KEIRAN CANTILINA

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EDUCATION

University of Minnesota-Twin Cities, College of Food, Agriculture, and Nat. Resources Sci, St. Paul, MN
Master of Science (MS) in Bioproducts and Biosystems Engineering, May 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, Plant Biotechnology option
Minor: Music

WORK EXPERIENCE

Laboratory Service Technician May 2015 – June 2016
M. Todd Walter Lab , Cornell University Department of Biological and Environmental Engineering
Provide 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
Cornell University Chimes April 2012 – May 2014
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 on behalf of the Chimes • Administered the annual 10-week-long open competition whereby new chimesmasters are auditioned and selected • Performed chimes concerts 3 times a week, taking impromptu song requests from tower visitors • Performed wedding/specialty concerts as commissioned • During concerts, tower tours, and open houses, explained the Chimes program, tower history, and basic campanology

PUBLICATION

J. Gottula, D. Lapato, K. Cantilina, S. Saito, B. Bartlett, and M. Fuchs. “Genetic Variability, Evolution, and Biological Effects of Grapevine fanleaf virus Satellite RNAs,” *Phytopathology*, November 2013

RESEARCH EXPERIENCE

Graduate Research Assistant August 2016 - May 2018
Marchetto Lab, University of Minnesota Department of Bioproducts and Biosystem Engineering
Worked on research developing novel environmental sensors • Repaired and constructed accessories for a variety of field-deployed water samplers.• Wrote a variety of 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 partially completed a cloning project as part of a program to develop a viral cross-protection vector for Vietnam strain Papaya ringspot virus (PRSV) • Became familiar with gene gun usage • Learned specialized technical vocabulary to communicate with co-workers in Mandarin Chinese

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 in silico and partially completed in vitro various cloning projects related to the improvement of Grapevine fanleaf virus (GFLV) as a virus induced gene silencing (VIGS) vector • Attained proficiency in various forms of 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

Developed bioinformatics skills for sequence analysis, primer design, and phylogenetic analysis • Ran mid-scale IC-RT-PCR and agarose electrophoresis reactions, screening projects, and cloning projects • Developed experimental design skills within the field of plant pathology • Learned various 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, and troubleshooting • Proficiency with PCB layout and design using KiCAD • Embedded microcontroller use and programming (AVR, PIC, Arduino) • Proficiency with test equipment: multimeter, digital and analog oscilloscope, sourcemeter, signal generator, spectrum analyzer • Basic RF circuit and antenna design

Programming

Competent in R, Python, and Arduino C++ • Able to design and implement software-hardware interfaces • Able to code statistical analysis and graphic visualization applied to complex datasets • Able to aggregate and analyze web data with custom-built web crawlers implemented in R • Basic proficiency in MATLAB and C

Molecular Biology

PCR and RT-PCR protocols and primer design • Protein and nucleic acid electrophoresis • ELISA immunodetection •Multiple types of plant, bacterial, and soil DNA and RNA extraction techniques • TOPO and LIC as well as conventional cloning design and execution • Plasmid design • Virus-induced gene silencing vector design • Bacterial transformation by heat shock and electroporation • Plant transformation by floral dip and biolistic particle delivery, etc.

Bioinformatics

Bioinformatics software including: DNAStar, DnaSP (nucleotide polymorphism analysis software), Vector NTI, Geneious, RaptorX (protein secondary structure modeling), SeaView (alignment software), Datamonkey (software for elucidation of genetic selection pressure) • Proficiency with PyMOL bioinformatics data viewer

Microbiology

Trained to Biosafety Level 2 (BSL-2) standards • Solid and liquid culture • Preparation of various solid and liquid media • Laminar flow hood use • Recovery of bacteria from soil • Spot plating, colony enumeration, calculation of CFU from optical density, and serial dilution • Autoclave and sonication sterilization • Small-scale density isolation by sucrose gradient centrifugation • Familiar with microbiological assays such as Congo Red curli tests and crystal violet biofilm assays

Mechanical Fabrication

Basic woodworking • Basic welding • Soldering • High voltage safety • Laser cutter use and maintenance • Power tool use • Shop tools: Drill press, bandsaw, handbrake, etc • CAD software proficiency (AutoCAD and OpenSCAD) • Sewing • Low vacuum systems • 3D printing and troubleshooting, use of slicer software

Other Instrumentation Training

Brightfield, darkfield, dissecting, confocal, and laser scanning microscopy • Gas chromatography • Fluorometer, plate-reader, other assorted 96-well instruments • Centrifuges • Phosphorus analyzer • Time-domain reflectometer • Water conductivity meter • Pyrometer • Sling psychrometer • Hydrological sonde

CERTIFICATIONS

General Class Amateur Radio License • EPA Pesticide applicator license

LANGUAGES

English
Native proficiency

Mandarin Chinese
Bilingual-level professional working proficiency

Dutch
Basic proficiency

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
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Dr. M. Todd Walter
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Dr. Marc Fuchs
Associate Professor, Department of Plant Pathology and Plant-Microbe Biology Section, School of Integrated Plant Science, Cornell University
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Shyi-Dong Yeh
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