

Annette M. Molinaro

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Education

University of California, Berkeley May 2004
Ph.D., Division of Biostatistics. Designated Emphasis in Computational and Genomic Biology.

Novel Approaches to Prediction of Survival in Cancer Research: Focus on Genomics
Mark van der Laan, advisor.

University of California, Berkeley May 2000
Masters of Arts, Division of Biostatistics. Steve Selvin, advisor.

Florida State University April 1992
Bachelor of Science, Department of Statistics.

Research Experience

National Cancer Institute, Cancer Prevention Fellowship Program 2004 - Present
Collaborators: *Ruth Pfeiffer, Richard Simon*
Develop methods for predicting censored outcomes with genomic and proteomic data structures. Write statistical software packages in the R language for implementing developed approaches.

University of California, San Francisco, Department of Medicine 1999 - Present
Collaborators: *Karla Kerlikowske, Fred Waldman*
Biostatistician for NIH funded, nested case-control study of epidemiologic, histopathologic, and clinical factors and molecular markers to find predictors of recurrence in women with surgically resected ductal carcinoma in situ (DCIS). Statistical methods include survival analysis, case-control and cohort risk analysis, competing risk and conditional logistic modeling.

University of California, San Francisco, Comprehensive Cancer Center 1998 - 2004
Advisors: *Dan Moore, Joe Gray, Fred Waldman*
Provide biostatistical support for the National Cancer Institute breast cancer SPORE and Program Project grants in cancer genetics. Analyze array Comparative Genomic Hybridization (CGH), compare array CGH to expression arrays, and associate clinical outcomes with array and biological covariates.

University of California, San Francisco, Department of Medicine 1999 - 2001
Biostatistician for NIH funded breast cancer study to determine the utility of mammographically dense breast tissue as a predictor of breast cancer risk. Statistical methods included risk and survival analysis.

Research Interests

- Computational Biology, including linking clinical outcomes to biological covariates.
- Methods for partitioning high dimensional covariate spaces.
- Survival Analysis with high dimensional data structures.

Teaching Experience

Stanford University, Health Careers Opportunity Program Summer 2000
 HCOP is a concentrated summer program that provides academic opportunities for promising educationally and economically disadvantaged students interested in careers in medicine, medical research, or minority health issues. Developed and taught an "Introduction to Topics in Biostatistics and Epidemiology" course and guided students individually through a research project. Lectured, led discussion sessions, prepared problem sets and exams, and advised students.

University of California, Berkeley, Biostatistics Department Fall 1999
 Graduate Student Instructor for the School of Public Health graduate course, "Introduction to Biostatistics". Led discussion, computer laboratory, and review sessions.

University of California, Berkeley, Statistics Department Summer 1999
 Graduate Student Instructor for the undergraduate course, "Introduction to Probability and Statistics". Led discussion, computer laboratory, and review sessions.

South Korea, Ansong English School 1995 - 1996
 Developed lesson plans and taught eight English classes to Korean students ranging from four to 65 years of age. In addition, selected by the Ansong School of Education to teach Advanced English to their high school teachers.

Academic Awards

- *Evelyn Fix Prize*, UC Berkeley, May 2004. Awarded to the Ph.D. student on the Berkeley Campus showing the greatest promise in statistical research, with preference for applications to biology and problems of health.
- *Chin Long Chiang Biostatistics Student of the Year*, UC Berkeley, May 2004.
- *Statistical Inference from Microarray Data with Application in Breast Cancer Research*. Lawrence Livermore National Laboratory 3-year grant, September 2000-2003.
- Biostatistics Block Grant Award, Fall 1999-Spring 2000.

Publications

Molinaro AM and van der Laan M. A Deletion/Substitution/Addition algorithm for partitioning the covariate space in prediction. Technical Report 162, Division of Biostatistics, University of California, Berkeley 2004. URL www.bepress.com/ucbbiostat/paper162.

Molinaro AM and van der Laan M (2004), "A New Partitioning Algorithm for Prediction of Survival Outcomes: Illustration with Histogram Regression," 2004 Proceedings of the American Statistical Association, Statistical Computing Section[CD-ROM], Alexandria, VA: American Statistical Association.

Molinaro AM, van der Laan MJ, Moore DH, and Kerlikowske K. Survival Point Estimate Prediction in Cohorts with Nested Case-Control Study Designs. Technical Report 149, Division of Biostatistics, University of California, Berkeley, 2004. Submitted to *Statistics in Medicine*. URL www.bepress.com/ucbbiostat/paper149.

Molinaro AM, Dudoit S, and van der Laan M. Tree-based multivariate regression and density estimation with right-censored data. *Journal of Multivariate Analysis* 90(1):154-177, 2004.

Kerlikowske K, **Molinaro AM**, Cha I, Ljung BM, Ernster V, Stewart K, Chew K, Moore D, and Waldman F. Predictors of Recurrence Among Women with DCIS Treated by Lumpectomy. *Journal of National Cancer Institute* 95(22): 1692-1702, 2003.

Dudoit S, van der Laan M, Keleş S, **Molinaro AM**, Sinisi S, and Teng SL. Loss-based estimation with cross-validation: Applications to microarray data analysis and motif finding. *SIGKDD Explorations* 5(2): 37-49, 2003.

Molinaro AM, van der Laan M, and Moore D. Comparative genomic hybridization array analysis. Technical Report 106, Division of Biostatistics, University of California, Berkeley 2002. URL www.bepress.com/ucbbiostat/paper106.

Aust DE, Terdiman JP, Willenbacher RF, Chang CG, **Molinaro AM**, Baretton GB, Loehrs U, and Waldman FM. The apc/beta-catenin pathway in ulcerative colitis-related colorectal carcinomas: A mutational analysis. *Cancer* 94(5):1421-7., 2002.

Etzell JE, Devries S, Chew K, Florendo C, **Molinaro AM**, Ljung BM, and Waldman FM. Loss of chromosome 16q in lobular carcinoma in situ. *Human Pathology* 32: 292-6, 2001.

Aust DE, Terdiman JP, Willenbacher RF, Chew K, Ferrell L, Florendo C, **Molinaro AM**, Baretton GB, Loehrs U, Waldman, FM. Altered Distribution of β -catenin, and its binding proteins E-cadherin and APC, in Ulcerative Colitis-Related Colorectal Cancers. *Modern Pathology* 14: 29-39, 2001.

Aust DE, Willenbacher RF, Terdiman JP, Ferrell LD, Chang CG, Moore DH, **Molinaro AM**, Baretton GB, Loehrs U, Waldman FM. Chromosomal Alterations in Ulcerative Colitis-Related and Sporadic Colorectal Cancers by Comparative Genomic Hybridization. *Human Pathology* 31(1): 109-114, 2000.

Presentations

Subsetting and Clustering of Array Comparative Genomic Hybridization Data

- Institute for Scientific Computing Research Seminar, Lawrence Livermore National Laboratory, December, 2001. Invited.

Prediction of Survival with Regression Trees and Cross Validation

- Biostatistics Core Meeting, University of California, San Francisco Comprehensive Cancer Center, June, 2003. Invited.
- Graybill Conference on Microarrays, Bioinformatics, and Related Topics, Colorado State University, June, 2003. Contributed.

Prediction of Survival with Piecewise Constant Regression and Cross Validation

- International Conference on Statistics, Combinatorics and Related Areas, University of Southern Maine, October, 2003. Invited.
- Biostatistics Seminar, University of California, Los Angeles, October, 2003. Invited.
- School of Natural Sciences Seminar, University of California, Merced, November, 2003. Invited

Piecewise Constant Estimation in Prediction of Survival Outcomes: Applications in Genomics

- Biostatistics Seminar, Boston University, January, 2004. Invited.
- Biostatistics Seminar, Emory University, January, 2004. Invited.

- Biostatistics Seminar, Yale University, February, 2004. Invited.
- Statistics and Genomics Seminar, University of California, Berkeley, February, 2004. Invited.
- Bioinformatics Seminar, University of California, Davis, February, 2004. Invited.
- Biostatistics Seminar, Wake Forest University, February, 2004. Invited.
- Biostatistics Seminar, University of Pennsylvania, February, 2004. Invited.
- Biostatistics Seminar, The Fred Hutchinson Cancer Center, March, 2004. Invited.
- Biostatistics Seminar, University of Washington, March, 2004. Invited.
- International Conference on Analysis of Genomic Data, Harvard Medical School, May 2004. Contributed.
- Joint Statistical Meetings, Toronto, Canada, August 2004. Contributed.
- Biostatistics Branch Seminar, Division of Cancer Epidemiology and Genetics, National Cancer Institute, September 2004. Invited.

Workshops and Colloquiums

- Statistical Science for Genome Biology, Banff, Canada, August 2004. Invited participant.
- 3rd Annual Cancer Prevention Fellows' Scientific Symposium, National Institutes of Health, Bethesda, MD, September 2004. Invited poster.

Computer Skills

Languages/Packages: R, Splus, SAS, C.

Operating systems: UNIX/Linux, Windows, and Mac.

Other: Emacs (with ESS), L^AT_EX, Microsoft Office Suite.

Professional Associations

American Statistical Association member

Institute of Mathematical Statistics member

Committees and Service

- Faculty Search Committee, Division of Biostatistics, University of California, Berkeley, 2001.
- Reviewer
 - *Bioinformatics*
 - *IEEE/ACM Transactions on Computational Biology and Bioinformatics*
- Volunteer, The Marine Mammal Center, Marin, California. 1999 - 2004. Volunteer and Assistant Supervisor for Saturday Night Crew. Responsible for animal care, administering medications, and training new volunteers.