Structural and Mineralogical controls of gold mineralization at the Tajitos project, Sonora, Mexico

Dillon Hume

Tajitos is an orogenic vein-hosted gold deposit in Sonora, Mexico. The local geology is composed of Juro-Cretaceous volcanic and sedimentary strata, with syn-volcanic granodioritic plugs and a post-depositional gabbroic stock. North-northeast directed compression during the Laramide orogeny formed a fold and thrust belt, folding and faulting the local strata. During the late Laramide orogeny, a mineralization event occurred, forming syn-deformational vein-hosted gold, under brittle-ductile conditions in the mid to upper crust. Post-mineralization Basin and Range extension accompanied the emplacement of lamprophyric dykes and reactivation of mineralized faults with normal movement.

Gold mineralization is hosted in steeply dipping, southeast trending fault-fill veins with surrounding coeval zones of extensional veins and quartz-sericite-pyrite alteration. High-grade mineralization shoots within the veins plunge steeply west and moderately to the southeast. Gold in the fault-fill veins primarily occurs along crack-seal laminations associated with galena and chalcopyrite occupying interstities between quartz and rimming pyrite, arsenopyrite, and sphalerite.