREHENY, P. J. and PAYAMI, H. (2016). Identification of genetic modifiers of age-at-onset for familial Parkinson’s disease. *Human Molecular Genetics*, **25** 3849.
- HUANG, J., BREHENY, P., LEE, S., MA, S. and ZHANG, C.-H. (2016). The Mnet method for variable selection. *Statistica Sinica*, **26** 903–923.
- SINGLETON, M. D. and BREHENY, P. J. (2016). Nonlinear hierarchical modeling of experimental infection data. *Preventive Veterinary Medicine*, **130** 129 – 136.
- SMITH, C. J., SAFTLAS, A. F., SPRACKLEN, C. N., TRICHE, E. W., BJONNES, A., KEATING, B., SAXENA, R., BREHENY, P. J., DEWAN, A. T., ROBINSON, J. G., HOH, J. and RYCKMAN, K. K. (2016). Genetic risk score for essential hypertension and risk of preeclampsia. *American Journal of Hypertension*, **29** 17–24.
- BREHENY, P. (2015). The group exponential lasso for bi-level variable selection. *Biometrics*, **71** 731–740.
- BREHENY, P. and HUANG, J. (2015). Group descent algorithms for nonconvex penalized linear and logistic regression models with grouped predictors. *Statistics and Computing*, **25** 173–187.

- LEE, S. and BREHENY, P. (2015). Strong rules for nonconvex penalties and their implications for efficient algorithms in high-dimensional regression. *Journal of Computational and Graphical Statistics*, **24** 1074–1091.
- YI, H., BREHENY, P., IMAM, N., LIU, Y. and HOESCHELE, I. (2015). Penalized multi-marker vs. single-marker regression methods for genome-wide association studies of quantitative traits. *Genetics*, **199** 205–222.
- MILLER, M., MA, D., SCHAPPET, J., BREHENY, P., MOTT, S., BANNICK, N., ASKELAND, E., BROWN, J. and HENRY, M. (2015). Downregulation of dystroglycan glycosyltransferases LARGE2 and ISPD associate with increased mortality in clear cell renal cell carcinoma. *Molecular Cancer*, **14** 141.
- SPRACKLEN, C. N., SAFTLAS, A. F., TRICHE, E. W., BJONNES, A., KEATING, B., SAXENA, R., BREHENY, P. J., DEWAN, A. T., ROBINSON, J. G., HOH, J. and RYCKMAN, K. K. (2015). Genetic predisposition to dyslipidemia and risk of preeclampsia. *American Journal of Hypertension*, **28** 915–923.
- VANDERPOOL, R. C., BREHENY, P. J., TILLER, P. A., HUCKELBY, C. A., EDWARDS, A. D., UPCHURCH, K. D., PHILLIPS, C. A. and WEYMAN, C. F. (2015). Implementation and evaluation of a school-based human papillomavirus vaccination program in rural kentucky. *American Journal of Preventive Medicine*, **49** 317 – 323.
- HOVEY, A. M., DEVOR, E. J., BREHENY, P. J., MOTT, S. L., DAI, D., THIEL, K. W. and LESLIE, K. K. (2015). mir-888: A novel cancer-testis antigen that targets the progesterone receptor in endometrial cancer. *Translational Oncology*, **8** 85 – 96.
- BADA, H., SITHISARN, T., GIBSON, J., GARLITZ, K., CALDWELL, R., CAPILOUTO, G., LI, Y., LEGGAS, M. and BREHENY, P. (2015). Morphine versus clonidine for neonatal abstinence syndrome. *Pediatrics*, **135** e383–e391.
- LAHAM, J. L., BREHENY, P. J. and RUSH, A. (2015). Do clinical parameters predict first planned extubation outcome in the pediatric intensive care unit? *Journal of Intensive Care Medicine*, **30** 89–96.
- MCCLINTOCK, T. S., ADIPIETRO, K., TITLOW, W. B., BREHENY, P., WALZ, A., MOMBAERTS, P. and MATSUNAMI, H. (2014). *In Vivo* identification of eugenol-responsive and muscone-responsive mouse odorant receptors. *The Journal of Neuroscience*, **34** 15669–15678.
- CAMPOS, J. R., BREHENY, P., ARAUJO, R. R., TROEDSSON, M. H., SQUIRES, E. L., TIMONEY, P. J. and BALASURIYA, U. B. (2014). Semen quality of stallions challenged with the Kentucky 84 strain of equine arteritis virus. *Theriogenology*, **82** 1068 – 1079.
- STOKES, S., BREHENY, P., RADULESCU, A. and RADULESCU, V. C. (2014). Impact of obesity on the risk of venous thromboembolism in an inpatient pediatric population. *Pediatric Hematology-Oncology*, **31** 475–480.
- LAHAM, J. L., BREHENY, P. J., GARDNER, B. M. and BADA, H. (2014). Procalcitonin to predict bacterial coinfection in infants with acute bronchiolitis: A preliminary analysis. *Pediatric Emergency Care*, **30** 11–15.

- CRAWFORD, T. N., SANDERSON, W. T., BREHENY, P., FLEMING, S. T. and THORNTON, A. (2014). Impact of non-HIV related comorbidities on retention in HIV medical care: Does retention improve over time? *AIDS and Behavior*, **18** 617–624.
- LI, Y. and BREHENY, P. (2013). Kernel-based aggregation of marker-level genetic association tests involving copy-number variation. *Microarrays*, **2** 265–283.
- SANZ, M., LOYNACHAN, A., SUN, L., OLIVEIRA, A., BREHENY, P. and HOROHOV, D. (2013). The effect of bacterial dose and foal age at challenge on rhodococcus equi infection. *Veterinary Microbiology*, **167** 623–631.
- HERON, P., STROMBERG, A., BREHENY, P. and MCCLINTOCK, T. (2013). Molecular events in the cell types of the olfactory epithelium during adult neurogenesis. *Molecular Brain*, **6** 49.
- OWEN, C., BREHENY, P., INGRAM, R., PFEIFLE, W., CAIN, J. and RYAN, M. (2013). Factors associated with pharmacy student interest in international study. *American Journal of Pharmaceutical Education*, **77** 54.
- BREHENY, P., CHALISE, P., BATZLER, A., WANG, L. and FRIDLEY, B. L. (2012). Genetic association studies of copy-number variation: Should assignment of copy number states precede testing? *PLoS ONE*, **7** e34262.
- BREHENY, P., LI, Y. and CHARNIGO, R. (2012). Statistical challenges and opportunities in copy number variant association studies. *Journal of Biometrics & Biostatistics*, **3** e118.
- HUANG, J., BREHENY, P. and MA, S. (2012). A selective review of group selection in high-dimensional models. *Statistical Science*, **27** 481–499.
- SMITH, K. L., LI, Y., BREHENY, P., COOK, R. F., HENNEY, P. J., SELLS, S., PRONOST, S., LU, Z., CROSSLEY, B. M., TIMONEY, P. J. and BALASURIYA, U. B. R. (2012). New real-time PCR assay using allelic discrimination for detection and differentiation of equine herpesvirus-1 strains with A_{2254} and G_{2254} polymorphisms. *Journal of Clinical Microbiology*, **50** 1981–1988.
- NICKELL, M. D., BREHENY, P., STROMBERG, A. J. and MCCLINTOCK, T. S. (2012). Genomics of mature and immature olfactory sensory neurons. *Journal of Comparative Neurology*, **520** 2608–2629.
- PODZIELINSKI, I., RANDALL, M. E., BREHENY, P. J., ESCOBAR, P. F., COHN, D. E., QUICK, A. M., CHINO, J. P., LOPEZ-ACEVEDO, M., SEITZ, J. L., ZOOK, J. E. and SEAMON, L. G. (2012). Primary radiation therapy for medically inoperable patients with clinical stage I and II endometrial carcinoma. *Gynecologic Oncology*, **124** 36–41.
- SCOTT, S. L., MCSPIRIT, S., BREHENY, P. and HOWELL, B. M. (2012). The long-term effects of a coal waste disaster on social trust in Appalachian Kentucky. *Organization & Environment*, **25** 402–418.
- SRINIVASAN, J. and BREHENY, P. J. (2012). Meditation for quality improvement of medical encounters: Single-intervention, vedanta-based meditation effects on vital signs and mood indices. *Journal of Evidence-Based Complementary & Alternative Medicine*, **17** 96–103.

- FARDO, D., DRUEN, A., LIU, J., MIREA, L., INFANTE-RIVARD, C. and BREHENY, P. (2011). Exploration and comparison of methods for combining population- and family-based genetic association using the genetic analysis workshop 17 mini-exome. *BMC Proceedings*, **5** S28.
- BREHENY, P. and HUANG, J. (2011). Coordinate descent algorithms for nonconvex penalized regression, with applications to biological feature selection. *Annals of Applied Statistics*, **5** 232–253.
- GODE-POTRATZ, C., KUSTUSCH, R., BREHENY, P., WEISS, D. and MCCARTER, L. (2011). Surface sensing in vibrio parahaemolyticus triggers a programme of gene expression that promotes colonization and virulence. *Molecular Microbiology*, **79** 240–263.
- BREHENY, P. and HUANG, J. (2009). Penalized methods for bi-level variable selection. *Statistics and Its Interface*, **2** 369–380.
- OLESON, J., BREHENY, P., PENDERGAST, J., RYAN, S. and LITCHFIELD, R. (2008). Impact of travel distance on wisewoman intervention attendance for a rural population. *Preventive Medicine*, **47** 565–569.
- GFELLER, K., OLESON, J., KNUTSON, J., BREHENY, P., DRISCOLL, V. and OLSZEWSKI, C. (2008). Multivariate predictors of music perception and appraisal by adult cochlear implant users. *Journal of the American Academy of Audiology*, **19** 120.
- BREHENY, P., LAEDERACH, A., FULTON, D. and ANDREOTTI, A. (2003). Ligand specificity modulated by prolyl imide bond cis/trans isomerization in the Itk SH2 domain: a quantitative NMR study. *Journal of the American Chemical Society*, **125** 15706–15707.

MANUSCRIPTS IN SUBMISSION

- ZENG, Y. and BREHENY, P. (In submission). The biglasso package: A memory- and computation-efficient solver for lasso model fitting with big data in R.
- ZENG, Y., BREHENY, P. and YANG, T. (In submission). Efficient feature screening for lasso-type problems via hybrid safe-strong rules.
- MILLER, R. and BREHENY, P. (In submission). Feature-specific inference for penalized regression using local false discovery rates.
- DAI, B. and BREHENY, P. (In submission). Cross validation approaches for penalized Cox regression.

PH.D. DISSERTATION

- BREHENY, P. “Regularized methods for high-dimensional and bi-level variable selection”. Dissertation advisor: Professor Jian Huang. Defended May 2009.

OTHER PUBLICATIONS

- BREHENY, P. (2014). Review of *Genomic Clinical Trials and Predictive Medicine*, by Richard Simon. *Journal of the American Statistical Association*, **109** 868–869.
- SCHOFIELD, M. and BREHENY, P. (2014). Review of *The BUGS Book: A Practical Introduction to Bayesian Analysis*, by David Lunn, et al. *The American Statistician*, 68: 63.
- BREHENY, P. (2011). Review of *Intuitive Biostatistics: A Nonmathematical Guide to Statistical Thinking*, by H. Motulsky. *The American Statistician*, 65: 67-68.
- *2005 Iowa Health Fact Book*, University of Iowa College of Public Health and the Iowa Department of Public Health.

SOFTWARE

Primary author and maintainer:

- [grpreg](#), an R package for computing regularized paths for regression models with grouped covariates.
- [ncvreg](#), an R package for fitting MCP- and SCAD-penalized regression models.
- [visreg](#), an R package for visualizing regression models.

Contributor:

- [grpregOverlap](#), extends the [grpreg](#) package to the case of overlapping groups.
- [biglasso](#), an R package for fitting lasso- and elastic-net-penalized regression models for big data (too large to fit into RAM).

SELECTED PRESENTATIONS

- Local False Discovery Rates for Nonconvex Penalties in High-Dimensional Regression Models. Invited. ENAR Spring meeting. Philadelphia, PA. March 2019.
- Marginal False Discovery Rates for Penalized Regression Models. Invited. Joint Statistical Meetings. Baltimore, MD. August 2017.
- Medicine, likelihood, and the mathematics of learning from experience. Keynote lecture. Mathematics Undergraduate Math Symposium, Simpson College. Indianola, IA. April 2016.
- Estimating false inclusion rates in penalized regression models. Invited. ENAR Spring Meeting. Austin, TX. March 2016
- Penalized regression approaches for genomics and genetic association studies. Iowa Institute of Human Genetics Bioinformatics Short Course 2014. Iowa City, IA. July 2014.
- Estimating false inclusion rates in penalized regression models. Invited. International Society for Nonparametric Statistics (ISNPS II). Cádiz, Spain. June 2014.

- Kernel-based aggregation of marker-level genetic association tests involving copy-number variation. Invited. Joint Statistical Meetings. Montreal, Canada. August 2013.
- Visualizing Regression Models using `visreg`. Joint Statistical Meetings. Montreal, Canada. August 2013.
- Group descent algorithms for nonconvex penalized linear and logistic regression models with grouped predictors. Joint Statistical Meetings. San Diego, CA. July 2012.
- Visualizing Regression Models using `visreg`. International R Users Meeting (useR). Nashville, TN. June 2012.
- Group exponential penalties for bi-level variable selection. Joint Statistical Meetings. Miami, FL. July 2011.
- Genetic association studies of copy-number variation: should assignment of copy number states precede testing? International Genetic Epidemiology Society Meetings. Boston, MA. October 2010.
- The MNet estimator. Joint Statistical Meetings. Vancouver, British Columbia. August 2010.
- Coordinate descent algorithms for nonconvex optimization. ENAR Spring Meeting. New Orleans, LA. March 2010.
- Coordinate descent algorithms for nonconvex penalized regression methods. Joint Statistical Meetings. Washington, D.C. August 2009.
- Statistical graphics and visualization using R and `GGobi`. Biostatistics Student Organization Seminar. Iowa City, IA. March 2009.
- A short guide to SAS macros. Iowa SAS Users Group. Iowa City, IA. February 2009.
- Bilevel feature selection with applications to genetic association studies. Invited. Fall Conference on Statistics in Biology. Ames, IA. October 2008.
- A general framework for bi-level variable selection. Joint Statistical Meetings. Denver, CO. August 2008.
- Impact of travel distance on WISEWOMAN intervention attendance. University of Iowa Research Week. Iowa City, IA. April 2008.
- Extending regression models using penalized approaches. Biostatistics Student Organization Seminar. Iowa City, IA. November 2007.

TEACHING

Instructor, University of Iowa

- BIOS 7600: High-Dimensional Data Analysis (S19, S16)
- BIOS 7210: Survival Data Analysis (F18, F17, F15)

- BIOS 4120: Introduction to Biostatistics (S18, S17, S15, S14, Su09)
- BIOS 5710: Biostatistical Methods I (F16, F14)

Guest lecturer, University of Iowa

- BIOS 4110: General Biostatistics (Su19, Su18, Su17, Su16, Su15, Su14)
- TBM 5001: Intro to Translational Biomedicine (F18)
- Outreach: Topics in Human Genetics Short Course (Su2018)
- EPID 5560: Molecular Epidemiology (S18, S16, S15)
- CBH 6410: Advanced Interventions Research (S18)
- EPID 6250: Genetics and Epidemiology (F17)
- BIOS 5510: Biostatistical Computing (F08, F07)
- BIOS 7120: Theory of Biostatistics II (S09)
- BIOS 5720: Biostatistical Methods II (S08)

Instructor, University of Kentucky

- STA 580: Biostatistics I (S12, F10, S10, F09)
- BST 760: Advanced Regression (S13, S11)
- STA 621: Nonparametric Statistics (F12, F10)
- BST 701: Bayesian Modeling in Biostatistics (S13)
- BST 764: Applied Statistical Modeling for Medicine and Public Health (F11)
- STA 715: Readings in Statistics: Penalized Regression (F11)
- STA 715: Readings in Statistics: Analysis of Copy-Number Variation (S12)

Guest lecturer, University of Kentucky

- BST 675: Biometrics I (F12)
- CPH 701: Current topics in Public Health (F11)
- CPH 786: Doctoral Seminar (F10)

Teaching assistant, University of Iowa

- BIOS 5110: Introduction to Biostatistics (S05, F04)

Teaching assistant, Iowa State University

- BBMB 301: Survey of Biochemistry (S04)

Supplemental instructor, Iowa State University

- Math 166: Calculus II (S01, F00)

ADVISING

- Completed Ph.D. dissertations for which I was the doctoral advisor:
 - “Regularized skewness parameter estimation for multivariate skew normal and skew t distributions,” Sheng Wang, Department of Statistics, University of Iowa, May 2019. (co-advisor)
 - “Marginal false discovery rate approaches to inference on penalized regression models,” Ryan Miller, Department of Biostatistics, University of Iowa, June 2018.
 - “Scalable sparse machine learning methods for big data,” Yaohui Zeng, Department of Biostatistics, University of Iowa, November 2017.
 - “Nonlinear hierarchical models for longitudinal experimental infection studies,” Michael Singleton, Department of Biostatistics, University of Kentucky, March 2015.
 - “Genetic association testing of copy number variation,” Yinglei Li, Department of Statistics, University of Kentucky, October 2014.
- Currently serving as doctoral dissertation advisor for:
 - Biyue Dai (Ph.D. in Biostatistics, University of Iowa)
 - Anna Reisetter (Ph.D. in Biostatistics, University of Iowa)
- Advisor for eight completed preceptorship projects (all in the Department of Biostatistics, University of Iowa):
 - “Predicting Protein Structure by Applying Penalized Classification Methods to High-Throughput Two-Hybrid Screening”, Helin Hernandez, December 2019.
 - “Differential Expression in Neuroendocrine Tumors”, Michelle Weitz, December 2019.
 - “Using CADD Scores to Inform Bayesian Analysis of Genetic Variants Implicated in Preterm Birth”, Michael Brumm, May 2018.
 - “Understanding the Sense of Smell through Identification of Olfactory Receptors Activated by Various Scents”, Ziqian Chen, University of Iowa, May 2017.
 - “Empirical Bayes Analysis of Overdispersed High-Dimensional Protein Interaction Data”, Anna Reisetter, University of Iowa, May 2017.
 - “Comparing Cross-Validation Methods in Penalized Cox Regression,” Biyue Dai, University of Iowa, November 2016.
 - “Rare Variant Analysis of Paired, Case-Only, Whole-Exome Sequencing Data from a Study of Preterm Birth,” Anthony Rhoads, University of Iowa, December 2015.
 - “Improving the Accuracy of Gene Expression Classifiers by Incorporating Pathway Information: A Latent Group Selection Approach,” Yaohui Zeng, University of Iowa, December 2014.
- Advisor for one completed M.P.H. capstone:
 - “Statistical analysis of metabolite concentrations in heart tissue from four groups of mouse models in response to Adriamycin treatment,” Zhenyu Huang, College of Public Health, University of Kentucky, November 2011.
- Currently serving on five doctoral committees

- Committee member for three completed M.P.H. capstones
- Committee member for seventeen completed Ph.D. dissertations
- Committee member for one completed Dr.P.H. capstone

FUNDING (ACTIVE)

- National Institute of Dental & Craniofacial Research grant 2-R56-DE023575-06, “Dissecting the Transcriptional Network Governing Differentiation of Periderm”. Contact PI: Dr. Robert Cornell. 7/2019-9/2020. Role: Co-investigator (0.72 calendar).
- National Institutes of Health grant 1-R01-DK110023, “C3 Glomerulopathy – A Collaborative Study”. Contact PI: Dr. Richard Smith. 4/2017-3/2021. Role: Co-PI (1.2 calendar).
- National Institute on Deafness and Other Communication Disorders grant 1- R01-DC014468, “In vivo patterns of receptor activation by odorants”. PI: Dr. Timothy McClintock. 12/2015-11/2020. Role: Co-investigator (1 calendar).
- National Cancer Institute grant 5-P30-CA086862, “Cancer Center Support Grant”. PI: Dr. George Weiner. 10/2013-3/2021. Role: Co-investigator (1.68 calendar).
- National Institutes of Health grant 1-R25-HL131467, “Iowa Summer Institute for Research Education in Biostatistics”. PI: Dr. Gideon Zamba. 2/2016-1/2019. Role: Co-Investigator (.48 calendar).
- National Institutes of Health grant 1-P50-CA174521, “Neuroendocrine Tumor Specialized Programs of Research Excellence (SPORE) in Human Cancer”. PI: Dr. Sue O’Dorisio. 9/1/15-8/31/20. Role: Co-investigator (0.6 calendar).

FUNDING (COMPLETED)

- Small Business Innovation Research grant G968100-CG, “Improved Detection of Bladder Cancer Recurrence using a Biophysical Marker”. PI: Dr. Michael O’Donnell. 9/2017-9-2018. Role: Co-investigator (0.6 calendar).
- National Institute of Child Health and Human Development grant 1-R21-HD087864, “Newborn Metabolic Screening for Prediction of Childhood Respiratory Phenotypes”. PI: Dr. Kelli Ryckman. 4/2016-3/2018. Role: Co-investigator (1.2 calendar).
- National Institute of Biomedical Imaging and Bioengineering grant 1-R21-EB021870, “DEEPN strategy for large-scale differential protein interaction studies”. PI: Dr. Robert Piper. 12/2015-11/2017. Role: Co-investigator (1.2 calendar).
- Small Business Technology Transfer grant G797300-CG, “Improved Preparation of Cell Suspensions for Single Cell Genomics”. PI: Dr. Michael Henry. 7/2017-12/2017. Role: Co-investigator (0.6 calendar).
- National Institutes of Health grant 2-T15-HL07622, “Iowa Summer Institute in Biostatistics (ISIB)”. PI: Dr. Kathryn Chaloner. 3/2013-2/2016. Role: Co-investigator (0.48 calendar).

- Bill & Melinda Gates Foundation grant OPP52256, “The Role of Cholesterol in Preterm Birth”. PI: Dr. Kelli Ryckman. 1/1/10-12/31/14. Role: Biostatistician (1.2 calendar).
- Kentucky Biomedical Research Infrastructure Network grant, “KY IDeA Networks of Biomedical Research Excellence.” Principal investigator: Dr. Arnold Stromberg. 08/2012-07/2012. Role: Co-investigator (0.45 Academic, 08/2012-07/2013).
- National Institute on Aging grant 1-R21-AG040542-01A1, “Muscle, fat and NK lymphocytes in aging.” Principal investigator: Dr. Charles Lutz. 08/2012-07/2014. Role: Co-investigator (0.45 Academic, 08/2012-07/2013).
- Merck IISP ID 40305, “A study to compare the impact of a school based HPV program on vaccination uptake and completion rates.” Principal investigator: Dr. Christine Weyman. 08/2012-08/2013. Role: Consultant (0.25 Summer, 08/2012-07/2013).
- National Center for Research Resources grant 2-P20-RR020145-07, “Center for the Biologic Basis of Oral/Systemic Diseases”. Principal investigator: Dr. Jeffrey Ebersole. 9/2004-7/2014. Role: Co-investigator (0.9 Academic, 10/2010-07/2013).
- Dan and Virginia Martin Pediatric Research Fund, in association with the University of Kentucky Department of Pediatrics (internal funding). Role: Statistical support (0.9 Academic, 12/2010-07/2013).
- Altarum Institute grant SC-10-013, “Models of SNAP Nutrition education and Evaluation, Wave 2”. Principal investigator: Laura Stephenson. Role: Co-investigator (0.9 Summer, 05/2013-07/2013).
- National Institute of Child Health and Human Development grant 1-R21-HD059058-01-A2, “Farm to School: A Community-Based Program to Combat Childhood Obesity”. Principal investigator: Dr. Mark Swanson. 9/2010-8/2011. Role: Co-investigator (0.45 Summer, 9/2010-8/2012).
- University of Kentucky Summer Research Fellowship, “Visualization of regression functions”. Role: Principal investigator (5/2011-8/2011, funds used to support a graduate research assistant over the summer).
- National Institute of General Medical Sciences grant 5-T32-GM077973, “Statistics in microbiology, infectious diseases, and bioinformatics”. Principal investigator: Dr. Kathryn Chaloner. Role: Fellow (8/2006-7/2009).

PROFESSIONAL SERVICE

- Associate Editor, Reviews Section, *Journal of the American Statistical Association* and *The American Statistician*, 2013-present
- Associate Editor, *Computational Statistics and Data Analysis*, 2018-present
- Awards Officer, Section on Statistical Computing and Section on Statistical Graphics, American Statistical Association, 2015-2017
- Review Editor, *Frontiers in Bioinformatics and Computational Biology*, 2011-2015

- Reviewer for grant proposal submitted to the National Security Agency (3)
- Refereed articles for the following journals:
 - *The Journal of the American Statistical Association* (7)
 - *Biometrics* (6)
 - *Statistics in Medicine* (4)
 - *Journal of Computational and Graphical Statistics* (4)
 - *Genetic Epidemiology* (4)
 - *The American Statistician* (3)
 - *Annals of the Institute of Statistical Mathematics* (3)
 - *Computational Statistics and Data Analysis* (2)
 - *Statistical Papers* (2)
 - *Statistics and Computing* (2)
 - *Communications in Statistics: Theory and Methods* (2)
 - *Communications in Statistics: Simulation and Computation* (2)
 - *PLoS ONE* (2)
 - *Journal of Machine Learning Research* (2)
 - *Bioinformatics*
 - *BMC Bioinformatics*
 - *Empirical Economics*
 - *Scandinavian Journal of Statistics*
 - *Statistics*
 - *Computational Statistics*
 - *Journal of Statistical Computing and Simulation*
 - *Statistical Applications in Genetics and Molecular Biology*
 - *Statistical Modelling*
 - *Psychological Methods*
 - *Frontiers in Plant Science*
 - *Current Eye Research*
 - *Technometrics*
 - *Annals of Applied Statistics*
 - *Journal of Biometrics and Biostatistics*
 - *American Journal of Epidemiology*
 - *Frontiers in Genetics*
 - *Journal of Multivariate Analysis*
 - *Journal of Translational Medicine*
 - *Annals of Statistics*
 - *Cancer Epidemiology, Biomarkers & Prevention*
 - *OMICS: A Journal of Integrative Biology*
 - *Statistical Science*
 - *IEEE Transactions on Parallel and Distributed Systems*
 - *The Journal of Bayesian Analysis*
- Session chair, Joint Statistical Meetings, *2009-2012, 2014-2018*
- Session chair, ENAR Spring Meeting, *2010*
- Member, American Statistical Association, *2006-present*
- Member, Institute of Mathematical Statistics, *2005-present*

DEPARTMENTAL SERVICE

- Curriculum review committee, Department of Biostatistics, University of Iowa, *2017-present*

- Computing Committee, Department of Biostatistics, University of Iowa, *2013-present*
- PhD Exam Steering Committee, Department of Biostatistics, University of Iowa, *2014-present*
- Student Awards Committee, Department of Biostatistics, University of Iowa, *2017-present*
- MS Exam Committee, Department of Biostatistics, University of Iowa, *2014-2015, 2018*
- Co-chair, Faculty Search Committee, Department of Biostatistics, University of Iowa, *2016-2017*
- Exploratory Committee for developing an Advanced Statistical Computing course, Department of Biostatistics, University of Iowa, *2015-2016*
- Faculty Search Committee, Department of Biostatistics, University of Iowa, *2013-2014, 2014-2015*
- Ph.D. qualifying exam committee, Department of Biostatistics, University of Kentucky, *2010-2012*
- M.S. comprehensive exam committee, Department of Statistics, University of Kentucky, *2012-2013*
- Degree program committee, Ph.D. in Epidemiology and Biostatistics, University of Kentucky, *2010-2012*
- Ph.D. qualifying exam committee, Department of Statistics, University of Kentucky, *2011*
- Picnic committee, Department of Statistics, University of Kentucky, *2009-2010*
- Minutes committee, Department of Statistics, University of Kentucky *2009-2010*
- President, Biostatistics Student Organization, University of Iowa, *2006-2007*

UNIVERSITY SERVICE

- Chair, research council, College of Public Health, University of Iowa, *2017-2018*
- Research council, College of Public Health, University of Iowa, *2015-2017*
- Computation and Informatics Committee, College of Public Health, University of Iowa, *2014-present*
- Faculty judge, Research Week Poster Competition, College of Public Health, University of Iowa, *2016-2017*
- Internal review committee to evaluate the Department of Community and Behavioral Health, College of Public Health, University of Iowa, *2015-2016*
- Search Committee, Tenure-track position in Department of Biomedical Engineering, University of Iowa, *2014-2015*

- Comprehensive exam committee for Interdisciplinary Ph.D. Program in Genetics, *2014, 2017*
- Academic Affairs Committee, College of Public Health, University of Kentucky, *2011-2013*
- Research, Evaluation, and Scholarship Committee, Center for Interprofessional Healthcare Education, Research, and Practice, University of Kentucky, *2012-2013*
- Discussion moderator, University of Kentucky Health Care Common Reading Experience, *2011-2012*
- Practice and Service Committee, University of Kentucky College of Public Health, *2009-2011*
- Ph.D. qualifying exam committee, Center for Biomedical Engineering, University of Kentucky, *2010*
- Faculty judge, Graduate Student Interdisciplinary Conference, University of Kentucky, *April 2010*

HONORS AND AWARDS

- Faculty Research Award, University of Iowa College of Public Health, *2018*
- College of Public Health Faculty Teaching Award, University of Iowa, *2015*
- Milford E. Barnes Award (for outstanding graduate student in Biostatistics), University of Iowa, *2009*.
- Elected to Delta Omega (Public Health Honorary Society), *2009*.
- Graduate teaching award, Iowa State University, *2003*.
- National Merit Scholar, *1998-2002*.

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