



Booth No. 14 THE PROVENANCE OF WINE: THE ROLE OF BEDROCK AND SOIL IN TRANSFERRING TRACE AND RARE EARTH ELEMENTS INTO WINE GRAPES, SONOMA COUNTY, CA

Wednesday, May 15, 2019

09:00 AM - 06:00 PM

📍 Oregon Convention Center - Exhibit Hall B

The wine industry is one of the highest grossing industries in Sonoma County and the ability to trace a wine grape back to its growing region has become increasingly important for quality control. Determining a wine grape's origin is exceedingly difficult, however, recent research indicates that the 'provenance' of a wine grape can be discovered by comparing and correlating trace and rare earth element (REE) profiles of the bedrock, soil, and wine grapes. Our aim is to establish a geochemical link between the bedrock, soil, and wine grapes of four established vineyards in Sonoma County: Lambert Bridge, Jordan Estate, Cartograph Estate, and Starscape Vineyard. We selected these vineyards to represent the predominant lithologies in which Sonoma County's highest quality wines are grown: the Sonoma Volcanics and Franciscan Complex sandstones. Two representative bedrock samples were collected from each vineyard and the lithologies were analyzed through petrographic descriptions of thin sections and ICP-MS analysis at Union College. The obtained lithologies include basalts (Jordan Estate), basaltic-andesites (Lambert Bridge), and feldspathic arenite (Starscape and Cartograph). REE distribution patterns (normalized to upper continental crust) indicate that all samples are depleted in light REE, but basaltic samples display distinct enrichment in heavy REE, while sandstone samples display depletion in heavy REE.

Two soil samples at varying depths (30cm-60cm) were collected from each vineyard and prepared for ICP-MS analysis. Initial soil sampling indicates that obtained series include Guenoc (Jordan Estate), Goulding-Toomes (Lambert Bridge), Laniger (Starscape), and Goldridge (Cartograph). Approximately 400 grape berries growing within 5m of the rock and soil collection sites were sampled and prepared for ICP-MS analysis. Cabernet sauvignon grapes were collected from the Jordan and Lambert Bridge vineyards, while pinot noir was collected from the Starscape and Cartograph vineyards. The soil and wine grape samples were dried, pulverized, and digested, and at the time of this abstract are awaiting analysis at the UC Davis Interdisciplinary Center for Inductively-Coupled Plasma Mass Spectrometry.

Authors

Kylie E. Dupuis *

Sonoma State University

Owen A. Anfinson

Sonoma State University

Laura Waters

Sonoma State University

Holli M. Frey

Union College

Mayerline Rico

Sonoma State University

Kalia J. Richardson

Sonoma State University

Graciela Camarena

Sonoma State University

Booth No. 14

View Related Events

Day: Wednesday, May 15, 2019

Geological Society of America Abstracts with Programs. Vol. 51, No. 4, ISSN 0016-7592

doi: 10.1130/abs/2019CD-329559

© Copyright 2019 The Geological Society of America (GSA), all rights reserved.