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Highlogeny

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Hidden deep in the dense urban jungle of Downtown Los Angeles, just off the beaten path of Figueroa Street, an



adventurer might stumble across Clade 9—a mystical place where coveted flowers grow. Immediately, the sweet and pungent aroma of lemons overtakes the mind. As sirens coax sailors from ships with songs, the alluring scents of Clade 9's home-grown, award-winning cannabis strains draw memories from depths long forgotten. In no small way, Dave Holmes and his passionate team have unlocked and learned to harness the ancient power of smells, tastes and memories.

The clade in Clade 9

Phylogeny is the science of grouping biological organisms. The evolutionary tree of life visualizes and delineates the pattern in which all organisms descend from a common ancestor. In biology, a “clade” represents a common ancestor and all its descendants. These descendants comprise smaller clades or classifications (i.e., order,

family, genus, species).

For instance, the clade Pancrustacea shares a common ancient ancestor, whose genetic descendants evolved and diversified to form smaller clades: crustaceans (such as barnacles, lobsters, crabs, krill, etc.) and hexapods (all insects). In this way, millipedes, grasshoppers, shrimp and giant lobsters share a single common ancestor even though they're now quite different from one another.

Around 550 million years ago, a fish-like chordate evolved a primitive olfactory system—neurons dedicated to smell (the detection of chemical signals). This clade is called Olfactores and includes all the descendants of Vertebrata and Tunicata. In most vertebrates, the brain evolved to favor the olfactory system and placed it near the memory processing neurons. Although the human brain has evolved to favor visual processing, locomotion and language, it has conserved the close connection between the olfactory system, the facial nerve (sense of taste) and the hippocampus, which processes memories. This ancient connection between smell and memory is the magic that Clade 9 bottles and packages to transport Californians on their couches to mystical lands far away and long ago.

The 9 in Clade 9

Dave is a man of science. His passion for cannabis is evident in every aspect of Clade 9, starting with the brand name. To that end, there are nine critical factors to consider when growing world-class cannabis indoors: 1) lighting; 2) airflow; 3) water; 4) temperature; 5) humidity; 6) soil; 7) CO₂; 8) nutrients; and 9) root zone temperature.

Brandan and Nic are Dave's right hand and left hand at Clade 9. They carefully monitor each of the nine core components and adapt each room to strain-specific needs. Like biological evolution, this kind of wisdom requires time, trial and error. For more than a decade, Dave has been tweaking and advancing his understanding of the cannabis plant, its many strains and "clades," and their individual needs and wants from seed to harvest.

Technology has evolved alongside growers' understanding of plant science and individual strains of the species *Cannabis sativa*. Dave has adapted to sweeping changes over the past decade by adopting cutting-edge technologies, such as LEDs, much earlier than other growers. If lighting can be imagined as a clade, then light-emitting diodes (LEDs) are thriving indoors while high-pressure sodium (HPS) fixtures are quickly going the way of the dinosaurs.

Dave turned to Fluence in 2020 for lighting solutions, expert support and advanced LEDs. Clade 9 uses Fluence's RAZR LED system in its propagation room and SPYDR X in its vegetation room. Both rooms are controlled by an automatable, easy-to-use control panel with flex dimming capabilities. To improve air flow and increase available space, Clade 9 installed Pipp racking and fans. Indeed, each technology and procedure serve to optimize one or more of the nine key factors that compose Clade 9.

The hidden genius in Clade 9

Any operation can adopt the best technology and learn to grow quality cannabis with the right help and support. But Clade 9 is not just any operation and Dave is not content with the status quo. While many growers are still grinding sticks for fire, Dave has been blazing new trails for a decade with a flamethrower of trial and error. If biological evolution teaches anything, it's the principle that mistakes lead to every success that we love most in the world.

Clade 9 pioneers its own home-grown strains that have become household names throughout California. In the process of phenotype-hunting, Dave and his team have conducted thousands of trials over many generations of strains and their crossbreeds. In doing so, they've narrowed the genetic pool (which is more aptly a sea of genetic information and phenotypic expression) to a handful of extremely successful in-house strains, such as Fig Bar and Diamond Bar. In fact, 60% of the varieties they grow are original strains chosen for their unique sensorial properties and popularity.

The 17,000-sq. ft. indoor facility is a small patch of paradise in an otherwise sprawling metropolis. Despite limited space in downtown L.A., Clade 9 manages an impressive \$4.5 million annual revenue with more than 100 retail locations across Southern and Northern California. The Clade 9 brand is especially beloved by local Angelinos, who recognize the in-house strain—Diamond Bar—as a play on the family of "Bar" strains and the city of Diamond Bar in Los Angeles County.

Plato said that Sappho is the tenth Muse. In this case, community outreach is the unsung tenth factor in Clade 9's continued success. On top of creating unique top-shelf strains, Dave and his team raise the bar when it comes to customer feedback, local flavor and education. He's devised a clever and revolutionary approach to

classifying and grouping cannabis strains into “clades” based on their phenotype profiles and lineages. Hence, we’ve arrived full circle at the deeper meaning of Clade 9.

The clades in cannabis

Innovators understand that satisfaction is the root of mediocrity. Dave is more than a scientist and trailblazer of new strains to blaze—he’s also a philosopher who’s changing the way customers experience and think about cannabis. Clade 9 applies the phylogenetic paradigm of genotypic and phenotypic groupings to classify various cannabis strains into “clades” or “families,” which produce similar effects or share similar aromas and taste.

Cannabis sativa is the species of flowering plant; the umbrella terms—sativa, indica and hybrid—can be considered subspecies. Dave and his team have meticulously divided and grouped various strains based on their unique terpene profiles. In the Clade 9 model, the five major families are: 1) Bubba/OG; 2) Citrus; 3) Cheese; 4) OG; and 5) Haze.

This simple, yet sophisticated, classification system helps consumers to find their preferred strains and others with similar profiles and effects. For example, if a customer enjoys fruity and zesty strains in the Citrus Family, then Clade 9’s brochure points to its popular home-grown Orange Push Pop as the citrusy ticket to sticky nirvana.

More than that, Clade 9’s educational brochures detail the effects of each strain in relation to both body and mind. The use of bar graphs is a clever play to display the strength or weakness of various experiences and moods.

For instance, Fig Bar’s body effects are given high marks in *euphoria* and *relaxation* and low marks in *sleepiness* and *loving*. Its strongest mental effects are *carefree sensations* and *focus*, while its *light-headedness* is ranked low. This model is a unique and effective way to understand and think about cannabis and its expressions. It provides valuable insight for an industry still in its infancy, but one which promises to grow and complexify in unforeseeable ways.

Dave and the Clade 9 team aren’t waiting around for tomorrow; they’re actively shaping individual cultures and genetics into wildly popular strains. Perhaps more importantly, Clade 9 is advancing the industry and cannabis culture at large by changing how growers and consumers think about and remember their experiences with the plant. Whether seeking medicinal benefits, creative muses, relaxational qualities or myriad other aspects, Clade 9 makes it easy for anyone to find their very own Diamond Bar in the rough.

Taylor Kirk is a Horticulture Service Specialist for Fluence, the global leader in cannabis lighting. As a member of Fluence’s Crop Science division, Taylor provides cultivation advice to the company’s cannabis growing partners and collaborates with cannabis researchers and industry leaders. He has more than 20 years of experience in agriculture and a bachelor’s degree in agronomy from Texas A&M University. Taylor is also the founder of 4K Pharm LLC, a licensed Texas hemp producer, nursery, manufacturer and distributor.