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**CURRICULUM VITAE**

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**EDUCATION**

<i>Year</i>	<i>Degree</i>	<i>Field of Study</i>	<i>Institution &amp; Location</i>
<b>06/1983</b>	BS	Math Sciences	Stanford University/Stanford, CA
<b>06/1988</b>	MS	Statistics	University of North Carolina at Chapel Hill/ Chapel Hill, NC
<b>12/1989</b>	PhD	Statistics	University of North Carolina at Chapel Hill/ Chapel Hill, NC

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**PROFESSIONAL EXPERIENCE**

<b>1991-present</b>	University of Kentucky Department of Statistics	Position:	<b>1991-1996</b> Assistant Professor <b>1996-2006</b> Associate Professor <b>1996-2007</b> Director of Graduate Studies <b>2001-present</b> Director of Data Analysis <b>2001-present</b> Director of Statistical Services <b>2006-present</b> Professor <b>2007-present</b> Chair
<b>1989-1991</b>	University of Minnesota School of Statistics	Position:	<b>1989-1991</b> Lecturer
<b>1987-1989</b>	Cornell University School of Operations Research and Industrial Engineering	Position:	<b>1987-1991</b> Visitor

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**PUBLICATIONS**

*Refereed*

Al-Attar, A., Alimova, Y., Kirakodu, S., Kozal, A., Novak, M. J., Stromberg, A. J., . . .  
Gonzalez, O. A. (2018). [Activation of Notch-1 in oral epithelial cells by P. gingivalis triggers the expression of the antimicrobial protein PLA2-IIA](#). *Mucosal Immunol*, 218(1), S360. doi:10.1038/s41385-018-0014-7.

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- Evans, H.M., Simpson, A., Shen, S., Stromberg, A.J., Pickett, C.L., & Garvy, B.A. (2017). [The trophic life cycle stage of the opportunistic fungal pathogen \*Pneumocystis murina\* hinders the ability of dendritic cells to stimulate CD4+ T cell responses](#). *Infect Immun*. doi: 10.1128/IAI.00396-17 [Epub-ahead of print].
- Grulke, E. A., Yamamoto, K., Kumagai, K., Hausler, I., Osterle, W., Ortel, E., . . . Stromberg, A. J. (2017). [Size and shape distributions of primary crystallites in titania aggregates](#). *Adv Powder Technol*, *28*(7), 1647-1659. doi:10.1016/j.appt.2017.03.027.
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- Wang, Q., Titlow, W.B., McClintock, D.A., Stromberg, A.J., & McClintock, T.S. (2017). [Activity-Dependent Gene Expression in the Mammalian Olfactory Epithelium](#). *Chem Senses*. doi: 10.1093/chemse/bjx028. [Epub ahead of print].
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### **Proceedings**

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- “Software for computing a robust efficient linear or nonlinear regression estimator,” **Stromberg, A.J.** (1994), invited paper in the *American Statistical Association 1994 Proceedings of the Section on Statistical Education*. pgs. 6-11.

### **Other Publications**

- [Estimating the number of release sites and probability of firing within the nerve terminal by statistical analysis of synaptic charge](#),” Cooper, R.L., Viele, K., and **Stromberg, A.J.** (2003). (Abstract, Society for Integrative and Comparative Biology annual meeting. Toronto, Canada, January 4-7).

### **Book Reviews**

- Book review of “Robust Diagnostic Regression Analysis,” **Stromberg, A.J.** (2002), by A. Atkinson M. Riani, *Journal of the American Statistical Association* to appear.
- Book review of “Asymptotic Theory of Nonlinear Regression,” **Stromberg, A.J.** (2001), by A. Ivanov, *Journal of the American Statistical Association*.



- Book review of “Number-theoretic Methods in Statistics,” **Stromberg, A.J.** (1996), by K.-T. Fand and Y. Wang. *Technometrics* **38**, 527-528.
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## PRESENTATION

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### *Invited Lectures*

- “High Breakdown Estimators: Boom or Bust?” School of Public Health, Johns Hopkins University, October, 1991.
- “High Breakdown Estimation in Nonlinear Regression.” Second International Conference on the  $L_1$  Norm and Related Methods. Neuchatel, Switzerland, August, 1992.
- “Breakdown of Covariance Estimates in Linear Regression.” School of Statistics, University of Minnesota, May, 1992.
- “High Breakdown Estimation.” Kentucky Chapter Meeting of the American Statistical Association. February, 1992.
- “Bootstrapped versus Jackknifed Covariance Estimates.” Department of Statistics, Virginia Tech, November, 1992.
- “Robust Covariance Estimates Based on Resampling.” *Symposium on Future Directions in Robust Methods and Data Analysis*, June, 1994.
- “Using Multiple Processors to Compute Robust Regression Estimators.” *Interface 94 - 26th Symposium on the Interface: Computing Science and Statistics*, June, 1994.
- “Software for computing a robust efficient linear or nonlinear regression estimator.” *Annual Meetings of the American Statistical Association*, August, 1994.
- “New Directions in Statistical Research.” Center for Computational Sciences, University of Kentucky. March, 1995.
- “New Directions in Multivariate Analysis.” *Southern Region Council on Statistics (SRCOS) Summer Research Conference in Statistics*. June, 1995.
- “Some New Robust Regression Estimators.” School of Statistics, University of Minnesota, May, 1996.
- “New Methods of Assessing Variability for Range Control Charts and Other Engineering Applications,” Department of Civil Engineering, University of Kentucky, November, 2001.
- Microarray Data Analysis. (Invited Speaker) Arnold Stromberg and Xuejun Peng. Kentucky Chapter of the American Statistical Association, Annual Meeting, Oct 2002. Frankfort, KY.
- “Computational Issues in Robust Statistics.” Invited presentation at the 2002 International Conference on Robust Statistics, Vancouver, British Columbia, Canada, May 2002.
- “Report on the 2002 Workshop on Computational Methods for Robust Statistics”. Invited presentation at the 2003 International Conference on Robust Statistics, Antwerp Belgium, July 2003.
- Li, H., Stromberg, A.J., Getchell, T.V., and Getchell, M.L. (2003) Analysis of cDNA microarray data from split-plot experiments using mixed model. *Abstract and Presentation at 2003 Joint Statistical Meetings. San Francisco CA. August, 2003.*
- Langub, M.C., Li, H., Stromberg, A., Malluche, H.H., and Koszewski, N.J. (2003) PTH-(7-84) exerts differential global gene expression compared to PTH-(1-84) in cultured human osteoclasts. *Abst. Am. Soc. Nephrology.*

Experiment Design and statistical Analysis for Microarrays.(Invited Speaker) Xuejun Peng, Eric Blalock, and Arnold Stromberg. The 2nd Virtual conference on Genomics and Bioinformatics, Sept. 2002. Fargo, ND.

Bioinformatics at the University of Kentucky. Arnold J. Stromberg. Presented at OVALS 2004: Life Sciences Without Boundaries Leveraging Resources... Converging Interests. Spring, 2004.

Robust Regression for Microarray Data Analysis, Arnold J. Stromberg, Hanga Galfalvy, Steven Grambow, Johanna Hardin. Invited paper presented at the Annual Meeting of the American Statistical Association. Toronto, Canada, August 2004.

Statistical Analysis for Microarray Data. Arnold J. Stromberg. Presented to the Cincinnati Chapter of the American Statistical Association. November, 2004

### **Contributed Lectures**

“Computing the Exact Value of the Least Median of Squares Estimate in Multiple Linear Regression.” *Annual Meeting of the Institute of Mathematical Statistics*, August 1991.

“Breakdown of Covariance Estimates in Linear Regression.” *Annual Meeting of the Institute of Mathematical Statistics* August 1992.

“Confidence Intervals based on Resampling for Robust Regression Estimators.” *Annual Meeting of the Institute of Mathematical Statistics*. August, 1993.

“Robust Estimation of Parameters for Fitting Circular Arcs.” *Annual Meeting of the Institute of Mathematical Statistics* August 9-13, 1998. Joint with Nathan S. Netanyahu, Vasanth Philomin, and Azriel Rosenfeld.

“Control Charts for the Median and Interquartile Range” International Conference on Robust Statistics, Vorau, Austria, July, 2001.

“A New Nonparametric Control Chart for the Range.” Annual Meeting of the American Statistical Association. August, 2001

Implications of Pooling RNA Samples for Microarray Experiments.(Contributed Paper). Xuejun Peng, Constance Wood, and **Arnold Stromberg**. The International Biometric Society, Eastern North American Region Spring Meeting March 30 April 2, 2003. Tampa, FL. (Received \$500 prize as runner up for Best Student Paper. The paper has now appeared in *BMC Bioinformatics*.)

Compound False Positive Rate and Compound Power: an alternative approach to multiple-hypothesis testing in Microarrays. (Contributed Paper). Xuejun Peng, Arne Bathke, Constance Wood, Richard Kryscio and **Arnold Stromberg**. Joint Statistical Meeting, August 2003. San Francisco, CA. (Received \$1000 prize for Best Student Papers in Biopharmaceutical Section.

“Changes in *Nicotiana benthamiana* gene expression in response to rhabdovirus and tospovirus infection”. M Goodin, G Senthil, H Liu, and **AJ Stromberg**. The American Society of Virology 23<sup>rd</sup> annual meeting, July 2004, Montreal, Canada

“Informatic analysis of stem/progenitor cell regulatory genes in the murine olfactory mucosa following target ablation of olfactory receptor neurons”. TV Getchell, RA Vaishnav, H Liu, **AJ Stromberg**, K Kwong, and ML Getchell. Association for Chemoreception Sciences Annual Meeting, 10th Annual Kentucky EPSCoR Conference, May 13, 2004, Lexington, KY, USA.

“Informatic analysis of stem/progenitor cell regulatory genes in the murine olfactory mucosa following target ablation of olfactory receptor neurons”. TV Getchell, RA Vaishnav, H Liu, **AJ Stromberg**, K Kwong, and ML Getchell. Association for Chemoreception Sciences Annual Meeting, April 2004, Sarasota, FL, USA.

“Informatic analysis of apoptotic regulatory genes in the murine olfactory mucosa following target ablation”. TV Getchell, RA Vaishnav, H Liu, C Chirila, K Kwong, CP Green, **AJ**

- Stromberg**, and ML Getchell. Genomics 2004 University of Kentucky, April 2004, Lexington, KY, USA.
- S. Tarima, Yuriy G. Dmitriev, Nonimputational Technique for Parameter Estimation on Missing Data // JSM, Toronto, August, 2004.
- Getchell ML, Kwong K, Vaishnav RA, Liu Y, **Stromberg A**, and Getchell TV, "TARGET ABLATION-INDUCED MACROPHAGE RECRUITMENT IN MIP-1 $\alpha$  KNOCK-OUT MICE: RESTORATION OF FUNCTION BY MIP-1 $\alpha$  INJECTION", 10th Annual Kentucky EPSCoR Conference, May 13, 2004, Lexington, KY
- Getchell TV, Kwong K, Saunders CP, Etscheidt J, Rozenova KA, Liu H, Vaishnav RA, **Stromberg AJ**, and Getchell ML. Leptin modulates olfactory-mediated behavior in *ob/ob* mice. Society for Neuroscience 35th Annual Meeting, Nov 2005, Washington DC, USA.
- Liu H and **Stromberg AJ**. Gene discovery and pattern recognition for microarray time-course experiments using regression models. Joint Statistical Meeting, Aug. 2005, Minneapolis, MN, USA.
- Liu H, Saunders CP, Borders AS, Getchell TV, Getchell ML, and **Stromberg AJ**. Alternatives to EASE analysis for microarray data: from gene lists to biological functions. The 28th Annual Midwest Biopharmaceutical Statistics Workshop, May 2005, Muncie, IN, USA.
- Borders AS, Getchell ML, Liu H, **Stromberg AJ**, and Getchell TV. EASE analysis of gene expression profiles from murine olfactory mucosa following target ablation. Achems Annual Meeting, April 2005, Sarasota, FL, USA.
- Liu H, Tarima S, Borders AS, Getchell TV, Getchell ML, and **Stromberg AJ**. Quadratic regression analysis for gene discovery and pattern recognition for small sample microarray experiments. 2005 Hawaii International Conference on Statistics, Jan. 2005. Honolulu, HI, USA.

## STATISTICAL FUNDING

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### *Current*

ID Pending (Cooper) **05/01/04-04/30/19** 0.18 AY

NIH/NCRR

**KY-INBRE; Kentucky Network Biomedical Research**

Role: Co- Investigator for statistical support

P42 ES007380 (Hennig) **04/07/97-03/31/19** 0.88 AY

NIH/NIEHS

**Nutrition and superfund chemical toxicity**

Role: Co-Investigator for statistical support

U17 CE002601 (Brown) **09/01/09-08/31/19** 0.01 AY

CDC

**Kentucky violent death reporting system**

Role: Co-PI for statistical support

TC-1403-14049 (Williams) **01/01/15-03/31/19** 0.72 AY

PCORI

**Project ACHIEVE: Achieving Patient-Centered Care and Optimized Health in Care Transition**

Role: Co-PI for statistical support

- 16GRNT30820006 (Yu, Guoqiang)      **07/01/16-06/30/18**      0.09 AY  
 AHA: Great Rivers Affiliate  
**Spatially Resolved Diffuse Correlation Spectroscopy for Cerebral Blood Flow Monitoring in Mouse Stroke Model**  
 Role: Co-PI for statistical support
- R21CA205778-02 (Wang, C)      **08/01/16-07/31/18**      0.27 AY  
 NCI  
**Statistical Detection and Biochemical Classification of Cancer Driver Mutation Patterns in Biological Networks**  
 Role: Co-PI for statistical support
- DMS-1713015 (Stromberg)      **05/01/18-04/30/19**      0.0 AY  
 NSF  
**The SRCOS Summer Research Conference in Statistics and Biostatistics**  
 Role: PI
- R01 EY021769 (Morris)      **08/01/12-07/31/18**      0.0AY  
 NIH/NEI      0.6SY  
**The role of Insm1a in photoreceptor differentiation**  
 Role: Co-Investigator for statistical support
- PP-1609-25975 (Stromberg)      **03/01/17-02/28/18**      0.72AY  
 National Multiple Sclerosis Society  
**Identifying Gene or SNP Based Interactions in Multiple Sclerosis Datasets**  
 Role: Co-PI for statistical support
- 1R01AG055359-01A1 (Saito)      **09/01/17-05/31/22**      0.36AY  
 National Institute on Aging  
**Mechanisms Mediating Severity of Acute Pancreatitis in the Aged**  
 Role: Co-PI for statistical support
- UL1TR001998 (Kern)      **08/15/16 – 05/31/20**      0.45AY  
 NIH/NCATS  
**Kentucky Center for Clinical and Translational Science**  
 Role: Co-PI for statistical support
- BCS-1563779 (Lyon)      **03/15/16-05/31/18**      0.0 AY(Y1)  
 NSF  
**Variables Influencing Increased Agricultural Yields in Areas of Socioeconomic Transition**  
 Role: Co-PI for statistical support
- 1R01GM126181-01 (Saito)      **09/01/18-08/31/23**      0.36 AY  
 NIH/NIGMS  
**Chronic Muscle Weakness in Sepsis Survivors**  
 Role: Co-PI for statistical support
- PON2 500 1700000999 (Stromberg, AJ)      **03/15/2017-06/30/2018**      0.45 AY  
 Kentucky Justice and Public Safety Cabinet  
**“Needs Assessment and Strategic Planning”**  
 Role: Statistical Research Coordinator



OVERLAP: None

PENDING:

(Stromberg) NIH/NCRR	<b>05/01/19-04/30/24</b>	1.8 AY
<b>KY-INBRE; Kentucky Network Biomedical Research (renewal)</b>		
Role: Co- Investigator for statistical support		
(Stromberg) University of Louisville	<b>09/01/17-08/31/19</b>	0.05 AY
<b>Development of a Mouse Model for Preclinical Screening of Investigational Drugs Against Pseudomonas Aeruginosa</b>		
Role: PI for statistical support (sub-award for UK)		
(Stromberg) KY Cabinet for Health and Human Services	<b>08/15/17-05/16/18</b>	1.08 AY
<b>Mitigate Opioid Overuse and Overdose in Kentucky Medicaid Patients by Analyzing Existing Claims Data to Identify Significant Combinations of Risk factors for opioid use disorder (OUD)</b>		
Role: PI for statistical support		
(Stromberg) NSF	<b>05/01/19-04/30/20</b>	0.0 AY
<b>The SRCOS Summer Research Conference in Statistics and Biostatistics</b>		
Role: PI		
(Cardarelli) NIH	<b>04/01/18-03/31/2023</b>	0.45AY 0.15SY
<b>Terminate Lung Cancer Kentucky Trial</b>		
Role: co-PI for statistical support		
(Garvy) NIH	<b>12/01/17-11/30/22</b>	0.45AY
<b>Innate Immune Interactions with the Trophic Life Forms of Pneumocystis</b>		
Role: co-PI for statistical support		
(Capilouto) NIH	<b>07/01/18-06/30/2020</b>	0.18AY 0.06SY
<b>Modeling Sucking Performance in Infants with Neonatal Abstinence Syndrome to Determine the Impact of Addiction on Feeding Skill Development</b>		
Role: co-PI for statistical support		
(Kawashima) NIFA	<b>01/01/18-12/31/2021</b>	0.09AY
<b>An Integrated Approach to Understand Soybean Early Seed Developmental Processes for Better Yield and Climate Resilience</b>		
Role: co-PI for statistical support		
(Thompson)	<b>02/01/18-01/31/19</b>	0.23AY

AHA 0.50SY  
**Identifying Combinations of Factors Associated with Cardiovascular Disease by Deploying a Statistical Tool on the Precision Medicine Platform**  
 Role: co-PI for statistical support

(Starr) 07/01/18-06/30/23 0.18AY  
 NIH 0.06SY

**Visceral Fat Gamma Delta T Cells in Sepsis Pathogenesis**  
 Role: co-PI for statistical support

(Stromberg) 05/01/18-04/30/19 0.00AY  
 University of Louisville (sub-award)  
**KBRIN Equipment Request**  
 Role: PI

(Abt) 10/01/18-09/30/21 0.45AY  
 DOD  
**The Interaction Between Mild Traumatic Brain Injury and Musculoskeletal Injury Diminishes Manpower and Resilience in US Military Personnel**  
 Role: co-PI for statistical support

(Saito) 04/01/18-03/31/23 0.45AY  
 National Institute on Aging  
**Mechanisms Mediating Severity of Acute Pancreatitis in the Aged**  
 Role: Co-PI for statistical support

### **Past**

R01 EY021769 (PI: Morris, A) 08/01/12-07/31/17  
 NIH/NEI  
**The role of Insm1a in photoreceptor differentiation**  
 Role: Co-Investigator for statistical support

TC-1403-14049 (PI: Williams, M) 01/01/15-12/31/17  
 PCORI  
**Project ACHIEVE: Achieving Patient-Centered Care and Optimized Health in Care Transition**  
 Role: Co-PI for statistical support

R01 NS061933 (PI: Nelson, P) 09/30/08-02/28/12  
 NIH/NIA  
**A specific microRNA (Mir-107) is a potential therapeutic target in Alzheimer's disease**  
 Role: Co-Investigator for statistical support

R21 AG036875 (PI: Nelson, P) 06/15/10-05/31/13  
 NIH/NIA  
**Novel assay identifies all microRNA targets in Alzheimer and normal aged brains**  
 Role: Co-Investigator for statistical support

P20 GM020145 (PI: Ebersole, J) **09/23/04-07/31/14**

NIH/NIGMS

**Center for the Biologic Basis of Oral/Systemic Disease**

Role: Co-Investigator for statistical support

TUL-590-09/10 (PI: Voss, S) **07/01/09-04/30/15**

Tulane University-DOD/DARPA

**Signaling network interactions controlling mouse and salamander limb regeneration**

Role: Co-Investigator for statistical support

R01 AG039732 (PI: Saito, H) **08/01/11-07/31/16**

NIH/NIA

**The role of adipose tissue in age-dependent sensitivity to critical illness**

Role: Co-PI for statistical support

HRSA

**University of Kentucky Biomedical Informatics Initiative**

D1BRH20410-01-00 (PI: Conigliaro) **09/01/10-08/31/12**

Role: Co-PI for statistical support

NIH

**Exercise as a Novel Strategy to Target Methamphetamine-Induced Cerebrovascular Toxicity**

R01 DA027569-02 (PI: Toberek) **09/01/09-08/31/14**

Role: Co-PI for statistical support

NIH/NCRR/CTSA

**Kentucky Center for Clinical and Translational Science**

U54 RR031263 (PI: Kern, P) **06/01/11-06/30/16**

Role: Co-PI for statistical support

NSF

**The SRCOS Summer Research Conference in Statistics and Biostatistics**

DMS-1613061 (PI: Stromberg,A) **04/01/16-03/31/17**

Role: PI

### ***INTERNAL SUPPORT***

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Vice-Chancellor for Research and Graduate Studies

Graduate Research Assistant for Microarray Data Analysis

Center of Computational Sciences at the University of Kentucky

Graduate Research Assistantship in Computational Sciences. "Cluster Analysis; Identifying Influential Points"

\$12,300 **07/01/93-06/30-94**

Special Summer Faculty Research Fellowship

\$6,000 **06/01/95-08/31/95**

College of Arts and Sciences

Research Assistantship Support

\$5,000/year **05/31/92-08/31/96 (summer only)**

**PATENTS**

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U.S. Utility Patent S.N. 10/442,330; 6.980,875 B1  
 NONPARAMETRIC CONTROL CHART FOR THE RANGE  
 Inventors: Dr. Arnold J. Stromberg                      **04/01/04;12/27/05** (patents issued)

**COURSES TAUGHT**

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*UNIVERSITY OF KENTUCKY***STA Statistical Analysis****STA Design of Experiments****STA Applied Linear Regression****STA Multivariate Analysis****STA Linear Models***UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL***STA Statistics for Management****STA Engineering Statistics****STA Introduction to Statistics****ADVISING STUDENTS**

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*Graduated*

- **Onecia Gibson**    **12/1996**              PhD  
 “Improved Diagnostics for Multivariate Analysis.”  
 \*Full support from AASERT grant.
- **Yehling Chen**    **12/1996**              PhD  
 “The Least Trimmed Squares Nonlinear Regression Estimator.”
- **Melissa Flett**    **05/1998**              PhD  
 “Robustness Concepts for Partial Least Squares.”      Co-chair Bill Rayens.
- **Steven Grambow**    **05/1999**              PhD  
 “Feasible Solution Algorithms.”
- **Kjell Johnson**    **05/1999**              PhD  
 “Influence Measures for Soft Modelling Techniques.”      Co-chair Bill Rayens
- **Xuejun Peng**    **06/2003**              PhD  
 “Simultaneous Inference and Sample Size Considerations in Microarray Data Analysis”  
 Co-chair Richard Kryscio
- **Hua Liu**    **2006**                      PhD





**Professional Level**

- NSA Young Investigator Award (92-94); \$9000
- AASERT Award (94-97); \$60,660-Graduate Student Support
- Fellow of the American Statistical Association (ASA); 2017