**KEIRAN CANTILINA**

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| **EDUCATION** | **University of Minnesota-Twin Cities**, College of Food, Agriculture, and Nat. Resource. Sci, St. Paul, MN  Master of Science (MS) in Bioproducts and Biosystems Engineering, June 2018  Concentration: Bioinstrumentation  **Cornell University**, College of Agriculture and Life Sciences, Ithaca, NY  Bachelor of Science (BS) in Biological Sciences, May 2015  Concentration: Plant Science and Biotechnology  Minor: Music | |
| **WORK EXPERIENCE** | **Laboratory Service Technician** | May 2015 – June 2016 |
| *M. Todd Walter Lab , Cornell University Department of Biological and Environmental Engineering*  Provided laboratory members with full-time multidisciplinary assistance, including experimental design consulting, training in microbiological laboratory techniques, assistance with instrument software and hardware design and troubleshooting, and the creation of data processing scripts and programs • Carried out experimental and sampling protocols for laboratory members. | |
|  | **Head Chimesmaster** | April 2012 – May 2014 |
|  | *Cornell University Chimes*  Managed the activities of the chimesmasters, the student/alumni group that plays the 21-bell instrument atop Cornell University's iconic McGraw Tower • Corresponded with 35 clients per month • Administered the annual 10-week-long competition whereby new chimesmasters are auditioned and selected • Performed chimes concerts 3 times a week, taking impromptu song requests from visitors • Performed commissioned wedding/specialty concerts • Conducted tours and open-houses | |
| **PUBLICATIONS** | * Gottula J, Lapato D, Cantilina K, Saito S, Bartlett B, Fuchs M, et al. (2013). Genetic variability, evolution, and biological effects of grapevine fanleaf virus satellite RNAs. *Phytopathology*, *103*(11), 1180-1187. * Truhlar AM, Denes TG, Cantilina KK, Leung SK, Walter MT, et al. (2018). Absence of genetic selection in a pathogenic *Escherichia coli* strain exposed to the manure-amended soil environment. *PLOS ONE*, 13(12): e0208346. | |
| **RESEARCH EXPERIENCE** | **Graduate Research Assistant** | August 2016 – May 2018 |
| *Marchetto Lab, University of Minnesota Department of Bioproducts and Biosystem Engineering*  Developed novel environmental sensors • Repaired and constructed accessories for a variety of field-deployed water samplers.• Wrote research grant proposals, budgets, and conference abstracts and posters | |
|  | **Plant Genetics Research Assistant** | Summer 2014 |
|  | *S.D. Yeh Lab, National Chung Hsing University Department of Plant Pathology, Taichung, Taiwan*  Planned and initiated a cloning project aimed to develop a viral cross-protection vector for Vietnam-strain Papaya ringspot virus (PRSV) • Became familiar with cross-cultural research contexts | |
|  | **Plant Bioinformatics Summer Intern** | Summer 2013 |
|  | *M. Fuchs Lab, Cornell University Department of Plant Pathology at the New York State Agricultural Experiment Station, Geneva, NY*  Planned and contributed to cloning projects related to the improvement of Grapevine fanleaf virus (GFLV) as a virus induced gene silencing (VIGS) vector • Gained proficiency in confocal laser microscopy • Became familiar with UV photography | |
|  | **Plant Pathology Research Assistant** | Summer 2012 |
|  | *M. Fuchs Lab, Cornell University Department of Plant Pathology at the New York State Agricultural Experiment Station, Geneva, NY*  Learned sequence analysis, primer design, and phylogenetic analysis • Ran mid-scale IC-RT-PCR and agarose electrophoresis reactions, screening projects, and cloning projects • Learned laboratory greenhouse skills such as planting, transplanting, inoculating, seed collecting, and sample collecting • Created and presented poster to share research results with research station faculty | |
| **RELEVANT SKILLS** | **Electronics Design and Fabrication**   * Analog circuit design, prototyping, assembly (through-hole and SMD soldering), troubleshooting * Proficiency with PCB layout and design using KiCAD * Embedded microcontrollers (AVR, PIC, Arduino) * Proficiency with test equipment: multimeter, digital and analog oscilloscope, sourcemeter, signal generator, spectrum analyzer * Basic RF circuit and antenna design   **Programming and Data Skills**   * Languages: R, Arduino C++, Python * Design and implementation of software-hardware interfaces * Statistical analysis and graphical visualization of complex datasets * Web-scraping and automated data collection * Management of complex datasets and relational databases using R and SQL  Molecular BiologyPCR and RT-PCR protocols and primer designProtein and nucleic acid electrophoresisELISA immunodetectionMultiple types of plant, bacterial, and soil DNA and RNA extraction techniquesTOPO and LIC as well as conventional cloning design and executionPlasmid designVirus-induced gene silencing vector designBacterial transformation by heat shock and electroporationPlant transformation by floral dip and biolistic particle delivery, etc.Bioinformatics  * Proficiency using software including: DNAStar, DnaSP (nucleotide polymorphism analysis software), Vector NTI, Geneious, RaptorX (protein secondary structure modeling), SeaView (alignment software), Datamonkey (elucidation of genetic selection pressure), PyMOL  Microbiology  * Trained to Biosafety Level 2 (BSL-2) standards * Solid and liquid culture and preparation of various solid and liquid media * Sterile technique and use of autoclave and sonication sterilization * Recovery of bacteria from soil * Spot plating, colony enumeration, calculation of CFU from optical density, and serial dilution * Small- scale density isolation by sucrose gradient centrifugation * Standard microbiological assays (Congo Red curli tests, crystal violet biofilm assays, etc.)   **Mechanical Design and Fabrication**   * CAD software proficiency (AutoCAD, OpenSCAD, Autodesk Inventor) * Design for 3D printing, use of 3D printers and slicing software, 3D printing troubleshooting * Basic woodworking and welding * Basic 2-phase and 3-phase electrical work * Laser cutter use and maintenance * Shop tools: Drill press, bandsaw, handbrake, etc  Other Instrumentation Training  * Brightfield, darkfield, dissecting, confocal, and laser scanning microscopy • * Gas chromatography * Fluorometer, plate-reader, other assorted 96-well instruments * Standard hydrological field instruments including: time-domain reflectometer, water conductivity meter, pyrometer, acoustic Doppler flowmeter, hydrological sonde | |
| **CERTIFICATION & TRAINING** | * General Class Amateur Radio License * EPA Pesticide applicator license |  |
| **LANGUAGES** | * **English:** Native proficiency * **Mandarin Chinese:** Bilingual-level working proficiency * **Dutch**: Basic proficiency |  |
| **HONORS & AWARDS** | **Belgian American Education Foundation Research Fellowship**  *Belgian American Education Foundation*  Yearlong all-inclusive fellowship to pursue intensive study of Belgium’s UNESCO-protected carillon culture at the Belgian Royal Carillon School in Mechelen, Belgium. | July 2018 – June 2019 |
|  | **Fulbright U.S. Student Researcher Grant (offered)**  *U.S. Department of State*  Award declined in order to accept the BAEF Research Fellowship | May 2018 |
|  | **Diversity of Views and Experiences Fellowship**  *University of Minnesota*  Two-semester fellowship including tuition and stipend | August 2016 – July 2017 |
|  | **2015 Plant Biology Student Excellence Award**  *Cornell University Department of Plant Sciences* | May 2015 |
| **ACTIVITIES & INTERESTS** | UMN Council of Graduate Students • Campanology and playing the carillon • Playing the organ • Building clocks • Baking bread • Hardware hacking • Amateur radio • Fountain pens • Failing at growing tomatoes indoors | |
| **REFERENCES** | Dr. Peter Marchetto  Assistant Professor, Department of Bioproducts and Biosystems Engineering  University of Minnesota- Twin Cities  218 BioAgEng Building, 1390 Eckles Ave, St. Paul, MN 55208  (201) 403-5470  [pmarchet@umn.edu](mailto:pmarchet@umn.edu)  Dr. M. Todd Walter  Professor of Ecohydrology, Department of Biological and Environmental Engineering  Cornell University  Riley-Robb Hall, Cornell University, Ithaca, NY 14850  (607) 255-2488  [Mtw5@cornell.edu](mailto:Mtw5@cornell.edu)  Dr. Marc Fuchs  Associate Professor, Department of Plant Pathology and Plant-Microbe Biology Section  School of Integrated Plant Science, Cornell University  Barton Laboratory, New York State Agricultural Experiment Station, Geneva, NY 14456  (315) 787-2487  [Mf13@cornell.edu](mailto:Mf13@cornell.edu)  Dr. Susan Henry  Professor of Molecular Biology and Genetics, Department of Molecular Biology and Genetics  Cornell University  249 Biotechnology [Building , Cornell Universit](mailto:sdyeh@nchu.edu.tw)y, Ithaca, NY 14850  (607) 254-8717  [Sah42@cornell.edu](mailto:Sah42@cornell.edu) | |