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RESEARCH INTERESTS

- Application of statistics to genomics.
- General bioinformatics and applied statistics.
- Development of statistical computing software for the analysis of biological data.

PROFESSIONAL EXPERIENCE

Lecturer, July 2005 to present.

School of Mathematics and Statistics, University of Sydney, Australia.

Assistant Professor, Dec 2003 to Apr 2005.

Lung Biology Center, Department of Medicine and Center for Bioinformatics and Molecular Biostatistics, University of California, San Francisco.

Postdoctoral Scientist, Aug 2002 to Nov 2003.

Center for Bioinformatics and Molecular Biostatistics, Division of Biostatistics, University of California, San Francisco.

Research with Professor Mark Segal on various statistical issues relating to gene expression data. In addition provide statistical consulting for the Functional Genomics Core Group in the Sandler Center for Basic Research in Asthma.

Graduate Student Researcher, Spring 2000 to Spring 2002.

Department of Statistics, University of California, Berkeley.

Research with Professor Terry Speed and Professor John Ngai on the design and analysis of gene expression experiments using cDNA microarrays.

Student Researcher, Fall 1999, 2000 and 2001.

Genetics and Bioinformatics Group, Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia.

Research on various problems of interest to the genetics groups including development of image analysis software for analyzing gene expression experiments.

Statistical Consultant, Fall 1998 and Spring 2000.

Statistical Consulting Service, Department of Statistics, University of California, Berkeley.
Provided statistical consulting to researchers from various departments on the Berkeley campus.

Graduate Student Instructor, Spring 1998-1999; Fall 1999.

Teaching assistant of large undergraduate statistics courses.

Assistant Statistician, Jan 1997- Jul 1997.

Image analysis group, Mathematical and Information Sciences, Commonwealth Scientific and Industrial Research Organisation, Australia.

EDUCATION

– **Ph.D. in Statistics**, University of California, Berkeley, 2002.

Dissertation: *Statistical methods in the design and analysis of gene expression data from cDNA microarray experiment.*

Committee: Terence P. Speed, Chair; David A. Freedman; John Ngai.

– **M.A. in Statistics**, University of California, Berkeley, 1999.

– **B.Sc in Mathematics and Statistics**, with First Class Honours and Medal, University of Sydney, Australia, 1996. Honours project: *Bootstrap confidence intervals* with Prof. John Robinson.

PUBLICATIONS

1. Xiao, Y., **Yang, Y. H.**, Burckin, T.A., Shiue, L., Hartzog, G.A., Segal, M.R.. Analysis of a Splice Array Experiment Elucidates Roles of Chromatin Elongation Factor Spt4-5 in Splicing. *PLoS Comput Biol.* Vol 1(4):e39, 2005.
2. Kuperman, D.A., Lewis, C.C., Woodruff, P.G., Rodriguez, M.W., **Yang, Y.H.**, Dolganov, G.M., Fahy, J.V., Erle, D.J.. Dissecting asthma using focused transgenic modeling and functional genomics. *J Allergy Clin Immunol.* Vol 116(2), pp. 305–311, 2005.
3. Barker, C., Griffin, C., Dolganov, G., Hanspers, K., **Yang, J.Y.** and Erle, D.J. Increase DNA hybridization specificity using sscDNA targets. *BMC Genomics* Vol. 6(1), pp. 57, 2005.
4. Xiao, Y. Y., Segal, M. and **Yang, Y. H.** Stepwise Normalization of Two-Channel Spotted Microarrays. *Statistical Applications in Genetics and Molecular Biology*, accepted, 2005.
5. Gonzalez, R., **Yang, Y. H.**, Griffin, C., Allen, L., Tigue, Z. and Dobbs, L. Freshly-isolated Rat Alveolar Type I Cells, Type II Cells, and Cultured Type II Cells Have Distinct Molecular Phenotypes. *Am J Physiol Lung Cell Mol Physiol.* Vol. 288(1), L179–89, 2005.

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6. Gentleman R. C., Carey V. J., Bates D. M., Bolstad B., Dettling M., Dudoit S., Ellis B., Gautier L., Ge Y., Gentry J., Hornik K., Hothorn T., Huber W., Iacus S., Irizarry R., Leisch F., Li C., Maechler M., Rossini A. J., Sawitzki G., Smith C., Smyth G., Tierney L., **Yang J. Y.**, and Zhang J. Bioconductor: open software development for computational biology and bioinformatics. *Genome Biology*, Vol. 5: R80, 2004.
 7. **Yang, Y. H.**, Xiao, Y. Y. and Segal, M. Identifying differentially expressed genes from microarray experiments via statistic synthesis. *Bioinformatics*, advance access Oct 28, 2004.
 8. Lin, D, **Yang, Y. H.**, Scolnick, J., Brunet, L., Marsh, M., Peng, V., Okazaki, Y., Hayashizaki, Y., Speed, T. P. and Ngai, J. Spatial patterns of gene expression in the olfactory bulb. *PNAS*, Vol. 101(34), pp.12718–12723, 2004.
 9. Rodriguez, M.W., Paquet, A.C., **Yang, Y. H.** and Erle, D.J. Differential gene expression by integrin beta7+and beta7-memory T helper cells. *BMC Immunology*, pp. 5–13, 2004.
 10. Erle, D.J. and **Yang, Y. H.** Asthma investigators begin to reap the fruits of genomics. *Genome Biology*, 4(11), p. 232, 2003.
 11. **Yang, Y. H.** and Thorne, N. Normalization for Two-color cDNA Microarray Data. *Science and Statistics: A Festschrift for Terry Speed, D. Goldstein (eds.), IMS Lecture Notes, Monograph Series*, Vol 40, pp. 403–418, 2003.
 12. Diaz, E., **Yang, Y. H.**, Loh, K. C., Tessier-Lavigne, M., Speed, T. P. and Ngai, J. Molecular analysis of positional identity in the developing mouse retina. *PNAS*, Vol. 100 (9), pp. 5491–5496, 2003.
 13. Smyth, G. K., **Yang, Y. H.** and Speed, T. P. Statistical issues in microarray data analysis. In: Functional Genomics: Methods and Protocols, M. J. Brownstein and A. B. Khodursky (eds.), *Methods in Molecular Biology* Vol. 224, Humana Press, Totowa, NJ, pp. 111-136, 2003.
 14. Diaz, E., Ge, Y., **Yang, Y. H.**, Loh, K.C., Serafini, T.A., Okazaki, Y., Hayashizaki, Y., Speed, T.P., Ngai, J., and Scheiffele, P. Molecular Analysis of Gene Expression in the Developing Pontocerebellar Projection System. *Neuron*. Vol. 36 (3), pp. 417–434, 2002.
 15. **Yang, Y. H.** and Speed, T. P. Design issues for cDNA microarray experiments. *Nature Review Genetics* Vol. 3, pp. 579–558, 2002.
 16. Speed, T. P. and **Yang, Y. H.** Direct versus indirect designs for cDNA microarray experiments. *Sankhya Series A*, Vol. 64, Series A, Pt. 3, pp 706-720, 2002.
 17. **Yang, Y. H.**, Buckley, M. J., Dudoit, S., and Speed, T. P. Comparison of methods for image analysis on cDNA microarray data. *Journal of Computational and Graphical Statistics*, 11:108-136, 2002.

18. **Yang, Y. H.**, Dudoit, S., Callow, M. J. and Speed, T. P. Statistical methods for identifying differentially expressed genes in replicated cDNA microarray experiments. *Statistica Sinica*, 12:111-139, 2002.
19. **Yang, Y. H.**, Dudoit, S., Luu, P., Lin, D. M., Peng, V., Ngai, J. and Speed, T. P. Normalization for cDNA microarray data: a composite method addressing local, global and multiple slide systematic variation. *Nucleic Acid Research*, 30(4):e15, 2002.
20. **Yang, Y. H.**, Buckley, M. J. and Speed, T. P. Analysis of cDNA microarray images. *Briefings in Bioinformatics*, 2:341-349, 2001.
21. **Yang, Y. H.**, Dudoit, S., Luu, P., and Speed, T. P. Normalization for cDNA microarray data. In M. L. Bittner, Y. Chen, A. N. Dorsel, and E. R. Dougherty (eds), *Microarrays: Optical Technologies and Informatics*, Vol. 4266 of *Proceedings of SPIE*, 2001.
22. Buckley, M. and **Yang, J.** Regularised shortest-path extraction. *Pattern Recognition Letters*, 18:621-629, 1997.

CHAPTERS IN BOOKS

1. **Yang, Y. H.** and Paquet, A. C. (2005). Preprocessing Two-Color Spotted Arrays In: R. Gentleman, V. Carey, S. Dudoit, R. Irizarry, W. Huber (eds.), *Bioinformatics and Computational Biology Solutions using R and Bioconductor*, Springer, New York, pp.397-420.
2. Dudoit, S., **Yang, Y. H.**(2003). Bioconductor R packages for exploratory analysis and normalization of cDNA microarray data. In: G. Parmigiani, E. S. Garrett, R. A. Irizarry and S. L. Zeger (eds), *The Analysis of Gene Expression Data: Methods and Software*, Springer, New York.
3. **Yang, Y. H.** and Speed, T. P. (2003). Design and Analysis of Comparative Microarray Experiments In: T. P Speed (ed) *Statistical Analysis of Gene Expression Microarray Data*, Chapman & Hall.
4. C.A. Ball, Y. Chen, S. Panavally, G. Sherlock, T. Speed, P.T. Spellman, **Y.H. Yang** (2002). Section7: An introduction to microarray bioinformatics. In: D. Bowtell and J. Sambrook (eds), *DNA Microarrays: A Molecular Cloning Manual*. Cold Spring Harbor Press.

PRESENTATIONS AND CONFERENCES

- *Statistical issues in gene expression studies.*, Bridges in Bioinformatics II, University of Sydney, Australia, 16 Sep, 2005.
- *Case Studies in the Design and Analysis of Microarray Experiment.*, Computational Biology Group, Cambridge, UK, 12 Sep, 2004.

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- *Analyzing Data from Splice Array Experiment.*, Institute for Mathematical Sciences, National University of Singapore, 9 Jan, 2004.
 - *Statistical Issues in the Design and Analysis of Microarray Experiment.*, Workshop on Microarray Data Analysis, Academia Sinica, Taiwan, 26 Nov, 2003.
 - *Analyzing DNA Microarray Data using Bioconductor.*, Third Annual Ontario Microarray Network Technology Symposium, Toronto, Canada, 2–13 Nov, 2003.
 - *Comparing Normalization Methods based on Splice Array Experiments.*, IMA Workshop 1: Statistical methods for gene expression: microarrays and proteomics, 29, Sept – 3, Oct, 2003.
 - *Statistical Issues in Analyzing Gene Expression Data.*, Joint Statistical Meeting, San Francisco, 3–7 August, 2003.
 - *Statistical Issues in the design of microarray experiments.*, Interface 2003: Security and Infrastructure Protection, Salt Lake City, Utah, 12–15, March, 2003.
 - *A spatial map of gene expression in the olfactory bulb*, International Conference on Statistics, Combinatorics and Related Areas, University of Wollongong, Australia, 19–21 December, 2001.
 - *Some aspects of the design and analysis of cDNA microarray experiments*, Joint Conference of Australasian Biometrics and New Zealand Statistical Association, Christchurch, New Zealand, 10–13 December, 2001.
 - *Normalization for cDNA Microarray*, Microarrays: Optical Technologies and Informatics, SPIE, San Jose, CA, Jan 2001.
 - *Identifying differentially expressed genes and clusters of genes in cDNA Microarray experiment*, International Congress on Differentiation, Molecular and Cell Biology, Gold Coast, Australia, 24–28 September 2000.

TEACHING

Formal Teaching

- *Instructor*, Fall 2004
BMI 209 “Statistical Analysis of Microarray Data”. Provide three (out of ten) 90-minute lectures covering a variety of statistical methods employed in the context of microarray data analysis. This is a formal scheduled classes for UCSF Students, Residents, and Fellows.
- *Graduate student instructor* 1997-1999
Department of Statistics, UC Berkeley
 - * (Upper division) Stat 131 “Introduction to statistical science”
 - * (Introductory) Stat 21 “Introductory Probability and Statistics for Business”
 - * (Introductory) Stat 2 “Introduction to statistics”

Postdoctoral Supervised

Sept 2004 - present Yuanyuan Xiao

Visiting postdoctoral scholar at Center for Bioinformatics and Molecular Biostatistics, Department of Epidemiology and Biostatistics.

Short courses and workshops

Co-designed and taught these courses addressing various quality, design and statistical aspects in the analysis of microarray data.

– *Microarray: Case studies and advanced analysis*, Center for Bioinformatics and Molecular Biostatistics, UCSF, Oct 23, 2004.

– *Course for R-based microarray data analysis*, Royal Institute of Technology, Albanova University Center, Stockholm, Sweden, Oct 12–15, 2004.

– *Statistics for Microarray Data Analysis Short Course*, International Biometric Conference, Cairn, Australia, July 11, 2004.

– *Statistical Methods in Microarray Analysis Tutorial*, Institute for Mathematical Sciences, National University of Singapore, January 2-6, 2004.

– *Exploratory Microarray Data Analysis*, SFGH, Univeristy of California, San Francisco. Monthly Short Course, Nov 03 – present.

– *Analysis of Gene Expression Microarray Data*, Center for Bioinformatics and Molecular Biostatistics, UCSF, Nov 15, 2003.

– *Health Canada Workshop on Microarray Data Analysis*, Health Canada, Ottawa, ON, Canada, April 24–25, 2003.

– *Short Course in Microarray Data Analysis*, Fields Institute, Toronto, ON, Canada, May 25, 2002.

– *Introduction to the statistical analysis of microarray data*, Temple University at Fort Washington, Fort Washington, PA, June 15, 2001.

Teaching assistant at the computational biology labs. Topics included protein structure, database searches, sequence alignment, computational gene finding, and phylogeny.

– *Program in Mathematics and Molecular Biology Short Course*, Berkeley, CA, June 2000.

AWARDS

– Evelyn Fix Memorial Medal, UC Berkeley, 2002.

– Student Presentation award - International Conference on Statistics, Combinatorics and Related Areas, 2001.

– Student Presentation award - Joint Conference of Australasian Biometrics and New Zealand Statistical Association, 2001.

- Statistical Society of Australia Honours Scholarship, 1996.
- Dean’s honour list, 1994-95.
- Sydney University Science Scholarship, 1993.

COMPUTING EXPERIENCE

- Developed image analysis software *Spot* package and *Statistics for Microarray Analysis (SMA)* package for **R**.
- Member of the core team in the Bioconductor project, an open source and open development software project for the analysis of genomic and other biological data.
- Languages/Software: C, S-Plus/R, Matlab, Mathematica, L^AT_EX, HTML.

REFEREE SERVICE

- Journal of the American Statistical Association.
- Bioinformatics.
- Biostatistics.
- Nucleic Acids Research.
- Statistica Sinica.
- BMC Bioinformatics.
- Journal of Bioinformatics and Computational Biology.
- Physiological Genomics.

PERSONAL

- Fluent in Chinese and English.