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# LUNAR SUBSURFACE MINING FOR BIOMEDICAL ADVANCEMENTS AND PLANETARY HISTORY EXPLORATION

**Abstract**

Lunar mining has traditionally been explored for resource extraction, but its potential extends far beyond industrial applications. This research investigates lunar subsurface excavation as a gateway to biomedical material discovery and planetary history analysis, with direct implications for space medicine, biotechnology, and deep-space survival strategies. By mining the Moon's regolith and ancient ice deposits, we can uncover rare isotopes, primordial bio-signatures, and radiation-resistant compounds that may revolutionize regenerative medicine, pharmaceutical synthesis, and biomaterial development for both space and terrestrial applications.

Additionally, deep lunar excavation provides a geological archive of early solar system events, offering insights into planetary evolution, cosmic radiation exposure, and potential precursors to extraterrestrial life. This research integrates AI-driven geospatial mapping, spectral mineral analysis, and in-situ biomedical experimentation to establish a framework for mining-derived space medicine and astrobiological studies. Our startup is pioneering commercial applications of lunar resource analysis, ensuring that advancements in medical science, planetary archaeology, and deep-space habitation technology remain at the forefront of lunar exploration.