

## **THE ROLE OF MICROORGANISMS IN FORMATION OF ORE AND PLACER GOLD DEPOSITS**

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Many sedimentary structures and minerals can be nucleated through microbial mineralization processes. Nevertheless biogenic formation of the noble metals is not clear yet. Numerous finds of gold microfossils show possible participation of bacteria and algae in formation of the ore and placer gold deposits. Microbial populations of native ore and placer gold deposits of the Amur area of the Russian Far East have been investigated. It was determined by results of analyses-screening, that considerable amount of isolating bacteria (*Bacillus*, *Micrococcus*,) and fungi (*Penicillium*) has abilities to accumulate ionic and colloid gold. The obvious correlation between gold accumulation microorganisms and content of gold in the rock has been revealed. It was determined by methods of electronic microscopy and IR-spectroscopy that accumulation of gold by fungi has three stages. The first stage includes high biosorption of colloid gold particles by functional groups of cell walls, the second - slow metal condensation on the crystallization centers with further formation of lacy net gold structures and the third one - transformation of these structures and the formation of loose biogenic gold aggregates. The results of experimental investigations prove the possibility of biogenic formation of secondary gold in oxidizing zones of the ore and placer gold deposits.