

The USDA-ARS Horticultural Crops Research Unit would like to celebrate our Oregon State University Graduates, Class of 2020!

We are privileged to have worked with these students and know that they will continue to do great things with the rest of their careers. Wishing them all the success in their future ventures. We will miss them.



Andrea Retano will receive her BS in Environmental Sciences and is planning to continue on to graduate school. Andrea works in the Bryla lab conducting various field and greenhouse experiments on water and nutrient management in blueberry. Her primary duties include measurements to document the effects of different fertilizers and irrigation methods on plant growth, mineral nutrition, yield, and fruit quality. She has great leadership skills and often coordinates group activities during field work.

David Leon Chang is a Ph.D. student in the Bryla lab. He is from Lima, Peru, and is employed by Molinos & Cia S.A., the largest importer of fertilizers in his country. He came to Oregon State to learn more about blueberries. This is a relatively new crop in Peru but acreage has expanded rapidly to the point that the country is now the leading producer of blueberries in South America. David is developing new fertigation practices for blueberry and is the first person to examine how it responds to liquid and granular sources of phosphorus, potassium, and boron. He is particularly knowledgeable about how each fertilizer is affected by various soil conditions. David is currently writing his dissertation and will defend this summer. Once he's finished, David will return home as one of the leading experts on mineral nutrition of blueberries.



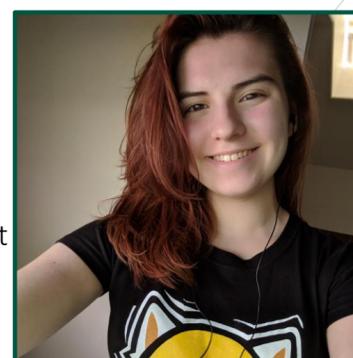
Emma Burt will be graduating with a BS in Botany. Emma has been member of the Martin Lab since October 2019, but came to us from the Finn Lab. Emma's primary responsibilities have been in the maintenance of research plants in the Martin lab greenhouses, this is no small task! Watering, fertilizing, repotting, pruning and she still finds time to help make media for both the tissue culture and molecular lab. Through excellent communication, attention to detail, hard work, asking great questions and always available to help when needed, Emma has been a wonderful member of our lab. When asked what's next, one possibility is working for a large nursery and they'd be lucky to get her.

Kale'a Galbreath graduates from Oregon State with a BS in Botany. She joined the Mahaffee Foliar Pathology lab in June 2018. She started primarily helping Sarah Lowder, (PhD. student) scout vineyards for grape powdery mildew as well as collecting and processing fungal samples. Kale'a continued to explore different scouting and sample collection methods which have significantly contributed to our understanding of the prevalence of QoI resistance throughout the Willamette Valley. She also worked independently on a project to determine the effect of leaf age of hydroponically grown grape plants on *E. necator* isolate establishment and maintenance. Kale'a also helped with maintenance of *E. necator* isolate collection and research vineyard. She has been an integral member of our lab and helps to keep it running every day with her diligent work.



Katerina Velasco Graham completed her MS research on alternative controls for azalea lace bug with Jana Lee's lab. She examined whether plant volatiles could attract natural enemies to infested azalea and rhododendron plants, and found some volatiles attracted green lacewing predators. She also tested whether supplementing plants with silicon could protect the plants from lace bug feeding and reproduction, and found promising results which she will continue to study this season. Katerina is passionate about sustainable agriculture, food security, and environmental education. Before coming to Oregon, she spear-headed community gardens and farmer's market organizations.

Katherine Gray will be graduating with a BS in Chemistry. Katherine joined the Martin Lab in Spring 2019. Both Katherine and Madison (*next page*) have been instrumental to the success of the tissue culture lab: solution and media preparation, lab maintenance, initiation preparation and execution, greenhouse upkeep, tissue culture preparation, transfers, and inventory reorganization and management. Katherine would take on tasks that most people would shy away from. Her contributions to the lab not only improved our system, but helped others succeed. When asked what was next, Katherine writes, "My plan is to take a little time to recover from school then my hope is to find a job working with plants in a molecular lab setting since I've greatly enjoyed my time here." No rest in store, as we have just arranged for her to continue working with us after graduation.



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Madison Gorton will be graduating with two BS degrees in Nutrition and Biology. Madison joined the Martin Lab in 2018. She started watering in the greenhouses and washing lab dishes then quickly transitioned into working with the tissue culture. Together, with Katherine (*previous page*), they were an integral team making media, maintaining an up-to-date inventory, and initiating cultivars from the greenhouses into tissue culture. Madison was mostly responsible for making sure the tissue cultures were thriving and ready to send to growers. Her dedication was truly appreciated, she wrote, "I love watching the growth of the plants and their response to changes we make in the medias to optimize their performance." Madison will be continuing her training towards becoming a Registered Dietitian at the University of Virginia Health Systems Dietetic Internship in Charlottesville, Virginia in the fall.

Nurul Ain Khalib transferred to Oregon State University, from INTEC Education College in Selangor, Malaysia, to pursue a BS in Bioresource Research Interdisciplinary Sciences with an emphasis in Plant Growth and Development on a scholarship from the Public Service Department of Malaysia. She joined the Stockwell Fruit Pathology lab in May 2019. Her research thesis is on aerial crown gall of blueberry. Aerial crown gall of blueberry is a notoriously difficult disease to study, in part, because it is challenging to isolate the pathogen and to reproduce the disease on blueberry. Fortunately, Nurul Ain is optimistic and persistent! She isolated and screened numerous cultures from diseased blueberry stems, but none of the cultured bacteria were responsible for the disease. She was undeterred and in a collaborative project, she generated tissue culture explants from galled stems to increase the odds of isolating the pathogen. This novel approach was successful and provided several isolates of the unique pathogen that will be extremely useful for future studies on aerial crown gall of blueberry. She will return to Malaysia to work in agriculture, hopefully in tissue culture or plant pathology.



Pedro Usabiaga Orantes graduates with a BS in Agricultural Business Management. Pedro joined the Finn lab in January 2018. Pedro came to us with a strong background in agriculture working on his family's garlic and vegetable farm and his uncle's agricultural shipping business in Mexico. Even with this strong background he still wanted to learn everything. Transplanting seedlings to fertilizing and watering the greenhouses, the plants were thriving and haven't looked the same since he returned to Mexico. Pedro is very driven, whether returning in summers to work on the family farm or to getting an internship at a large vegetable producer in California. It was a true pleasure to have him in our lab, singing and learning of his passion for golf.

Vedant Raol graduates from OSU with a BS in Bioengineering, with a new appreciation and interest in agriculture. He joined the Stockwell Fruit Pathology Lab in May 2018. His attention to detail, accuracy, and willingness to help wherever needed was a great value to our program. He primarily supported the Washington Red Raspberry Microbiome and the *Botrytis* Gray Mold Projects. His support was integral to maintaining our research blackberry field plot and our laboratory. He prepared thousands of freezer vials for storing all the isolates and accurately labeling the vials without error, unless he couldn't decipher our handwriting.



Zach Foster is graduating with a PhD in Molecular and Cellular Biology from Oregon State University. Zach has been exceptionally productive member of the Grünwald lab. Zach characterized the fungal and oomycete microbiome associated with Rhododendron plants grown in nurseries. Zach also worked on novel methods to characterize microbiomes. Perhaps we are most proud of his metacoder paper published in PLoS Computational Biology. In this effort Zach pioneered a novel method for visualizing community data in the form of heat trees. This provides a more information-rich alternative to stacked bar charts commonly used to date. He also published the associate R package taxa for manipulating hierarchical data in R suitable for phylogenetic and community ecology. Zach also led a team developing a new barcode for oomycete metabarcoding based on the mitochondrial gene rps10. This barcode is more accurate than the previous region based on the internal transcribed spacer region.