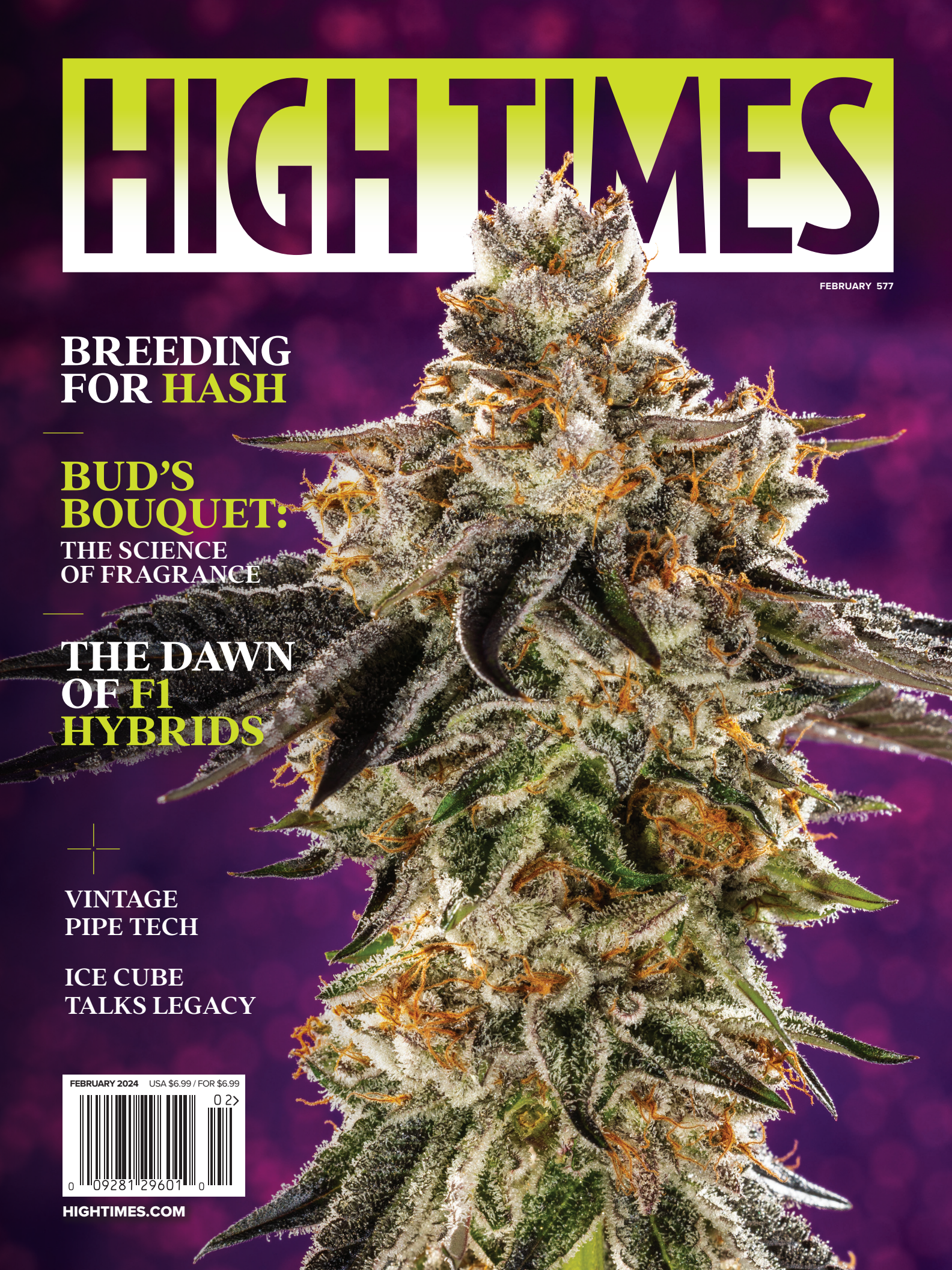
HIGH TIMES

FEBRUARY 577



BREEDING FOR HASH

BUD'S BOUQUET: THE SCIENCE OF FRAGRANCE

THE DAWN OF F1 HYBRIDS

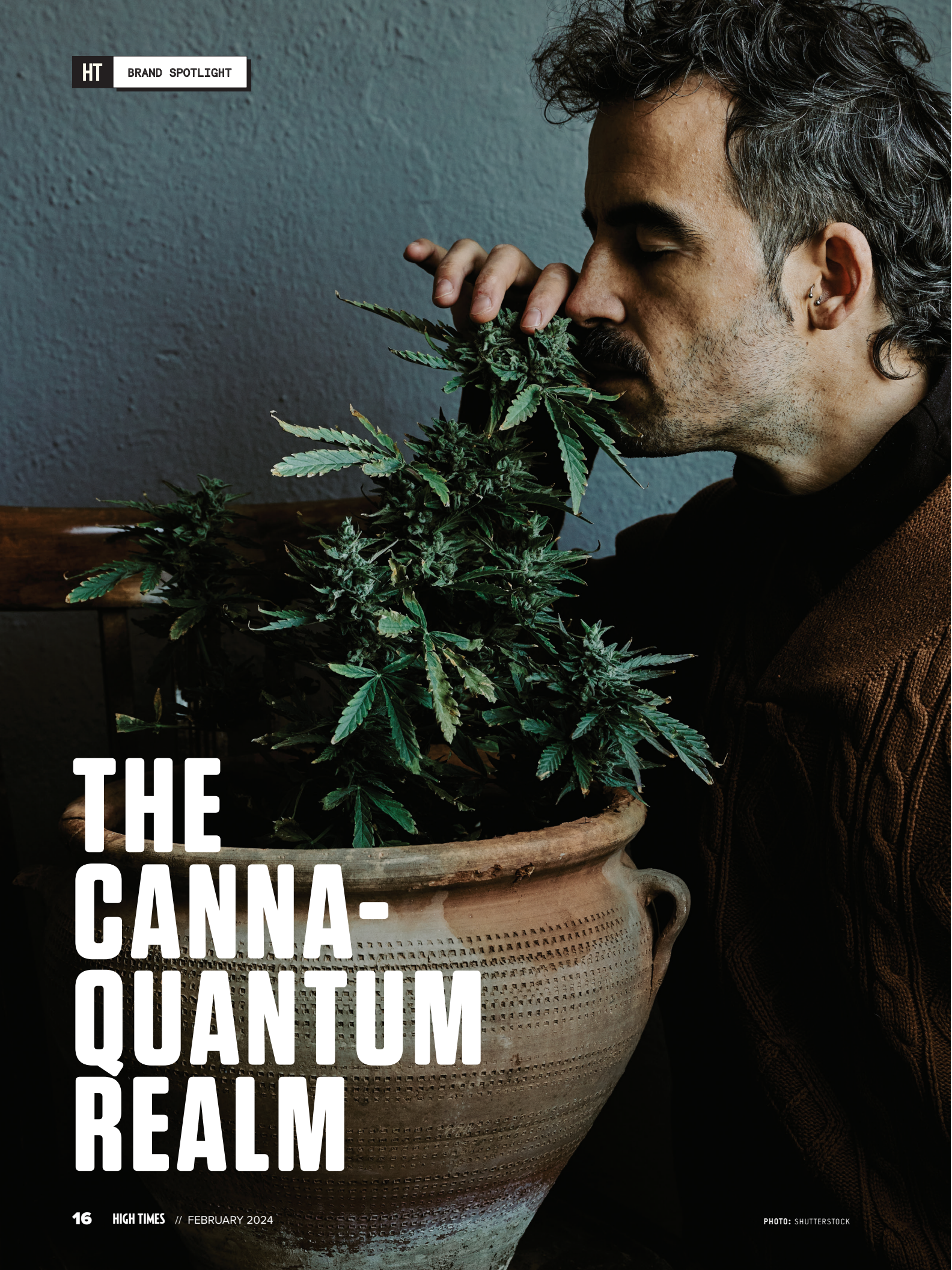
VINTAGE PIPE TECH

ICE CUBE TALKS LEGACY

FEBRUARY 2024 USA $6.99 / FOR $6.99

0 09281 29601 0 02

HIGHTIMES.COM



THE CANNA-QUANTUM REALM

PHOTO: SHUTTERSTOCK

Abstrax reaches beyond the world of terpenes to discover new, exotic flavor compounds.

By Matt Jackson

WHEN ABSTRAX STARTED ITS RECENT RESEARCH PROJECT, I DOUBT anyone could have imagined it would discover a whole new universe beneath our still-evolving knowledge of cannabis compounds. Now, they've released research suggesting how we understand how weed tastes or smells might just be the tip of the iceberg. Working with 710 Labs, SepSolve Analytical, and Markes International, the research team opened a portal into a world of rare and unseen flavor and aroma compounds in cannabis.

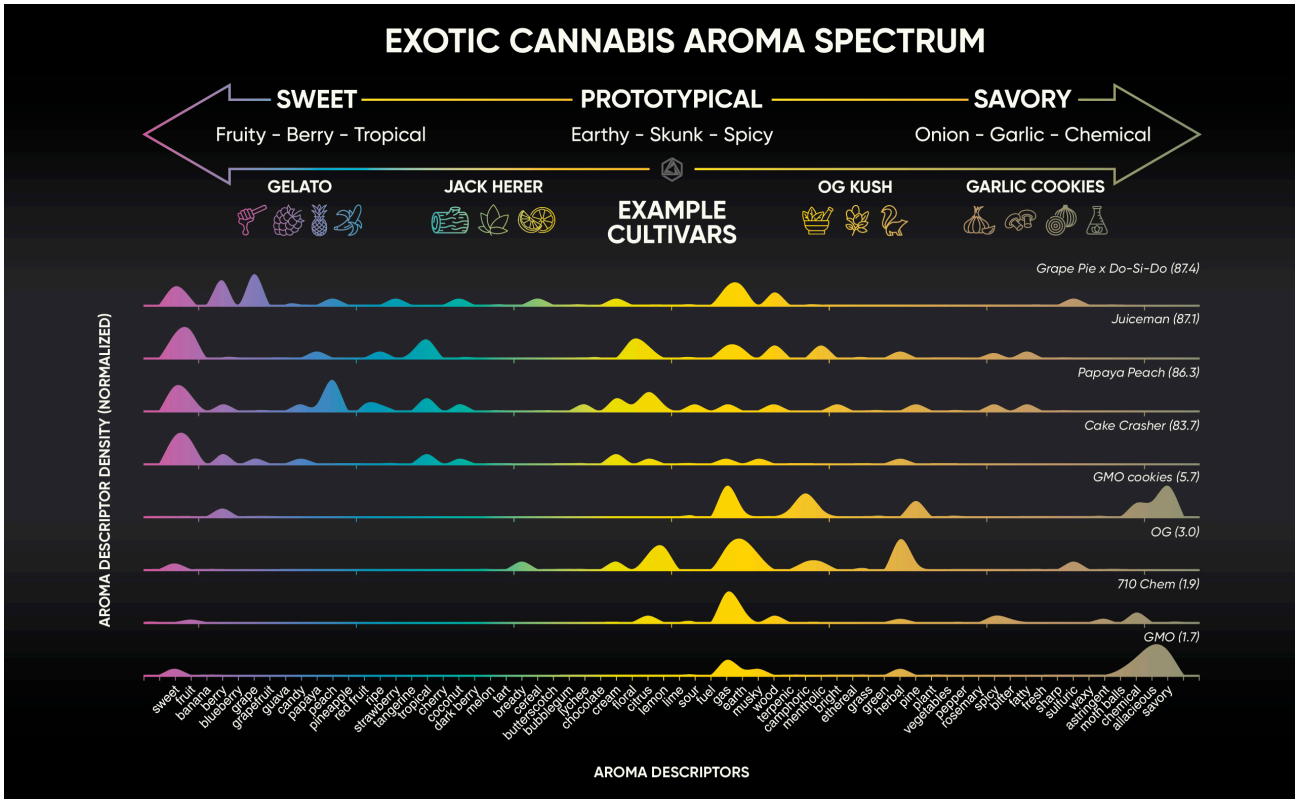
Founded in California in 2017, the Abstrax team calls themselves pioneers in botanical flavor technology. Its main business is to provide terpene-driven flavor solutions for industries such as cannabis, beverage, and fragrance. By studying the complete chemical makeup of a cultivar, Abstrax goes through a rigorous process to map out, select, analyze, refine, formulate, optimize, test, reformulate, test, and package before offering companies the truest strain-specific flavors they can produce. It does so through its three divisions: tech, which researches and creates terpene blends for various markets; labs, which conducts botanical testing and offers extraction/analytical technologies; and hops, providing research, products, and services to the brewing sector.

Using two-dimensional gas chromatography, a sophisticated separation technique that offers higher resolution than traditional chemical analysis, Abstrax was able to detect pockets of "hidden compounds," which they believe have a significant impact on odor and can shape the course of how we classify or even shop for weed.

Abstrax researchers published the results of their findings in a white paper posted on their website and in the peer-reviewed journal *ACS Omega*. The research points out that one of the main driving factors regarding how consumers choose cannabis has to do with THC percentages. The battle over whether something is better because it's stronger has caused more than a few amazing strains to become lost to time. However, another key factor in what someone purchases is and has always been how something smells. Despite restrictions across many states on cracking open a jar and letting someone take a whiff, this obsession with smell has led to terpenes, or terps, becoming the second most important factor that the study identifies when consumers decide which cannabis to buy. Now, packaging lists the most dominant terpenes on the label and uses them as a guide to tell consumers what they can expect. ≫

"The discovery of these compounds will play a crucial role in validating cannabis's authenticity and accurately classifying cannabis varieties in the future."

– Max Koby



GRAPHS: COURTESY ABSTRAX

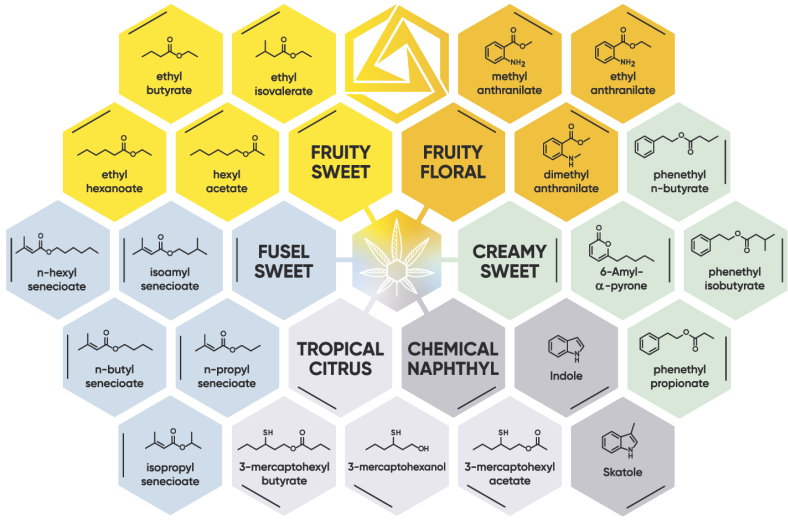
Abstrax and the research team see this as a partial response to the modern pushback to the classic indica, sativa, and hybrid classification system we've leaned on up to this point. As the cannabis industry develops more modern ways of labeling and portraying the different varieties of cannabis, it's looking for new terms to replace indica and sativa, and smell has emerged as a dowsing rod as competitions divide strains between candy, citrus, and gas. Much of the marketing focus on educating base-level consumers past sativa and indica has shifted toward trying to describe to shoppers what these aromatic compounds mean concerning the taste, smell, and psychoactive effects of a strain. It makes sense since, as the research points out, they appear in high amounts, making them a seemingly perfect identifier for classification.

Contrastingly, the research asserts that we might be trading one generalization for another in our use of terpenes, pointing to an additional study—"The phytochemical diversity of commercial cannabis in the United States," published in *PLOS One* in May 2022—which concluded that in the United States, all cannabis falls into one of three terpene-dominant categories: terpinolene/ß-myrcene, D-(+)-limonene/ß-caryophyllene, or ß-myrcene/pinene.

The authors point out that through this system, strains with very different smells ended up in the same groups together. With its skunky, woody aroma, Dogwalker OG wound up next to Tropicana Cookies and Purple Punch, two cultivars with very contrasting smells. Meaning that you can't always assume something will smell a certain way due to high percentages of certain terpenes.

"Taken together, these results strongly suggest that while aroma is a key property in differentiating cannabis varieties and user preferences, the importance of terpenes appears to be overstated," researchers wrote.

The team concluded that terpenes had less of a correlation with the sought-after attributes of a lot of "exotic" cannabis strains and that it must be these alternate classes of compounds at work.



The study identified a wide variety of aroma classes, each with diverse functionality, that are responsible for some of the most desirable aromatic qualities found in modern cannabis. Two such classes include tropical volatile sulfur compounds (VSCs), which are responsible for the citrus notes in Tropicana Cookies or Tangie, and heterocyclic compounds like indole and skatole, which produce the rich, intense scent in strains like GMO. They also identified a class of chemicals called flavorants that includes alcohols, ketones, and esters, that go beyond terpenes in affecting the smells and tastes of cannabis. Though found in small amounts, they believe these compounds play a major role by combining to create many of the diverse tastes in modern "exotic" strains like Apple Fritter or Zkittlez.

"The discovery of these compounds will play a crucial role in validating cannabis's authenticity and accurately classifying cannabis varieties in the future," says Max Koby, CEO and co-founder of Abstrax.

Koby also said that utilizing these previously undiscovered cannabis compounds would allow Abstrax to create "the most flavorful and authentic cannabis flavors," which will elevate the level of the terpene blends and isolate it sells, but also benefit everyone in the space. Consumers can finally have a better toolkit to identify what flavors and feelings they enjoy most. Cultivators, breeders, and brands could someday use this knowledge to better understand which plant components drive these sweet fruit flavors versus the savory ones.

"This research helps us better understand flavor in the cannabis experience, allowing us to better educate our customers and select phenos for our genetic library," says research co-author Brad Melshenker, co-CEO of 710 Labs.

One of the more exciting benefits that Abstrax identified for this research was its ability to provide a jumping-off point for researchers and packagers to discover the best way of preserving these specific compounds and provide cannabis with a better shelf life.

With additional research planned, Abstrax has announced a partnership to create educational content that helps tell the story of the revelations brought about by its discoveries. Somebody reach out to Paul Rudd. Just like *Antman* explored and expanded upon the understanding of the microscopic quantum realm the technology employed here shows us there's so much more happening inside the plant than we've ever imagined.

Abstrax believes "we stand at the dawn of a new era in cannabis understanding" and that the microcosm of additional compounds inside these plants is part of a secret roadmap researchers are just now learning to draw. This new research will allow us to look for and provide solutions to many of the problems that have arisen from the swift evolution of cannabis from evil weed to essential service. Maybe someday, in a galaxy far, far, away, an android will extend a glass jar to smell the nugs instead of watching an image spin on a budtender's holopad. HT