

## RESUME: Natascha Vukasinovic

### Address (work):

Monsanto Company  
Animal Genomics  
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### Professional experience and employment history:

Dates		Name and address of employer	Position held and main duties
From	To		
06/02	...	Monsanto Company Animal Genomics	Quantitative-Molecular Geneticist • QTL discovery and MAS in swine
08/99	06/02	Department of Mathematics and Statistics Utah State University Logan, Utah  Department of Animal, Dairy, and Veterinary Science Utah State University Logan, Utah	Lecturer • Teaching upper and lower level undergraduate statistics courses  Research associate • Teaching undergraduate courses in animal breeding • Participating in Sheep Genome Project
07/97	07/99	Animal Breeding Group, Institute of Animal Science Swiss Federal Institute of Technology (ETH) Zurich, Switzerland	Research associate • Research in statistical genetics (80%): Survival analysis techniques in genetic evaluation for longevity of dairy cattle • Teaching (20%): Graduate and undergraduate courses; supervising students' theses.
01/96	06/97	Department of Animal Science Iowa State University Ames, Iowa, USA	Postdoc / visiting scientist • Research in statistical genomics: Mapping genes for complex traits
01/92	12/95	Animal Breeding Group Institute of Animal Science Swiss Federal Institute of Technology (ETH) Zurich, Switzerland	Research assistant / Ph.D. candidate • Research in quantitative genetics: Relationships among longevity, production, and type in dairy cows • Ph.D. Thesis completed May 1995.
03/90	12/91	Institute of Animal Science Faculty of Agriculture University of Belgrade Belgrade, Yugoslavia	Teaching assistant / M.S. candidate • Teaching 'Introduction to animal breeding'. • Research in quantitative genetics at ETH Zurich: Genetics of milkability in Swiss Holstein cows. • M.S. Thesis completed July 1992.

**Education:**

- 1995: Ph.D. in Technical Science (Major: Animal Breeding)  
Swiss Federal Institute of Technology  
Zurich, Switzerland
- 1992: M.S. in Biotechnical Science (Major: Population Genetics)  
Faculty of Agriculture, University of Belgrade  
Belgrade, Yugoslavia
- 1989: B.S. in Animal Science  
Faculty of Agriculture, University of Belgrade  
Belgrade, Yugoslavia

**Main Research Projects (before joining Monsanto):**

- Linkage analysis to identify the genetic region responsible for Bovine Spinal Muscular Atrophy (with Dr. Sue Denise, University of Arizona).
- Implementation of survival analysis techniques in genetic evaluation of dairy cattle (funded by Research and Development Group of the Swiss Cattle Breeders' Associations).
- Mapping QTL in outbred populations with a random model approach (funded by Swiss National Scientific Foundation).
- Relationships between longevity, production, and type in dairy cows (PhD project).

**Research interests:**

- Statistical genomics: Mapping of genes that influence complex traits and diseases
- Bioinformatics
- Survival analysis: Applications to large data sets and frailty models

**Other skills:****Computational skills:**

- Operating systems:  
Unix, VAX/VMS, MS DOS, Windows (MS Office: advanced skills in Word and Excel)
- Programming languages:  
Fortran 77 and 90, C++, Web design: HTML, Java Script; creator of the URL:  
<http://www.math.usu.edu/~vukasino/sheep/>
- Statistical software:  
SAS, S Plus, R, Matlab, Internet-based software (Statlets, Webstat)
- Genetic linkage software:  
PAP, Crimap, QTL Cartographer, LINKAGE, and others

**Language skills:**

- Proficiency level: English, German
- Advanced knowledge of: Spanish, French
- Native speaker: Serbo-Croatian

**Awards:**

1999:	Travel award for attending the NSF/CBMS Regional Conference in Mathematical Sciences: Statistical Inference from Genetic Data on Pedigrees
1997:	Travel grant by the International Group for Genetic Improvement of Functional Traits (GIFT)
1996-1997:	Swiss National Scientific Foundation Grant for young researchers
1994:	Scholarship of the European Association for Animal Production (EAAP)
1990-1991:	Swiss Government Grant for outstanding international students

**Service:**

- USU Genomic Center Task Force member
- Manuscript review:
  - Journal of Dairy Science
  - Animal Science
  - Animal Genetics
  - Genetics Selection Evolution
  - Functional and Integrative Genomics
  - "Current topic in computational biology" - book chapter

**Professional membership:**

- American Society of Animal Science (ASAS)
- American Dairy Science Association (ADSA)
- American Statistical Association (ASA) - Biometrics Section, St. Louis Chapter
- International Biometrics Society (WNAAR)

**References:**

- Prof. A. E. Freeman  
Iowa State University  
Department of Animal Science  
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- Dr. Russell C. Thompson  
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- Prof. Noelle Cockett  
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## LIST OF PUBLICATIONS: Natascha Vukasinovic

### *Refereed journal papers (by topic):*

#### **QTL mapping and MAS:**

Martinez, M.L., Vukasinovic, N. (2000): Algoritmo para cálculo da proporção de genes idênticos por descendência, para mapear QTL em famílias de meio-irmãos. *Revista Brasileira de Zootecnia (Brazilian Journal of Animal Science)* 29: 443-451.

Martinez, M.L., Vukasinovic, N., Freeman, A.E. (1999): Random model approach for mapping QTL in half sib families. *Genetics Selection Evolution* 31(4): 319 - 340.

Vukasinovic, N., DeNise, S.K., Freeman, A.E. (1999): Association of growth hormone loci with milk production traits in Holstein bulls. *Journal of Dairy Science* 82: 788 - 794.

Martinez, M.L., Vukasinovic, N., Freeman, A.E., Fernando, R.L. (1998): Mapping QTL in outbred populations using selected samples. *Genetics Selection Evolution* 30 (5): 453-468.

Martinez, M.L., Vukasinovic, N., Freeman, A.E. (1997): Estimating QTL location and QTL variance in half-sib families under the random model with missing parental genotypes. *Journal of Animal Breeding and Genetics* 115(3), 165-180.

#### **Longevity and Survival Analysis**

Vukasinovic, N., Schleppei, Y., Künzi, N. (2002): Using conformation traits to improve reliability of genetic evaluation for herd life based on survival analysis. *Journal of Dairy Science* **85**:1556-1562.

Vukasinovic, N., Moll, J., Casanova, L. (2001): Implementation of routine genetic evaluation for longevity based on survival analysis techniques in dairy cattle populations in Switzerland. *Journal of Dairy Science* **84**: 2073-2080.

Vukasinovic, N. (1999): Genetic evaluation for productive life in dairy cows using survival analysis. *Biotehnologija u stocarstvu (Biotechnology in Animal Husbandry)* **5-6**.

Vukasinovic, N., Moll, J., Künzi, N. (1999): Genetic evaluation for the length of productive life with censored records. *Journal of Dairy Science* **82**: 2178 - 2185.

Vukasinovic, N., Moll, J., Künzi, N. (1997): Analysis of productive life in Swiss Brown Cattle. *Journal of Dairy Science* **80**, 2572-2579.

Vukasinovic, N., Moll, J., Künzi, N. (1997): Factor analysis for evaluating relationships between herd life and type traits in Swiss Brown cattle. *Livestock Production Science* **49**, 227-234.

Vukasinovic, N., Moll, J., Künzi, N. (1995): Genetic relationships among longevity, milk production, and type traits in Swiss Brown cattle. *Livestock Production Science* **41**, 11-18.

#### **Teaching Statistics**

Symanzik, J., Vukasinovic, N. (2002): Teaching experiences with a course on "Web-Based Statistics". *The American Statistician*. To appear in February 2003.

#### **Other**

Vukasinovic, N. (1992): Investigation of milkability traits in Swiss Black-and-White cattle. *Review of research work at the Faculty of Agriculture Belgrade, Yugoslavia*.

### **Conference proceedings**

- Vukasinovic, N., Martinez, M.L. (2002): Mapping quantitative trait loci in general pedigrees using the random model approach. Proc. of the Joint Statistical Meetings (CD-ROM), American Statistical Association (forthcoming).
- Vukasinovic, N., Berweger Baschnagel, M., Künzi N. (2002): Modeling length of productive life in beef cows. J. Dairy Sci. **85** (Suppl. 1), 88.
- Symanzik, J., Vukasinovic, N. (2002): Teaching Statistics with Electronic Textbooks, In: Härdle, W., Rönz, B. (Eds.), COMPSTAT 2002: Proceedings in Computational Statistics, Physica-Verlag, Heidelberg, 79-90.
- Vukasinovic, N. (2001): Random model approach for estimating the variance of a quantitative trait locus. Proc. of the Joint Statistical Meetings (CD-ROM), American Statistical Association.
- Symanzik, J., Vukasinovic, N. (2001): A course on Web-based statistics. Proceedings of the 33rd Symposium on the Interface: Computing Science and Statistics, Vol. 33. Forthcoming.
- Vukasinovic, N. (2000): Random model approach for multiple QTL mapping in half-sib families. Proc. of the Biometrics Section, American Statistical Association, 157-162.
- Vukasinovic, N., Moll, J., Casanova, L. (2000): Routine genetic evaluation for functional longevity in dairy cattle populations in Switzerland. J. Dairy Sci. **83** (Suppl. 1), 62.
- Vukasinovic, N. (1999): Using correlated traits to improve reliability of genetic evaluation for longevity based on survival analysis. Proc. of the Biometrics Section, American Statistical Association. 162 - 167.
- Vukasinovic, N., Moll, J., Künzi, N. (1999): Using linear type traits in genetic evaluation for productive life based on survival analysis (abstract). J. Dairy Sci. **82** (Suppl.1), 30.
- Vukasinovic, N. (1999): Nutzungsdauer als Selektionsmerkmal (in German). Proceedings of the 24th European Holstein Conference, 119-129.
- Vukasinovic, N., Moll, J., Künzi, N. (1998): Weibull survival models in practice: An example from dairy cattle breeding. Proc. of the Biometrics Section, American Statistical Association, 210-215.
- Vukasinovic, N., Moll, J., Künzi, N. (1998): Genetic analysis of productive life with censored records (abstract). *Journal of Dairy Science* **81** (Suppl. 1), 59.
- Vukasinovic, N., Martinez, M.L., Freeman, A.E. (1998): Mapping QTL under selection. *Proc. 6<sup>th</sup> World Congr. Genet. Appl. Livest. Prod., Armidale, Australia*, Vol. 26, 261-264.
- Freeman, A.E., Vukasinovic, N., DeNise, S.K. (1998): Association of growth hormone loci with milk production traits in Holstein bulls. *Proc. 6<sup>th</sup> World Congr. Genet. Appl. Livest. Prod., Armidale, Australia*, Vol. 23, 471-474.
- Martinez, M.L., Vukasinovic, N., Freeman, A.E. (1997): Estimating variance of a quantitative trait locus in half-sib families with missing parental genotypes. *Proc. of the Biometrics Section, American Statistical Association, Anaheim*, 44-49.
- Vukasinovic, N., Martinez, M.L., Freeman, A.E. (1997): Association of BoLA-DRB3 locus with economically important traits in dairy cattle (abstract). *Journal of Dairy Science* **80** (Suppl. 1), 335.
- Vukasinovic, N., Moll, J., Künzi, N. (1996): Analysis of productive life in Swiss Brown Cattle (abstract). *Journal of Dairy Science* **79** (Suppl. 1), 218.

## ***Presentations***

### **2002:**

*August 14:* Joint Statistical Meeting, NYC, NY.

Mapping quantitative trait loci in general pedigrees using the random model approach.

*July 23:* ADSA/ASAS Joint Annual Meeting, Quebec City, CAN

Modeling length of productive life in beef cows (virtual presentation).

### **2001:**

*August 6:* Joint Statistical Meeting, Atlanta, GA.

Random model approach for estimating the variance of the quantitative trait locus.

### **2000:**

*August 15:* Joint Statistical Meeting, Indianapolis, IN.

Random model approach for multiple QTL mapping in half-sib families.

*July 23:* ADSA/ASAS Joint Annual Meeting, Baltimore, MD.

Routine genetic evaluation for functional longevity in dairy cattle populations in Switzerland.

*January 18:* Graduate Seminar, Department of Animal, Dairy, and Veterinary Sciences, Utah State University.

Looking for genes that affect economically important traits.

### **1999:**

*September 22:* Graduate Seminar, Department of Animal, Dairy, and Veterinary Sciences, Utah State University.

Using survival analysis techniques in breeding for longevity.

*August 10:* Joint Statistical Meeting, Baltimore, MD.

Using correlated traits to improve reliability of genetic evaluation for longevity based on survival analysis (contributed talk).

*June 21:* ADSA, 94th Annual Meeting, Memphis, TN.

Using linear type traits in genetic evaluation for productive life based on survival analysis (contributed talk).

*May 9:* Workshop on genetic improvement of functional traits in cattle (GIFT): Longevity. Jouy-en-Josas, France.

Application of survival analysis in breeding for longevity (invited talk).

*April 21:* European Holstein Conference, Charmey, Switzerland.

Nutzungsdauer als Selektionsmerkmal (invited talk).

### **1998:**

*August 24:* 49th Annual Meeting of the EAAP, Warsaw, Poland.

Genetic gain from QTL selection versus traditional selection methods (contributed talk).

*August 13:* Joint Statistical Meetings, Dallas, TX.

Weibull survival models in practice: An example from dairy cattle breeding (contributed talk).

*July 20:* ADSA, 93rd Annual Meeting, Denver, CO.

Genetic analysis of productive life with censored records (contributed talk).

*January 14:* 6th World Congress on Genetics Applied to Livestock Production, Armidale, NSW, Australia.

Mapping QTL under selection (contributed talk).

*January 10:* 2nd QTL Workshop, Armidale, NSW, Australia.  
Analysis of QTL Workshop real data using random model approach.

**1997:**

*August 25:* 48th Annual Meeting of the EAAP, Vienna, Austria.  
Mapping QTL in outbred populations using selected samples. (contributed talk).

*August 14:* Joint Statistical Meetings, Anaheim, CA.  
Estimating variance of a quantitative trait locus in half-sib families with missing parental genotypes (contributed talk).

*June 22:* ADSA, 92st Annual Meeting, Guelph, Ontario, Canada.  
Association of *BoLA-DRB3* locus with economically important traits in dairy cattle (contributed talk).

**1996:**

*August 20:* 47th Annual Meeting of the EAAP, Lillehammer, Norway.  
Genetic evaluation for the length of productive life in Swiss Brown cattle (contributed talk).

*July 18:* ADSA, 91st Annual Meeting, Corvallis, OR.  
Analysis of productive life in Swiss Brown cattle. (contributed talk).

**1995:**

*August 19:* 46th Annual Meeting of the EAAP, Prague.  
Factor analysis for evaluating relationships between herd life and type traits in Swiss Brown cattle (contributed talk).

**1994:**

*October 15:* DGfZ/GfT Tagung, Halle (Saale), Germany.  
Vergleich zweier Methoden für indirekte Zuchtwertschätzung auf Nutzungsdauer.

*August 20:* 45th Annual Meeting of the EAAP, Edinburgh.  
Analysis of type traits as predictors of longevity in Swiss Brown cattle: Genetic parameters and sire evaluation.

**1993:**

*October 15:* DGfZ/GfT Tagung, Göttingen, Germany.  
Genetische Beziehungen zwischen Lebensdauer und Exterieurmerkmalen beim Schweizer Braunvieh.

**Posters**

*January 1999:* 7th Plant & Animal Genome, San Diego, CA.  
Association of milk protein loci with production traits in Holstein bulls.

*January 1998:* 6th WCGALP, Armidale, NSW, Australia.  
Association of growth hormone loci with milk production traits in Holstein bulls.

*February 1997:* Gordon Research Conference, Ventura, CA.  
Mapping QTL in half-sib families under the random model with missing parental genotypes.

*January 1997:* 5th Plant & Animal Genome, San Diego, CA  
Random model approach for mapping QTL in half sib families.

### **Other invited talks**

*Mapping quantitative trait loci in outbred populations.*

March 5, 2002, Monsanto Company, Animal Genomics, Chesterfield, MO

*Mapping quantitative trait loci - present and future challenges.*

August 15, 2001, Department of Animal Biotechnology, University of Nevada Reno.

*Random model approach for QTL mapping in outbred populations.*

October 4, 2000, Department of Animal Science, Michigan State University.

*Application of survival analysis in breeding for longevity.*

August 4, 2000, College of Veterinary Medicine, Mississippi State University.

*Looking for genes that control quantitative traits (diseases).*

October 22, 1996, Pharmacia & Upjohn, Kalamazoo, MI.

*Methods for QTL mapping.*

September 11, 1996, Faculty of Agriculture, University of Belgrade, Yugoslavia.

*Introduction to QTL mapping.*

September 3, 1996, ETH Zurich, Switzerland.

### **Other publications**

Vukasinovic, N., Moll, J. (2000): Zuchtwertschätzung Nutzungsdauer. *Schweizer Braunvieh* **5/6**: 4-6.

Hofer, A., Baschnagel-Berweger, M., Vukasinovic, N., Schneeberger, M., Rebsamen, A. (1998): Schweizerische Vereinigung für Tierzucht - 1. Teil. *Agrarforschung* **5 (11-12)**: 507-509.

Vukasinovic, N., Moll, J., Künzi, N. (1995): Breeding for longevity (Zucht auf Langlebigkeit). *KB-Mitteilungen* **4/25**: 24-27.

Vukasinovic, N. (1995): Genetic relationships among longevity, milk production, and type traits in Swiss Brown cattle (Genetische Beziehungen zwischen Langlebigkeit, Milchleistung und Exterieur beim Schweizerischen Braunvieh). Diss. ETH Nr. 11122, Zurich, Switzerland.

Vukasinovic, N. (1992): Investigation of milkability traits in Swiss Black-and-White cattle (Ispitivanje muznih karakteristika švajcarskog crno-belog goveceta). M.S. Thesis, Faculty of Agriculture, University of Belgrade, Yugoslavia.