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Genetic Sequencing in the Cannabis Sector

Presenter: Mike Esposito, Microbiologist, MCR Labs

Abstract: Scientists have been developing DNA sequencing techniques since the 1970s, leading to the generation of all new molecular systematics opportunities, across science fields. These technologies allow us to distinguish between closely related species, and enables science to track how and when newer species diverged from common ancestors. The technologies can also be applied to keep a watchful eye on threats to agriculture that are steadily encroaching on new territories. This is critical, as it is becoming more commonplace for popular cannabis cultivars to be moved from place to place; and, with rapid changes to the earth's climate, environmental niches are more likely to shift location.

To decipher the possibilities of genetic sequencing for cannabis we will discuss the technology used to sequence and understand DNA, as well as how the sequences generated through these methods can be used to help cultivators better understand their plants. We will include a history of "sanger sequencing", the most commonly known technique, as well as its predecessors and its modern day equivalents. Additionally, we will discuss how phylogenies, or "tree of life" graphs are constructed, how regulatory bodies like the USDA use these technologies to monitor dangerous invasive species, and how that same approach may be useful in the cannabis sector. As plant materials are increasingly transported from state to state, and cultivators seek out prized "cuts" by ordering seeds from both interstate and intercontinental sources, genetic sequencing will become an increasingly useful tool to cannabis scientists and cultivators across the globe.