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How Peter Horvath plans to revolutionize  
the cannabis shopping experience. **Page 48**







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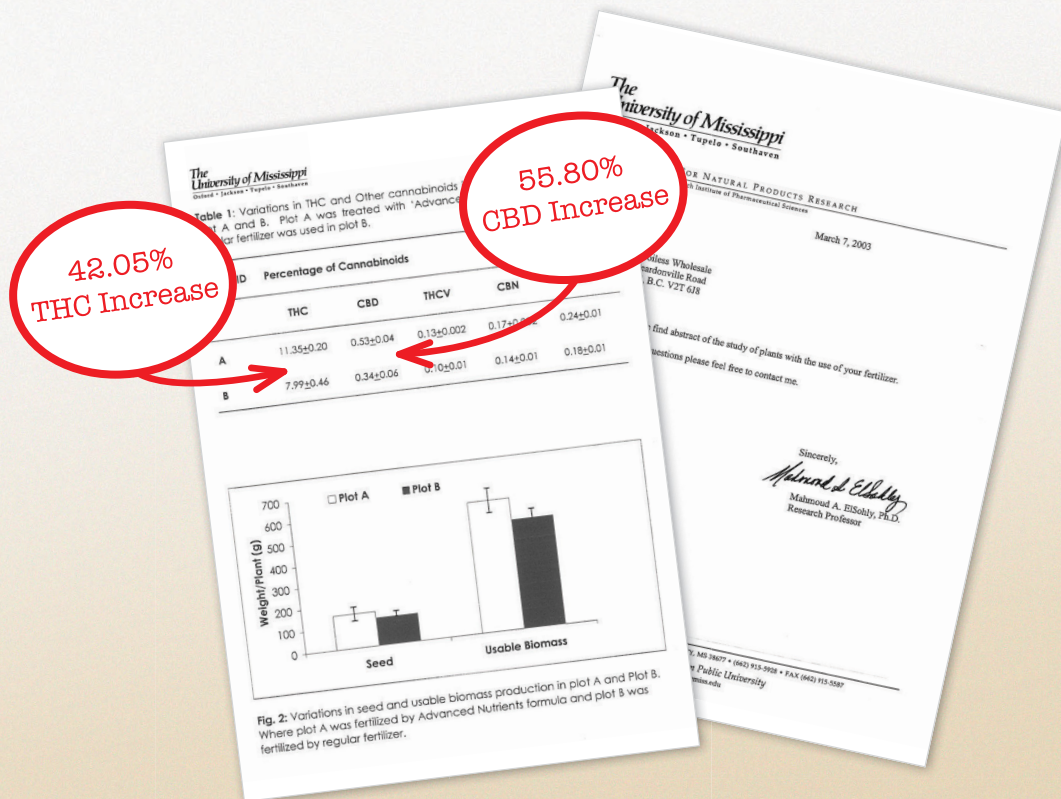
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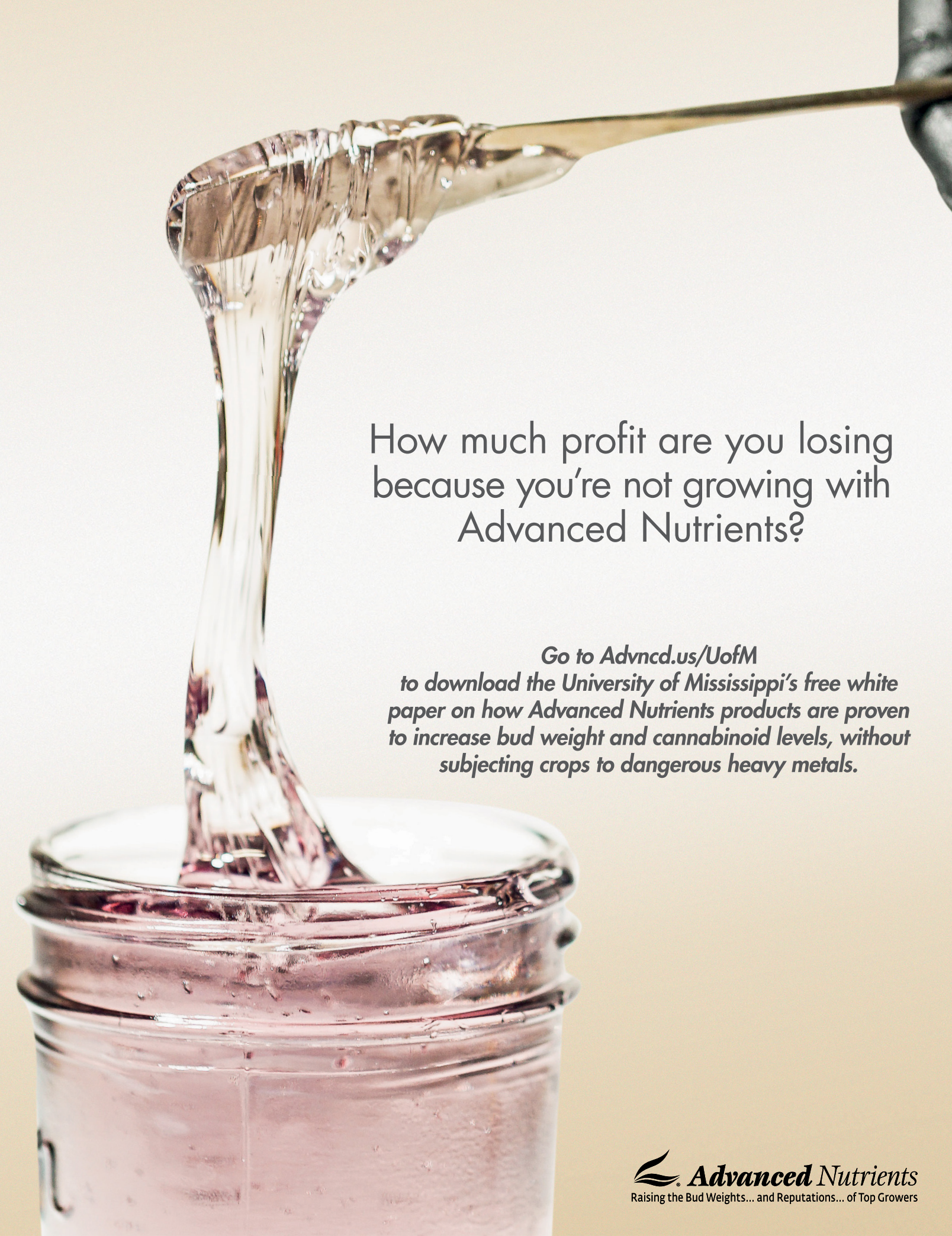




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to increase bud weight and cannabinoid levels, without  
subjecting crops to dangerous heavy metals.*



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SPECIAL FEATURE

## The Cannabis Plant

Scientists and growers are working to find order in tangled strain genetics, but ancestry claims are difficult to substantiate.





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Photo: agsandra / Shutterstock

# Blinded with Science

AN ARMY MAY MARCH ON ITS STOMACH BUT, regardless the commodity, most modern industries march on science and technology. Cannabis is no exception, although the industry's relationship with the disciplines has been somewhat informal until relatively recently. Testing labs arose at the dawn of legalization and manufacturing technology (for edibles, vaporizers, and the like) has been expanding and improving for more than a decade, but digital systems that facilitate tracking and tracing, inventory management, and sales are only now becoming commonplace.

Cultivation always has been a scientific endeavor. Managing complex interactions between plants, nutrients, pest control, soil, water, and light requires heavy-duty technical know-how. So does breeding new strains. While more agronomists with high-level diplomas enter the industry every day, discovering new processes and tweaking existing ones, they base their work on knowledge and practices pioneered by people who've worked in the field, literally, for generations. Those folks have earned the equivalent of laboratory science degrees—not in classrooms, but through experience.

Some of the most fascinating—and essential—scientific investigations taking place at the moment comprise efforts to uncover genetic relationships between strains. As Christopher Jones reveals in his feature “The Cannabis Plant,” strain identities may not be as discrete, or as accurate, as growers and consumers assume. Due to mutation and the genetic complexities of seed generation, some plants thought to be specific hybrids may be covert operatives in disguise.

Among the notions three intellectual property attorneys bring to the fore in their column “Challenging and Enforcing Canna-patents” is genetic documentation will prove vital in defending against utility patents. By filing such patents, companies can lay claim to broad swaths of existing cannabis genotypes and phenotypes because demonstrable “prior art” is virtually non-existent. Those companies—one of which already is gathering a Monsanto-like portfolio—could require cultivators to grow only from seeds purchased from them every crop cycle. Say goodbye to clones, cuttings, and breeding programs.

One needn't be Einstein or Tesla—or even a run-of-the-mill geek—to appreciate how science and technology can change the world. The trick in cannabis, as in every other industry, will be to use practical applications to our advantage while not overlooking any that could take advantage of us.

Kathee Brewer



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## NEWS BRIEFING



# Record Number of Workers Failing Workplace Drug Tests

SECAUCUS, NJ — The number of workers who test positive for drug use has risen by double digits in almost one-third of U.S. industry sectors, according to a report from workplace testing lab Quest Diagnostics. Perhaps unsurprisingly, cannabis leads the list of detected substances.

Workers tested positive for cannabis use at a rate more than 34-percent higher than the average positivity rate across all other substances, according to the Quest Diagnostics Drug Testing Index. Five sectors experienced at least 20-percent increases in positive cannabis results: transportation and warehousing, 33.3 percent; construction, 26.7 percent; wholesale trade, 23.5 percent; manufacturing, 23.1 percent; and accommodation and food service, 20.7 percent. The retail sector experienced an

18.5-percent rise in cannabis-positive test results but displayed the highest positivity rate among the sixteen employment sectors observed.

Since 2015, positive test results have shown sharp state-by-state increases upon legalization of recreational use, according to the Quest database: Nevada experienced a 43-percent jump, Massachusetts saw a rise of 14 percent, and California's rate climbed by 11 percent over pre-rec levels. The increases were particularly pronounced in federally mandated drug tests for safety-sensitive workers including pilots; rail, bus, and truck drivers; and nuclear powerplant workers.

Quest Diagnostics has analyzed annual workforce drug-testing data since 1988.





## CORY GARDNER TO REINTRODUCE STATES ACT

This time around, the Republican senator from Colorado may include language easing federal restrictions on banking.

## IS CBD LEGAL? THE POST OFFICE DOESN'T THINK SO.

The U.S. Postal Service Criminal Investigation Division is examining an Arizona company's shipment of CBD products across state lines.



## SURGEON GENERAL: LET'S RECLASSIFY MJ

U.S. Surgeon General Jerome Adams advocates removing cannabis from Schedule I, rethinking criminal justice and health policies, and promoting research.

## STUDY: CANNABIS VS. BORDER WALL

According to the Cato Institute, cannabis seizures at the southern border are down 78 percent since 2013, indicating legalization may trump a physical barrier.



## UN DELAYS THC RESCHEDULING

The "necessary process" continues, pending a March report from the World Health Organization which may recommend Schedule II or descheduling altogether.

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40%

Decrease in consumer flower demand since 2015.

138%

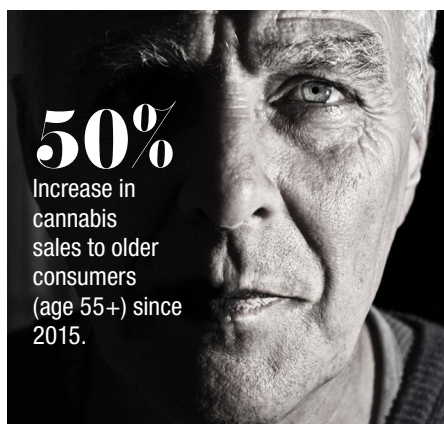
Growth in concentrates market share since 2015.

38%

Concentrates' share of retail sales in October 2018.

(Source: New Frontier/MJ Freeway report)





## OREGON'S CANNABIS CONUNDRUM

Some of the 1.3 million pounds of bud inventory stockpiled in Oregon on January 1 was just-harvested, so weighed more than if it were dried. If all 1.3 million pounds were dried and ready to go, the volume would:

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**7.8 years**  
**TO SMOKE, IF OREGONIANS**  
**CONTINUED 2018'S**  
**CONSUMPTION RATE**

(Source: Willamette [Oregon] Week)



## HEADSET RAISES \$12.1 MILLION

SEATTLE — Headset, a cannabis retail data and analytics firm, secured \$12.1 million in a Series A financing round led by Poseidon Asset Management and AFI Capital Partners. Canopy Rivers Inc. also participated in the round.

Emily Paxhia, managing director for Poseidon, and AFI Managing Director Nico Richardson will join Headset's board of directors.

Headset plans to use the funds to improve current products and services, expand the company's offerings to additional U.S. states and international markets, and support partnerships and strategic alliances. The company also intends to invest some of the money in developing market intelligence for the consumer packaged goods, beverage alcohol, and financial industries, all of which have begun showing interest in the cannabis space.

Leafly cofounders Brian Wansolich, Cy Scott, and Scott Vickers launched Headset in 2015 with a \$450,000 seed investment from Poseidon.

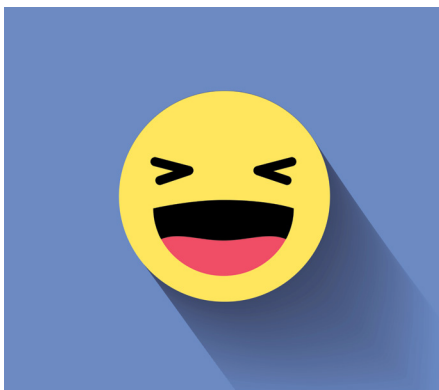
## WHAT WOULD WILLIAM BARR DO?

Donald Trump's nominee for U.S. Attorney General pushed for harsher treatment of drug offenders in the 1990s, but his position on legalization is unknown.



## FDA WADES INTO CBD'S STATUS...SORT OF

The Food and Drug Administration "recognizes the potential opportunities" for the substance and plans to evaluate "pathways" for nationwide sale and distribution.



## OOPS! FACEBOOK GOOFS AGAIN

In what the social media giant described as a mistake, Facebook shut down pages belonging to several hemp and CBD companies for promoting prescription pharmaceuticals.

**\$5.9b**

Projected U.S. medical sales during 2019, up 28 percent from 2018.

**2.4m**

Projected Registered U.S. medical cannabis patients by year-end 2019.

**\$7.4b**

Projected U.S. recreational sales during 2019, up 21 percent from 2018.

**\$1.4b**

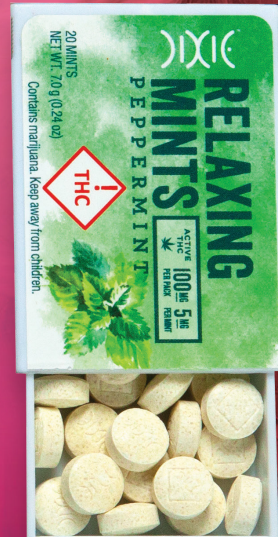
Projected U.S. hemp market in 2019.





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67%

of cannabis consumers consider themselves recreational users.

(Source: New Frontier/MJ Freeway report)

60%

of consumers spend less than \$50 per purchase.

(Source: New Frontier/MJ Freeway report)

47%

of consumers report spending more than \$100 per month on cannabis.

(Source: New Frontier/MJ Freeway report)



## NYC MAYOR WANTS TO KEEP WHALES OUT OF CANNABIS

**NEW YORK** — New York City Mayor Bill de Blasio is not a fan of big businesses in small spaces. In his view, the cannabis industry should be dominated by local players with “skin in the game” instead of corporations and investors—especially those from outside the industry.

“Legalization can follow two routes. In one, corporate Cannabis rushes in and seizes a big, new market, driven by a single motive: greed. In another, New Yorkers build their own local cannabis industry,” he wrote in the introduction to “A Fair Approach to Marijuana,” a seventy-nine-page report compiled by the Mayor’s Task Force on Cannabis Legalization and released in January.

De Blasio specifically hopes to avoid recreating California’s model, which awarded 20 percent of the state’s cultivation licenses to twelve super-sized companies. Even more specifically, he wants to prevent Big Alcohol, Big Tobacco, Big Pharma—and, yes, Big Cannabis—from dominating the supply chain.

On the mayor’s to-do list: automatically expunge some criminal records, provide job training, and offer loan programs as part of a social equity program. The mayor and the state comptroller also want to invest cannabis tax dollars in the communities most harmed by the war on drugs.



## MICHIGAN CLOSES 70 DISPENSARIES

The temporarily licensed dispensaries missed a deadline. They said the state is to blame for being slow to grant final approval.



## STUDY: CANNABIS MAY AFFECT MEN’S FERTILITY

Duke University research indicated using bhang induces heritable structural and regulatory changes in the DNA of men of child-bearing age.



## NY MOVING TO LEGALIZE REC USE

Lawmakers are drafting legislation based on Nevada’s system, which gives licensing priority to existing medical dispensaries and allows sales of one ounce per day.





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# Concentrates: The Hottest Product Category in Cannabis

A Cannabis Intelligence Briefing Series Report

## A SAMPLING OF KEY INSIGHTS



CANNABIS CONCENTRATES HAVE EMERGED AS THE FASTEST-GROWING OF THE MAJOR SEGMENTS OF THE LEGAL CANNABIS MARKET. DATA FROM BDS ANALYTICS' GREENEDGE™ RETAIL SALES TRACKING PLATFORM SHOWS THAT CONSUMERS, PARTICULARLY THOSE IN ADULT-USE MARKETS, ARE GRAVITATING TOWARD THIS STRONGER, DISCREET, PORTABLE PRODUCT CATEGORY. RETAIL CONSUMER APPEAL IS PROPELLING CONCENTRATES TOWARD AN ESTIMATED \$8.4 BILLION IN RETAIL SALES BY 2022.

Concentrates' forecast share of total dollar sales will reach 46.5% of all U.S. cannabis product sales in 2019 (\$6.7B of \$14.4B).

By 2022, U.S. concentrate product sales are estimated to hit \$8.4 billion and nearly match the \$8.5 billion in flower sales forecast.

Nearly 60% of concentrate spending in 2018 came from prefilled vaporizers, a market dominance likely to grow over the next five years.

Vape cartridge products are forecast to reach an 80% share of concentrate sales and garner nearly \$6.5 billion by 2022.

Consumer spending on cannabis concentrates in the United States is forecast to grow 41.3% Y-O-Y to reach \$4.1B in 2019.



### Most Popular Types of Concentrates

Based on Jan-Oct 2018 Sales  
AZ, CA, CO & OR Markets



#### VAPE

\$972M | 68.4%



#### SHATTER

\$114M | 8.0%



#### LIVE RESIN

\$109M | 7.7%



#### WAX

\$100M | 7.0%



#### OILS

\$47M | 3.3%

Key: Total Sales | Percentage of Concentrates Sales



With more brands coming into the market, the top 5 concentrate brands in Colo. composed 27.1% of total concentrate sales in October 2018, down from 34.9% in Jan 2018. In the near term, we see this trend continuing forward.

*"Technology is revolutionizing a product category that began as hand-rubbed hash in the Middle East centuries ago. We believe the growth of the concentrate market will continue as the cannabis industry evolves and consumers look toward new and innovative delivery methods that fit their lifestyles."*

Tom Adams  
Editor in Chief, Arcview Market Research  
Managing Director of Industry Intelligence, BDS Analytics



This infographic was created exclusively for **mg** Retailer readers

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These insights are featured in the  
*Concentrates: The Hottest Product Category in Cannabis* report

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## EVENTS



## CALENDAR OF EVENTS

*The following is a list of select industry events taking place during February 2019.*

### INTERNATIONAL CANNABIS BUSINESS CONFERENCE FEBRUARY 7—8

Mass Mutual Center,  
Springfield, Massachusetts  
The ICBC brings together state regulators  
and industry leaders to discuss permits, business  
models, and investment opportunities.  
Educational sessions address legal and political  
challenges and regulations, and networking events  
encourage mixing with other professionals in the  
cannabis space.

[INTERNATIONALCBC.COM](http://INTERNATIONALCBC.COM)

### NCIA SEED TO SALE SHOW FEBRUARY 12—13

Hynes Convention Center, Boston  
The Seed to Sale Show brings together people,  
labs, cultivators, technology companies, and  
product manufacturers for business-to-business  
networking and to exchange information about  
policy issues and every aspect of the seed-to-sale  
cycle. More than 3,000 policymakers, experts,  
and entrepreneurs are expected to attend.

[SEEDTOSALESHOW.COM](http://SEEDTOSALESHOW.COM)

### CANNATECH FEBRUARY 13—14

Central Hotel Panamá,  
Panama City, Panama  
CannaTech's global focus offers senior industry  
leaders, medical and scientific experts, and new  
ventures a platform to form partnerships and  
promote knowledge exchange. Presentations focus  
on science, research, finance, medicine, technology,  
agriculture, innovation, and government policy.

[PANAMA.CANNA-TECH.CO](http://PANAMA.CANNA-TECH.CO)

### 5TH ANNUAL EMERALD CONFERENCE FEBRUARY 27—MARCH 1

Loews Coronado Bay Resort,  
Coronado, California  
The Emerald Conference brings together  
extraction, production, and cultivation professionals;  
scientists and researchers; lab owners; regulators,  
and others in a collaborative environment. The 2019  
conference will incorporate educational sessions  
about genomics and chemotyping, clinical research,  
and product development.

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# Making the Message Memorable

*Marketing in a highly regulated industry isn't easy,  
but it's doable with a little creativity.*



**I**N A HIGHLY competitive industry, memorable brands win. Creating a lasting impression in consumers' minds requires no small amount of outside-the-box thinking—not necessarily “out there,” but creative and different. While there is no recipe for marketing success, there are a number of ways to stand out from the crowd.

## MORE THAN MERCH

According to Chief Executive Officer David Elias, Lowell Herb Company's marketing plan leverages fan loyalty. The company is known for products and packaging that honor the heritage of California cannabis: renewable, clean, and with an emphasis on craftsmanship. Customers and employees who share the brand's ethic “kept asking for ways they could represent Lowell,” Elias said.

“The retail partners we work with, and particularly the budtenders who love Lowell products, wanted to represent the brand,” he said. “People who were fans of Lowell beyond California—who knew us from social media—wanted to be a part of our movement to create beautiful, sustainable cannabis products.”

To answer the call, Lowell produced branded T-shirts and could not keep them in stock. Then they released consumer versions of the rolling kits Lowell's farmers used to roll their own joints, so customers could enjoy the same experience. From there, Elias rolled out more branded merchandise, including cedar-lined humidors, vintage replica ashtrays, and framed Lowell posters.

“The [posters] are hand-silkscreened and hand-numbered, with the majority of the profit going to the artists who created them,” Elias said.

Next came Lowell vintage vending machines—many having been in storage since the 1940s—which made a big splash due to their limited edition, historical coolness. “Owning one of these is owning a significant piece of Lowell history,” Elias said.

What excites him most, though, are the company's custom pop-up shops—brand experiences that go beyond point-of-purchase displays. “We cannot really talk about it too much because we are doing the first three pop-up shops right now,” he said. “The idea is that they are custom Lowell outposts that exist inside a store and share the Lowell brand experience with considerably more visual impact.”

## ELEVATED EXPERIENCES

Canndescent takes a subtle, personal approach to marketing its ultra-premium brand. According to Chief Marketing



Officer Jenna Habayeb, consumers have responded well to thoughtful touches like colorful packaging that includes a hemp wick, rolling papers, quotes, and a note from the CEO. “Most people say our gift sets feel almost like a jewelry box experience,” she said.

The company devotes considerable attention and resources to creating magical events, with a special eye to details such as fresh flowers, ornate gift bags, and educational ambassadors. “This also applies to how we work with partners that have a direct line to our consumers, like lifestyle media publisher activations with *Goop*, *Clique Media*, and *Entrepreneur*,” said Habayeb. “But what really sets us apart is that we create a luxurious experience at every consumer touchpoint, which is really new for the cannabis space.”

Canndescent also has seen success with its trade marketing initiatives, from in-store video to signage and elevated visual merchandising strategies. “Again, all things that matter in the last mile when it comes to consumer consideration and purchase,” Habayeb said.

## REDEFINING THE TRADITIONAL APPROACH

Regulations that limit marketing outreach through traditional channels spurred Caliva—both a dispensary and consumer brand—to rethink its approach. “We have tried *everything* under the sun,” said Vice President of Branding and Marketing Rosie Rothrock. First were buzzy billboards that screamed slogans like “Doobie or not doobie, that is the question” and “You share your buds, we’ll share ours.” Next, the company partnered to disseminate messages through local businesses like farmers markets and pedicab companies. “This works well during big sporting events and concerts in San Jose,” said Rothrock.

With input from employees and friends, Caliva began deploying street teams to local events and hosting a taco Tuesday event in their own parking lot. “We offer free tacos plus a drink to anyone

who spends over \$45,” Rothrock said.

Caliva also found an ingenious way around restrictive social media advertising laws: The company added a giant, colorful mural to its outer wall, turning its retail facility into an Instagram-worthy selfie hotspot. “We are located in a very industrial part of town due to zoning restrictions, and we really wanted to make sure that we looked friendly, approachable, and open to the public,” Rothrock said.



BUDTENDERS ARE  
BY FAR THE MOST  
VALUABLE LINK IN THE  
MARKETING CHAIN.

—Ruben Cross, Kushy Punch



The company has seen the most success with its ever-growing brand ambassador program. “We send a large, fun merch and schwag package out to our ambassadors regularly throughout the year,” said Rothrock. “We’re always looking for more people to join this crew.”

## DO IT WITH PANACHE

Kushy Punch has become known for print ads that enchant with a bit of sly, wink-wink, nudge-nudge mischief. That’s by design, according to founder and President Ruben Cross. “We have always tried to communicate what it feels like to consume Kushy Punch,” he said. “As a result, our marketing has always been whimsical, fun, and potent.”

Like so many other cannabis


brands, Kushy Punch felt hamstrung by restrictive marketing rules, forcing the company to reach new customers in novel ways. For Cross, that meant sponsoring third-party content, working with cannabis influencers, paying to place products in music videos, and even sponsoring Vanes “The Nightmare” Martirosyan in his 2018 World Boxing Association title bout.

“This was the first time the California State Athletic Commission and HBO approved a cannabis company as a sponsor,” Cross noted.

While at first glance it might seem a bit odd for a cannabis company to back a boxer, the move made historical sense to Kushy Punch: Promotional mini boxing gloves were instrumental in getting consumers to try Kushy’s medicated gummies in 2014. At the time, Cross felt the company needed...well, a hook that would help it stand out from more robust, better-funded players entering the space. The tactic worked: People didn’t want to spend money to try a new edible, but they would buy three Kushy Punch products just to get the kitschy-cool gloves.

“We see a lot of people hanging the gloves from their rear-view mirror,” Cross said. “That means our brand is the last thing they see before going into the dispensary. That’s a billboard spot that money can’t buy.”

Kushy Punch recently broadened its marketing focus to include data analysis as a means to maximize effectiveness, particularly when exploring marketing channels outside the cannabis space. “Harnessing audience data is standard practice for more conventional industries, but this is pretty out-of-the-box for the cannabis industry right now,” Cross said.

As for in-store retail marketing, he said he believes budtenders are Kushy’s best ambassadors. “The budtenders are by far the most valuable link in the marketing chain, so educating them on the virtues of your product and your brand is tremendously important.” 

—Rob Hill





# 401(k)s Benefit Employees and Employers

**A**S THE CANNABIS INDUSTRY matures and companies grow, acquiring and retaining talent is becoming more competitive. To adapt, companies must adopt incentives employees seek, such as 401(k) retirement savings plans. Many small businesses currently don't offer 401(k)s, but that slowly is changing, in no small part because associated fees are decreasing. According to recent surveys, 15 percent of small businesses—those with eleven to 100 employees—offer a 401(k) plan, while 50 percent of companies with 100 or more make 401(k) part of a standard compensation package.

In addition to providing employees with an attractive perk, 401(k)s can benefit companies in another way, according to Janine Bush, president of Cannabis Staffing Group: Employer contributions to retirement plans can help lower corporate taxes. Although clearly cannabis companies can't benefit from federal tax benefits yet—because they engage in federally illegal commerce—as nationwide legalization inches closer, there is reason to hope the tax situation soon will change. By preparing compensation package revisions now, companies will be positioned to enact new perks and benefits the minute prohibition ends.

"401(k)s are great," Bush said. "If an organization is providing a match to the employees' contribution, it can be a very effective recruitment tool that will set your organization apart from the competition."

However, she cautioned, implementing new financial schemes and staying compliant with ever-shifting local and federal regulations can be tricky. She counsels clients to adhere to guidelines established by the Employee Benefits Security Administration, a division of the U.S. Department of Labor, which enforces pension plan regulations. She also



advises administrators to conduct a rigorous quarterly assessment of plan expenses and to stay ahead of shifting enrollment demographics and rapidly increasing cash flow within the plan's investments.

Papa & Barkley is one of the few cannabis companies that offer 401(k) plans. The company began offering the perk to its 140 employees in 2018 and has been pleased not only with employee response, but also with how the policy has benefitted the company. Human Resources Director Tracy Jordan said matching 401(k) contributions helped Papa & Barkley strengthen its corporate culture. The benefit helped earn the company a spot among *mg Magazine's* "50 Best Companies to Work for in 2018."

"While most traditional companies have done away with providing these

s reduces turnover, boosts morale, and attracts top talent. Even though Papa & Barkley doesn't receive tax breaks—yet—management feels so strongly about saving for retirement that the company didn't hesitate to shoulder the financial burden.

Competition in a growing industry also factored into the equation. "It is imperative we offer benefits that outperform other companies," Jordan said. "We want to grab the amazing candidates that companies are fighting for, and a good 401(k) program is [a human resources department's] dream. It's an attractive bargaining chip to grab those top-level candidates everyone's fighting for."

Jordan offered advice to other companies debating modifying compensation packages. "This



"PROVIDING A MATCH TO EMPLOYEES' 401(K) CONTRIBUTION CAN BE A VERY EFFECTIVE RECRUITMENT TOOL."

—Janine Bush, president, Cannabis Staffing Group

benefits, or at the very least are not providing a contribution towards the employee retirement fund, we offer matching contributions, which is quite extraordinary," Jordan said. "Offering this benefit is very empowering for the entire workforce, and it is a great way to attract talent."

Research backs up her assertion: Studies indicate offering 401(k)

industry will keep you on your toes," she said. "So be ready for [changes]. Educate yourself about the cannabis space and its state regulations. Reach out and network with other HR cannabis professionals who may be going through or facing similar challenges and come together to build up this industry." *mg*

—Rob Hill



## THREE PERKS OF 401(K) PLANS

### FOR EMPLOYERS

**Attracting talent:** Offering a 401(k) plan will help a company stand out from its competitors, particularly in highly competitive job markets.

**Retaining talent:** Employees are less likely to seek alternative employment when they stand to lose financial security or are faced with the complication of a 401(k) rollover.

**Federal tax savings:** Most employers can deduct contributions made to employees' 401(k) accounts, a perk which likely will become available to cannabis companies once prohibition ends.

### FOR EMPLOYEES

**Tax-deferred savings:** 401(k) contributions are not subject to federal income taxes nor to most state and local taxes. Earnings accumulate tax-free until withdrawal at retirement.

**Loan provisions:** Unlike other retirement plans, employees may make loan withdrawals from their 401(k) based on certain circumstances such as emergencies or hardship.

**Flexibility:** Participation in a 401(k) plan is optional and not exclusive. Employees may also have other retirement plans such as an IRA.





IAN SEEB

# LaCroix, Lawsuits, and Linalool

*Debate over natural-vs-synthetic terpenes is gaining ground.*

I'VE always been a vocal fan of LaCroix sparkling water. I drink so much of it my friends say I should own stock in the company. So, when I heard about the class-action lawsuit claiming LaCroix had been deceiving consumers by using synthetic terpenes, I nearly dropped my can of Pamplemousse.

In case you missed the fracas, the lawsuit filed against LaCroix's parent company, National Beverage Corporation, alleges the manufacturer misled consumers by claiming LaCroix is "all natural." Law firm Beaumont Costales attested LaCroix "contains ingredients that have been identified by the Food and Drug Administration as synthetic. These chemicals include limonene, which can cause kidney toxicity and tumors...and linalool, which is used in cockroach insecticide."

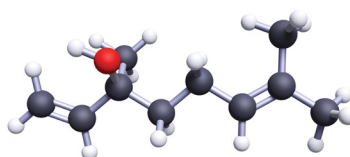
It's not surprising a lawsuit would trumpet some alarmist claims. While the statements may hold kernels of truth, everyone in the cannabis industry knows limonene and linalool aren't inherently dangerous to humans.

We all encounter these two terpenes in our daily lives. Limonene is in orange juice and other citrus products;

linalool is in blueberries, basil, lavender-scented soap, and countless other household products. Both are naturally occurring compounds found in our cannabis.



THERE ARE VERY FEW  
REGULATIONS GOVERNING  
USE AND MANUFACTURING  
OF SYNTHETIC TERPENES.



If you're familiar with the science of cannabis, you know terpenes are responsible for far more than just signature scents: They contribute to the "entourage effect," and research published in the *Journal of Cannabis Therapeutics* indicated terpenes "increase cerebral blood flow, enhance

cortical activity, kill respiratory pathogens, and provide anti-inflammatory activity."

Educated consumers know terpenes aren't something to be feared. The lawsuit against LaCroix, however, accuses its parent company of using synthetic terpenes. The debate about natural versus synthetic terpenes is an issue we've discussed in the cannabis space for quite some time. Does it matter whether you source your terpenes from plants or a lab?

Yes, it absolutely matters.

The concern around synthetic terpenes as additives is in the spotlight due to the oxidative liability of these substances: Harmless chemical compounds can be transformed into potentially dangerous substances when heat is applied, such as in vaping and dabbing. For this very reason, certain pesticides are banned in cannabis cultivation.

The risks of consuming synthetic cannabinoids—which go by names like "spice" and K2—are well-documented. Synthetic cannabinoids are chemical analogs that bind to endocannabinoid receptors at astronomically larger quantities than regular cannabis. It stands to reason synthetic terpenes also could prove



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problematic, but we won't know until research catches up with the modern cannabis marketplace.

Discussion about the safety of synthetic terpenes in cannabis products is something I've seen firsthand in Denver, as a longtime business owner and regulatory stakeholder. During working-group meetings for the City of Denver, officials considered a ban on synthetic terpenes in vape products. But there are very few regulations governing use and manufacturing of synthetic terpenes, which are added to many products including vape cartridges, distillate, and other concentrates.

The sourcing matters, as well: Synthetic terpenes can be made and sold by fly-by-night operators much more cheaply than botanically derived terpenes extracted from plants and fruits.

I'm of the mind you get what you pay for.



TERPENES INCREASE  
CEREBRAL BLOOD FLOW,  
ENHANCE CORTICAL  
ACTIVITY, KILL RESPIRATORY  
PATHOGENS, AND PROVIDE  
ANTI-INFLAMMATORY  
ACTIVITY.

— *Journal of Cannabis Therapeutics*




The jury is out on whether inhaling synthetic terpenes poses health risks, but I predict there will be an emphasis on terpene sourcing as more cannabis consumers do research and ask questions about what exactly is in their vape cart.

An analysis in *Food Navigator USA* called the LaCroix lawsuit “a food and beverage manufacturer’s nightmare.” Is there potential for a similar class-action lawsuit against cannabis companies if studies show synthetic additives in cannabis products are harmful? The LaCroix controversy should serve as a call to action for the cannabis industry. Americans are asking more questions about what’s in the products they consume. This is a good thing.

For now, I’m still drinking LaCroix, and I’m still a fan of vaping—although I intentionally seek out products that contain botanically derived, natural cannabis terpenes.





Whether a company makes sparkling water or vape carts, manufacturers will be expected to answer for what's in their products and how they affect consumer health. Wise cannabis leaders will head off disaster at the pass by operating transparently and funding research to get answers to those questions before the lawsuits are filed. 

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*EAN SEEB is a seasoned Denver-based entrepreneur and founding partner of Denver Relief Consulting, a firm established in 2011 to cultivate quality cannabis operations and advance responsible policy reform. He previously co-owned one of Colorado's oldest and most successful medical cannabis businesses. Seeb serves on the boards of Manna Molecular Science, Dymapak, Vapor Slide, and the National Cannabis Industry Association.*

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# The Problem with Branding

*What works, what doesn't, and what you should do.*

BY RANDALL HUFT  
PRESIDENT AND CREATIVE  
DIRECTOR, INNOVATION AGENCY



**A** FEW YEARS AGO, I had the privilege of speaking at a major cannabis conference about marketing and branding. The room was packed with exuberant attendees—many of whom were new to the industry—ready to absorb everything they could about this new and wonderful market and anxiously anticipating making their first of many millions. I felt bad that I would have to crush their dreams so soon into their journey.

## HARSH REALITIES

I told them that within a few years, many no longer would be in the industry. I said the market was over-saturated with young, eager startups like theirs, and the legal cannabis industry was not a ticket to get rich quick. Most, I said, were under-capitalized and had no concept of the time, effort, and expense it would take to build a sustainable brand.

“Within a few years, you will be competing with major corporations with petty cash

funds larger than your entire marketing budget,” I said. “You need to be in a position to either compete with these giants or be acquired by them, or you will be crushed.”

I am not a nasty person by nature, but felt it was my duty to inform these dewy-eyed newbies that reality soon would set in and the giddiness of the green rush someday would reflect the cold, hard nature that governs every other sector of business.

The fact is, the cannabis industry is turning from a happy place where everyone can dream of making it big into a hard-nosed, competitive arena where only the strong will survive. If you attended the most recent Marijuana Business Conference in Las Vegas, you saw ample evidence of this transformation.

## HOW TIMES ARE CHANGING

I’ve been attending the conference since its early days at the Rio Hotel. According to MJBizCon stats, the first conference hosted only 402 attendees; the second only 720. Back in those days, the conference had an aura of “anything is possible.” Old hippies in tie-dyed shirts sold worm casings alongside guys selling newfangled plastic pop-top containers, the packaging fad of the time. The show was filled with wonder and innocent images of the opportunities that lay ahead.

Contrast that with the most recent show, which more than 27,000 people reportedly attended. Gone are the hippies and the smaller brands.





Vanished are the little companies founded by eager entrepreneurs with dreams of hitting it big. In their place were well-funded corporations with marketing budgets the size of an average city's annual revenue. The eager entrepreneurs have been replaced by Wall Street hawks and venture capitalists.

So, what's the branding lesson?

The cannabis industry is saturated with brands competing for shelf space and consumer loyalty. We are going to see a major market shakedown within the next few years, and the smaller, less competitive brands will cease to exist. In other words, if you don't have a strong brand, you will die.

If you take the time to build a strong brand now, you will be better positioned to effectively compete with the majors or become a candidate for a cushy buyout. Either way, you will make a tidy sum and your dreams will come true.

## LEARNING FROM OTHERS

Building a brand strong enough to compete with well-funded major players doesn't always mean you need a huge marketing budget, but you do have to be smart. The fact is, the largest marketing budget doesn't always win. There is still room for much smaller companies to

compete if they follow some of the lessons learned in other industries.

For starters: It's not enough to have a great product or a terrific idea. Ideas are a dime a dozen, and greatness is no longer a goal—it's an entry point. Your brand must stand for something, and that something better be really special. Just how many companies do you think can claim to be the best or all-natural or from Humboldt or 100-percent pure or for connoisseurs? The answer is that while many will make the claim, very few will rise to the top.

So how do you compete and create a sustainable business in the cannabis industry? You must create a brand that resonates, one that is different, interesting, truthful, speaks to an under-represented market, or provides a benefit no one else is touting.

Many untapped opportunities remain in the cannabis market. Where are the products targeting the suburbanite, the intellectual, the sports fan, the minority, the blue-collar worker, the executive, the conservative, or the socially shy? These are market sectors ripe for a brand that will cater to their interests and passions.

Don't be afraid of targeting too narrow a demographic. It's better to own a niche than to try to be all things to all people. Besides, you ultimately will attract

customers from both within and outside your target demo. Marlboro wasn't catering to cowboys when it featured them in its ads, but the image resonated with millions and made the brand the top-selling cigarette in the world. I imagine cannabis branding tailored to any of the above-mentioned sectors, done properly, would have appeal extending way beyond its obvious target audience.

One last piece of advice: Come up with something original. The sameness in products is getting ridiculous. Instead of trying to occupy the same space as a thousand competitors, do something different. Be bold. Be creative. Be different.

It worked for Apple. It will work for you. 



**RANDALL HUFT** is president and creative director of the Innovation Agency, an advertising, marketing, branding, and public relations

firm specializing in the cannabis industry. He formerly worked with blue-chip companies including AT&T, United Airlines, IBM, Walgreen's, American Express, Toyota, and Disney, where he discovered what works, what doesn't, and what steps must be taken to achieve sales goals and gain market share. [Inov8.us](http://Inov8.us)

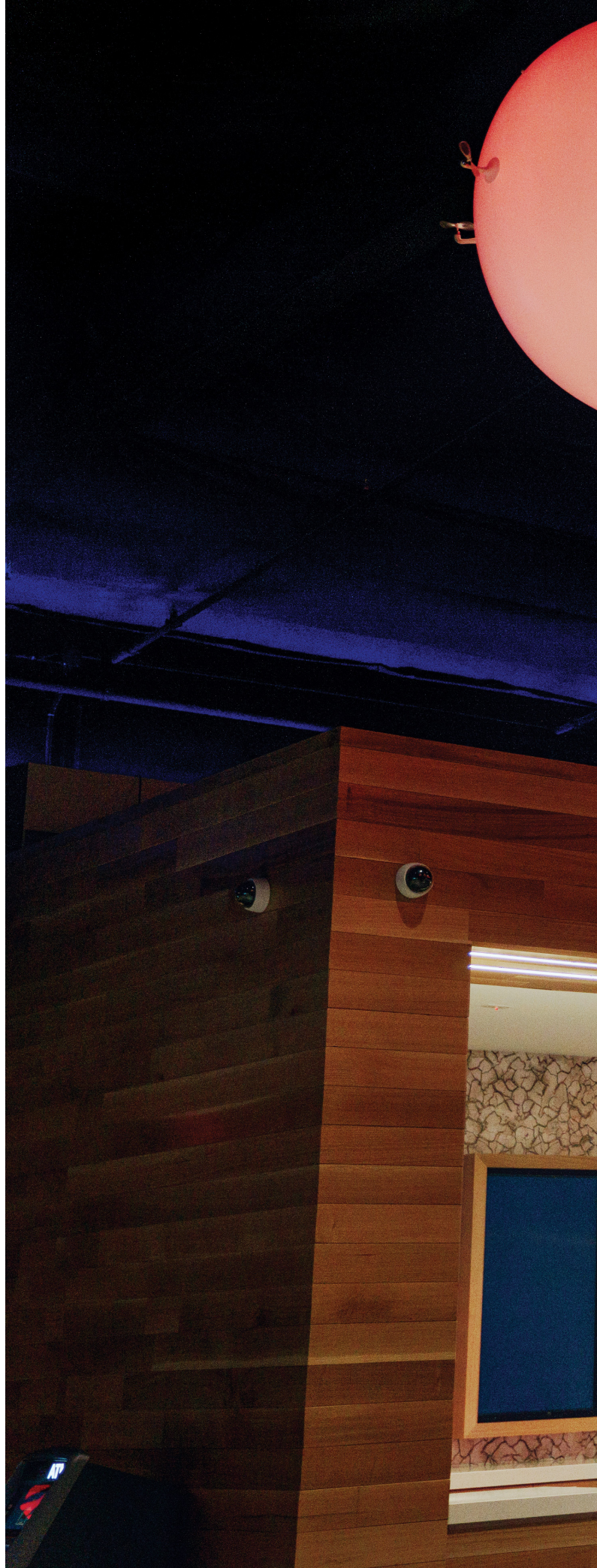


# Out of This World

*Planet 13 is everything a Las Vegas dispensary ought to be.*

**W**HEN Larry Scheffler and Bob Groesbeck envisioned their Las Vegas dispensary, Planet 13, they insisted on one non-negotiable point: The shop had to present an experience as “over the top” as the city itself.

The pair, who share the role of chief executive officer, spent roughly \$7.5 million bringing the concept to life. On opening night hundreds of customers, window-shoppers, and local politicians marveled at the glitz, glamour, and far-out-ness of the complex. “Vegas is the entertainment capital of the world,” said Director of Marketing David Farris. “It was important for [us] to capitalize on that unique experience.”











### INTERACTION IS KING

The 40,000-square-foot cannabis entertainment superstore—purportedly the largest dispensary on Earth—is situated right across the street from ultra-upscale The Wynn Hotel. “We really wanted the exterior of the building to stand out,” said Farris. “With over 60,000 hotel rooms overlooking our property, it was important for Planet 13 to have a monument cohesive with our planetary theme.”

To say the building is unique would be an understatement. From fifteen-foot-tall, interactive LED lotus flowers sprouting from the rooftop to a Vegas-Strip-worthy glowing outdoor water wall and a dry wall where shoppers can leave their mark in laser graffiti, the shop is designed to wow customers and passersby.

“The lotus flowers can be controlled by visitors,” said Farris, “making them bilateral pieces of art as they change colors, sequences, and patterns.”

Planet 13’s lobby had to match the structure’s colossal, lively exterior. “Our lobby is much different from a traditional [dispensary] approach,” said Farris. “It allows the customer to browse and enjoy a few entertainment components before entering our facility. Our visitors aren’t constrained to a small waiting room, and I think this creates a better environment.”

Inside, the shop is loaded to the hilt with dazzling features unique to Planet 13, including state-of-the-art 3D visuals projected onto the ceiling. The mesmerizing display includes blue whales making waves and flashing purple, pink, and red orbs that perform a floating

aerial show. “We wanted the effect of giant indoor drone orbs performing choreographed shows,” said Farris.

Just as the above titillates, so too does below with footstep-responsive LED flooring. “Each step leads to a digital reaction,” said Farris. “There’s a koi pond where water ripples with each step, and the fish bolt when you step near them.”

### FORM AND FUNCTIONALITY

More than fifty flower strains and products from more than twenty-eight vendors stock the shelves in a scrupulously curated collection. “We strive to be synonymous with quality and quality products,” said Farris. “It is important for brands to align with our upscale atmosphere, and we also want to develop a strong relationship with all our brands.” Merchandising is



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just as important as product selection. “Planet 13 will even work with brands to build out their individual displays,” Farris added. Despite the enormous number of products on display, everything is surprisingly easy to find. All the walls are glass and adorned with nests of flickering menus flashing with deals, brands, and directions. “Our display cases allow for our visitors to browse simultaneously without feeling cramped,” said Farris.

While mapped as a gargantuan open-concept showroom, the store maintains intimacy in the flow of foot traffic. According to Farris, the “zone system”—which allows visitors to find their favorite products without having to wander unless they want to take in the sights—is key to the customer experience. Multiple sensory stations where customers can test the aroma of strains by holding a clear, wine-glass-shaped case to their nose dot the floor, each buzzing with friendly, red-



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YET BOLD, “THE [LOGO’S]  
VIBRANT RED CRESCENT IS  
SYMBOLIC TO OUR STORE AND  
CONSISTENTLY SEEN WITHIN  
OUR BRANDING.

—David Farris, director of marketing,  
Planet 13

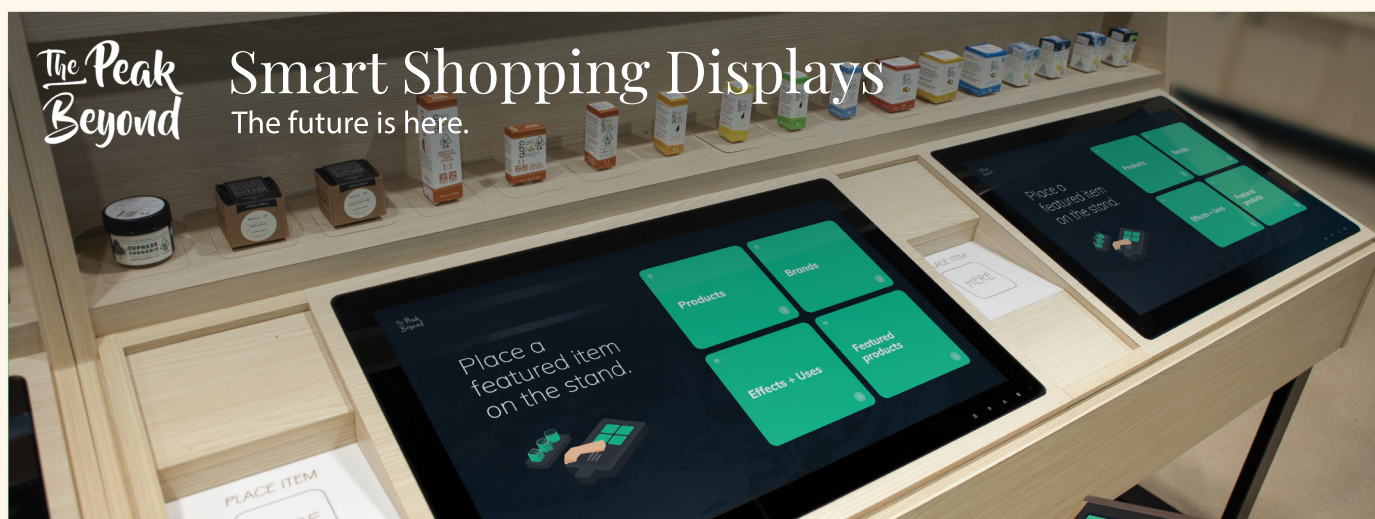
shirted budtenders. But it’s the snaking grand hallway that makes the superstore easily navigable. “The grand hallway is a crucial component to our operational flow,” Farris said. “This hallway also gives us the ability to properly expand the building in future phases.”

Speaking of the future, Farris said, “We are also looking at possibly adding amenities like food courts and coffee shops.” He added that an express checkout lane for customers who desire a quick check-out experience is in the final planning stage. The eventual goal is to serve 2,000-plus customers a day. *mg*

—Rob Hill



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# Something to Talk About

*Ionic is changing the face of cannabis and creating a social revolution.*

**C**HRISTIAN STRUZAN grew up in a time and place where cannabis use no longer was covert or a sign of rebellion. Ironically, Hollywood—where cannabis was a part of everyday life—perpetuated the stoner image. So, when he co-founded vape manufacturer Ionic in his hometown in 2012, Struzan set out to change the perception.

“The brand identity for Ionic is simple,” he said. “It was to reinvent cannabis and appeal to the professional, hardworking, respectable, functioning human being with a family and a job who also uses cannabis.”

Coming from the advertising and branding world where he developed campaigns for big Hollywood movies and global beverage alcohol brands Stella Artois, Guinness, and Beck’s, Struzan was well-versed in the art of marketing. He said he was intrigued by the challenge of creating a similar phenomenon in the nascent cannabis industry.

“If we could change people’s minds about cannabis, change their perceptions of people that used it, then we could effect positive change,” he said.

From the outset, Struzan avoided iconography like marijuana leaves and insider jargon such as 420 and dank. “We wanted to step away from all the things that would instantly, even if subliminally, trigger those deeply rooted stigmas and previously associated prejudices,” he said.

In this, Ionic was way ahead of the curve. When the company launched, recreational products were still hiding behind a façade of medical marijuana. “We ran headlong into creating a brand that celebrated recreational use and *demand*ed to be taken seriously,” Struzan said. “We had full intention of reframing the conversation about cannabis and those that discreetly use it. We wanted to bring it out of the dark and reset the bar.”

But he knew the proof had to be in the oil. While the brand image was sophisticated and sexy, the oil had to be the purest, Struzan noted. “A huge majority of our budget is invested in sourcing premium raw materials, equipment, the cleaning of our oils, and pesticide tests on every single batch that leaves our facilities,” he said. “Our products are twice and three times refined, until we feel that they are perfect.”

He’s particularly proud of the company’s recent implementation of the Ionic Clean Certified program, which tests 100 percent of outbound material for pesticides and other harmful agents before shipping to retail stores.



"Although not required by state regulations, we decided that until cannabis is legal at a federal level and federal regulation is enacted, it is our responsibility to regulate our products so as to protect our customers and our products," he said.

The pursuit of purity led Ionic to use food-grade CO<sub>2</sub> extraction even though the process is more expensive than other options. That bet has paid dividends. In Washington state, Ionic is now the number one vape brand, Struzan said. "We have seventy-two direct competitors and 1,100 in our segment," he said. "I would say that is a pretty crowded and competitive market, [but] we always put our customers first. We listen when they have feedback or criticism, and we never stop looking for ways to improve our products."

Part of the reason for the company's success, Struzan is certain, can be attributed to a very clear concept of who Ionic's customers are: people who use cannabis as an augmentation to their already busy and interesting lives. More specifically, Ionic's tribe is composed of people who use cannabis before a collaborative endeavor or as an enrichment during a social event or experience with friends. It's all in the URL: Ionic.social. "We believe our products are best when enjoyed in a social setting," said Struzan.

### NEW FACE, NEW PRODUCT

Ionic went all-in on the high-end, socially engaged image with a makeover that spiffed up the trappings and refined the message. Seven years ago, marketing phrases like "elevated" and "redefining" didn't appear in retail cannabis messaging. Taking branding cues from cosmetics and beverage alcohol, Ionic repositioned itself as the new "it" brand by invoking the small-batch cool exuded by fine whiskeys and handmade cigars. "The change in our packaging looks and product lines signals the change we are having from within our brand," Struzan said. "The evolution of our message hopefully will spawn more positive change within the industry."


Along with its new look, the company launched a new product line: Ionic Cask—oil crafted in small batches and aged in charred oak barrels. An exclusive run of oil and a custom pod device designed to maximize flavor and finish is presented in numbered, limited-edition black-walnut boxes. The product radiates elegance and refinement.

"The reaction has been amazing to the Ionic Cask launch," Struzan said. "As a lifestyle brand, we aim to be aspirational. Our products aren't something to hide; rather, they are meant to be something one can be proud of and share."

### SPREADING THE WORD

When it comes to sharing his marketing message, Struzan employs traditional advertising mixed with digital channels and special events. The company's most effective marketing tool, he said, is understanding the consumer experience and having a brand image that resonates. "Design is the silent brand ambassador," he said.

Ionic's carefully measured growth strategy over the past few years is speeding up with the expansion of the company's retail footprint from Washington state to the entire west coast, largely on the back of the popular, and original, Black Line. Struzan said expansion has only begun. He believes the small-batch and premium oil sector could follow the post-prohibition trajectory of the scotch and whiskey industries, when many small, regional labels became globally recognized. "People know when something is created with pride," he said.

Even though things look good for Ionic, Struzan still suffers some sleepless nights. Like any other business, Ionic faces challenges, including protecting margins and fighting for retail shelf space. Complications are compounded by the lack of representation, protection, and rights for cannabis businesses at the federal level. "This [industry] definitely is not for the weak of spirit," he said. 

—Rob Hill



Photos: Ionic



# the cannabis

*Don Carlos, a founding member of the Jamaican reggae group Black Uhuru, admires the Humboldt Seed Co. cultivar "Don Carlos."*



# plant

AN UNFOLDING STORY IN GENETICS.

BY CHRISTOPHER JONES  
PHOTOGRAPHY BY MIKE ROSATI

**F**OR A PLANT HUMANS have grown and transported around the world for thousands of years—utilizing its precious seeds, flowers, resin, and fibers in myriad ways—we sure don't know much about cannabis. Only recently have scientists begun to identify its chemical compounds and other properties with any degree of accuracy. Patients and doctors have designed their own *ad hoc* treatments, but serious clinical trials are few and far between, both in the U.S. and abroad.

As scientists and researchers begin to unravel the tangled and convoluted codes of cannabis genotypes, new light is shed on the most infamously hybridized plant on the planet. For farmers and breeders who want to settle scores, DNA-mapping projects will provide more clarity about what's what in the cannasphere and who really developed some of the industry's most prized strains.

For now, though, as you're perusing the never-ending menu of flowers, oils, and edibles at the local cannabis shop, remember cannabis is still a genetic work in progress.

## CONSTRUCTING A WEED GALAXY

Mowgli Holmes has been working to map cannabis genotypes at his Portland, Oregon, company Phylos since 2014. As cannabis growers across the world send samples for testing, Phylos employs modern molecular genetics and computational biology to create a “galaxy” visually representing hundreds of cannabis cultivars and

how they relate to each other. Think of it as a slowly unfolding map of the cannabis genome, in all its 3D glory.

“It's interesting how diverse and interbred cannabis is, and its galaxy is this tangled hairball that shows intense hybridization,” said Holmes. “Everything has been crossed and crossed in this atypical breeding situation that is very unlike any other crop. So, we have this weird population that is diverse, but blended together in this complicated soup.”

He pointed out the landrace strains, the original, indigenous cultivars, essentially have been bred out of existence. As people spread cannabis seeds across the globe, strains from Asia, Africa, and the Middle East began sprouting in environments vastly different from their native soils. When growers began breeding cannabis strains together to maximize THC and other desirable attributes, some of their inherent traits were lost in the shuffle.

When a grower sends in a strain to be identified, Phylos puts it through a DNA sequencing process and then gives the genotype a location in the Phylos Galaxy, which is determined by how closely its DNA is related to other samples already plotted. The genotype report also is available and shows the closest genetic relatives, population profile, and other characteristics. Using the report as a baseline, growers can certify their sample and give customers more assurance they are getting the same medicine each time they buy a particular cut. However, even when plants are genetically identical, the growing environment impacts the appearance, smell, taste, and effects. So, the genotype has a range of possible traits, but other variables determine the results. DNA is a factor, but not the final word.





*Dark Heart Nursery Production Manager Jennifer Mercado packs clones for delivery to a grower.*

“The problem with this data [from the genetic analysis] is that there are so many varieties and such a tangle, there is no such thing as a strain or stable seed lines,” Holmes explained. “In normal agriculture we have genetically stable plants, but this isn’t the case with cannabis. Seeds are unique, and every plant is its own special snowflake with its own chemical diversity.”

One of the difficulties raised by all the unique, irregular seeds floating around is a considerable and coordinated effort is required to sort out the best phenotypes from the rest. Of course, some intrepid farmers look at the challenge and jump in head-first.

## BREEDING NEXT-GEN STRAINS

As chief executive officer for Humboldt Seed Company, Nathaniel Pennington has a reputation to protect. Not only for his company, but also the NorCal region he represents. Since the 1960s or so, the Emerald Triangle arguably has been the most important place on the planet for cannabis breeding, strain development, and propagation. Indeed, many of the powerhouse strains that established Amsterdam as weed capital of the world were developed in the shadows of the Emerald Triangle. This massive, interconnected, and off-grid science experiment is still alive and well today.

In 2018, Humboldt Seed partnered with Oakland’s Dark Heart Nursery on a “mega pheno-hunt” designed to pick out the unicorns—the most vigorous, unique, and outstanding cannabis plants—

from a collection of about 10,000 individual plants (“phenos”) they’ve tracked over the past year. For Dark Heart, the hunt is an opportunity to identify new and promising strains and to develop a closer relationship with a top-notch genetics company. With the plants in full bloom, Humboldt Seed and Dark Heart, along with a cadre of plant science gurus from around the U.S., visited farms to get an up-close look at thousands of plants, searching for the best of the best.

Because cannabis has been under prohibition for so long, Pennington explained, there haven’t been organized, large-scale efforts to explore breeding and phenotype selection, using precise rating systems and tracking chemotype variations. Chemotype is the chemical composition, phenotype is the outward expression, and genotype is the genetic thumbprint. “And then when you have something wonderful, where all three of those come together, that’s a Dream-O-Type...that’s the unicorn,” Pennington said.

Pennington founded Humboldt Seed almost twenty years ago, teaming up with Benjamin Lind and Beau Quinter some years later. Walking around a farm with any of the three men can turn into a geeked-out genetics discussion at the drop of a nugg. Looking through a line of blooming bushes on the Humboldt Seed farm, Lind picked out some of his favorites—pointing out the bright-white pistils and deep green and purple hues on some plants and the tight internodal spacing and bud structures on others.





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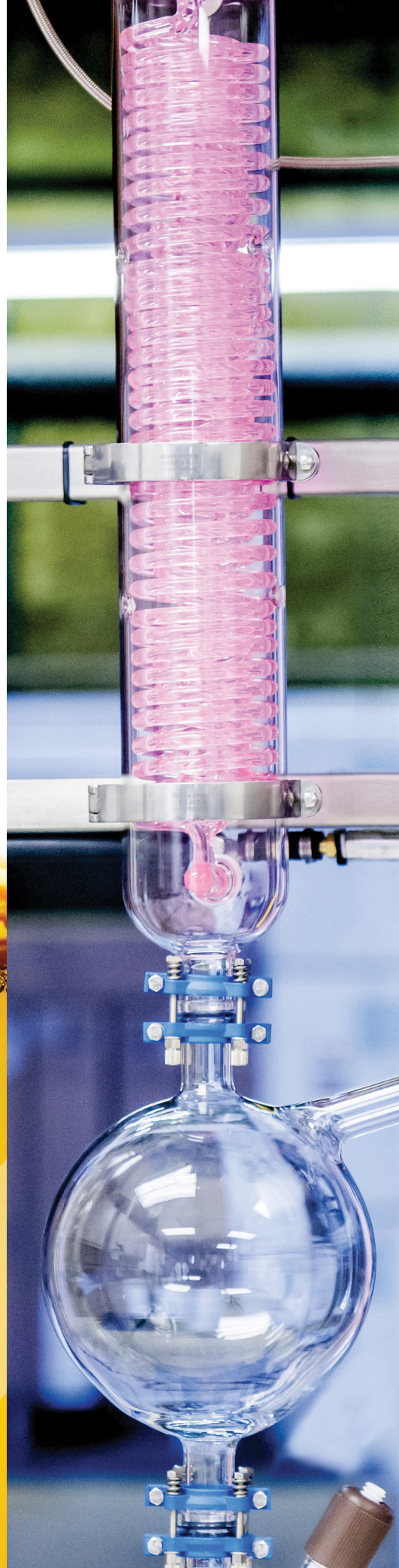


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Dark Heart lab technician performing Meristem Excision, removing plant tip (~1mm in length) by sterile dissection under microscope.



Mega pheno-hunt team members at Humboldt County Indoors' farm in Arcata, California.

When growers use the same mothers and clones to propagate their crops year after year, the plants eventually lose some of their vigor and desirable traits. By contrast, Humboldt Seed creates new seeds, strains, and genetics by using pollination chambers where one male plant is surrounded by dozens of females that produce hundreds and thousands of new seeds, each with its own boundless potential.

One of Pennington's favorite tools on the pheno hunt is Orange Photonics' LightLab Analyzer, a portable testing kit that uses liquid chromatography with spectroscopy to separate and measure chemical compounds. The device reports data for six major cannabinoids and terpene intensity. Somewhat remarkably, the results are delivered in about ten to fifteen minutes.

"Using the LightLab and marker-assisted breeding, and the fact we can share things more openly, we're about to hit lightspeed compared to how it's been moving along in genetics advancements," Pennington said. "It's definitely an exciting time to be in the industry and on the creative end of cannabis development."

In Humboldt Seed, Dark Heart sees a company with twenty years of experience in producing unique, stable genetics, and an ongoing opportunity to offer its customers sturdy and exotic new strains. In Dark Heart, Humboldt Seed sees one of the most established and reputable clone producers in the state, which connects it more directly with home and commercial growers who provide feedback and *de facto* marketing for its new strains. Dark Heart also keeps clones of its Humboldt Seed strains in its tissue culture lab, preserving the unique genetics indefinitely.

"Humboldt Seed has identified some really interesting, unique terpene profiles that create a distinguished product at retail," said Dark Heart founder and CEO Dan Grace.

Commercial agriculture, biotech, and other established scientific communities and industries are beginning to take breeding and production processes in new directions, based on time-tested techniques that are used for other crops. Holmes believes the current cannabis flower market is driven by novelties and new flavors—like Humboldt Seed's "Blueberry Muffin" strain—that vary by region and state. Eventually, Holmes predicted, these "hype" strains will take a back seat to ones more practical for commercial farm operations to grow on a consistent, reliable basis.

Indeed, once modern commercial breeding tools are brought to bear on cannabis, breeders won't focus so much on plants with loud noses and couch-lock qualities but instead will seek out high-yield cultivars that are pest- and mold-resistant, less water-intensive, and optimized for specific growing conditions.

"But that stuff hasn't come to market yet," said Holmes. "As they do, those strains will dominate."

## A GENETIC ARCHIVE OF CANNABIS STRAINS

Now and again, stories surface about growers who submit a flower sample with unique, valuable attributes—a high percentage of a cannabinoid like THCv or CBN, for instance—to a lab, which reports the exciting results back to the grower a few days (or weeks) later. Sadly, the grower never took a clone from that specific



phenotype, so its distinctive genetic attributes are preserved only in a lowly lab report.

To prevent the scenario, some farmers are beginning to hedge their genetic bets by using tissue culture to preserve phenotypes deemed unique and valuable. Founded in 2007, Dark Heart is one of the oldest cannabis nurseries in the U.S., and over the years Grace has had to revise and update his business model to meet the needs of indoor, outdoor, and greenhouse growers.

“The hard thing with the industry this year is the ways people are cultivating have changed a lot. We’re seeing more scale, different cultivating regions, and different types of systems: field cultivation, mechanized cultivation, and traditional craft cultivation,” he said. “So, we need to figure out what cultivation is going to look like and what varieties are going to be good for different systems and regions.”

Beyond offering farmers a rotating variety of new strains in the form of vigorous, healthy clones, the company also aims to help with difficulties that impact the health of plants and yields. To that end, one of the newest Dark Heart services is a “clean plant program,” whereby a grower can submit a plant to the lab and technicians eradicate pathogens, then preserve the sample’s genetics in tissue culture.

In a generic office building not far from Dark Heart’s nursery facility is the company’s tissue culture lab, where plant scientists develop cutting-edge genetic preservation techniques designed to give growers a leg up on the competition. Using a scalpel and an electron microscope, technicians mining for stem cells carefully scrape away the outer layers of a shoot’s stem at the growing tip to

uncover the stem cell node, which is about the size of a human hair. Here, hundreds of cells that define the genetic makeup of the plant are exposed. If these cells are captured before they are exposed to the plant’s vascular system—where the majority of pathogens float around—any regenerations will be pathogen-free.

“These are advanced techniques that are hard to perform,” said Grace. “We also use pre-treatments to reduce the pathogen load by causing them to retreat. By doing proprietary testing downstream, it tells us what pathogens are getting through, so we get better and better at eliminating them through this process. It’s a unified program to produce the cleanest and best cannabis plants in the industry right now.”

In a nutshell, tissue culture is a process during which stem cells are transferred to an artificial environment—in this case, a mixture of sugar, gelatin, nitrates, and vitamins—that gives the cells all they need to survive and function. The procedure is complicated, involving twenty to thirty variables, Grace said, but it allows the company to maintain a slow-growing genetic archive of hundreds of strains in a relatively small space.

The cultures are started in test tubes and then transferred to small containers stacked on metal shelves with LED lights mounted above them. This is Dark Heart’s memory bank, where strains that are not in mass production can be stored for up to three years. Over the course of a few months, the plants can be brought out of their culture, put into a grow plug, and ultimately transplanted into a bigger pot that becomes a mother plant.



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Siobhan Danger Darwish of the Grow Sisters inspects her Blueberry Muffin plants at Blessed Coast Farms, Humboldt County's first permitted cannabis farm.

The “elite mother block” might sound like a gang of cold-blooded matriarchs from a sci-fi novel, but in Dark Heart’s scheme of things it’s a more innocuous bunch. The elite mothers are a collection of virus-free mother plants that were sprung from their tissue culture habitats and then used to provide cuttings for the company’s commercial clone business. But how do they know these elite mothers are indeed virus-free?

“A nursery is only as good as the number of pathogens they test for, and we have a good screen that other nurseries don’t,” said Grace. “Many nurseries talk about clean plants, but very few talk about what they’re testing for. Most of them test for common viruses that impact tomatoes and tobacco.”

## STAKING A CLAIM ON CANNABIS DNA

Compared to other plants and animals the cannabis genome isn’t particularly large, although it has about 800 million base pairs, the building blocks of the DNA double helix. By comparison, the sunflower genome contains 3.6 billion base pairs, which is about twice as many as the human genome. However, the size of a genome doesn’t necessarily relate to the complexity of an organism, and cannabis is unique in the degree of variation among its contents, with more than 400 compounds that belong to the phytocannabinoid and terpene classifications.

In January 2018, a team of scientists at Sunrise Genetics presented the first completed cannabis genome map, which gives researchers access to a comprehensive view of the ten pairs of chromosomes in cannabis. In order to determine the functions of specific genes, scientists need to link genotypes with observable traits and find enough correlations to verify the connections. By looking at DNA from cannabis plants with higher yields, for instance, scientists could try to associate those properties with sequenced DNA building blocks called single nucleotide polymorphisms (aka SNPs or

“snips”). When snips are identified, breeders may use them to create new strains with specific attributes such as potency, pest resistance, and early flowering.

The more genomic data is analyzed and decoded, the more doctors and patients may be able to accurately match specific strains and/or cannabinoids to specific symptoms and diseases. But with almost 150 cannabinoids and 100-plus terpenes and flavonoids in the mix, the potential combinations will take some time to identify and comprehend.

“The cool thing about cannabis is that it produces all these compounds that are very different and unique, and all of them in multiple ratios,” said Dr. Daniela Vergara, an evolutionary biologist researching cannabis genomics at the University of Colorado Boulder and founder of the Agricultural Genomics Foundation (AGF). “It’s not like aspirin, though, and these different compounds make it hard to bring it into mainstream medicine.”

Of course, this also presents a dilemma of sorts for those who wish to capitalize on a particular strain of cannabis, given that its complex chemical structure is only beginning to be identified and documented.

## OPEN SOURCE CANNABIS?

After decades of *ad hoc* experimentation during which thousands of strains were crossed with each other, farmers in Northern California have built an unrivaled genetic collection of cannabis. The only problem is, very little documentation exists about how and where strains were created, much less who the descendants may be. Who knows how long it will take to make sense of the twisted genetic puzzle? In the meantime, some companies are hedging their bets by filing patents.

Kenneth Morrow is the founder of Trichome Technologies and author of *Marijuana Horticulture Fundamentals*. During his thirty-five years in cannabis research, he has become an expert on



everything from breeding to hash-making. Morrow argues breeders in Northern California need to be more careful about protecting their most valuable genetics: European seed banks, among others, have utilized Humboldt genetics to create commercial seed lines that are licensed to some of the biggest Canadian companies, which are exporting products internationally.

“The big picture is that Humboldt growers work their asses off to find a good copy of a phenotype and breed it and find their winner and take it to [The Emerald] Cup and sell seeds,” he said. “They take those genetics they worked so hard to isolate and erode their strategic advantage by making them public property. Some say that’s altruistic, which I agree with, but this is what happens when you put these strains up for sale.”

So, the answer is to patent potentially valuable and unique strains, right?

Cannabis patents already have been granted. The most significant—U.S. Patent No. 9,095,554 (“the ’554 patent”), awarded in 2014—belongs to BioTech Institute LLC. The summary abstract states, “The invention provides compositions and methods for the breeding, production, processing, and use of specialty cannabis,” and the patent describes in detail cannabis strains that have both THC and CBD, plus certain terpene profiles. Many cannabis plants fall within the THC, CBD, and terpene ratios outlined in the company’s multiple patents, and should they be enforced, growers would have to pay royalties or stop growing any strains that match the profile in the patent.

The Open Cannabis Project is one of several groups involved in documenting genetic and chemical data for all the cannabis varieties in existence today, and this “prior art” would help prevent the USPTO and other international patenting bodies from granting intellectual property rights that would cover existing varieties. Holmes believes there are better ways to generate revenue from unique cannabis genetics than filing patents, such as bringing new strains to market only as flower—so other companies can’t clone them—or licensing special strains to a discrete set of growers.

“Patenting is expensive and takes a long time,” said Holmes. “With seed-to-sale tracking you can identify cheaters in the supply chain, so while breeders need to monetize their work, patents may not be the best way of doing that. When we eventually have stable seed lines and tools to track who’s growing what, people will license varieties and there will be lawsuits and it will be messy for a while.”

### **WILL THE REAL JACK HERER PLEASE STAND UP?**

One of the most compelling aspects of the Phylos Galaxy is that it can help determine relationships between cannabis strains in the same genetic families and help sort out which OGs, for instance, have the strongest correlation to each other. However, identifying the “true” and/or “original” version of any strain is not possible.

“People always ask, ‘How do you know this strain is what it is?’” said Holmes. “But it’s a fool’s errand to answer that, because unless there is a benchmark there’s no way of knowing.”

Looking at the Phylos Galaxy, you can identify where a sample strain lands in the galaxy, and some strains might have a huge

cluster where everyone agrees on the original breeder. Sometimes there are multiple clusters of the same names. “It’s not our job to say this is the real Girl Scout Cookies,” Holmes said. “All we can say is that you’re in one of the Cookie clusters and you can see who submitted that and draw your own conclusions. So, for anyone to say ‘this is Blue Dream,’ I don’t think it will be quite that simple. For legacy varieties it will be very complicated, because there has not been much professional, modern breeding and it’s just a very unusual plant population, so no one knows what’s what. About half the time they do know what’s what, but the rest of the time they are completely wrong.”

“

**THE BIG PICTURE IS THAT HUMBOLDT GROWERS WORK THEIR ASSES OFF TO FIND A GOOD COPY OF A PHENOTYPE AND BREED IT AND FIND THEIR WINNER AND TAKE IT TO [THE EMERALD] CUP AND SELL SEEDS.**


—Kenneth Morrow, founder, Trichome Technologies

”

If companies are allowed to patent strains, they may well be able to enforce patent claims against other companies that grow that same strain. At that point, the retail market may start to look more like the craft beer and wine industries, where consumers have allegiances to specific flower varieties and brands.

“You can go to any store in Vegas and buy Blue Dream,” said Morrow. “But if you have something unique and special, it’s different. Cannabis will soon get very proprietary in that way. Everything in the public domain, you can take that body of work and do what you want with it. So, people who create superior products by breeding something unique will be able to patent it.”

As the Phylos Galaxy fills up, growers will be able to verify their “True OG” cut at least falls within a similar group of True OG strains. In this fashion, growers and consumers alike will get a better sense of which traits they should expect from strain to strain. While the craft side of the industry tries to carve out as much of the market as it can with new and exotic cultivars, the strains that become most popular and widespread likely will be strains the commercial industry deems best for their production practices.

“Going forward, the industry will rely more on seeds—once we’ve done the inbreeding work—and people will stop growing [cannabis] in these ridiculous spaceships in Canada,” said Holmes. “They’ll start growing it outdoors and in greenhouses in Kentucky and Colombia. Then it will become a modern crop.” 



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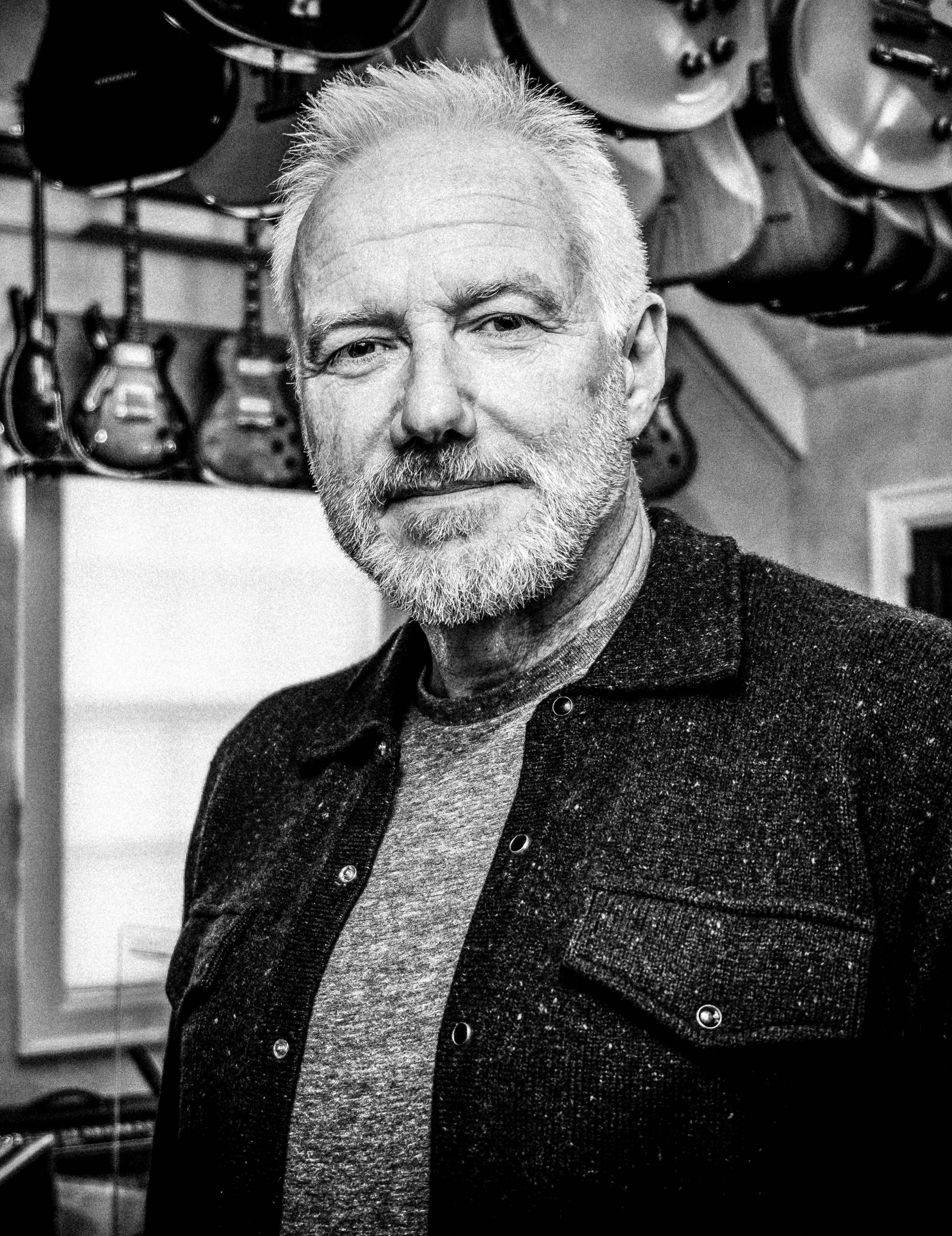
Mega-retailer Peter Horvath brought his  
A Team to the cannabis industry.

*Will it be enough?*

BY TOM HYMES

*Photos: Green Growth Brands*









PETER HORVATH hesitated slightly during a mid-November interview in Las Vegas. He was about to give away a secret of the retail trade. “I’m basically telling my competitors what to do,” he said before catching himself. “I’m not worried about it, because it’s not that easy.” That was a big understatement. Like ancient codes and search engine algorithms, retail done correctly is part science, part alchemy, understood by few, and properly practiced by fewer. A practitioner of the highest order, Horvath’s singular career has included stops at Victoria’s Secret, American Eagle Outfitters, DSW, The Limited, and now publicly traded Green Growth Brands Ltd., based in Columbus, Ohio.

“We respect and admire everybody that has gotten the industry to where it is. That’s the first thing,” he said in response to a question about his impression of the industry’s grasp of retail. “They came from diverse backgrounds, and they’re all focused on products, and that’s great, because we’re about to go through an explosion of product development that is only going to accelerate more. Product is important: quality of product, anticipating what consumers want—super important. But particularly in retail, where you are on the front lines with consumers, experience competing for—and earning loyalty from—consumers is going to be a huge advantage.”

## STREET-TESTED

Brimming with youthful energy, Horvath ticks off accomplishments with matter-of-fact ease, avoiding boastfulness through the sheer weight of the achievements. “I am the only CEO in the entire industry who has taken a company public on the New York Stock Exchange, and then been there doing earnings conference calls for three-plus years. And, thankfully, what I pitched when we went public is what we talked about even on the last conference call,” he said. “They always say the key to a successful strategy is making sure the strategy connects with what you’re capable of doing. So, that’s the way I’ve approached everything in every business I’ve been involved in, from the defense industry to retail and brands, and now cannabis.”

Horvath’s stint with a defense contractor took place a few years before he settled into cannabis, which is a decidedly different sort of product and industry from the others along his career path. Could he be biting off more than he can smoke even with thirty-plus years of high-end corporate experience?

“I don’t think so,” he said. “We have a confidence that we have earned. We are the first retail team [in cannabis] where the CEO is a retailer and understands the cross-functional necessity of working





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### RETAIL RUNES

Divining the secrets of retail requires a deep dive into human desire. It's a subject Horvath is more than comfortable discussing. "There are three levels of branding," he explained. "There's emotional, functional, and technical. Emotional is how it makes you feel, functional is what are the benefits, and technical is how do you make it. The world of cannabis has been focused on technical." He mentioned a recent meeting with vape producer dosist. "That's functional. First, there are no pure-play retailers anymore; you must be digital. Retail is not a brick-and-mortar store but every touchpoint with the consumer. The functional and technical is going to happen on your phone, before or after [a sale] or both. The emotional is in-store."

Retail may be every touchpoint with the consumer, but for the moment most people still "touch" the retailer when they go into a dispensary to make a purchase. It is there that the seeds of loyalty are sown. "A store must create an emotional position and experience that stands for something that makes customers loyal to that experience," said Horvath.

He visited 100 cannabis dispensaries last year and has been quoted extensively in the press as noting all the shops were leaving double-digit market share on the table. "They are still underperforming," he added. "How do I know? It's a trick. Every retailer is underperforming. Cannabis retailers are underperforming more than other categories, however, and it's because they don't have the experience dealing with consumers.

"Here's how I know they're underperforming," he continued. "The generalized experience is that there are many points of dissonance [in dispensaries] that are easily avoidable. If we forget about the check-in process and the casting of associates, if you simply look at product assortment... the presentations look like a dog's breakfast, like ransom notes. Nothing looks like it should be next to each other. You don't know why one brand is different from another, why prices are different. It's confusing and complicated." Solving consumer confusion is crucial for retailers selling broad assortments of low-margin products. "That's what the business is," he said.



## BRANDS

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## STORE SMARTS

Experienced retailers inherently understand the dynamics of flow. “If you walk into a MAC cosmetics store, the products and store fixtures are in complete harmony in terms of height and shape,” said Horvath. “When you walk into an Apple store, the entire store is shaped like an iPad. All the shapes are square; everything is harmonious. That is because there is a calming effect when you walk into something that’s narrow and clear in terms of purpose.”

What is that purpose? “It’s this thing the best retailers try to accomplish: How do I get someone to walk in and in four seconds decompress and then understand what I’m trying to give them? That can mean the experience and it can also mean the product. [There is a problem] if you can’t walk into a store and tell which the most important product is.

“With a cannabis store, even though vapes, edibles, and concentrates are on the increase, the star is flower,” he said. “Even if flower goes from 50 percent of sales to 20 percent, it still must be the star because it’s the mother of this whole idea. When you walk into the store, it should be obvious. If the flower is in the back of the store, there should be a shrine to it. If it functionally delivers 50 percent of sales, great, but the customer needs to know its star power immediately.”

Horvath also cautioned against the “Starbucks effect,” a common malady among cannabis retailers. “Nascent retailers are quick to say they want to be the Apple, the Amazon, the Starbucks of cannabis,” he said. “If it was that easy, we wouldn’t be talking about them. It’s not. They want people to think they are going to be the dominant player, and there is no easier way than to tell them to use something familiar, and most people drink that Kool-Aid.”

Cannabis stores, said Horvath, should be designed for women. To make his case, he referenced Paco Underhill, the revered retailer and author of *Why We Buy: The Science of Shopping*. “Paco will tell you that how you lay out tables and product on flow are very important,” said Horvath. “He’s observed that women are the most important shoppers of any product, because it is in their DNA to analyze, assess, and see everything, and it is in [men’s] DNA to go kill something. We’re goal oriented, and they want to make sure they don’t miss something. They are going to see something we don’t see.”

It took decades for car dealerships to figure that out, he added. “And if you can kill it with a millennial woman, centennials [will follow their] big sisters... If you get that group, all the older women are likely to follow, because they all want to see themselves as a 26-year-old. And if you get all the women, you’re going to get all the men. If you don’t believe me, watch [reality show] *Bar Rescue*. He always cleans the bar up first, saying you have to get rid of all the drunks. You’ve got to make it a place where women feel safe, and then you’ll get more guys.”

“WE RESPECT  
AND ADMIRE  
EVERYBODY THAT  
HAS GOTTEN THE  
INDUSTRY TO WHERE  
IT IS. THAT’S THE  
FIRST THING.

—Peter Horvath, chief executive officer, Green Growth Brands

## GREEN GROWTH

Horvath has staked his claim in remarkably short order. It was only January 2, 2019, that Xanthic Biopharma officially changed its name to Green Growth Brands (GGB). Xanthic, doing business as GGB, had made its trading debut on the Canadian Securities Exchange a few months earlier, on November 13, completing a reverse takeover announced in July.

“The formal name change represents the next step toward GGB’s goal of becoming the premier cannabis and CBD-infused personal-care product retailer in North America,” said the company in a press release. The announcement was made amid a flurry of other aggressive moves by the company,



GGB  
MANAGEMENT  
TEAM

**Peter Horvath, CEO,** has held leadership roles with brands including Victoria's Secret, American Eagle Outfitters, DSW, and Limited Brands. Under his leadership, shoe retailer DSW went public on the NYSE with a \$1.5 billion IPO.



**Scott Razek, CMO,** has led the creative and marketing teams for retail brands including Victoria's Secret, Bath & Body Works, American Eagle Outfitters, and Limited Stores.



**Ed Kistner, CAO,** possesses thirty-three years of retail experience in operations.



**Kellie Wurtzmann, CSO,** has managed operations across multiple retail sectors for retail brands including Victoria's Secret and Virgin Entertainment.



including the acquisition of a second cultivation facility in Nevada and the receipt of seven additional retail licenses in the state; the acquisition of Just Healthy, a company that holds provisional certificates of registration for a dispensary (expandable up to three) and cultivation/processing site in Northampton, Massachusetts; and a highly publicized unsolicited takeover bid tendered in late December for Aphria, a Canadian cannabis company traded on the New York Stock Exchange.

GGB currently operates one dispensary in Las Vegas, The+Source, which Horvath said is primed for significant growth. "My team at The+Source and our team in Columbus are working to increase sales by 33 percent in the next two to three months by making adjustments to the assortment navigation, the strategy of the store—pricing and whatever—the customer flow of the store, and the back-office supply chain, if you will.

"The store does about 8,000 transactions a week and typically runs about 1,200 to 1,300 transactions on a Friday," he said. "What they are doing is exceptional. It's easy to navigate; free-flowing. You don't need to talk to anybody unless you want to. Once the guys are out taking orders on the floor and you get in line to pay, it doesn't annoy you because it moves fast because your order is getting picked while you are in line."

He intends to build on what The+Source management already is doing. "They have consumer loyalty because the consumers are loyal to the staff," he said. "They love the staff. We just met, and my wife sat outside The+Source, watching customers come in, who they were, the broad range, watching them interact with the team, and saw the relationship that was there. It brought her to tears when she told the leadership team of that store that what she saw was the reflection of the company's founder, Andrew Jolley. 'How he treats you is a reflection of how you treat the customers,' she told them. And she's right.

"So, how do you take that and scale it," Horvath asked rhetorically. "We've done it at Victoria's Secret."

In addition to scaling via brick-and-mortar stores and every other type of retail channel, plans include establishing hundreds of mall kiosks, where GGB plans to become a leader in the CBD movement.



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•US Patent 8,863,947 B2

•US Patent 9,878,821 B2

•US Patent Pending CPSC 16 CFR part 1700.20

•Child Resistant Lid Patent Pending: Pub #US-2017-0355-495-A1

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“We have a pipeline of deals that we will announce as a public company when they are complete,” said Horvath. “Our estimate is that if you take trailing 2018 revenue with the businesses we’re going to buy, we will probably be a \$100 million 2018 company. Now, they won’t be in our financials, because that doesn’t make the crossover until you own it, but if you ask what the business is likely to do in 2019, it will be at least \$100 million, and then we will have new licenses and new deals. So, we’re not going to be able to catch up to Acreage, GTI, and MedMen in terms of the number of licenses, but I think we will catch and surpass them in terms of sales and profit.” Currently, GGB’s market cap stands at about \$600 million, according to market analyst Seeking Alpha.

### HOSTILE TAKEOVER?

From the get-go, analysts questioned GGB’s offer to acquire Aphria for \$8.07 per share. “This offer is surprising because GGB is smaller than Aphria, operates in the U.S. and not Canada, and because GGB’s takeover offer came at a discount rather than

a premium,” Seeking Alpha’s Jonathan Cooper wrote on January 7. “Despite that, I view this offer as more than just a publicity stunt: It may be a harbinger of things to come. Over the next several years, we are likely to see consolidation between the currently-separate worlds of U.S. and Canadian cannabis. This may be an early glimpse at offers that will become more commonplace in the coming years.”

Other observers noted conveniently close relationships between the two companies. “During a recent interview with *Bloomberg*, Green Growth CEO Peter Horvath insisted nobody at Aphria prodded him to make an offer for Aphria in an effort to spark investor interest for the target,” Cory Renauer wrote for *The Motley Fool*. “The denial didn’t have much of an effect, partly because an Aphria-controlled investment fund called GA Opportunities is Green Growth’s second-largest shareholder.

“Green Growth is still re-forming its board members because it just closed on a merger with Xanthic Biopharma in November,” he added. “Perhaps it’s just a coincidence that two of Xanthic’s



board members with close ties to Aphria put feed money into Green Growth in March.”


Those observations came mere days after GGB reiterated its intention to acquire Aphria. In a release issued December 31, Horvath doubled-down on his argument the deal represents a big win for Aphria shareholders, denied any untoward relations between the two companies, defended GGB’s recent record of success, and put a positive spin on all the media attention.

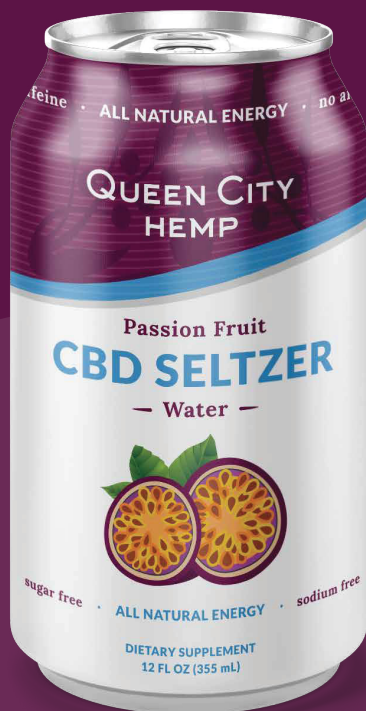
“Since we announced our intention to launch the takeover of Aphria, we have seen two things,” he said. “First, Aphria shareholders are welcoming a 45-percent-plus premium offer because they understand the significant value that can be unleashed by our combined teams, assets, and geographies. Second, a real interest in the market to understand Green Growth and our valuation.

“When investors consider our trailing revenue, recent license wins in Nevada, and a buildout in the new market of Massachusetts, they agree that it is not a question of *if* Green Growth reaches C\$7 per share, but *when*,” he added. “We understand there are some in the market who want to focus on

destroying value at Aphria, but we are committed to creating it.”

The thought process behind the Aphria offer perhaps was best explained by Horvath in a *Bloomberg* interview conducted a few days before the December 31 statement. “I think it’s important to understand that how you win in Canada is different from how you would win in the United States,” he said. “In the United States, we believe it’s consumer-focused, it’s brands, it’s consumer experience, and it’s quality product. In Canada, the current situation is that the government is who you sell to, so we think being a licensed producer is the way to go there.

“Ultimately, as the laws change in both countries, combining over the borders will absolutely make sense,” he added. “But, to be clear, the first opportunity is to take [Aphria’s] experience in cultivating and apply it to our operations in Massachusetts and Nevada, and then other states as we grow. Take our experience in branding and product development—particularly in personal care products that have CBD in them—and bring that to [Aphria’s] opportunities to sell in Europe and other countries.” 



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# SNIFFING OUT THE SCENTS OF WELLNESS

The nose knows. Go beyond pretty smells,  
to where potent terpenes top the wellness trend.

BY JOANNE CACHAPERO

**T**HERE'S NO QUESTION terpenes are a hot topic among both cannabis and mainstream retailers. How hot? Witness one of the 2018 seasonal drinks introduced by coffee empire Starbucks: the Juniper Latte, a veritable sugar- and spice-frosted, aromatic Christmas tree in a cup. The company described the creation as containing “a hint of juniper and sage, an evergreen aroma, and citrus notes.” It was concocted of “Starbucks signature espresso and steamed milk infused with juniper syrup and capped with velvety foam and a dusting of pine-citrus sugar.”

Juniper and sage? Evergreen and citrus? Sounds more like a description of a Seattle-grown cannabis

strain than a fancy Christmas caffeinated beverage, doesn't it? It's certainly a level up in sophistication and subtle taste compared to the wildly popular, seasonal (and sugary) Unicorn Frappuccino or autumn's signature flavor, the Witches Brew, made with superfood-forward “bat wart” chia seeds.

As described, the beverages went well beyond traditional fast-food products by containing elements consumers want to experience: pine trees, coffee, and spices all possess intangible qualities that elicit emotional and physical reactions when smelled. An increasing recognition of such experiences as an integral part of overall health is prompting consumers to sniff out the scent of wellness.



That olfactory stimulation would play a critical role in wellbeing may seem to some like patchouli-packing hippy talk, right up there with crystal-enhanced drinking water or vibrational sound baths. However, a wealth of scientific data indicates scent can have beneficial mental and physical effects—and that’s where terpenes come in.

Terpenes, which are found in every plant, are hydrocarbon-based compounds typically associated with scent but which have many industrial uses. In fact, the word “terpenes” derives from the same Greek root

“**OLFACTION, THE SENSE OF SMELL, IS THE ONLY SENSE THAT BYPASSES THE THALAMUS AND CONNECTS DIRECTLY TO THE FOREBRAIN.**”

—Dr. J. Preston Campbell, chief scientific officer, MONQ

as the word turpentine—the strongly scented distilled extract of gum and pine trees used as a solvent and in paint and lacquer. There are 20,000 known terpenes, 200 of which are said to be from cannabis varieties. In the context of cannabis, many consumers judge the quality of dried flower with a good whiff. Whether the aroma hints at citrus, pine, or skunk, the scent-sensitive customer uses terpenes to sense an experience.

“Olfaction, the sense of smell, is the only sense that bypasses the thalamus and connects directly to the forebrain,” explained Dr. J. Preston Campbell, chief scientific officer at aromatherapy product manufacturer MONQ. “No filtering—just direct connection between chemical stimuli and your emotions. It happens quickly, which is why you can feel nauseated or start crying from some specific odor context before your conscious brain even knows why.”

## DEFINING THE ‘QUALIA’ OF THINGS

MONQ represents an application of modern technology to the ancient traditions of aromatherapy and essential oil inhalation. The MONQ “personal aromatherapy diffuser” (basically, a reusable vape battery), utilizes disposable cartridges filled with proprietary, mood-enhancing essential oil blends. MONQ encourages consumers not to inhale completely, but to draw off the diffuser, then breathe out through the nose. This allows botanical essences to be introduced directly to the user’s palate and olfactory receptors, followed by rapid delivery of active compounds to the bloodstream and forebrain.

For instance, MONQ’s Happy blend contains oils of fennel, thyme, vanilla, caraway, clary sage, lavender, green mandarin, marjoram, parsley seed, and petit grain. Intended to evoke “joy and kindness,” the blend’s benefits go beyond freshening the air. Fennel long has been used as a natural remedy for upset stomach. Thyme is said to be calming, improving blood circulation and mental focus. Vanilla has been used to reduce anxiety, invigorate, and even as an aphrodisiac.

“There is a great deal of evidence to support the notion that human physiology functions optimally with the addition of terpenes,” Preston Campbell said.

At one point, MONQ’s product development team wanted to deliver “forest therapy” to consumers. Called Shinrin-Yoku by Japanese adherents, forest therapy—or “forest bathing”—is the practice of utilizing woodland walks as an immersive experience to improve health and happiness and relieve stress.

“Think about it from an evolutionary perspective,” Preston Campbell said. “Innumerable birds, insects, and mammals spent millions of years in forest environments and reached a point of coevolution in which animal survival is controlled by the plants’ secretion of volatile organic compounds into the air, like pheromones and scent molecules.

“These animals require scents from plants to live, feed, and mate. Humans are animals too,” he continued. “Why wouldn’t we share some of the same relationships with plants? There is strong evidence from forest therapy studies that this idea of optimized physiology can be obtained through immersion in forest environments, and a great deal of the benefits arise from the scent molecules you inhale.”

But if birds do it and bees do it, why do educated humans have such a hard time putting a finger on the molecule-sized components that help them feel better? Why do they put more faith in prescriptions than plant medicine?





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Preston Campbell, as well as MONQ founder and orthopedic surgeon Eric Fishman, M.D., are traditionally trained medical doctors who emphasize aromatherapy treatments aren't meant to take the place of conventional medicine for health conditions requiring treatment by a physician. But both Preston Campbell and Fishman also recognize traditional medicine overlooks some elements of good health. Those elements respond to stimuli with subtle and individual reactions that are easy to miss and often difficult to quantify.

Essential oil blends (and other aromatherapy products) attempt to trigger good health by using terpenes to enhance positive feelings, physical relief, or improved mood. At MONQ, those effects are measured in units called "qualia." Quale is the singular form.

What's a quale, you ask? Merriam-Webster Dictionary defines a quale as "a property as it is experienced as distinct from any source it might have in a physical object."

Trying to explain the sophisticated synergy between the brain, body, senses, and stimuli—in this case, with the sense of smell—is complicated...as complicated as trying to explain why a lemon is lemony, and then why that lemon scent, and the flood of terpenes into your brain, helps you feel refreshed and awake.

In the cannabis world, qualia are essential to the "entourage effect" that enhances the experience of full-spectrum cannabis applications, including blends of cannabinoids and terpenes.

Fortunately, your nose knows good qualia when it smells them.

## ANCIENT HISTORY, FUTURE MARKETS

Many cultures have used essential oils therapeutically and ritually. The ancient Egyptians, in fact, documented the essential oils they used in the process of mummification. China, India, and Greece employed essential oil therapies in antiquity. In biblical history, two of the three kings brought the infant Jesus aromatic gifts of frankincense and myrrh, illustrating the extreme value of pungent substances in the ancient world, equal to—and sometimes more valuable than—gold.

Although largely unknown in the United States until the 1970s, the term "aromatherapy" was coined in 1937 by French chemist René-Maurice Gattefossé; his father Louis had founded a cosmetics company in France in 1880. The son, who suffered burns in 1910, discovered essential oil of lavender helped heal his scars. Linalool—a terpene found in lavender and

cannabis and said to alleviate both pain and anxiety—likely played a role in Gattefossé's reported recovery. Eventually, he authored the first book on medicinal uses of essential oils: *Aromathérapie; les huiles essentielles hormones végétales*.

Both the family company and subsequent nonprofit Gattefossé Foundation still exist, with the foundation providing education and advocacy for essential oil use in hospitals and healthcare.

Of course, there's more than one way to experience terpenes. Scent's twin sister is flavor, typically encountered in tandem with scent in food and beverages. In the case of beer, hops—a varietal cousin to cannabis—adds flavor and character. Other spirits that make specific use of botanical essences include gin, which is flavored with juniper, along with other botanicals; herbal blend Jägermeister; and absinthe, which incorporates anise and wormwood.

Terpenes are nothing new to craft beer brewers, but THC and other cannabis-derived compounds could be a game-changer. The most recent manifestation of craft beer has no alcohol content at all. Instead, the brew is infused with THC from cannabis. While terpenes aren't as essential to the new angle on ales, revising beer's molecular recipe is an expression of consumer interest in cannabis and new ways to experience adult beverages.

The trend is being watched closely by legacy alcohol brands. Multinational adult beverage distributor Constellation Brands was the first to place a billion-dollar bet on the industry by way of a product-development deal with Canadian cannabis producer Canopy Growth. In December 2018, AB InBev—the world's largest brewer and parent company to Budweiser—partnered with Canadian company Tilray to develop cannabis-infused adult beverages.

California-based infused adult beverage company Cannabiniers was the first to develop craft brews with the alcohol content removed and subsequently replaced with an infusion of THC from cannabis. The company launched the craft brews, called "cannabier," in August 2018 under the Two Roots Brewing Co. brand, concurrently with its Just Society line of THC-infused iced teas and coffees.

Cannabiniers Director of Product Development Kevin Love explained that while cannabis terpenes aren't necessarily desirable in consumable products due to their typically strong flavors, cannabis and hops blend well together because they are from the same plant family. "We like the fact that [cannabis and hops are] complementary taste elements, right?"









And the compounds actually allow for these two very distinct flavonoid-type profiles to coexist with each other,” said Love. “So, there is a unique element...the crossover characteristics that make cannabis-infused de-alcoline beer such a perfect match.”

Love pointed out beer and other water-based beverages are optimal for sublingual delivery of active cannabis compounds because, unlike fat-based edible products, consumers don’t have to wait for digestion to occur for the THC or other active ingredients to be absorbed into the bloodstream. He said Two Roots’ brewing technology breaks down active compounds to nearly nano-scale for rapid intake. This results in a quicker onset of effects, mimicking the reaction time of an alcoholic drink.

“We wanted to ensure when the consumer is drinking our product, that as they’re consuming it, they’re actually experiencing the same consumption onset that they would with traditional alcohol products. And that’s a way we can regulate, ensuring

that we have strong efficacy,” Love said. “Our dosing is accurate, our onset and consumption times are accurate, and the experience as you’re consuming is [similar to] that of alcohol, because we all know our tolerance levels of alcohol.

“That’s the thing about this product: It’s the same exact process that you’re consuming, you’re inching up, and you get to a point where you know exactly how much to consume to be where you need to be,” he added. “And that’s your benchmark. So, it’s important to have the consumer be able to interact with the product on the spot.”

Love predicted consumers’ ability to experience THC beverages in a social setting—just like alcohol—will tap a whole new market for adult beverages. Recent moves by market-leading, multinational alcohol producers and distributors to merge with, invest in, or acquire Canadian cannabis companies certainly seem to support the prediction.



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**SCIENTIFICALLY SPEAKING**

Cannabis edibles producer Kushy Punch infuses its award-winning gummies and vape blends with full-spectrum cannabis extract that includes cannabinoids and terpenes, as well as other natural, organic ingredients. Carolina Vasquez, chief scientist for the company, has been studying terpenes and other plant compounds since her teenage years, when she discovered a career interest in biochemistry and organic chemistry. Since then, she has earned a bachelor's degree in chemistry and pharmacobiology from the University of Guadalajara and a Ph.D. in chemistry from the University of California.

Before joining Kushy Punch, Vasquez founded consultancy KitChem, which helped companies research and develop cannabis edibles, supplements, food, and beverages. She also served as head of research for an American beverage consulting firm.

"Before entering the cannabis industry, I was very aware of the benefits of cannabinoids and terpenes," she said. "Herbs and plants rich in terpenes have been used for millennia with well-reported effects. I first learned of the existence of terpenes almost two decades ago, in an organic chemistry class in high school.

"The endocannabinoid system was not a mystery, either," she continued. "This system regulates

mood, inflammation, pain, immunity, appetite, and sleep, among many other physiological responses. Endocannabinoid receptors were discovered in 1988; they are the most abundant neurotransmitter receptor in the brain and have been studied ever since."

Vasquez's early experience with cannabinoids and terpenes illustrates strides made by research scientists like legendary Israeli cannabis researcher and organic chemist Raphael Mechoulam, who isolated the cannabinoid THC in 1965 and is credited with discovering the endocannabinoid system. Despite U.S. cannabis prohibition, cannabis studies and trials in countries like Israel have steadily increased since Mechoulam's groundbreaking research, contributing to public acceptance of medical cannabis.

Instead of fast-acting products like THC-infused beer, Kushy Punch is committed to producing a more classic edibles experience, the result of digesting cannabinoids. Although the effects can take somewhat longer to manifest, traditional edibles typically produce stronger effects than inhaling or ingesting water-soluble infused products or applying topicals.

"In the case of [fat-free] beverages, they commonly use hydrosoluble [water-soluble] cannabinoids," Vasquez explained. "These molecules are metabolized differently and produce a wholly different and short-



Photo: Kushy Punch



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*Dr. J. Preston Campbell, chief scientific officer, MONQ*



*Carolina Vasquez, chief scientist, Kushy Punch*

lasting effect compared with the standard liposoluble [soluble in oil] cannabinoid. That is not really aligned with what our audience is looking for.”

Vast experience with consumer food and beverage brands puts Vasquez in a position to speculate about consumable cannabis trends and how infused products will develop for global markets.

“This is a very interesting moment in food science,” she said. “I see flavor companies developing cannabis flavors these days. Chefs and food scientists are using cannabinoids—and especially CBD—in foods like desserts, snacks, or main dishes. Hydrosoluble cannabinoids are trending, too.

“I’ve also seen cannabis bees that produce 1-percent THC honey,” she said.

## TALKING TERPENES


“True Terpenes is lucky enough to straddle a variety of markets, which in turn gives us access to an incredible variety of customers,” said Vice President of California Operations Audra Horridge. “Terpenes are found in the food we eat, in things like black pepper [beta-caryophyllene], the beer we drink [hops/myrcene] and, of course, cannabis.”

The company “specializes in the sourcing and custom formulation of pure, potent, and always-analyzed botanical terpenes.” While terpenes are used in a wide variety of industrial and consumer applications, Horridge said True Terpenes focuses on cannabis oil producers who want to add terpenes back into their extract blends to improve flavor or increase therapeutic effects. Extraction processes may strip away natural terpenes in cannabis extracts, which sometimes are re-added. True Terpenes also supplies manufacturers with terpenes for use in food and beverage products.

“We work with brewers like Coalition Brewing in Portland,” Horridge said. “They’re currently utilizing our botanically sourced [cannabis] strain profiles to enhance the taste of beers.”

According to David Heldreth, manager of marketing content for the company, “Terpenes, as components of essential oils, foods, and other products, have been used by humans since the dawn of time. However, the rise of the cannabis industry has put a new light on these compounds. Terpenes are tied to the intrinsic working of cannabis via the entourage effect. As cannabis education and use has increased, so has that of terpenes. As the public learns about cannabis, they’re basically getting a crash course in terpenes on the side. When people learn about the benefits of terpenes, it opens a whole new market to them.”

For example, he continued, “Hops contains myrcene. Many people are aware of the use of lavender essential oil in a diffuser or lavender tea to help unwind. Lavender lotion is known for its soothing effect when used topically. That effect is essentially the action of a variety of terpenes, including the terpene linalool in the lavender. Similarly, indica strains of cannabis contain linalool, among many other terpenes that provide that same effect to help you unwind. From topicals to tea to beer, there’s an endless variety of uses.”

Horridge believes crediting terpene trends for at least part of rising consumer interest in cannabis is hitting the issue right on the nose, so to speak. “The use of essential oils has boomed over the past few years right alongside cannabis,” she said. “As essential oil or cannabis enthusiasts learn about the terpenes in their products, it helps with normalization of the cannabis plant. It helps demonstrate that many of the extractions of cannabis are just essential oils themselves.” 



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# Challenging and Enforcing Canna-Patents

BY NICOLE E. GRIMM, GEORGE “TREY” LYONS III, AND BRETT W. SCOTT



**W**ITH the continued growth and normalization of the cannabis industry, patent protection of cannabis innovations remains a key consideration for those working in the space. At a high level, patents are granted by the U.S. Patent and Trademark Office (USPTO) on new, useful, and nonobvious inventions and create the right to exclude others from making, using, and selling the invention in the United States. While the USPTO has been granting patents on cannabis-related inventions (including the plant itself) for years, the industry is just starting to see cannabis patents be enforced and challenged in judicial proceedings.





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owners and applicants in the current legal landscape. Specifically, if U.S. courts were to begin declining to hear cannabis patent infringement cases, then an unfortunate circumstance may arise where cannabis patents are challenged and invalidated via an IPR without the owner's ability ever to enforce them in U.S. courts.

On this point, however, innovators should not be deterred from filing canna-patent applications, because the benefits of seeking patent protection almost certainly outweigh any theoretical disadvantages. Given the rapid growth of the industry, enforcing canna-patents may become less complicated as new cannabis products are allowed on the market. Take, for example, GW Pharma's patents directed to Epidiolex. Following the FDA's approval of the drug, the DEA accepted the Department of Health and Human Services' finding that Epidiolex's formulation has "a very low potential for abuse," and transferred Epidiolex from a Schedule I controlled substance to a


Schedule V drug, the lowest restrictive class. (See 83 Fed. Reg. 48,950, Sept. 28, 2018.) Post-rescheduling, Epidiolex is available by prescription and GW Pharma should be able to enforce related patents in U.S. courts.

### TAKEAWAYS

If a canna-patent can withstand an IPR challenge, the value created for the owner is tremendous. Surviving an IPR strengthens the patent by demonstrating its validity over the challenging references and also shows the canna-patent owner's commitment to protecting their intellectual property, which can add leverage value in patent licensing negotiations.

The very existence of the PTAB's willingness to engage in cannabis-patent IPRs further confirms for everyone participating in the canna-patent process (judges, attorneys, examiners, inventors, etc.) that property rights bestowed in canna-patents are no different from those

created in any other patent. In turn, canna-patents, like the cannabis industry as a whole, will continue to normalize in the American judiciary (as cannabis has in the American psyche)—and, hopefully, some of the recurring challenges will be alleviated along the way.

Despite these developments, the takeaway for canna-patent owners and applicants seeking to protect their innovations should remain largely unchanged. Obtaining canna-patents is still highly valuable for companies in this industry and will serve as irreplaceable stakeholders in an ever-normalizing and expanding market. 

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NICOLE E. GRIMM is a partner with McDonnell Boehnen Hulbert & Berghoff LLP (MBHB). GEORGE "TREY" LYONS III and BRETT W. SCOTT are associates with MBHB. With offices in Illinois, California, and North Carolina, MBHB provides comprehensive legal services for intellectual property owners. MBHB.com



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# Science Behind the Scenes



**C**ANNABIS science and technology are developing rapidly, as they do in most young industries. Here are a few examples.

## WHAT'S THE LATEST ABOUT TERPENES?



**Tristan Watkins, Ph.D., chief science officer, LucidMood:** The biggest advancement in the terpene space

relates to the acceptance of their importance and the diverse effects they have. Advanced companies are moving beyond full-spectrum and instead looking to create the perfect “designer” spectrum of terpenes. This novel view of terpenes and terpene profiles will allow companies to create their own differentiated products in the evolving cannabis space.

LucidMood creates formulated cannabis products that produce specific and predictable effects, making it easy for consumers to choose their perfect product with effects ranging from feeling calm to increasing sociability at a party, and plenty of options in-between. Another company, Ginkgo Bioworks, currently is developing ways to make rare cannabinoids in the lab instead of needing to genetically alter plants to produce those same cannabinoids. This paves the way for researchers and formulators to gain access to exceedingly rare cannabinoids that may have important medicinal or recreational benefits.

**LucidMood.net**

## IS THERE A “BEST” METHOD FOR EXTRACTING TERPENES?



**David Heldreth, marketing content manager, True Terpenes:** In general, isolating terpenes or essential oils

is done through flash chromatography and distillation technologies. You use the heat from steam to lift the terpenes, which evaporate around room temperature, from the plant material. Alcohol and water have varying boiling points, which is why in an alcohol still, moonshiners or distillers use specific temperatures to capture varying alcohol proofs.

True Terpenes provides botanically sourced terpenes that we reformulate to recreate the terpene profiles from analytical testing of cannabis plants. We use a wide variety of plants from lemongrass to citrus or even basil to formulate the terpene strain profiles that have become the centerpiece of our brand. **TrueTerpenes.com**

## HOW IS DATA CHANGING INDUSTRY PRACTICES?



**David Kessler, senior vice president of horticultural solutions, TriGrow Systems:** First and foremost, science

and data are used to deliver consistency and quality. Our proprietary software, TriMaster, coupled with TriGrow’s hardware solutions, records tens of thousands of data points throughout the cultivation process. By recording environmental data such as temperature,

humidity, vapor pressure deficit, fertilizer and water inputs, and then adding additional data about a plant’s genetic constitution coupled with testing data about the chemotype fingerprint of the flower produced, we are able to refine grow plans.

TriGrow’s vegetative flower units (VFUs) are all independently software-controlled cultivation environments. By running a single genetic in several VFUs and changing a single environmental variable, we are able to compare the results and scientifically determine which “recipe” produced the best results. From there, we can replicate environmental conditions to produce the genetic in question consistently. **TriGrow.com**

## TECHNOLOGY IS BECOMING MORE PORTABLE AND USER-FRIENDLY, ISN'T IT?



**Dylan Wilks, chief technology officer and founder, Orange Photonics:** Very much so. LightLab’s

analytical approach is not unlike high-performance liquid chromatography (HPLC) instruments—the “go-to” analytical instrument for state-certified cannabis testing labs. However, unlike an HPLC, LightLab is an in-house instrument designed for field use and for the non-technical user. We had to develop a liquid chromatography column that has repeatable, reliable performance, simple sample preparation, and have it all culminate in an accurate measurement.

**OrangePhotonics.com** 

—Rob Hill



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- 277 - 347 Volt for 3 phase systems in USA and Canada
- Central control through Gavita Master Controller (50-115% output)
- Repeater Bus system allows control of hundreds of fixtures in daisy chains
- Horticultural quality fixture for long life and reliability
- Choice of reflectors

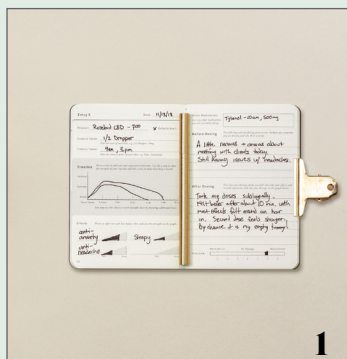


[www.gavita.com](http://www.gavita.com)



# On the Shelf

## New, novel, or noteworthy.



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## Hardware

1

### GOLDLEAF CBD JOTTER

This pocket-sized logbook helps patients track products they have tried and document their experiences, allowing them to make informed decisions about their health. Contains twenty-four templated entry pages, dosing guide, recommendations, product review section, and more. The company also makes journals for grow planning and cannabis tasting. [SHOPGOLDLEAF.COM](http://SHOPGOLDLEAF.COM)

2

### SUBLIME SNEAKER VAPORIZER

Sleek and discreet, the Sneaker is a super-convenient battery that charges directly from any USB outlet, alleviating worries about unexpected lack of power. The product comes with a keychain for combustion-on-the-go. Small but mighty, affordable, and dressed in black; from the designers at Sublime. [SUBLIMECANNNA.COM](http://SUBLIMECANNNA.COM)

3

### BURNBUD

A cannabis multi-tool made from hemp stalk fiber bioplastic, not petroleum-based materials. Compact and convenient, Burnbud is an herb dispenser, grinder, lighter holder, packing piston, herb storage container, and bottle opener that also fills cones—like a sesh in your pocket. Available in black and grey or natural hemp color. [BURNBUD.COM](http://BURNBUD.COM)

4

### GHOST MV1 VAPORIZER

Made of medical-grade materials with proprietary engineering from the ground up, this handheld dry-flower vaporizer offers several sought-after features: ergonomic design, tooled components, its own app, and long-lasting battery for less-frequent charging. In black chrome, silver satin, nickel, rose gold, and “stealth” finishes. [GHOSTVAPES.COM](http://GHOSTVAPES.COM)

5

### NEON-LOOK LED SIGN

Adv Pro’s laser-carved LED signs contain no harmful gas or mercury and release very little heat. Because they draw only 3 watts and last as long as 50,000 hours, the replaceable bulbs can cost 50 percent to 70 percent less to operate than neon. [ADVPRODUCT.COM](http://ADVPRODUCT.COM)

## Horticulture

6

### LIFE CLONING GEL

LIFE Cloning Gel contains a blend of rooting hormones and all-natural ingredients formulated to produce roots in any substrate, including rooting cubes and aeroponic machines. Naturally occurring plant growth hormones stimulate early root development, and vitamin B1 helps increase stress resistance. Available in 0.5 oz, 4 oz, or 8 oz. [RXGREENTECHNOLOGIES.COM](http://RXGREENTECHNOLOGIES.COM)

7

### TERRAVESCO VERMICOMPOST

Terra Vesco’s horticultural-grade compost feeds plants with diverse beneficial microbes that transform into plant-available nutrients. Its proprietary formulation process creates consistent particle size, which encourages hydration and aeration. Free of pathogens and foreign seeds. [TERRAVESCO.COM](http://TERRAVESCO.COM)

8

### GROWPITO BENEFICIALS

A unique blend of carefully selected mycorrhizal fungi, humic acid, Trichoderma, and beneficial bacteria specifically designed to work with Growpito’s one-of-a-kind perpetual stone-wool hydroponic grow medium. According to the company, plant roots experience intensified growth and vigor. [GROWPITO.COM](http://GROWPITO.COM)

9

### ROOTBUILDER II KITS

Trademarked RootBuilder II Kits come in pint, quart, one-gallon, two-gallon, three-gallon, and High-5 sizes, as well as an “expandable” version composed of a 100-foot-long RootBuilder roll that can be cut to create any size container required. Encourages healthy root ball formation. [ROOTMAKER.COM](http://ROOTMAKER.COM)

10

### GRODAN PRO COMMERCIAL PACKS

Grodan stonewool is made from molten rock spun into cotton candy-like fibers and then compressed into cubes, blocks, or slabs. Grooves at the base promote good drainage. Available in a large assortment of sizes and configurations to suit all types of plants. [GRODAN.COM](http://GRODAN.COM)

11

### SUNNY DAZE

All-natural sun cream features flecks of plant-based glitter and an SPF of 30. Manufactured in Las Vegas from nano-emulsified, hypoallergenic cannabidiol and other natural ingredients, the product is available in regular and travel sizes. [FELIXANDAMBROSIA.COM](http://FELIXANDAMBROSIA.COM)

12

### BLACK BELT CBD PRODUCTS

CBD-infused performance training products for Jujitsu competitors, martial arts pros, and serious athletes looking to add cannabinoids to their training regimen. Available in roll-on, topical balms, tonic, capsules, and vegan and paleo protein mixes. [BLACKBELTCBDPRODUCTS.COM](http://BLACKBELTCBDPRODUCTS.COM)

13

### CANNABINOID CREATIONS CBD SYRUP

This infused syrup comes in two formulas for daytime and nighttime use. Neither produces groggy side effects. Available in grape and cherry flavors; nighttime formula incorporates added melatonin. [CANNABINOIDCREATIONS.COM](http://CANNABINOIDCREATIONS.COM)

14

### SPIRO EXTRA STRENGTH CBD FULL SPECTRUM KIT

Everything necessary for vaping Spiro’s hemp oil: a 4.2mg pod of organic, full-spectrum hemp oil and an Aspire Gusto Mini handheld vaporizer. Discreet and portable; in raw, citrus, and mint flavors. [HALOCIGS.COM](http://HALOCIGS.COM)

15

### CBD & HONEY SKIN REPAIR

The antiseptic powers of hemp and healing potential of CBD help minor cuts, burns, bug bites, and other skin conditions. No harsh chemicals, petroleum, mineral oil, lanolin, preservatives, parabens, phthalates, fragrances, or dyes. [LIFEELEMENTS.COM](http://LIFEELEMENTS.COM)

16

### STRETCH MARK SALVE

This cream mixes cannabis with skin-healing ingredients including vitamin E, shea butter, eucalyptus, and ultra-regenerative tamanu oil. Use over time can make scars less noticeable and improve dermatological health. [MADEFROMDIRTORGANICS.COM](http://MADEFROMDIRTORGANICS.COM)



# INFLUENCER SECRETS: KITTY KITTY BANG BANG



Photo: Frank Chacon / @fstophlacon

**KITTYKITTYBANG BANG (@bangkittybang)** is a cannabis influencer, advocate, photographer, and stylist. Her background in performance and musical theater is evident in the pinup-style glamour shots for which she's famous on Instagram, where she has more than 30,000 followers and works with numerous established and up-and-coming brands.

## WHAT IS YOUR ADVICE FOR BRANDS TRYING TO SUCCEED ON SOCIAL MEDIA PLATFORMS?

Constant, active engagement increases your visibility and the number of accounts that are going to see your brand. That's why it's important to comment on other photos, like other posts, and comment on brands you want to work with. I've received follows from making informed comments. It's an insane amount of work. You need to post every day (on Instagram, for example), because when you don't it sort of reboots the algorithm.

I think it's important to consider people are scrolling. You want your posts to get their attention. I have a very colorful, over-the-top, crazy style. I think a theme (or consistent look or color scheme) is not only fun, but also a quick way for your audience to get to know you and assess the aesthetic of what you're selling.

First and foremost, the content has to be strong. For me, that meant investing in better image quality. I bought a professional camera. Another way to increase engagement is to keep up with trends. Social media loves trends. Right now, one of those trends is putting text on your video so when people are scrolling, they are able to "read" the video. When your content is trendy, it increases the chances that another account or brand will share your post.

Instagram stories are a fun way for people to have more access to a brand. I like to use my stories to highlight all the details about a product or event. Stories are a great way to survey your audience, which increases interaction.

People do love seeing tons of weed, of course, but that's not necessarily relatable. I find just speaking authentically and truthfully to your audience often gets the greatest engagement.

—Linda Friedman

## YOUTUBE INFLUENCERS



**Macdizzle420**  
"Just an annoying brunette getting lit on the internet."

**39k**



**That High Couple**  
"Building up the digital cannabis community with peace, love, and positivity."

**31k**



**Positive Smash 420**  
"Legal weed reviews, weed hauls, smoke sesh videos, product reviews."

**189k**



## RETWEET RECORDS

**4.3M**

Jan. 5, 2019: Japanese billionaire Yusaku Maezawa (@yousuck2020) **promised to share 100 million yen** between 100 random retweeters of a promotional message for his clothing line, ZOZO Inc.

**3.55M**

April 5, 2017: Carter Wilkinson (@carterjwm) tweeted **"HELP ME PLEASE. A MAN NEEDS HIS NUGGS,"** a desperate plea for assistance in winning a social media contest that would reward him with a year of Wendy's chicken nuggets.

**3.31M**

March 2, 2014: Ellen DeGeneres (@TheEllenShow) tweeted a group selfie from the Oscars, wishing **"If only Bradley's arm was longer. Best photo ever. #oscars."** The image captured a group of Hollywood A-listers mugging for the camera.

**2.68M**

Oct. 2, 2011: One Direction singer-songwriter Louis Tomlinson (@Louis\_Tomlinson) sent love to a fellow bandmate with **"Always in my heart @Harry\_Styles. Yours sincerely, Louis."** Days later, a bitter Twitter spat erupted between the two.

**1.79M**

Aug. 20, 2016: Spanish gamer @Rubi5 tweeted simply **"LIMONADA,"** which is Spanish for lemonade. Subsequently, he promised followers a chance to appear on his popular YouTube channel if they retweeted.


**1.66M**

Aug. 30, 2017: Former President Barack Obama (@BarackObama) delivered a message about tolerance when he tweeted **"No one is born hating another person because of the color of his skin or his background or his religion..."**

**1.47M**

Sept. 29, 2018: Apparently missing the spotlight, @Rubi5 tried to rekindle the flame by tweeting **"LIMONADA 2.0."** He offered prizes for retweets.





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# SIZE MATTERS



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