

Curriculum vitae

Dr. sc. nat. **Muff Stefanie**

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Born November 5, 1978

Married, Swiss citizen

2 children (2010, 2013)

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Education

- 09.2009–05.2011 Certificate of Advanced Studies in Applied Statistics
Swiss Federal Institute of Technology (ETH), Zurich.
- 05.2004–12.2008 PhD thesis
University of Zurich, Computational Structural Biology group of Prof. A. Caflisch.
Graduation with highest honors.
- 10.2003–04.2008 Teaching diploma in Mathematics (Höheres Lehramt)
University of Zurich.
- 10.1998–10.2003 Master in Mathematics
University of Zurich. Minors in Computer Science and Biology.
Graduation with highest honors.

Current positions

- Since 02.2016 Senior scientist in Biostatistics
Department of Biostatistics at the Epidemiology, Biostatistics and Prevention Institute, University of Zurich; group of Prof. Leonhard Held.
- Since 02.2016 Senior scientist in Ecological Statistics
Department of Evolutionary Biology and Environmental Studies, University of Zurich; group of Prof. Lukas F. Keller.

Previous positions

- 08.2017 – 01.2018 Visiting researcher
Centre for Biodiversity Dynamics, Norwegian University of Science and Technology (NTNU) Trondheim, Norway.
- 02.2012 – 01.2016 Postdoc in Biostatistics and Ecological Statistics
Department of Biostatistics at the Epidemiology, Biostatistics and Prevention Institute *and* Department of Evolutionary Biology and Environmental Studies, University of Zurich
- 03.2009–01.2012 Lecturer for Mathematics and Statistics
Zurich University of Applied Sciences ZHAW

- 02.2010–12.2012 Temporary lecturer for *Bioinformatics* and *Biomathematics*
University of Zurich and ETH Zurich
- 05.2004–12.2008 PhD student, University of Zurich
Molecular dynamics (MD) simulations of protein biomolecules.
- 11.2003–12.2003 Student exchange, Technical University of Kyiv.

Teaching experience

- Since 2017 Course design and lecturer for “Data analysis for Biologists”, UZH;
Bachelor level (each spring semester; together with Owen L. Petchey).
- Since 2014 Practical classes in “Biostatistics” for Medicine, UZH; Bachelor and Master
level
- 2010 – 2012 Teaching assignments for Bioinformatics and Biomathematics, University
and ETH of Zurich; Master level.
- 2009 – 2012 Lecturer for Mathematics, Statistics and Physics, ZHAW; Bachelor
level.
- 2001 – 2003 Teaching assistant in Mathematics;
Bachelor level.

Supervision of junior researchers

- PhD student Erica Ponzi (since 10.2015). Title: *Accounting for measurement error in statistical methods for quantitative genetics*.
- Master student Silvano Sele (02.2018–10.2018). Title: *Relative variable importance in generalized linear models as complements to p-values*.

Honors

- Outstanding PhD thesis, University of Zurich, 2008 (top 5% of UZH graduates).
- Outstanding Diploma in Mathematics, University of Zurich, 2003 (summa cum laude).

Invited presentations

- Kolloquium talk at Freie Universität Berlin, January 2018.
- Talk at Philipps-University, Marburg, 2017. *Measurement error and uncertainty in statistical variables - effects and cures*.
- Workshop contribution, International Biometric Society, German Region, 2016. *Errors and uncertainty in variables – When to worry and when to Bayes?*
- Selected paper presentation at the annual conference of the Royal Statistical Society, Exeter, 2015. *Bayesian analysis of measurement error models using integrated nested Laplace approximations* (see publication list).

- Invited talk from the ICMS Edinburgh, 2014. *On the Importance of Uncertainty Quantification of Relatedness and Relationship Estimates.*
- Talk for the Swiss Statistical Society, Seminar in Ecological Statistics, 2012. *How to deal with measurement errors in ecological data analysis.*
- Two invited talks during PhD time (1 workshop, 1 conference).

Peer-reviewing activities

Annals of Applied Statistics

Biometrical Journal

Biometrics

Biostatistics

Communication in Statistics

Journal of the Royal Statistical Society

Journal of Evolutionary Biology

Journal of Animal Science and Biotech.

PlosOne

Statistical Papers

Statistics in Medicine

Physical Review E

Languages

German: Mother tongue

English: Fluent; very good written and oral skills

French: Conversational; good written and oral skills

Spanish: Conversational; good written and oral skills

Norwegian: Basic knowledge

Publication list

Articles under peer-review

E. Ponzi, L. F. Keller, **S. Muff**. The simulation extrapolation technique meets ecology and evolution: A general and intuitive method to account for measurement error. Preprint on bioRxiv; doi 10.1101/535054.

S. Muff, J. Signer, J. Fieberg. Accounting for individual-specific variation in habitat-selection studies: Efficient estimation of mixed-effects models using Bayesian or frequentist computation. Preprint on bioRxiv; doi 10.1101/411801.

C. Bozzuto, I. Biebach, **S. Muff**, A. R. Ives, L. F. Keller. Inbreeding reduces long-term population growth rates of reintroduced Alpine ibex.

B. Weinberger, **S. Muff**, A. Kranz, F. Bontadina. Riparian vegetation provides crucial shelter for resting otters in a human-dominated landscape.

D. Bächinger, C. Brühlmann, T. Honegger, E. Michalopoulou, A. Monge Naldi, V. G. Wettstein, **S. Muff**, B. Schuknecht, A. H. Eckhard. Endotype-Phenotype Patterns in Meniere's Disease Based on Gadolinium-Enhanced MRI of the Vestibular Aqueduct.

Peer-reviewed articles

S. Muff, A. K. Niskanen, D. Saatoglu, L. F. Keller, H. Jensen. Animal models with group-specific additive genetic variances: extending genetic group models. *Genetics, Selection, Evolution*; In press. Preprint on bioRxiv; doi 10.1101/331157.

P. Nietlisbach, **S. Muff**, J. M. Reid, M. Whitlock, L. F. Keller (2019). Nonequivalent lethal equivalents: Statistical approaches for comparable estimation of inbreeding depression with pedigree-based and genomic metrics of inbreeding. *Evolutionary Applications*, 12, 266–279.

E. Ponzi, L. F. Keller, T. Bonnet, **S. Muff** (2018). Heritability, selection, and the response to selection in the presence of phenotypic measurement error: effects, cures, and the role of repeated measurements. *Evolution*, 72, 1992–2004.

S. Muff, M.A. Puhan, L. Held (2018). Bias away from the Null due to miscounted outcomes? A case study on the TORCH trial. *Statistical Methods in Medical Research*, 27, 3151–3166.

D. Imo, H. Dressel, K. Byber, C. Hitzke, M. Bopp, M. Maggi, S. Böse-O'Reilly, L., L. Held, **S. Muff** (2018). Predicted mercury soil concentrations from a kriging approach for improved human health risk assessment. *International Journal of Environmental Research and Public Health*, 15, 1326.

D. Imo, **S. Muff**, R. Schierl, K. Byber, C. Hitzke, M. Bopp, M. Maggi, S. Böse-O'Reilly, L. Held, H. Dressel (2018). Risk assessment for children and mothers in a mercury-contaminated area using human-biomonitoring and individual soil measurements: a cross-sectional study. *International Journal Of Environmental Health Research*, 28, 1–16.

B. Gehr, E. Hofer, **S. Muff**, A. Ryser, E. Vimercati, K. Vogt, L.F. Keller (2017). Spatial scale and behavioral state interact in shaping temporal dynamics of habitat selection in Eurasian lynx. *Oikos*, 126, 1389–1399.

S. Muff[‡], M. Ott[‡], J. Braun, L. Held (2017). Bayesian two-component measurement error modelling for survival analysis using INLA - A case study on cardiovascular disease mortality in Switzerland. *Computational Statistics & Data Analysis*, 113, 177–193

[‡] These two authors contributed equally

E.A. Schmutz, C. Leeger-Aschmann, T. Radtke, **S. Muff**, T.H. Kakebeeke, A.E. Zysset, N. Messerli-Bürge, K. Stülb, A. Arhab, A.H. Meyer, S. Munsch, J.J. Puder, O.G. Jenni, S. Kriemler (2017). Correlates of preschool children's objectively measured physical activity and sedentary behavior: a cross-sectional analysis of the SPLASHY study. *International Journal of Behavioral Nutrition and Physical Activity*, 14:1.

S. Muff, L. Held and L.F. Keller (2016). Marginal or conditional regression models for correlated non-normal data? *Methods in Ecology and Evolution*, 7, 1514–1524.

L. Held and **S. Muff** (2016). Comment on Diggle and Giorgi: Prevalence mapping and response misclassification. *Journal of the American Statistical Association*, 515, 1108–1110.

Weinberger I., **S. Muff**, A. de Jongh, A. Kranz and F. Bontadina (2016). Flexible habitat selection paves the way for a recovery of otter populations in the European Alps. *Biological Conservation*, 199, 88–95.

S. Muff and L.F. Keller (2015). Reverse attenuation in interaction terms due to covariate measurement error. *Biometrical Journal*, 57, 1068–1083.

S. Muff[‡], A. Riebler[‡], L. Held, H. Rue, P. Saner (2015). Bayesian analysis of measurement error models using integrated nested Laplace approximations. *Journal of the Royal Statistical Society. Series C (Applied Statistics)*, 64(2), 231–252.

[‡] These two authors contributed equally

This paper has been selected for presentation at the annual meeting of the Royal Statistical Society 2015 in Exeter.

M. Seeber, A. Felling, F. Raimondi, **S. Muff**, R. Friedman, F. Rao, A. Caffisch, F. Fanelli (2011). Wordom: A user-friendly program for the analysis of molecular structures, trajectories, and free energy surfaces. *Journal of Computational Chemistry* 32(6), 1183–1194.

B. Qi, **S. Muff**, A. Caffisch, A. R. Dinner (2010). Extracting physically intuitive reaction coordinates from transition networks of a beta-sheet miniprotein. *Journal of Physical Chemistry B*, 114(20), 6979–6989.

Ch. Kaiser-Bunbury[‡], **S. Muff**[‡], J. Memmott, Ch. B. Müller, A. Caffisch (2010). The robustness of pollination networks to the loss of species and interactions: A quantitative approach incorporating pollinator behaviour. *Ecology Letters*, 13(4), 442–452.

[‡] These two authors contributed equally

S. Muff and A. Caffisch (2009). ETNA: Equilibrium transition networks and Arrhenius equation for extracting folding kinetics from REMD simulations. *Journal of Physical Chemistry B*, 113(10), 3218–3226.

S. Muff and A. Caffisch (2009). Identification of the protein folding transition state by free-energy profiles. *Journal of Chemical Physics*, 130(12), 125104.

S.V. Krivov[‡], **S. Muff**[‡], A. Caffisch, M. Karplus (2008). One-dimensional barrier-preserving free-energy projections of a β -sheet miniprotein: new insights into the folding process. *Journal of Physical Chemistry B*, 112(29), 8701–8714.

[‡] These two authors contributed equally

M. Karplus was Nobel Prize laureate for Chemistry in 2013.

J. A. Ihalainen, B. Paoli, **S. Muff**, E. H. Backus, J. Bredenbeck, G. A. Woolley, A. Caffisch, P. Hamm (2008). α -helix folding in the presence of structural constraints.

Proceedings of the National Academy of Sciences (PNAS), 105(28), 9588–9593.

S. Muff and A. Caflisch (2008). Kinetic analysis of molecular dynamics simulations reveals changes in the denatured state and switch of folding pathways upon single-point mutation of a β -sheet miniprotein. *Proteins: Structure, Function and Bioinformatics*, 70(4), 1185–1195.

S. Muff, F. Rao, A. Caflisch (2005). Local modularity measure for network clusterizations. *Physical Review E*, 72, 056107.

Other relevant publications

S. Muff. New Computational Methods for the Investigation of Thermodynamics and Kinetics of Protein Folding (2009). PhD thesis, University of Zurich.