

## Characterization of Igneous Intrusions and Mineralization at the REN Deposit, Northern Carlin Trend, Nevada, USA

**Amber Prevallet**<sup>1</sup>, Simon Jowitt<sup>1</sup>

<sup>1</sup>University of Nevada, Reno, Reno, United States

The REN deposit, located along the northern Carlin Trend in northeastern Nevada, hosts high-grade Carlin-type gold mineralization within sedimentary and igneous units. The igneous component consists of several dikes that are variably altered and locally contain some of the highest gold concentrations identified within the deposit.

This study characterizes these dikes using integrated geochemical, petrographic, mineralogic, and geochronological datasets to identify cogenetic protolith dike suites and differentiate dike populations within the deposit. analysis. These protolith suites are evaluated relative to alteration assemblage, including sulfidation and sericitization, to evaluate whether specific magma suites are preferential hosts for gold mineralization at REN.

Whole-rock geochemical data, including light rare earth elements (LREE) abundances and immobile element ratios such as Zr/TiO<sub>2</sub>, and Nb/Y were used in igneous classification diagrams to distinguish lamprophyre and diorites dikes. Lamprophyres are enriched in LREE relative to the diorites. Additional immobile and incompatible element ratios, including Nb/La and Gd/Yb, indicate arc-related magmatism and provide constraints on magma source characteristics and melting depth. These geochemical relationships enable the definition of protolith suites with distinct initial mineralogical and geochemical compositions. Spatial relationships and assay data were integrated to assess correlations between dike suites and higher-grade gold zones.

The results will provide a geochemical classification framework, protolith and magma-type characterizations, paragenetic sequences, and geochronologic context for the igneous intrusions at REN. Identifying dike suites preferentially associated with gold mineralization and those less favorable enables improved exploration targeting. In addition, this work contributes to understanding the interaction between mineralizing fluids in Carlin-type systems and the igneous host rocks.