10/05

Katy L. Simonsen

Education

B.Math.	Applied Mathematics	University of Waterloo	1990
M.Sc.	Applied Mathematics	Cornell University	1993
Ph.D.	Applied Mathematics	Cornell University	1996

Professional Experience (Academic)

Post-Doctoral Research Associate	North Carolina State University	6/96 – 5/98
Assistant Professor of Statistics	Purdue University	6/98 – present

Professional Experience (Non-Academic)

Unix System Administrator	Cornell Center for Applied Math	1/1991 – 5/1996
Maple Programmer	Waterloo Maple Software	9–12/88, 4–8/90, 5–8/91
C Programmer	Harris Media Systems	5–8/87, 1–4/88
APL Programmer	Texaco, Inc.	1–4/86, 9–12/86

Research Interests

Statistical genetics, stochastic models, hypothesis testing, multiple comparisons with correlation, inference from DNA sequence and marker data, linkage analysis, computer simulation.

Teaching Experience

Spring	1997	Statistics 371	Introduction to Probability	NCSU
Fall	1998	Statistics 503-7	Statistical Methods for Biology	Purdue
Spring	1999	Statistics 503-3,5	Statistical Methods for Biology	Purdue
Fall	1999	Statistics 503-2,3	Statistical Methods for Biology	Purdue
Spring	2000	Statistics 517	Statistical Inference	Purdue
Fall	2000	Statistics 503-1,2	Statistical Methods for Biology	Purdue
Spring	2001	Statistics 517	Statistical Inference	Purdue
Fall	2001	Statistics 490	Human Genetic Linkage Analysis	Purdue
Spring	2002	Statistics 598T	Stochastic Models in Biology	Purdue
Fall	2002	Statistics 512-1,4	Applied Regression Analysis	Purdue
Spring	2003	Statistics 512-1	Applied Regression Analysis	Purdue
Spring	2003	Statistics 490B	Introduction to Bioinformatics	Purdue
Fall	2003	Statistics 512-3,4	Applied Regression Analysis	Purdue
Spring	2004	Statistics 490B	Introduction to Bioinformatics	Purdue
Fall	2004	Stat 503 (coord)	Statistical Methods for Biology	Purdue
Spring	2005	Statistics 517	Statistical Inference	Purdue
Spring	2005	Statistics 490B	Introduction to Bioinformatics	Purdue
Spring	2005	Stat 503 (coord)	Statistical Methods for Biology	Purdue
Fall	2005	Statistics 512-2	Applied Regression Analysis	Purdue
Fall	2005	Statistics 490B	Introduction to Bioinformatics	Purdue
Fall	2005	Statistics 598M	Probability Module for CLS	Purdue
Fall	2005	Statistics 598S	Statistics Module for CLS	Purdue

Awards and Honors

School of Science Faculty Award for Outstanding Contributions to Undergraduate Teaching by an Assistant Professor, 2004

Teaching for Tomorrow Award, Purdue University, 2001-2002

"Eleven Best Teachers of Undergraduates" List, School of Science, Purdue University, March 2000

Descartes Fellow, University of Waterloo, 1985–1990

Grants

Completed

NSF DBI-9904704, 9/00 – 8/04 $333,439: K.L. Simonsen and L.M. McIntyre, *Identifying Quantitative Trait Loci From Sequence Data In Natural Populations*

University of Notre Dame, 8/00 – 8/02 $742,090: J. Romero-Severson, R.W. Doerge, G.J. Hunt, L.M. McIntyre, B. Pittendrigh, P.J. SanMiguel, K.L. Simonsen and J.J. Stuart, *Indiana Insect Genomics*

Pending

CLSIR, 1/06 – 1/07, $50,000: M. W. Hahn and K. L. Simonsen, *Powerful Methods for Autocorrelated Genomic Data*

NIOSH, $927,976: D. M. Abraham and K. L. Simonsen, *Reduction of Traumatic Injuries in Steel Erection*

NIOSH, $843,919: D. M. Abraham and K. L. Simonsen, *Trench Safety - Focus on Small Contractors*

Professional Activities

Lecturer for the Summer Institute in Statistical Genetics, North Carolina State University
1996: Population Genetic Data Analysis
1997: Population Genetic Data Analysis; Molecular Evolution
1998: Molecular Data Analysis: Bioinformatics and Evolution
1999: Molecular Evolution

Grant proposal reviewer for NSF, MITACS.

Professional Societies

American Statistical Association, Genetics Society of America, American Society for Human Genetics

Editorial Work

Reviewer for the following journals: *Genetics, Theoretical Population Biology, Heredity, Molecular Biology and Evolution, American Journal of Human Genetics, Crop Science, Computational Statistics and Data Analysis, BMC Bioinformatics*

Vita

Citizenship: Canada and USA

Papers

[1] K. L. Simonsen, G. A. Churchill, and C. F. Aquadro, "Properties of statistical tests of neutrality for DNA polymorphism data," *Genetics*, vol. 141, pp. 413–429, September 1995.

[2] G. Casella, G. A. Churchill, and K. L. Simonsen, "Sampling based methods for the estimation of DNA sequence accuracy," Tech. Rep. BU-1138-M, Cornell University, Statistics Department, 1995.

[3] K. L. Simonsen and G. A. Churchill, "A Markov Chain model of coalescence with recombination," *Theoretical Population Biology*, vol. 52, no. 1, pp. 43–59, 1997.

[4] K. L. Simonsen, N. L. Kaplan, and E. R. Martin, "A Monte-Carlo permutation approach to choosing an affection status model for bipolar affective disorder," *Genetic Epidemiology*, vol. 14, pp. 681–686, 1997.

[5] M. L. Wayne and K. L. Simonsen, "Statistical tests of neutrality in the age of weak selection," *Trends in Ecology and Evolution*, vol. 13, no. 6, pp. 236–240, 1998.

[6] L. M. McIntyre, E. R. Martin, N. L. Kaplan, and K. L. Simonsen, "Circumventing multiple testing: A multilocus Monte Carlo approach to testing for association," *Genetic Epidemiology*, vol. 19, pp. 18–29, July 2000.

[7] K. L. Simonsen, "A general probability model for the inheritance of binary traits," Tech. Rep. tr03-04, Purdue University Statistics Department, 2003. To be submitted to Theoretical Population Biology.

[8] K. L. Simonsen and L. M. McIntyre, "Using alpha wisely: Improving power to detect multiple QTL," *Statistical Applications in Genetics and Molecular Biology*, vol. 3, no. 1, p. 1, 2004. http://www.bepress.com/sagmb/vol3/iss1/1.

[9] K. J. F. Verhoeven, K. L. Simonsen, and L. M. McIntyre, "Controlling type i errors in multiple hypothesis testing: understanding your options," *Oikos, A Journal of Ecology*, vol. 108, pp. 643 – 647, March 2005.

[10] K. J. F. Verhoeven and K. L. Simonsen, "Genomic haplotype blocks may not accurately reflect spatial variation in historic recombination intensity," *Molecular Biology and Evolution*, vol. 22, pp. 735–740, March 2005.

[11] C. J. Coffman, R. W. Doerge, K. L. Simonsen, K. M. Nichols, C. K. Duarte, R. D. Wolfinger, and L. M. McIntyre, "Mapping binary trait loci in experimental populations," *Genetics*, vol. 170, July 2005.

[12] B. Munneke, K. Schlauch, K. L. Simonsen, W. D. Beavis, and R. W. Doerge, "Adding confidence to gene expression clustering," *Genetics*, vol. 170, pp. 2003–2011, August 2005.

[13] J. Irizarry, K. L. Simonsen, and D. M. Abraham, "Effect of safety and enviornmental variables on task durations in steel erection," *Journal of Construction Engineering and Management*, 2005. In press.

[14] J. Irizarry, K. L. Simonsen, and D. M. Abraham, "Safety and enviornmental variables: Effect on steel erection task durations," in *Third International Structural Engineering and Construction Conference*, (Shunan, Japan), September 2005. Refereed, to appear.

[15] K. L. Simonsen, D. A. Noland, and C. Le, "Argos: An efficient algorithm for simulating the coalescent with recombination." Submitted to Bioinformatics, 2005.

Talks

A Polynomial Algorithm for Simulating Coalescence with Recombination, Probability and Statistics Seminar, Indiana University, Bloomington (April 5, 2004).

Life at the Interface: My Multidisciplinary Career in Science, Indiana University, Bloomington (April 5, 2004).

An Efficient Algorithm for Simulating Coalescence with Recombination, Bioinformatics Seminar, Purdue University (Feb. 17, 2004).

A Polynomial Algorithm for Simulating Coalescence with Recombination, Statistics Department Colloquium, Purdue University (Dec. 4, 2003).

Multiple Testing Issues for Linked Genetic Markers (Contributed Talk), ENAR Biometrics Meeting; Charlotte, NC (March 27, 2001).

Probability Models for Genetic Factors Underlying a Binary Phenotype, VIGRE Seminar, Purdue University (December 6, 2000).

A Markov Chain Model of Recombination, Biophysics Department Seminar; Purdue University (February 9, 2000).

Probability Models for Genetic Factors Underlying a Binary Phenotype, Samuel Lunenfeld Research Institute of Mount Sinai Hospital; Toronto, ON (March 10, 2000).

Probability Models for Genetic Factors Underlying a Binary Phenotype, Canadian Mathematical Society Winter Meeting; Montreal, QC (December 13, 1999).

Probability Models for Genetic Factors Underlying a Binary Phenotype, Statistics Department Colloquium; Purdue University (November 18, 1999).

Properties of Statistical Tests of Neutrality for DNA Polymorphism Data, Biostatistics/Statistical Genetics Seminar; Purdue University (October 26, 1999).

Genome Data: Finding Trait Genes Using a Dense Marker Map, 31st Symposium on the Interface: Computing Science and Statistics (June 11, 1999).

Likelihood Ratio Testing with DNA Sequences and Monte-Carlo Integration, Joint Purdue – Illinois Colloquium, Urbana-Champaign, IL (April 15, 1999).

Likelihood Ratios and DNA Sequences – Testing for Evolution, GSO, Statistics Department; Purdue University (November 2, 1998).

An Introduction to Statistical Genetics, Sixth Purdue Symposium on Statistics; Purdue University (June 21, 1998).

Searching for Disease Genes Using Correlated Markers: A Monte-Carlo Approach to Multiple Testing, Statistics Department Seminar; Purdue University (April 21, 1998).

Likelihood Ratio Testing with DNA Sequences and Monte-Carlo Integration, Statistics Department Seminar; North Carolina State University (April 1997).

A Markov Chain Model of Recombination, Statistics Department Colloquium; Purdue University (December 1996).

Choosing an Affection Status Model for Bipolar Affective Disorder, Genetic Analysis Workshop 10; Pajaro Dunes, CA (October 1996).

Hypothesis Testing with DNA Polymorphism Data, Postdoctoral Research Symposium, Department of Genetics; North Carolina State University (September 1996).

The Markov Chain Model of Recombination in Coalescence: A Computational Approach, Canadian Workshop on Computational Biology; University of Western Ontario (January 1996).

The Two-locus Coalescent Model with Recombination, Eastern Great Lakes Molecular Evolution Meeting; McMaster University (May 1995).

Posters

K. L. Simonsen. *How Powerful is Tajima's D?*, New England Molecular Evolution Meeting; Harvard University, Cambridge, MA (November 1994).

L. M. McIntyre, E. R. Martin, K. L. Simonsen and N. L. Kaplan. *The TDT for Multiple Loci*, Meeting of the American Society for Human Genetics; San Francisco, CA (October 1997).

L. M. McIntyre, E. R. Martin, K. L. Simonsen and N. L. Kaplan. *Circumventing the Multiple Testing Problem in Searching for Disease Genes*, Sixth International Purdue Symposium on Statistics; Purdue University, West Lafayette, IN (June 1998).

C. J. Coffman, R. W. Doerge, K. L. Simonsen, and L. M. McIntyre. *Detection and Localization of Multiple Binary Trait Loci in Experimental Populations*, Eastern North American Regional Meeting of the International Biometrics Society; Charlotte, NC (March 2001).

K. L. Simonsen, and L. M. McIntyre. *Multiple Testing Issues for Linked Genetic Markers*, Eastern North American Regional Meeting of the International Biometrics Society; Charlotte, NC (March 2001).

L. M. McIntyre, K. L. Simonsen, Y. Qin *Multiple Testing and Genetic Marker Data: An Ordered Approach*, Joint Statistics Meeting; New York, NY (2002).

L. M. McIntyre, Y. Qin and K. L. Simonsen. *Multiple Testing: An Ordered Approach*, Plant and Animal Genome X; San Diego, CA (2002).

Cynthia J. Coffman, Krista Nichols, Christine Woods, Wendy Czika, Katy L. Simonsen, Russell D. Wolfinger, Lauren M. McIntyre *Model Selection Strategy for Multiple Binary Trait Loci*, Joint Statistics Meeting, San Francisco, CA (2003).

C. J. Coffman, R. W. Doerge, K. L. Simonsen, K. Nichols, C. Duarte, R. Wolfinger and L. M. McIntyre. *Model Selection in Binary Trait Locus Mapping*, Gordon Research Conference on Quantitative Genetics and Genomics, Ventura, CA (February 2005).

Committee Work

Graduate Admissions Committee, Statistics Department (2002–2006)

Hiring Committee, Statistics Department (2002-03)

Myra Samuels Lecture Committee (Chair 2002-03, member 2000–2006)

Search Committee, COALESCE Bioinformatics (CS Focus) (2005)

Search Committee, Biological Sciences Department: Assistant Professor of Microbiology (2002-03)

V. L. Anderson Award Committee (Member 2001, 2004; Chair 2005, 2006)

Undergraduate Majors in Statistics and Actuarial Science, Statistics Department (2000-01, 2002-03, 2005-06)

Math Library Committee (2001-02)

Teaching Policy, Statistics Department (2000-01)

Search Committee, Agronomy Department: Assistant Professor of Molecular Quantitative Genetics (1999)

Qualifying Exam Committee, Statistics Department (January 2000)

Postdoctoral Research Associate

Koen Verhoeven, 2003–2004

Current Graduate Students: committee chair

Shannon Knapp (Ph.D.); Alexander Lipka (Ph.D.); Lingmin Zeng (Ph.D.); Paul Kidwell (M.Sc.); Timothy Clough (M.Sc.); Claire Engelbrecht (M.Sc.); Sherry Towers (M.Sc.); Thomas Lofton McLean (M.Sc.); Xiaomei Wang (M.Sc.);

Former Graduate Students: committee chair

Tadd Colver (M.Sc.); Deming Mi (M.Sc.); Shannon Knapp (M.Sc.);

Current Graduate Students: committee member (Statistics if not specified)

Lei Liu (Ph.D.); Alberto Figueroa-Medina (Ph.D., Civil Engineering); Julia Spadaccini (M.Sc., Civil Engineering); Lianbo Yu (Ph.D); Rebecca Kendall (M.Sc.); Peter Savolainen (Ph.D., Civil Engineering); Vandana Patidar (Ph.D., Civil Engineering); Adam Reeger (M.Sc.); Patricia Yoshida (M.Sc.);

Former Graduate Students: committee member (Statistics if not specified)

Renée Jones, MSc 1999; Nels Tomlinson, MSc 2000; Yaohua Zhang, MSc 2001; Chunsu Li, MSc 2001; Dachuang Cao, MSc 2001; Brian Munneke, PhD 2001; Olga Vitek, MSc 2001; Christopher Tong, MSc 2002; Christina Wassel, MSc 2002; Ryan Wiegand, MSc 2002; Deming Mi, MSc Biology 2002; Tom Aliff, MSc 2003; Pang Du, MSc 2003; Alexis Ellicott MSc Agronomy 2003; Nilupa Gunaratna, MSc 2003; Tae-Eun Kim, MSc 2003; Wen Lin, MSc 2003; Yongtao Wang, MSc 2003 Tina Alexander, MSc 2004; Eunjung Lim, MSc 2004; Alex Lipka, MSc 2004; Sudeshna Paul, MSc 2005; Melissa Chester, MSc 2005; Elsie Grace, MSc 2005; Shi-Yi Wang, MSc 2005; Samantha Islam, PhD, Civil Engineering 2005;