

# JESSIE K UEHLING, PhD

JESSIE.UEHLING@UCSF.EDU JKUEHLING@BERKELEY.EDU  
JESSIEUEHLING.COM

## EDUCATION

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PhD Genetics & Genomics Duke University 2012-2017  
MSc Mycology Humboldt State University 2010-2012  
BS Botany Humboldt State University 2005-2010

## PROFESSIONAL EXPERIENCE

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Postdoctoral Researcher UC Berkeley/UC San Francisco current

## PUBLICATIONS

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### 2019

1.) Varga T, Krizsan K, Foldi C, Dima B, Sanchez-Garcia M, Sanchez-Ramirez S, Szollosi G, Szarkandi G, Papp V, Albert L, Angelini C, Antonín V, Bougher N, Buchanan P, Buyck B, Bense V, Catcheside P, Cooper J, Dämon W, Desjardin D, Finy P, Geml J, Hughes K, Alfredo F, Justo A, Karasiński D, Kautmanova I, Kerr S, Kiss B, Kocsubé S, Kotiranta H, Lechner B, Liimatainen K, Lukacs Z, Morgado L, Niskanen T, Noordeloos M, Beatriz Ortiz-Santana B, Ovrebo C, Rácz N, Savchenko A, Shiryayev A, Soop K<sup>31</sup>, Spirin V, Szebenyi, Tomsovsky M, Tulloss R, **Uehling J**, Vagvolgyi C, Papp T, Martin F, Miettinen O, Hibbett D, Nagy L. 2018. Megaphylogeny resolves global patterns of mushroom diversification. *Nature Ecology and Evolution* Accepted.

### 2018

2.) Lofgren L, **Uehling J**, Branco S, Tom D, Bruns T, Martin F, Peter G, Kennedy P. 2018. Genome-based estimates of fungal rDNA copy number variation across phylogenetic scales and ecological lifestyles. *Molecular Ecology* doi:10.1111/mec.14995

3.) Misztal P, Lympelopoulou D, Adams R, Scott R, Lindow S, Bruns T, Taylor J, **Uehling J**, Bonito G, Vilgalys R, and Goldstein A. 2018. What controls the variance in microbial volatile organic compound (mVOC) emissions from different bacteria and fungi? *Chemical Biology*. In press.

4.) Deveau A, Bonito G, Millet L, Bindschedler S, **Uehling J**, Becker M, Hacquard S, Hervé, V, Lastovetsky O, Mieszkina S, Vajna B, Paoletti M, Bonfante P, van Elsas JD. 2018. Bacterial - Fungal Interactions: impacts, mechanisms and challenges. *FEMS Microbiology Reviews*. doi: 10.1093/femsre/fuy008

### 2017

5.) **Uehling J**, Deveau A, Paoletti M. 2017. Do fungi have an innate immune response?; an NLR-based comparison to plant and animal immune systems. *PLoS Pathogens* 13 (10), doi:e1006578

6.) **Uehling J**, Gryganskyi A, Hameed K, Tschaplinski T, Misztal PK, Wu S, Desirò A, Vande Pol N, Du Z, Zienkiewicz A, Zienkiewicz K, Morin E, Tisserant E, Splivallo R, Hainaut M, Henrissat B, Ohm R, Kuo A, Yan J, Lipzen A, Nolan M, LaButti K, Barry K, Goldstein AH, Labbé J, Schadt C, Tuskan G, Grigoriev I, Martin F, Vilgalys R, Bonito G. Comparative genomics of *Mortierella elongata* and its bacterial endosymbiont *Mycoavidus cysteinexigens*. *Environmental Microbiology*. 19(8), 2964–2983 doi:10.1111/1462-2920.13669

### 2016

7.) Li Z, Yao Q, Dearth S, Entler M, Castro Gonzalez M, **Uehling J**, Vilgalys R, Hurst G, Campagna S, Labbé J, Pan C. 2016. Integrated Proteomics and Metabolomics Reveal Symbiotic Metabolism and Multimodal Regulation in a Fungal-Endobacterial System. *Environmental Microbiology*. 19(3), 1041–1053 doi:10.1111/1462-2920.13605

8.) Spatafora J, Benny G, Lazarus K, Smith M, Berbee M, Bonito G, Corradi N, Gryganskyi A, James T, Taylor T, **Uehling J**, Vilgalys R, White M, Stajich J. 2016. Zygomycete Genealogy of Life (ZyGoLife): a phylum-level phylogenetic classification of zygomycete fungi based on genome-scale data. *Mycologia*. (108)5:1028-1046. doi: 10.3852/16-042

9.) Henkel TW, Obase, K, Husbands D, **Uehling J**, Bonito G, Aime MC, Smith ME. 2016. New Boletaceae taxa from Guyana: *Binderoboletus segoi* gen. et sp. nov., *Guyanaporus albipodus* gen. et sp. nov., *Singerocomus rubriflavus* gen. et sp. nov., and a new combination for *Xerocomus inundabilis*. *Mycologia*, (108)1:158-173) doi: 10.3852/15-075

## 2015

10.) Grupe A, Baker A, **Uehling J**, Smith M, Baroni T, Lodge D, Henkel T 2015. *Sarcodon* in the Neotropics I: new species from Guyana, Puerto Rico and Belize. *Mycologia* 107.3 (2015): 591-606., doi:10.3852/14-185.

## 2014

11.) Labbé J, **Uehling J**, Payer T, Plett J 2014. Fungal biology: compiling genomes and exploiting them. *New Phytologist*. 203(2):359-361. doi: 10.1111/nph.12891

12.) Henkel TW, Wilson AW, Aime MC, Dierks J, **Uehling J**, Roy M, Schimann H, Wartchow F, Mueller GM. 2014. Cantharellaceae of Guyana II. New species of *Craterellus*, new South American distribution records for *Cantharellus guyanensis* and *Craterellus excelsus*, and a key to the Neotropical taxa. *Mycologia*. 106: 307-322. doi: 10.3852/106.2.307

## 2013

13.) Smith ME, Henkel TW, **Uehling JK**, Fremier AK, Clarke HD, Vilgalys R 2013. The ectomycorrhizal fungal community in a Neotropical forest dominated by the endemic dipterocarp *Pakaraimaea dipterocarpacea*. *PLoS one* 8.1 (2013): doi: 10.1371/journal.pone.0055160

## 2012

14.) **Uehling JK**, Henkel TW, Aime MC, Smith ME 2012. New species and distribution records for *Clavulina* (Cantharellales, Basidiomycota) from the Guiana Shield, with a key to the lowland neotropical taxa. *Fungal Biology*. 116(12): 1203-1274. doi: 10.1016/j.funbio.2012.09.004

15.) Kennedy P, Matheny B, Ryberg M, Henkel T, **Uehling J**, Smith M. 2012 Scaling up: examining the macroecology of ectomycorrhizal Fungi. *Molecular Ecology*. 21:4151–4154. doi: 10.1111/j.1365-294X.2012.05703.x

16.) **Uehling JK**, Henkel TW, Vilgalys R, Smith ME. 2012. *Membranomyces* species are common ectomycorrhizal symbionts in North temperate forests. *Mycorrhiza*. 22(7):577-81. doi: 10.1007/s00572-012-0457-8

## 2011

17.) Hodkinson BP, **Uehling JK**, Smith ME 2011. *Lepidostroma vilgalysii*, a new basidiolichen from the New World with an inverted thallus. 2011b. *Mycological Progress*. 11(3): 827-833. doi:10.1007/s11557-011-0800-z

18.) **Uehling JK**, Henkel TW, Aime MC, Vilgalys R, Smith ME 2011. New species of *Clavulina* (Cantharellales, Basidiomycota) with resupinate and effused basidiomata from the Guiana Shield. *Mycologia* 104:547-556. doi: 10.3852/11-130

19.) Henkel TW, Aime MC, **Uehling JK**, Smith ME 2011. New species and distribution records for *Clavulina* (Cantharellales, Basidiomycota) from the Guiana Shield. *Mycologia* 103(4):883-889. doi: 10.3852/10-355

**PAPERS IN ADVANCE PREPARATION FOR SUBMISSION (AVAILABLE ON REQUEST)**

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Millet L , Aufrecht J, Labbé J, **Uehling J** , Vande Pol N , Kremer J , Rhodes D , Estes M , Guennoc C , Deveau A, Olsson S, Bonito G, Vilgalys R, Doktycz M, Retterer S. 2017. Microfluidics: Windows into the biology of branching structures. In Review.

**Uehling J**, Dietrich F, Lin J, Lipzen A, Barry K, Grigoriev I, Vilgalys R, Bonito B. Long-term bacterial endosymbiosis in *Mortierella elongata* involves fungal metabolic dynamics and G protein-coupled receptor functioning

**Uehling J**, Millet R, Meredith H, Labbe J, Doktycz M, Retterer S Tschaplinski T, Vilgalys R. Microfluidics and metabolomics reveal symbiotic bacterial fungal interactions between *Mortierella elongata* and *Burkholderia* include metabolite exchange

## **FUNDING & FELLOWSHIPS**

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### **2018**

MSA Special Topics award; computational infrastructure for *Coccidioides* population genomics  
International Mycological Congress Travel Award

### **2017**

NASA Astrobiology Science Conference Student Travel Award

### **2016**

International Society for Molecular Plant Microbe Interactions Student Travel Award  
North American Mycological Association Student Travel Award

### **2015**

Department of Energy Oak Ridge National Laboratory Go! Graduate fellowship  
Oak Ridge National Laboratory the Center for Nanophase Materials Sciences (CNMS) user facility 'Microfluidic environmental control platforms for chemical and transcriptomic analysis of fungal-bacterial interactions' Vilgalys R, Uehling J, Millet L, Labbe J, Doktycz M

### **2014**

Seed Grant from Department of Energy Biosciences Division 'Filamentous fungi for biodiesel production using lignocellulosic residuals' Co-PI with J Labbé, W Muchero, T Tschaplinski, R Vilgalys  
Duke University Graduate School International Travel Award  
Mycological Society of America Backus Award

### **2013**

European Conference for Fungal Genetics student travel grant  
Fungal Environmental Sampling and Informatics Network research dissemination grant  
Duke University Genetics & Genomics summer training travel grant

### **2012**

California State University Program for Education and Research in Biotechnology travel grant  
McConkey Outstanding Graduate Student Award, Alistair McCrone Graduate Fellowship Award, Gregory Mark Jennings Research Dissemination grant, Humboldt State University  
Humboldt Bay Mycology Society George Verback Memorial Scholarship

### **2011**

Friends of the Farlow Visiting Scholar Fellowship, Harvard University  
Sonoma County Mycological Society Outstanding Graduate Research Scholarship

### **2010**

Cascade Mycological Society Promising Graduate Student Research Grant  
Institute for Tropical Ecology & Conservation Sarah Glanzer Memorial Fellowship

## PROGRAMMING PROFICIENCIES

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Python  
R

Shell scripting  
Perl

## TEACHING

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Introduction to Fungal Biology & Identification, Dja Rainforest Reserve, Cameroon, 2017

Mycology (BIO540, 90/10 undergrad/grad, Duke) 2016

Triangle Science Tweet Up Mushroom ID event, Duke Forest, 2013

Fungal Biology station North Carolina elementary schools' Forest days, 2013-2014

Fungal Biology workshop at Iwokrama Rainforest Reserve, Guyana 2011

Botany TA (BOT105, undergrad, HSU) Fall 2010, lab assistant 2009-2010

## PROFESSIONAL SOCIETY SERVICE & COMMUNITY OUTREACH

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Mycological Society of America Student Section Chair, Vice Chair, and Secretary 2012-2016

Duke Graduate and Professional Student Council general assembly representative for the University program in genetics & genomics 2013-2014

NSF STEM graduate challenge collaborative team leader, 'Engaging graduate students in professional societies via technology & social media using a self-perpetuating travel-trade model: a case study' 2013

**Peer reviews for:** Applied Microbiology and Biotechnology, BMC Microbiology, Phytopathology, New Phytologist, Mycoscience, Environmental Microbiology, Protist, Frontiers in Microbiology

## MEETING ORGANIZATION

Bacterial Fungal Interactions workshop (co-organizer G Bonito) and Evolutionary Genomics Symposium (co-organizer S Branco) International Mycological Conference San Juan Puerto Rico, July 2018

Bacterial Fungal Interactions at the European Fungal Genetics Conference in Paris, France. Co-organizers: G Bonito, J Labbe, A Deveau 2016

Mycological Society of America Program committee 2015-2016

## PRESENTATIONS

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Invited talks indicated in bold

2019

'Population genomics of the human fungal pathogen, *Coccidioides* in Pima County Arizona' **Genetics Society of America (GSA) Fungal Genetics Meeting, Pacific Grove CA** Scheduled March 2019

'Fungal symbiosis genomics' **National Autonomous University of Mexico** Scheduled February 2019

'Fungi of tropical Rainforests' **California Academy of Sciences Night Life series** January 2019

2018

'Evolutionary genomics of plant associated microbial symbioses' **Green Life Symposium, University of Michigan, Ann Arbor, MI** September 2018

'Metagenomic strategies for inferring biological aspects of fungal endosymbiont systems' **International Mycological Congress, San Juan, Puerto Rico** July 2018

'Comparative genomics of functional basis for plant fungal endosymbiosis in *Mortierella elongata*' **University of Western Sydney, NSW Australia** June 2018

'Comparative genomics of interactions between fungal endosymbiont *Mycoavidus cysteinexigens* and host *Mortierella elongata*' **Humboldt State University Biology weekly seminar Arcata, CA**, February 2018

'Biogeography and diversity of the tropical ectomycorrhizal fungal genus *Clavulina*'

**Humboldt Bay Mycological Society** Arcata CA, February 2018

2017

'Causes and consequences of microbial symbioses; insights from comparative genomics of plant associated fungal bacterial interactions' **University of San Francisco weekly seminar San Francisco, CA**

'Data dumpster diving in the fungal –omics era' Mycological Society of America Annual meeting, Athens, GA

'Elucidating fungal endosymbiont interaction mechanisms between *Mortierella elongata* and *Mycoavidus cysteinexigens*' **GSA Fungal Genetics Meeting, Pacific Grove CA**

2016

'Visualizing fungal bacterial interactions; applications of microfluidics & time-lapse videography' Mycological Society of America Annual meeting, Berkeley CA

'Studying bacterial fungal interactions with microfluidics' Department of Energy Plant Microbe Interfaces Fungal Genetics Meeting, Duke University Durham, NC

'Combined -omic approaches reveal functional mechanisms of bacterial fungal interactions in the *Populus* rhizosphere' **Fungal-Bacterial Interactions workshop at European Fungal Genetics Conference, Paris, France**

'Great fleas, little fleas, and lesser fleas; a comparative genomic study of endosymbiotic bacteria living in fungi associated with plant roots' Duke Biology Systematics Discussion Group, Duke University, Durham NC

2015

'Data dumpster diving; insights on fungal bacterial interactions from a mixed microbial community –omics approach' Duke Microbial Genomics symposium, Duke University, Durham NC

2014

'Bacterial-fungal interactions of *Mortierella elongata* in the *Populus* rhizosphere' **International Mycological Congress Bangkok Thailand**

'Genomic analyses of *Mortierella elongata* and associated bacterial endosymbiont (*Candidatus Glomeribacter* sp.)' **European Conference on Fungal Genetics, Seville, Spain**

'Host interaction dynamics between *Mortierella elongata* and bacterial endosymbionts *Glomeribacter*' Department of Energy Plant Microbe Interface meeting, Oak Ridge National Laboratory, Oak Ridge, TN

2013

'*Glomeribacter*, an endosymbiont of the basal fungus *Mortierella*' Advanced Bacterial Genetics Course. Cold Spring Harbor Laboratory NY

2012

'*Membranomyces*, a highly reduced ectomycorrhizal symbionts common in temperate forests' Humboldt Bay Mycological Society monthly meeting. Arcata, CA

'Implications of morphological and molecular variation in neo-tropical *Clavulina*' **Sonoma County Mycological Society SOMA Camp Santa Rosa, CA**

2011

'The tale of *Clavulina* in the tropics and in the Guiana Shield' **Cascade Mycological Society monthly meeting Eugene, OR**

'Is the Guiana Shield a diversity center for the genus *Clavulina*? Deviant morphologies and new species descriptions' Mycological Society of America meeting. Fairbanks, AK

'Diversity of the genus *Clavulina* (Cantharellales, Basidiomycota) in the Guiana Shield' Guest lecture series, **Institute for Tropical Ecology and Conservation Bocas del Toro, Panama**

'*Clavulina* in the Guiana Shield: species diversity and deviant morphologies in a global diversity center' Panel on Basidiomycete diversity, **Latin American Mycological Congress meeting San Jose, Costa Rica**

'Systematics of the Cantharellales from the Guiana Shield' Humboldt Bay Mycological Society monthly meeting. Arcata, CA

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## RESEARCH ASSISTANTSHIPS

Zygomycete Genealogy of Life genome sequencing project 'ZyGoLife' NSF DEB1441715. 2016-2017  
Alternative energy sources derived from fungi project 'Filamentous fungi for biodiesel production using lignocellulosic residuals' Department of Energy SEED Grant 2015-2016  
Department of Energy Plant Microbe Interfaces 2014-2015  
Ectomycorrhizal fungi in Guyana project, NSF DEB0918591 2011-2012

## **EXTERNAL TRAINING**

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Woods Hole Molecular Mycology Course 2018  
Dja Forest Reserve, Cameroon 2017  
Plant Systems Biology group internships at the Environmental Sciences Division, Department of Energy Oak Ridge National Laboratory. Funded by GO Fellowship & CNMS grants, 2014-2015  
Advanced Bacterial Genetics Course & Proteomics Course, Cold Spring Harbor Laboratory, 2013 & 2014  
Pagaima Savannah/Potaro River Basin, Guyana 2010-2013  
Institute for Tropical Ecology and Conservation (ITEC) Bocas del Toro, Panama 2009

## **SOCIAL MEDIA COVERAGE**

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'American Pecan Truffle May Be Coming to a Plate Near You, By Way of Extremely Cute Courier' Scientific American Blog. Coverage of educational short film available on YouTube  
<https://www.youtube.com/watch?v=h514cjmJD84>, 2013