Plant Pathology Seminar Series

"Population genomic tools and approaches to characterize *Phytophthora* emergence"
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Plant pathogens emerge at increasing rates, be it due to a combination of climate change, increased human travel, and more frequent global trade among other factors. The genus *Phytophthora* harbours some of the most notorious invasive and emerging pathogens affecting forests, landscape and crop plants. These pathogens cause billion dollar losses annually. Notable examples include the sudden oak death pathogen *P. ramorum* and the Irish famine pathogen *P. infestans*. *P. ramorum* emerged repeatedly by at least five global migrations, three into North America and two into Europe. In both North America and Europe, *P. ramorum* populations remain clonal. Despite the fact that both mating types coexist in North America, sexual reproduction has not been observed. *P. infestans* populations show a similar pattern, but clearly undergo an apparently 'random' succession of clonal lineages as novel lineages emerge and older lineages are displaced. The South American tomato tree pathogen *P. andina* emerged via hybridization between *P. infestans* and another unknown *Phytophthora* species. This talk will provide insights into mechanisms of emergence in the genus *Phytophthora* using evolutionary, population genetic, bioinformatics, and genomic approaches. It is becoming increasingly clear that this genus uses an arsenal of tools and mechanisms such as effectors, hybridization, migration, and adaptation to continually re-emerge. This work provides a current assessment of *Phytophthora* biology with an emphasis on genomics and novel computational tools and approaches that facilitate development of translational approaches to mitigate the impact of these pathogens.

4:10 pm | September 21st, 2020 | Plant Pathology 515, Fall 2020
Zoom Link and ID: https://wsu.zoom.us/j/91621814000?pwd=MDVOY1prS0QybDRaMXNvTVNxTS82UT09

Meeting ID: 916 2181 4000

Passcode: 5353

Call in number: 1 253 215 8782

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Niklaus J. Grünwald is a Research Plant Pathologist with the Horticultural Crops Research Laboratory, USDA Agricultural Research Service, in Corvallis, Oregon. He is a courtesy Professor in the Department of Botany and Plant Pathology and the Center for Genome Biology and Biocomputing at Oregon State University. He received his Ph.D. in plant pathology from the University of California at Davis and conducted postdoctoral research at Cornell University. His principal research interests include the ecology, genetics and management of emerging and re-emerging Phytophthora diseases affecting ornamental and nursery crops with a special emphasis on the Sudden Oak Death pathogen *Phytophthora ramorum* and the Irish famine pathogen *P. infestans*. More recently, he has started working on projects involving oomycete forest biodiversity in Douglas fir old growth, whole genome sequencing of the genus Phytophthora, and development of computational and bioinformatics tools for comparative genomics, genotyping-by-sequencing, population genomics and metabarcoding. Grünwald has served as associate editor, senior editor and editor-in-chief for Phytopathology, editor for Plant Pathology, and currently serves as founding editor-in chief for CABI Agriculture and Biosciences and PhytoFrontiers. He has held numerous leadership positions including chair of the APS Publications Board overseeing all APS journals that launched the new Phytobiomes open access journal. He is a recipient of the 2006 USDA ARS Early Career Scientist of the Year award, the 2007 APS Syngenta award, the 2015 APS Ruth Allen Award recognizing outstanding, innovative research contribution that have changed the direction of research in any field of plant pathology, and became APS fellow in 2016 and AAAS fellow in 2019.

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