

UNDERSTANDING THE (RE)DISTRIBUTION OF RESISTATE INDICATOR MINERALS ASSOCIATED WITH OROGENIC GOLD MINERALISATION ACROSS THE MURRAY BASIN

PHD PROJECT

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RESEARCH PROJECT

Based on gold endowment by area, Victoria hosts the most gold-rich rocks in Australia. Recently gold exploration has identified a series of gold prospects under Murray Basin cover rocks. The Murray Basin is mostly less than 200 metres thick across the northern extensions of rock packages that host the world-class gold orogenic systems of Ballarat, Bendigo, Fosterville, and Stawell. This project aims to de-risk future mineral exploration undercover and develop mineralogical and geochemical tools that assist with the identification of high priority targets for follow-up work. The project will characterise the distribution and composition of resistate indicator minerals (e.g., rutile, monazite, ilmenite, apatite, tourmaline) both in-situ associated with gold mineralisation and ex-situ in cover sequences using micro-analytical techniques (e.g., automated scanning electron microscopy, electron microprobe, and laser ablation). Targeted sampling and analyses of material from key horizons within the Murray Basin cover will then assess the suitability of this approach in mineral exploration. This work will focus on marginal fluvial environments of the Murray Basin and will integrate cover stratigraphy, paleodrainage, and landscape evolution datasets.



Figure: an example of spectacular gold mineralisation from Fosterville – one of highest grade, lowest cost gold-only producers in the world.