

GENOMICS OF *FRAXINUS* (OLEACEAE): A GENUS UNDER SEVERE THREAT

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Fraxinus (Oleaceae; olive family) is a genus of c. 48 tree and shrub species, including taxa of ecological and economic importance. *Fraxinus* species face severe threats from an invasive beetle species, emerald ash borer (EAB) in North America and a disease caused by an invasive fungal pathogen, ash dieback (ADB) in Europe. Susceptibility to these threats varies among ash species, and seems to be low in at least some Asiatic species. We have therefore sequenced and assembled whole genomes of 28 species or sub-species of *Fraxinus* (<http://www.ashgenome.org/worldwide>). We are taking a new approach for identifying genes conferring resistance to threats, based on detecting evidence of convergent molecular evolution among host species' genomes. We are currently analyzing patterns of gene evolution between species highly susceptible to EAB (*F. americana*, *F. latifolia*, *F. pennsylvanica*, *F. ornus* and *F. velutina*) and species with low susceptibility (*F. baroniana*, *F. chinensis*, *F. floribunda*, *F. mandshurica*, and *F. platyploda*). Genes showing patterns of convergent sequence similarity within low susceptibility species are identified as candidate genes roles in susceptibility. We will soon extend these studies to further species and to the analysis of ADB susceptibility.

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Citation for proceedings: Nelson, C. Dana; Koch, Jennifer L.; Sniezko, Richard A., eds. 2020. Proceedings of the Sixth International Workshop on the Genetics of Host-Parasite Interactions in Forestry—Tree Resistance to Insects and Diseases: Putting Promise into Practice. e-Gen. Tech. Rep. SRS–252. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 170 p.