

## *Personal Data*

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## *Current Position*

- **Research Associate**, 9/2006–present, at the Institute for Data Analysis and Process Design of the Zurich University of Applied Sciences in Winterthur, Switzerland. Focus is on statistical consulting and research projects with both industry and academic partners.

## *Working Experience*

- **Research Fellow**, 11/2004–4/2006, in the Department of Biostatistics at the Johns Hopkins School of Medicine, Baltimore. Research focus was on the development of efficient statistical learning tools for the analysis of genomic data, their software implementation and on their application through collaboration.
- **Research and Teaching Assistant**, 11/2000–8/2004. Mathematics Department, ETH Zürich. Duties included occasional lecturing; tutorship; teaching, preparation and correction in exercise courses and computer labs; preparation, correction and grading of exams.
- **Statistical Consultant**, 11/2000–8/2004. Statistical Consulting Service, Seminar for Statistics, ETH Zürich. I occasionally provided statistical consulting to researchers of various departments.
- **Actuary**, 6/1998–9/1998. Zurich Financial Services, Zürich. 4 months of practical training as an actuary.

## *Education*

- **Postdoctoral Studies in Biostatistics**, 11/2004–4/2006, at the Johns Hopkins University in Baltimore.
- **Ph.D. in Statistics**, 6/2004, at the Seminar for Statistics of the Swiss Federal Institute of Technology (ETH) Zürich. Under the supervision of Peter Bühlmann, thesis title was *Supervised Learning in Very High Dimensional Problems with Applications to Microarray Data*.
- **Visiting Researcher**, 9/2001–10/2001, at the Max-Planck-Institute for Molecular Genomics, Berlin.

- **M.Sc. in Mathematics**, 8/2000, ETH Zürich. Masters thesis under the supervision of Peter Bühlmann, thesis title was *Improved Risk and Volatility Estimation with High-Frequency-Data*.

## *Awards and Fellowships*

- **Postdoctoral Fellowship**, 11/2004, Swiss National Foundation. Funding was granted for postdoctoral research on developing statistical and computational tools for combining multiple sources of genomic information. I rejected the fellowship since I was able to acquire alternative funding in the US.
- **Arthur-Linder-Prize**, 9/2003, International Biometrical Society, Austria-Switzerland. Awarded for the paper *Supervised Gene Clustering with Penalized Logistic Regression*, honoring outstanding research work in the area of biometry.
- **Research Fellowship**, 10/2001–9/2004, ETH Zürich. Funding for the project *Supervised Learning in Very High Dimensions and Applications to Microarray Data*.
- **Walter-Saxer-Insurance-Prize**, 2/2001, ETH Zürich. Awarded for the Masters thesis, honoring excellent scientific work in insurance mathematics and related fields.

## *Area of Expertise & Research Interests*

- *Statistical data analysis, i.e. clustering, regression, prediction*
- *Analysis of high dimensional data, also known as data mining*
- *Application of statistics and computing to real-world problems*
- *Development of rapid and user-friendly software for the above tasks*
- *Expert knowledge in dealing with microarray data and financial time series*

## *Publications*

### Refereed Publications

1. **M. Dettling** and P. Bühlmann (2002). *Supervised Clustering of Genes*. Genome Biology, Vol. 3, p. 0069.1–0069.15.
2. **M. Dettling** and P. Bühlmann (2003). *Boosting for Tumor Classification with Gene Expression Data*. Bioinformatics, Vol. 19, p. 1061–1069.

3. **M. Dettling** and P. Bühlmann (2004). *Finding Predictive Gene Groups from Microarray Data*. Journal of Multivariate Analysis, Vol. 90, 106–131.
4. **M. Dettling** and P. Bühlmann (2004). *Risk and Volatility Estimation with Linear and Nonlinear Methods Based on High-Frequency-Data*. Applied Financial Economics, Vol. 14, p. 717–729.
5. O. Teuffel, **M. Dettling**, G. Cario, M. Stanulla, M. Schrappe, P. Bühlmann, F. Niggli and B. Schäfer (2004). *Gene Expression Profiles and Risk Stratification in Childhood Acute Leukemia*. Haematologica, Vol. 89, p. 801–808.
6. M. Wachtel, **M. Dettling**, E. Koscielniak, S. Stegmaier, J. Treuner, K. Simon-Klingenstein, P. Bühlmann, F. Niggli and B. Schäfer (2004). *Gene Expression Signatures Identify Rhabdomyosarcoma Subtypes and Detect a Novel  $t(2;2)(q35;p23)$  Translocation Fusing PAX3 to NCOA1*. Cancer Research, Vol. 64, 5539–5545.
8. R. Gentleman, V. Carey, D. Bates, B. Bolstad, **M. Dettling**, S. Dudoit, B. Ellis, L. Gautier, Y. Ge, J. Gentry, K. Hornik, T. Hothorn, W. Huber, S. Iacus, R. Irizarry, F. Leisch, C. Li, M. Maechler, A. Rossini, G. Sawitzki, C. Smith, G. Smyth, L. Tierney, J. Yang and J. Zhang (2004). *Bioconductor: Open Software Development for Computational Biology and Bioinformatics*. Genome Biology, Vol. 5, R80.
8. O. Teuffel, D. Betts, **M. Dettling**, R. Schaub, B. Schäfer and F. Niggli (2004). *Prenatal Origin of Separate Evolution of Leukemia in Identical Twins*. Leukemia, Vol. 18, p. 1624–1629.
9. **M. Dettling** (2004). *BagBoosting for Tumor Classification with Gene Expression Data*. Bioinformatics, Vol. 20, p. 3583–3593.
10. T. Hothorn, **M. Dettling** and P. Bühlmann (2005). *Computational Inference*. In *Bioinformatics and Computational Biology Solutions using R and Bioconductor*, R. Gentleman, V. Carey, W. Huber, R. Irizarry, S. Dudoit (eds.), Springer, New York. ISBN-10: 0-387-25146-4.
11. **M. Dettling** (2005). *Case Study on Microarray Classification*. In *Bioinformatics and Computational Biology Solutions using R and Bioconductor*, R. Gentleman, V. Carey, W. Huber, R. Irizarry, S. Dudoit (eds.), Springer, New York. ISBN-10: 0-387-25146-4.
12. **M. Dettling**, E. Gabrielson and G. Parmigiani (2005). *Searching Differentially Expressed Gene Combinations*. Genome Biology, Vol. 6, Issue 10, R88.

## Proceedings

13. **M. Dettling** (2002). *Supervised Clustering of Genes* (short version). Proceedings of the 15th Conference in Computational Statistics, Compstat 2002, Berlin. ISBN 3-00-009819-4.
14. **M. Dettling** (2003). *Revealing Predictive Gene Groups with Supervised Algorithms*. Proceedings of the International Workshop on Distributed Statistical Computing 2003, Vienna. Editors: Kurt Hornik, Friedrich Leisch and Achim Zeileis. ISSN 1609-395X.
15. **M. Dettling** (2005). *Finding Predictive Gene Groups from Microarray Data and Combining them with Clinical Predictor Variables*. Proceedings of the 55th Session of the International Statistical Institute, Sydney, Australia. ISBN 1-977949-28-2.

## Software

16. **M. Dettling** (2003). Package `supclust`, for supervised clustering of genes and finding predictive gene groups from microarray data. R: A Language and Environment for Statistical Computing, Vienna, Austria. ISBN 3-900051-00-3.
17. **M. Dettling** (2004). Package `boost`, implementing several machine learning techniques for classification with high-dimensional data, as well as simulation procedures for biological data. R: A Language and Environment for Statistical Computing, Vienna, Austria. ISBN 3-900051-00-3.

## Technical Reports, Submitted Manuscripts and Work in Preparation

18. **M. Dettling** and P. Bühlmann (2003). *Supervised Gene Clustering with Penalized Logistic Regression*. Technical Report No. 115, Seminar für Statistik, ETH Zürich.
19. **M. Dettling** (2004). *Supervised Learning in Very High Dimensional Problems with Applications to Microarray Data*. Ph.D. Thesis No. 15580, ETH Zürich.

## Presentations

### Invited Presentations

1. Department of Computational Molecular Biology, Max-Planck-Institute for Molecular Genetics, Berlin, September 20, 2001. *Supervised Clustering of Genes*.
2. Department of Computational Molecular Biology, Max-Planck-Institute for Molecular Genetics, Berlin, October 1, 2001. *Boosting: A Generic Algorithm to Improve Classification*.

3. Swiss Research Students Meeting in Statistics, University of Bern, November 16, 2001. *Statistical Evaluation of Gene Expression Microarrays.*
4. Biozentrum, University of Basel, March 6, 2002. *Statistical Evaluation of Gene Expression Microarrays.*
5. Conference on Distributed Statistical Computing, DSC 2003. Technical University of Vienna, March 20, 2003. *Revealing Predictive Gene Groups with Supervised Algorithms.*
6. Workshop on Statistical Computing, Schloss Reisensburg, June 30, 2003. *BagBoosting for Tumor Classification with Gene Expression Data.*
7. Workshop on Statistical Analysis of Gene Expression Data, Wye College Conference Center, July 12, 2003. *Pelora - A Novel Algorithm for Supervised Clustering of Genes.*
8. Seminar of the International Biometrical Society Austria-Switzerland, University of St.Gallen, October 1, 2003. *Supervised Clustering of Genes.*
9. Swiss Society for Clinical Chemistry, University of Basel, October 15, 2003. *Statistical Evaluation of Gene Expression Microarray Data.*
10. Department of Biostatistics, Johns Hopkins University, Baltimore, November 6, 2003. *Extracting Predictive Gene Groups from Microarray Data and Combining them with Clinical Variables.*
11. Computational and Applied Genomics Program, Duke University, Durham, November 10, 2003. *Extracting Predictive Gene Groups from Microarray Data and Combining them with Clinical Variables.*
12. Colloquium on Applied Statistics, University of Zürich, December 11, 2003. *Statistical Evaluation of Gene Expression Data.*
13. Workshop on Ensemble Methods, University of Erlangen, January 23, 2004. *BagBoosting for Tumor Classification with Gene Expression Data.*
14. Workshop on Gene Expression Microarrays, University of Zürich, March 5, 2004. *Combining Gene Expression Data from Multiple Studies.*
15. Center for Data Analysis and Modelling, University of Freiburg, April 30, 2004. *Finding Predictive Gene Groups from Microarray Data.*
16. Ph.D. Thesis Defense, ETH Zürich, June 9, 2004. *Supervised Learning in Very High Dimensional Problems with Applications to Microarray Data.*
17. 55th Session of the International Statistical Institute, Sydney, April 11, 2005. *Finding Predictive Gene Groups from Multiple Sources of Genomic Information.*
18. The Maseeh Mathematics and Statistics Seminar Series, State University, Portland, May 6, 2005. *Finding Pathways from Microarray Gene Expression Data.*
19. Biostatistics Seminar Series, Johns Hopkins University, Baltimore, May 11, 2005. *Combining Multiple Sources of Genomic Information.*
20. Colloquium on Genomics, Fred Hutchinson Cancer Research Center, Seattle, August 8, 2005. *How to Find Gene Interactions from Microarray Data.*
21. Nestle Research Center, Lausanne, October 31, 2005. *Revealing Interacting Gene Groups from Microarray Data.*

22. DNA Array Facility, EPFL Lausanne, December 21, 2005. *How to Find Gene Interactions from Microarray Data.*
23. Institute for Data Analysis and Process Design, Zurich University of Applied Sciences, Winterthur, December 22, 2005. *Improving Cancer Diagnosis with Microarray Data.*

**Referee Work**

- *Bioinformatics* (14 times)
- *BMC Bioinformatics* (4 times)
- *Biostatistics*
- *Genome Biology*
- *Journal of Computational and Graphical Statistics*
- *Journal of the Royal Statistical Society, Series B*
- *Machine Learning*
- *BioTechniques*
- *The Pharmacogenomics Journal*
- *IEEE/ACM Transactions on Computational Biology and Bioinformatics*
- *The Netherlands Organization for Scientific Research*
- *International Journal of Artificial Intelligence Tools*
- *Computers in Biology and Medicine: an International Journal*
- *Springer Verlag*

**Professional Memberships & Duties**

- Member of the *Bioconductor* core team, an open source and open development software project for the analysis and comprehension of genomic data.
- Organizer of the *Swiss Research Students Meeting in Statistics*. Held in Montreux, October 30, 2003.
- Member of the *Swiss Statistical Society*.
- Member of the *International Biometric Society*.
- Member of the *Regional Biometric Association for Austria and Switzerland*.

**Language Skills**

- German: Mother tongue
- English: Excellent level, spoken and written
- French: Advanced level, spoken and written
- Spanish: Basic level, spoken and written

**Hobbies and Other Activities**

- Active in Rock Climbing, Mountaineering, Skitouring and Paragliding
- Tour Guide of the Swiss Alpine Club