Josephine Daub

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Born: December 17, 1970 in Nijmegen, the Netherlands

PROFILE

Computational biologist trained in bioinformatics and systems biology. Specialized in the study of genetic interactions within both evolutionary and cancer genomics. Independent researcher with strong communication skills. Loves to develop statistically sound methods to analyze large data sets. Gained more than ten years of teaching and programming experience in the education sector and industry before switching to Academia.

EDUCATION

Sep 2010 - Dec 2014 **PhD** degree in Ecology and Evolution (summa cum laude)
Institute for Ecology and Evolution, University of Bern, Switzerland
Thesis title: *Detecting polygenic selection at different time-scales in human evolution*
Supervisors: Prof. Laurent Excoffier and Prof. Marc Robinson-Rechavi

Sep 2008 - Jun 2010 **Master of Science** degree in Grid Computing (cum laude)
Track Computational Science, variant Bioinformatics
University of Amsterdam, Netherlands
Thesis title: *A cell-based model of extracellular-matrix-guided endothelial cell migration during angiogenesis*
Supervisors: Dr. Jaap Kaandorp and Dr. Roeland Merks

Mar 1992 - Jun 1995 **Bachelor** degree in Mathematics Education
Pedagogische Technische Hogeschool, Eindhoven, Netherlands

Sep 1989 - Mar 1992 **Architecture student** (propedeuse)
Technical University Eindhoven, Netherlands

RESEARCH EXPERIENCE

Jun 2017 - present **Postdoctoral researcher**, Princess Máxima Center for Pediatric Oncology
Project title: *Cooperative and mutually exclusive genetic alterations in pediatric cancer*

Feb 2015 - May 2017 **Postdoctoral researcher**, Universitat Pompeu Fabra, Barcelona
Project title: *Detecting and understanding the action of natural selection within segmental duplications in primates*

TEACHING EXPERIENCE

May 2020	**Teacher** and **Coordinator** of *Cancer Genomics* pilot course, University of Utrecht Course offered by the Cancer, Stem Cells and Development Biology Master program
Sep 2019 - Jun 2020	**Supervisor** of Bachelor student, HBO Informatica, Leiden Internship project: *Detecting genetic interactions in childhood brain tumors*
Mar 2018 - Sep 2018	**Daily supervisor** of Master student, MCLS, University of Utrecht Minor research project: *Genetic interactions underlying mutational signatures in paediatric cancer*
Dec 2018	**Trainer at R-Ladies meetup,** Amsterdam Workshop: *How to speed up R?*
Aug 2017	**Teacher at Summer School** *Integrated methods to detect polygenic adaptation from genomic data*, University of Zurich, Switzerland
Aug 2011 - Nov 2013	**Teaching assistant**, University of Bern Courses: *Programming and Data Analysis with R*, *Population genetics*
Aug 2004 - Dec 2004	**Mathematics teacher**, Weredi secondary school, Valkenswaard, Netherlands Classes: VMBO3, VMBO4
Sep 1997 - Sep 1999	**Software Trainer**, BVO information services, Eindhoven, Netherlands Office applications, such as: Microsoft Word, Excel, Access
Aug 1996 - Dec 1996	**Mathematics teacher**, Bisschop Bekkers College, Eindhoven, Netherlands Classes: HAVO/VWO1, HAVO4, VWO4

OTHER WORK EXPERIENCE

Jan 2005 - Aug 2008	**Administrative assistant, Planner and Coordinator of Planning department** Weredi secondary school, Valkenswaard, Netherlands
May 2001 - Aug 2004	**Software developer** Vespro/ECF Logistics, Eindhoven, Netherlands
Sep 1999 - Apr 2001	**Software developer** Lanalyst BV, Sassenheim, Netherlands
Sep 1997 - Sep 1999	**Software developer** BVO information services, Eindhoven, Netherlands

AWARDS & FELLOWSHIPS

Oct 2019	**Best Poster Award** at UBC symposium, Utrecht
Feb 2015 - July 2016	Swiss National Science Foundation **Early Postdoc.mobility fellowship**
Mar 2015	University of Bern, Institute of Ecology & Evolution, **Volz Award 2014** (Best PhD Thesis)
Jun 2014	Swiss Institute for Bioinformatics **Best Graduate Paper 2014 award**

SELECTED SEMINARS AND CONFERENCES

Sep 2019	AACR meeting **Advances in Pediatric Cancer Research**, Montreal, Canada Poster and flash talk: *Beyond synthetic lethality: Multiple mechanisms can explain genetic interactions within childhood cancer*
Sep 2018	**ECCB2018**, Athens, Greece Selected talk: *Genetic Interactions in Childhood Cancer*
Aug 2017	Symposium **Detecting the Genomic Signal of Polygenic Adaptation and the Role of Epistasis in Evolution**, Zurich, Switzerland Invited talk: *Detection of polygenic selection in primate lineages ancestral to humans*
July 2017	**SMBE2017**, Austin, Texas, USA Selected talk: *Detecting and understanding the action of natural selection within segmental duplications in primates*
July 2016	**SMBE2016**, Gold Coast, Australia Organizer of symposium: *Structural variations in the light of new sequencing technologies*
Sep 2015	**Jornada sobre la Evolución Humana**, Fundación Valenciana de Estudios Avanzado, Valencia, Spain Invited talk: *Inference of evolutionary forces in human evolution*
Jun 2014	**SMBE2014**, Puerto Rico, USA Invited talk: *Detection of polygenic selection at different evolutionary time scales*
Feb 2014	**Biology2014**, Geneva, Switzerland Selected talk: *Detection of polygenic selection at different evolutionary time scales*
Oct 2013	**IBE seminar**, Institute for Evolutionary Biology, Barcelona, Spain Invited talk: *Detection of polygenic selection at different evolutionary time scales*
Jan 2013	**SIB days**, Biel, Switzerland Selected talk: *Evidence for Widespread Polygenic Adaptation to Pathogens in the Human Genome*

OTHER SKILLS

Bioinformatics:	Handling and Analysis of Next Generation and Third Generation Sequencing (Pacbio) data sets, Gene set enrichment analysis, Population genetics methods, Genetic Interaction detection
Programming:	Experience with programming in the following languages: R/Bioconductor, C, C++, Python, Perl, Matlab, Mathematica, Shell scripting, Latex, MS Visual Basic, SQL, XML, HTML
Languages:	Dutch: native speaker, English: full professional proficiency, German and Spanish: good working knowledge, French: basic working knowledge

PEER-REVIEWED PUBLICATIONS

Gouy, A., Daub, J.T., Excoffier, L. (2017) **Detecting gene subnetworks under selection in biological pathways.** *Nucleic Acids Research* 45 (16): e149. https://doi.org/10.1093/nar/gkx626

Daub, J.T., Moretti, S., Davydov, I. I., Excoffier, L., and Robinson-Rechavi, M. (2017) **Detection of pathways affected by positive selection in primate lineages ancestral to humans.** *Molecular Biology and Evolution* 34 (6): 1391-1402. https://doi.org/10.1093/molbev/msx083

Dopazo, J., Amadoz, A., Bleda, M., Garcia-Alonso, L., Alemán, A., García-García, F., Rodriguez, J.A., Daub, J.T., Muntané, G., Rueda, A., et al. (2016). **267 Spanish Exomes Reveal Population-Specific Differences in Disease-Related Genetic Variation.** *Molecular Biology and Evolution* 33 (5): 1205–1218. https://doi.org/10.1093/molbev/msw005

Daub, J.T.**,** Dupanloup, I., Robinson-Rechavi, M., and Excoffier, L. (2015). **Inference of Evolutionary Forces Acting on Human Biological Pathways.** *Genome Biology and Evolution* 7 (6): 1546–1558. https://doi.org/10.1093/gbe/evv083

Amorim C.E.G., Daub, J.T.**,** Salzano F.M., Foll M. and Excoffier L., (2015) **Detection of Convergent Genome-Wide Signals of Adaptation to Tropical Forests in Humans**. *Plos One* 10 (4). https://doi.org/10.1371/journal.pone.0121557

Foll, M., Gaggiotti, O.E., Daub, J.T., Vatsiou, A., and Excoffier, L. (2014). **Widespread Signals of Convergent Adaptation to High Altitude in Asia and America**. *The American Journal of Human Genetics* 95 (4): 394–407. https://doi.org/10.1016/j.ajhg.2014.09.002

Roux J., Privman E., Moretti S., Daub, J.T., Robinson-Rechavi M. and Keller L. (2014). **Patterns of positive selection in seven ant genomes.** *Molecular Biology and Evolution* 31 (7):1661–1685. https://doi.org/10.1093/molbev/msu141

Daub, J.T., Hofer T., Cutivet E., Dupanloup I., Quintana-Murci L., Robinson-Rechavi M. and Excoffier L. (2013). **Evidence for Polygenic Adaptation to Pathogens in the Human Genome**. *Molecular Biology and Evolution* 30 (7): 1544-1558. https://doi.org/10.1093/molbev/mst080

Daub, J.T. and Merks R.M.H. (2013). **A Cell-Based Model of Extracellular-Matrix-Guided Endothelial Cell Migration During Angiogenesis**. *Bulletin of Mathematical Biology* 75 (8): 1377-1399. https://doi.org/10.1007/s11538-013-9826-5

BOOK CONTRIBUTIONS

Daub J.T. and Merks R.M.H. (2015). **Cell-Based Computational Modeling of Vascular Morphogenesis Using Tissue Simulation Toolkit**. In Ribatti D. (Ed.), *Vascular Morphogenesis: Methods and Protocols*. New York, NY: Springer. https://doi.org/10.1007/978-1-4939-1462-3_6