

# Sandra Jeanne Simon

Ph.D. Graduate  
*Curriculum Vitae*

## Contact information

---

West Virginia University  
Institute of Technology  
Department of Biology

Office 119B, 410 Neville St,  
Beckley, WV 25801  
ssimon4@mail.wvu.edu

## Education

---

- 2014-2020 Ph.D. program- Department of Biology, West Virginia University, Morgantown, WV; under the supervision of Dr. Stephen P. DiFazio **Cumulative GPA: 4.0**
- 2010-2014 B.S. in Biological Sciences, *summa cum laude*; West Virginia University, Morgantown, WV **Cumulative GPA: 3.82**

## Peer-Reviewed Publications

---

- 2021 Burnham, M.B., **Simon, S.J.**, Lee, D.K., Kent A.D., DeLucia, E.H., and Yang, W.H., 2021. Intra- and inter-annual variability of nitrification in the rhizosphere of field-grown bioenergy sorghum. *Global Change Biology Bioenergy*. <https://doi.org/10.1111/gcbb.12917>
- 2021 Sinn, B.T. \*, **Simon, S.J.** \*, Santee, M.V., DiFazio, S.P., Fama, N.M. and Barrett, C.F., 2021. ISSRseq: an extensible, low-cost, and efficient method for reduced representation sequencing. *Methods in Ecology and Evolution*. \*Co-first authors. <https://doi.org/10.1111/2041-210X.13784>
- 2021 **Simon, S.J.**, Keefover-Ring, K., Park, Y.L., Wimp, G., Grady, J. and DiFazio, S.P., 2021. Characterization of *Salix nigra* floral insect community and activity of three native *Andrena* bees. *Ecology and Evolution*, 11(9), pp.4688-4700. <https://doi.org/10.1002/ece3.7369>
- 2020 **Simon, S.J.**, Tschaplinski, T.J., M LeBoldus, J., Keefover-Ring, K., Azeem, M., Chen, J.G., Macaya-Sanz, D., MacDonald, W.L., Muchero, W. and DiFazio, S.P., 2020. Host plant genetic control of associated fungal and insect species in a *Populus* hybrid cross. *Ecology and Evolution*, 10(11), pp.5119-5134. <https://doi.org/10.1002/ece3.6266>
- 2017 Macaya-Sanz, D., Chen, J.G., Kalluri, U.C., Muchero, W., Tschaplinski, T.J., Gunter, L.E., **Simon, S.J.**, Biswal, A.K., Bryan, A.C., Payyavula, R. and Xie, M., 2017. Agronomic performance of *Populus deltoides* trees engineered for biofuel production. *Biotechnology for Biofuels*, 10(1), pp.1-13. <https://doi.org/10.1186/s13068-017-0934-6>

## Manuscripts in Preparation

---

**Simon S.J.**, Furches A., Chhetri H., Macaya-Sanz, D., Evans L., Jones P., Wimp G., Jacobson D., Tschaplinski T.J., Tuskan G.A., and DiFazio S.P. Genetic underpinnings of arthropod community distributions in *Populus trichocarpa*

Barrett, C.F., Santee M.V., Fama N.M., Freudenstein J.V., **Simon S.J.**, and Sinn B.T. Lineage and 'role' in striped coralroots: Integrating multiple data sources in species delimitation of a heterotrophic orchid complex

## Research Presentations

---

- Feb 2021      Invited Talk: These bees like trees: pollinator dynamics in a dioecious forest system; Otterbein University
- August 2020      Poster Presentation: Assessing the relationship between biological nitrification inhibition of field-grown sorghum and rhizosphere microbial communities; Ecological Society of America (ESA)
- Sept 2019      Poster Presentation: Using a poplar hybrid to investigate genetic control of associating insect and fungal communities; ASPB Midwestern Section Annual Meeting
- Sept 2018      Oral Presentation: Using a poplar hybrid to investigate genetic control of associating insect and fungal communities; West Virginia University Department of Biology Retreat
- August 2018      Poster Presentation: Using a poplar hybrid to investigate genetic control of associating insect and fungal communities; IUFRO Tree Resistance Workshop
- July 2017      Poster Presentation: Genetic determinants of arthropod community structure in *Populus*; Bioenergy Science Corporation Retreat

## Teaching Experience

---

- 2021-Present      Assistant Professor BIOL 111: General Biology and BIOL 416: Cellular Biology; West Virginia University (WVU) Institute of Technology
- Spring 2019      Laboratory Instructor for BIOL 320: Total Science Experience Capstone; West Virginia University (WVU)
- Fall 2018      Laboratory Instructor for BIOL 219: The Living Cell Laboratory; WVU
- 2014-2019      Laboratory method development and student assistance; BIOL 320: Total Science Experience Capstone; WVU
- 2014-2018      Research Assistant Laboratory Technician for the WVU Genomics Core; WVU

- 2015 Guest lecturer: Next-generation sequencing methods; BIOL 464/GEN 535: Population and Quantitative Genetics; WVU
- 2014 Guest lecturer: Next-generation sequencing and microbial diversity; BIOL 320: Total Science Experience Capstone; WVU

### **Scientific Outreach**

---

- Fall 2021 WVNS Television Interview; What is a variant: Breaking down the basics of COVID-19; <https://www.wvnstv.com/news/what-is-a-variant-breaking-down-the-basics-of-covid-19/>
- 2017-2019 Tour guide: WVU Department of Biology Spring Ephemeral Wildflower Walks; WVU Core Arboretum
- 2017-2019 Entomology box curation and collection for donations to art auction raising support for the Avian Conservation Center of Appalachia; The WVU Chapter of the Society for Conservation Biology
- 2015-2016 Field/Research Tour Guide; NEWBio Teacher Education Outreach

### **Department and Professional Service**

---

- 2021-Present Departmental Safety Officer; WVU Institute of Technology Department of Biology
- Fall 2021 Student Mentor BIOL 494: Capstone Seminar; WVU Institute of Technology
- Fall 2021 Watershed Sample Collection Assistance BIOL 466: Ecology
- 2016 Biology Graduate Student Association (BGSA) Social Coordinator; WVU

### **Supervisory Experience**

---

- 2019-2021 Field research technician in the Laboratory of Dr. Angela Kent; University of Illinois at Urbana-Champaign (UIUC)
- 2017 NEWBio Internship Undergraduate Mentor- Tanita Cheevaphantusri; Insect communities in different families and crosses of Shrub Willow
- 2014-2019 Supervisor/Mentor Undergraduate Student Workers in the Laboratory of Dr. Stephen DiFazio- Margo Folwick, Jacob Miller, Ismail Asad and Mohd Mazri

## **Awards**

---

- Sept 2019      First Place Outstanding Graduate Poster Presentation (\$300) - ASPB Midwestern Section Annual Meeting
- Sept 2018      Best Graduate Student Oral Presentation (\$300) - West Virginia University Department of Biology Retreat
- 2016-2018      Core Research in Taxonomy of Vascular Plants Scholarship (\$2,000) - WVU Department of Biology
- 2014            Morrissey-Ropp Scholarship (\$2,000) - West Virginia University

## **Laboratory and Biotechnology Work Experience**

---

### Dr. Kent Laboratory Field Research Technician UIUC

- Soil nitrogen cycle assays
- Greenhouse experiment development and supervision
- Field work management and collection of soils for 16S DNA/RNA processing
- DNA extraction with Qiagen QIAcube HT purification system

### Dr. DiFazio Laboratory WVU

- CTAB, Qiagen, and Zymo DNA extraction of plant and microbial genomic DNA
- Development of DNA library protocols for shotgun next-generation sequencing
- Development of next-generation sequencing protocol for rapid generation of genetic variants without reference genome

### WVU Genomics Core Technician

- Chain-termination sequencing and fragment analysis using 3130xl Genetic Analyzer
- Qubit, Nanodrop, qPCR, and Bioanalyzer quantification and fragment size analysis
- DNA, mRNA, RNA, and 16S rDNA library preparation for Illumina MiSeq sequencing

## **Computational Experience**

---

### Basic Computer Skills

- MS Word, Powerpoint, and Excel for chart generation and PivotTable
- Adobe Illustrator

### Statistical/Bioinformatic Platforms

- R- multivariate community analysis (vegan), figure generation (ggplot2), QTL analysis (R/QTL), linear and generalized mixed modeling (lme4)
- QIIME and QIIME2- 16S rRNA sequence analysis including rarefaction, principal component analysis (PCoA), and diversity calculations
- SAS Jmp and Past3 statistical software
- GenAlEx- Mantel tests, analysis of molecular variance, analysis of genetic distances
- Geneious- Microsatellite analysis

