

Commentary

Adding Cannabis to the Curriculum

Without fanfare, Temple University School of Medicine introduced cannabis to the curriculum in 2011. All it took was a faculty member —Ronald Tuma, PhD, a professor of physiology— proposing to add a one-hour lecture on the endocannabinoid system to the material he taught first-year medical students as part of “Block 3.”

Temple organizes the curriculum into “blocks” according to body or organ systems. Classes are led by faculty from various departments. The blocks replaced the traditional set of courses administered by separate academic departments. Perhaps the “integrated curriculum,” adopted by Temple a decade ago, made it easier for the endocannabinoid system—which is involved in almost every physiological process in the body—to find a niche.

Temple’s Block 3 —“Body Systems 1”— provides “the fundamental facts and concepts necessary to understand the microscopic structure, embryological development and function of the cardiovascular system, the pulmonary system, the gastrointestinal system, and the kidneys.”

When Tuma told Block 3 Director James Heckman, PhD, that he intended to devote a lecture to the endocannabinoid system. Heckman, who is also a physiology professor, approved unhesitatingly.

Tuma says the endocannabinoid lecture is “always very well received” by the more than 200 first-year medical students who attend it each year.

Tuma does not consider himself the Jackie Robinson of medical education. “It was something I wanted to do and it was time,” he says matter-of-factly.

Temple University School of Medicine has long been supportive of cannabinoid research, with labs run by Mary Abood and Sara Jane Ward doing cutting-edge studies. Jahan Marcu worked in Abood’s lab en route to getting his PhD, then as a postdoc.

Tuma’s lab, according to the med school website, is investigating “inflammatory reactions that contribute to central nervous system injury following stroke, trauma, and autoimmune disease, and how modulation of the activity of specific cannabi-

noid receptors influences the progress of these diseases.”

Tuma and colleagues at Temple were “first to demonstrate that modulation of the activation of cannabinoid 2 receptors has a significant impact on the development of a model of multiple sclerosis, as well as on the magnitude of damage in mouse models of stroke and spinal cord injury.”

Unfortunately, Temple University School of Medicine—and McGill in Montreal, where pain specialist Mark Ware, MD, started teaching a class on the endocannabinoid system five years ago—are the exceptions that prove the rule. Virtually all med school graduates enter practice with no understanding of how cannabis works as medicine. They are unprepared to treat cannabis-using patients and know nothing about a treatment option that could help cannabis-naïve patients. They may miss out on research opportunities over the course of their careers.

We suspect that some of the very doctors and scientists who until now ignored or disrespected Cannabinoid Medicine, will be teaching courses about it—or shaping their content

We expect a surge of medical schools adding introductions to the endocannabinoid system in the next few years. Whereas professors Tuma and Ware have real experience and expertise, we suspect that some of the very doctors and scientists who until now ignored or disrespected Cannabinoid Medicine, will be teaching courses about it—or shaping their content. Count on them to instill disinformation such as “9% percent of all longterm users become addicted.”

Continuing Medical Education

Licensed physicians and nurses are required by state licensing boards to take a certain number of Continuing Medical Education courses annually to stay abreast of advances.

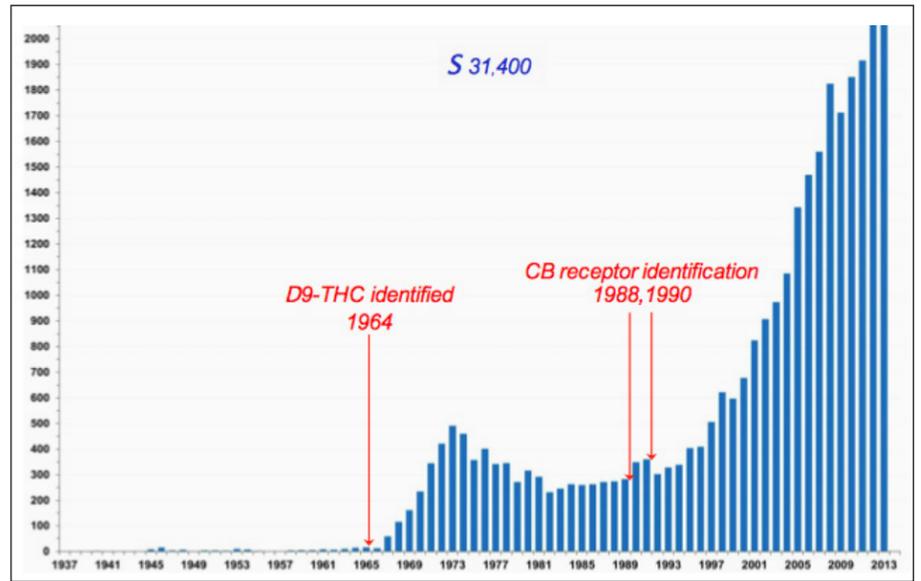
CME courses introducing doctors and nurses to cannabinoid medicine have been slowly proliferating. The Canadian Consortium for the Investigation of Can-

continued on page 70



RONALD TUMA, PhD

Fifty years of intensifying research



GRAPH PREPARED FROM PUBMED DATA by Istvan Ujvary shows that peer-reviewed studies on cannabis and cannabinoids have accelerated dramatically since 1964, when Y. Gaoni and Raphael Mechoulam notified the *Journal of the American Chemical Society* that they had worked out the chemical structure of delta-9 tetrahydrocannabinol and cannabidiol —THC and CBD, the principal compounds in hashish.

Is Cannabis-Based Medicine a viable—and valid—specialty?

A spectre is haunting California physicians who have been practicing Cannabis-based Medicine: the likelihood of “legalization” in 2016. The economic viability of their specialty may depend on how the new law is worded.

If legalization involves a steep tax on cannabis sold for recreational use, many people will continue visiting MDs to confirm that their use is medical. This is the situation in Colorado, where a doctor’s authorization letter effectively confers a 25% price break from dispensaries, and cannabis-oriented medical practices are flourishing.

But what if the tax is not steep enough to induce cannabis users to get a doctor’s approval? How many people using the herb to treat common conditions such as pain, depression and anxiety will feel the need to seek annual renewals?

We asked Jeffrey Hergenrath, MD, the president of the Society of Cannabis Clinicians (SCC), how he sees the future of the specialty.

Hergenrath’s office is in Sebastopol, California, a small city some 60 miles north of San Francisco. His examinations are thorough—each new patient gets an hour and a half—and his expertise is exceptional. Hergenrath, 67, was in Emergency Medicine for 26 years and has never been in any kind of trouble with the medical board. He charges \$250 for the initial visit, \$120 for recheck visits.

Off the top, he estimates, “Fifty to 90 percent of my patients would not seek renewals if the legal and economic incentives were removed.

“The need for many patients to have a cannabis consultation is greater than ever.”

“At the same time,” he went on, “the need for many patients to have a cannabis consultation is greater than ever. Patients are presenting with cancers and a whole range of serious illnesses for which cannabis is capable of providing relief, but they need guidance in using it—how to optimize their treatment plan. They need doctors who stay informed about cannabis and cannabinoids and can share evidence-based information about strains, dosage, frequency of administration, methods of administration, and so forth.”

Cannabis specialists also have an important role to play, Hergenrath says, countering “the constant stream of misinformation from the federal government” by collecting data conscientiously and publicizing their findings.

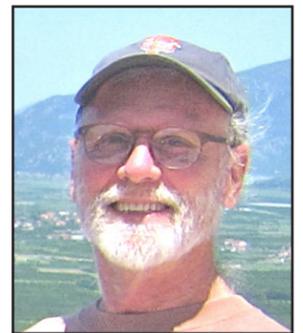
Hergenrath was a founding member of the SCC, which was launched 1999 by Tod Mikuriya, MD, the Berkeley-based psychiatrist who drafted the first sentence of the Compassionate Use Act of 1996 (Prop 215), allowing doctors to approve cannabis use by patients for “any... condition for which marijuana provides relief.” Today the group has some 200 members nationwide.

“Cannabis Clinician” is a valid specialty,” Hergenrath asserts. “It doesn’t fit in with the conventional categories such as Oncologist, Neurologist, Dermatologist, Rheumatologist, Gastroenterologist, Endocrinologist, Pediatrician, and so forth. It is a unique specialty that cuts across all the conventional divisions by virtue of the catholic nature of the endocannabinoid system. In the words of a recent paper by NIH researchers Pal Pacher and George Kunos, ‘modulating endocannabinoid activity may have therapeutic potential in almost all diseases affecting humans.’

“Genetic variations in the endocannabinoid receptors are being revealed by the field of genomics, and shed light on the endocannabinoid deficiency diseases. Similarly, the ‘natural’ deterioration of the endocannabinoid system seems to give rise to diseases that we are resistant to in our youth. It isn’t so-far fetched to imagine that the plant cannabinoids, like the essential fatty acids from which they are derived, are like essential nutrients in an increasingly poisonous world.”

The treatment plan Hergenrath provides patients is individualized—“based on the person and their real-life situation—their age, diagnosis, condition, employment, aspirations, and obligations—like they’ll be picking up the kids at 3 o’clock—everything needs to be considered. Tailoring the treatment plan to meet the needs of each patient can’t be done with a 10 minute appointment and a prescription pad in your hand.”

The availability of CBD-rich cannabis in recent years has been a boon to many in the workforce. “Typically people use CBD tincture in the morning or daytime to stop the anxiety and or reduce the pain without impairing their global ability to multi-task at work. With CBD and THC we’re just scratching the surface of what cannabis-based



JEFFREY HERGENRATH, MD

O'Shaughnessy's

The Journal of Cannabis in Clinical Practice

Managing Editor: Fred Gardner
Associate Editor: Martin A. Lee
Guiding Spirit: Tod Mikuriya, MD

Contributors: Jeffrey Hergenrath, Bonni Goldstein, John McPartland, Ryan Lee, Giovanni Appendino, Michelle Sexton, Dave West, Zach Klein, Jahan Marcu, Dustin Costa, Stacey Kerr, Valerie Corral, Istvan Ujvary, Deborah Malka, Wade Laughter, Paul Meyer, Clint Werner, Frank Lucido, Dale Gieringer, Pebbles Trippet, Jerry Whiting, DJ Short, Christine Paoletti, Lester Grinspoon, Adrian Devitt-Lee, Michael Krawitz, Michael Aldrich, Ellen Komp, Chris Van Hook, Zara Axelrod, Jerlina Love, Samantha Miller, Joshua Ahn, Doug McVay, Michael Backes, Lincoln Godfrey

Special thanks to The Society of Cannabis Clinicians, Michael Gannon, Michael Hayes, Carlos Armenta, Alana Lee, Donald Abrams, Ethan Russo, Larry Brooke, Caroline Francese, Tim Anderson, Mark Ware, Greg Gerdeman, Diane Dickinson, Ned, Doug, Paige Figi, Heather Jackson, William Panzer, Eric Johnston, Jason Schechter, Jack McCue, MaryLynn Mathre, Michelle Aldrich, Jean Lang, Dress, Alec Dixon, **Lawrence Ringo**, Starr Hergenrath, Chris Larson, Susan Soares, Jahan Marcu, Anne Goebel, Anneliese Clark, Moriah Barnhart Seth Hyman, Steve Robinson, Anna Szostek, Christine Milentis, George Van Patten, Robert Raich, KJL, Patricia Smith, Steph Sherer, Goran Abrahamyan, Vivian McPeak, John Karapelou, Susan Schindler, Joe D. Goldstrich

Send correspondence to p.o. box 490, Alameda CA 94501
phone: 415-305-4758 email: editor@beyondthc.com

Viewpoints expressed in O'Shaughnessy's may not reflect positions adopted by the Society of Cannabis Clinicians. Signed pieces present the opinions of the authors; unsigned pieces present the opinions of the editors. Copyright 2015 by O'Shaughnessy's. All rights reserved. Address reprint requests to editor@beyondthc.com



WB O'SHAUGHNESSY
“AT THE BENCH.”

continued on page 68

Cannabis in the Curriculum *continued from page 2*

nabinoids, led by Mark Ware, in alliance with UCSF oncologist Donald Abrams, has been presenting introductory courses since 2007. A session in 2013, drew some 70 doctors; the most recent in Ontario, Canada, drew 210.

“Clinicians are confused,” says Ware. “They get very little information from their own colleges and licensing boards.” The doctors attending the CCIC presentation in Ontario were, according to a survey, less naive about cannabis than the average Canadian MD. A third of them had written declarations entitling patients to obtain cannabis legally. Almost 80% had been asked by a patient or the family member of a patient about cannabis as a possible treatment. On the other hand, only 66% said they had cannabis-using patients, which we take to mean that 34% of these doctors didn’t know that some of their patients are too afraid or embarrassed to bring up the subject. The devil-weed stigma dies hard.

The more prejudiced doctors will be the last to get educated.

Ware cites a study concluding that personal experience and feedback from patients are the key factors in convincing doctors that the herb is benign and potentially useful. “Our personal experiences with this drug drive our clinical practice,” Ware observes. Which implies that the more prejudiced doctors will be the last to get educated, and the most prejudiced individuals will never get educated at all.

The CCIC survey revealed that the doctors wanted, uppermost, to learn what to tell patients about proper dosing, and how to formulate treatment plans. Their biggest fear was that patients would be trying to obtain cannabis for recreational purposes. Their favored educational formats are “peer-reviewed summaries” and “online CME material.”

Physicians with relevant experience should be invited by medical schools to train students directly as clinical faculty

Drs. Deborah Malka and Stacey Kerr produced for the Society of Cannabis Clinicians an online CME course that includes an exceptionally lucid introduction to The Endocannabinoid System by Dustin Sulak, D.O. (See page 3 for the print version.) The SCC intends to upgrade and update the 12 modules as the field advances.

The CCIC and the SCC are reaching doctors who learned nothing in medical school about the endocannabinoid system—playing catch-up ball, as it were. Physicians with relevant experience should be invited by medical schools to train students directly as clinical faculty. Why are these institutions content to turn out doctors with incomplete knowledge about how the brain works—not to mention the gut, the immune system, bone, and the rest of the body?

Of Possible Relevance:

According to the Journal of the American Medical Association, 16 of 17 (94%) U.S. drug companies paid leaders of academic medical centers to sit on their boards of directors. The average pay for this sinecure was more than \$312,000 as of 2014.

Johnson & Johnson was most generous, paying off the leaders of the David Geffen School of Medicine at UCLA, the UCLA Health System, the University of Michigan, Morehouse School of Medicine, Eisenhower Medical Center, Northwestern Memorial Hospital, and Cornell University.

(J&J appears to be first among Big Pharma equals. After California voters passed legalized marijuana for medical

use in 1996, leading Drug Warriors held an emergency meeting in Washington, D.C., at which a representative of J&J’s Robert Wood Johnson Foundation promised financial support for whatever containment schemes the group devised.)

GlaxoSmithKline paid off honchos from the University of Texas Southwestern Medical Center, NYU Langone Medical Center, and Texas Medical Center. Merck paid two execs from Memorial Sloan-Kettering Cancer Center and one each from New York Presbyterian Hospital and Weill Cornell Medical College.

Amgen paid \$281,000 to a University of Southern California administrator.

How fitting!

How fitting that Temple University School of Medicine—where Tod Mikuriya got his MD—is in the forefront of adding cannabis to the curriculum. This is from a biographical sketch in our “Notes for a Biography” (O’Shaughnessy’s 2008):

“No mention was made of cannabis in Tod’s lectures at Temple, but an unassigned chapter on the subject in a pharmacology textbook (*Goodman and Gilman, 2nd edition*) caught his attention in March, 1959, triggering the interest that would define his career.

“I somehow got the message not to even discuss it with any of the professors,” Tod said, looking back. “It would not have been good for my career to become known as a person with an interest in marijuana.”

“He read everything on the subject available in the library and resolved to obtain and try cannabis himself—but not in north Philadelphia, where an arrest could get him thrown out of med school.”

Back to the future (compounding)

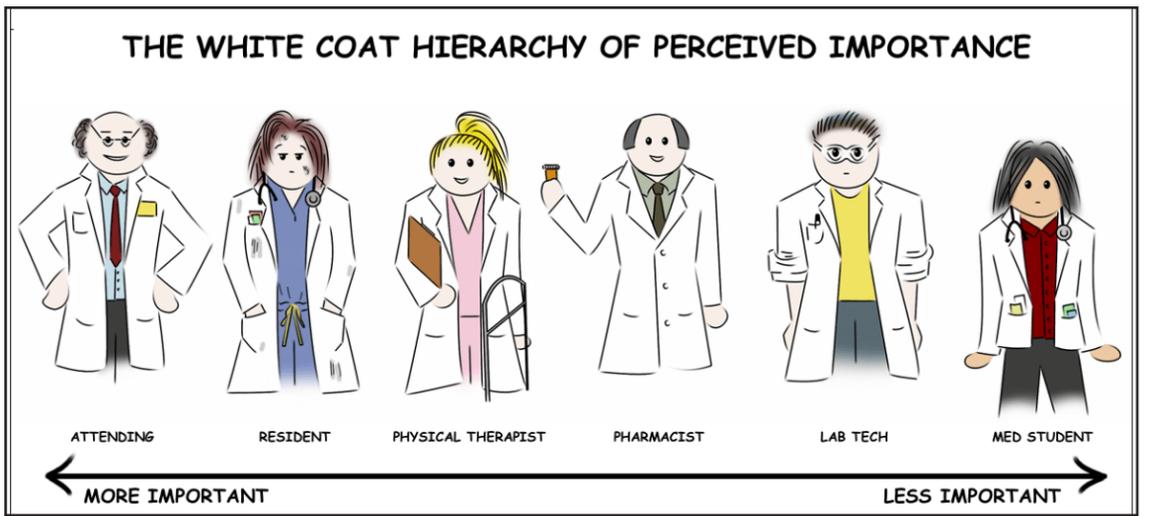
Cannabis has recently been added to the curriculum at the Massachusetts College of Pharmacy and Health Sciences (MCPHS). In May 2015, Drs. Matthew Metcalf and Evan Horton taught a two-credit-hour course on the medical uses of cannabis. “As if we were teaching about any other drug in the pharmacy curriculum,” Metcalf said, “we taught the biochemistry, pharmacology, pharmacokinetics, and therapeutic applications. The entire course is based on what the primary, peer-reviewed, research literature has revealed about medical applications for cannabis and drugs targeting the endocannabinoid receptor system.”

The course entitled, “Medical Cannabis,” will be offered as an elective to second-year students in the accelerated, three-year PharmD program at MCPHS University in Worcester.

“The endogenous target for cannabis is the cannabinoid receptor system. People don’t realize how large a role the endo-



Matthew Metcalf (left), assistant professor of medicinal chemistry and Associate Professor Evan Horton are teaching a “Medical Cannabis course at the Massachusetts College of Pharmacy and Health Sciences (MCPHS).



GRAPHIC FROM ABSURDIST.ORG

cannabinoid system plays in the everyday functions of the body. For example acetaminophen, the ubiquitous over-the-counter analgesic, activity is produced through the endocannabinoid system.”

Al Domeika, a pharmacist from Connecticut who dispenses cannabis, gave a talk for the class that was attended by the whole student body (more than 300 students). Dr. Metcalf described the system in Connecticut thus: “State-regulated growers submit their product to a state-regulated analysis lab, and then they send the product in batches to the state-regulated dispensaries run by pharmacists.”

Currently three states; Minnesota, New York and Connecticut mandate that only pharmacists dispense state authorized medical cannabis. The speaker from Connecticut, Al Domeika, said several other states are planning their medical cannabis laws to follow suit.

Connecticut moved cannabis to Schedule II under state law and exempted pharmacists from prosecution for dispensing it. (Each state has its own Controlled Substances Act. Pharmacists can still be prosecuted under federal law, but haven’t been.)

Minnesota, unlike Connecticut, “put the decisions about strain and dosage into the hands of the pharmacist,” according to

Metcalf. “So the doctor can write a recommendation for a patient to take cannabis, then they have to go to the pharmacist who’s going to determine the strain based on cannabinoid profile, and the dosage and frequency of how the patient takes it for a specific medical condition.

“So it’s really kind of getting back to compounding pharmacy as it was in the early 1930s and ’40s, with the pharmacist determining the specifics of the drug you’re taking. The doctor writes a prescription for a certain drug, the pharmacist is going to look up in his Pharmacopoeia what to dispense, and they’re going to make a professional determination about that specific patient and how much they should be taking.”

Metcalf described the course as “meeting an unfilled need in healthcare education. The endocannabinoid system is the most prevalent receptor system in the brain and is not commonly taught in pharmacy or medical schools. It’s now time to make sure this prominent endogenous system is taught to our health professionals. If states are going to mandate by law that doctors can recommend cannabis and pharmacists dispense cannabis, it would be unethical for us not to offer sound, professional education in how the cannabinoid system and drugs which target it affect the body.”

Daily Marijuana Use Is Not Associated with Brain Morphometric Measures in Adolescents or Adults

The above headline is a screenshot—the title of a paper published in the *Journal of Neuroscience* January 28, 2015, and our nominee for Downplayed Study of the Year. Barbara J. Weiland and colleagues at the University of Colorado and the University of Louisville found that marijuana use does *not* cause measurable changes in the brain. (Morphometrics pertains to the measurement of shape.)

This is almost a Tashkin-level exposé. (UCLA pulmonologist Donald Tashkin and colleagues reported in 2005 that smoking marijuana does not cause lung cancer.) And just as Tashkin’s findings were buried by the biomedical establishment and corporate media, so, too, has the study by Weiland et al.

Reviewing the papers purporting to show that marijuana use alters brain morphology, the authors note serious inconsistencies—“Marijuana use has been associated with both increased (Cousijn et al., 2012) and decreased (Yücel et al., 2008; Demirakca et al., 2011; Solowij et al., 2011) volumes of subcortical structures, or both (Battistella et al., 2014).”

The influential studies also have a serious limitation: “Importantly, these studies were not designed to determine causality (i.e., that marijuana use causes morphological changes), which would require a longitudinal design to establish temporal precedence.”

Moreover, the conventional wisdom is based on studies that “did not adequately exclude the effects of confounding variables.

“It is possible that alcohol use, or other factors, may explain some of the contradictory findings to date.”

“Several reports included marijuana groups that differed from control groups in alcohol use/abuse (Demirakca et al., 2011; Solowij et al., 2011; Schacht et al., 2012; Gilman et al., 2014). Unlike marijuana, alcohol abuse has been unequivocally associated with deleterious effects on brain morphology and cognition in both adults (Sullivan, 2007; Harper, 2009) and adolescents (Nagel et al., 2005; Medina et al., 2008; Squeglia et al., 2012). Statistically controlling for comorbid alcohol abuse, as many studies do, is not an ideal strategy, especially in small groups or under conditions where covariates may interact with the independent variable (Miller and Chapman, 2001). Thus, it is possible that alcohol use, or other factors, may explain some of the contradictory findings to date.”

Weiland et al did brain scans on 29 adult daily users and 50 adolescent daily users, and an equal number of non-users (controlling for age, sex, etc.), and looked for changes. “We evaluated the following structures that were the focus of recent studies of marijuana: the bilateral nucleus accumbens and amygdala (Gilman et al., 2014); hippocampus (Demirakca et al., 2011; Schacht et al., 2012); and cerebellum (Solowij et al., 2011; Cousijn et al., 2012).”

continued at right

Indigo Rose

If you have access to some soil and are planning a garden come spring in a place that gets sun, consider “Indigo Rose,” which Rosie’s catalog describes as “the darkest tomato bred so far, exceptionally high in anthocyanins.”

Anthocyanins are flavonoids that contribute purple pigment to eggplants (and cannabis), red to grapes, blue to blueberries. They are potent antioxidants.

The Indigo Rose tomatoes look like big cherries (which are also high in anthocyanins). “Developed by Jim Myers at Oregon State University using traditional plant breeding techniques...”

Some hip dispensary ought to buy a thousand seeds (price: \$10.15) and give out packets to their grower-members. A wee first step out of the single-issue trap.



Another plant worth pushing is milkweed. Most varieties are butterfly-attractors. The flowers are star-shaped and beautiful. Rosie was reading a high-end catalog the other day and saw an ad for a Syriaca comforter.

She thought that Syriaca was from milkweed — the fluff that provides a parachute for each light, flat seed — and confirmed it on Wikipedia, which also informed us:

“Failed attempts have been made to exploit rubber (from the latex) and fiber (from the seed’s floss) production from the plant industrially. The fluffy seed hairs have been used as the traditional background for mounted butterflies. The compressed floss has a beautiful silk-like sheen. The plant has also been explored for commercial use of its bast (inner bark) fiber which is both strong and soft. U. S. Department of

Agriculture studies in the 1890s and 1940s found that Milkweed has more potential for commercial processing than any other indigenous bast fiber plant, with estimated yields as high as hemp and quality as good as flax. Both the bast fiber and the floss were used historically by Native Americans for cordage and textiles. Milkweed oil from the seeds can be easily converted into cinnamic acid, which is a very potent sunscreen when used at a 1-5% concentration.

“The flowers often constitute small traps for insects who cannot take off again. Several insects live off the plant, including the Monarch Butterfly... The flower nectar has a high glucose content and was used by natives as a sweetener.”

Hemp isn’t the only useful plant that we’re missing out on, being so disconnected from nature in this dying culture.

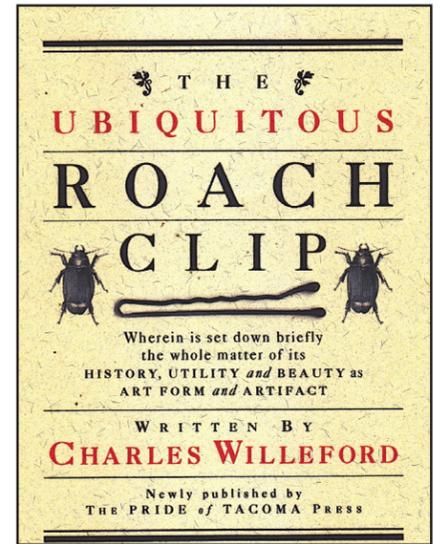
Find your entourage at

BeyondTHC.com

“Be there or be in DARE!”

About this issue

Our thanks to Paul Stanford — an old friend of Tod Mikuriya’s, too — and The Hemp and Cannabis Foundation for paying the printer, making it possible for us to maximize content. You can find our other backers — and material from our back issues — online at BeyondTHC.com. We’ve been using the site as a kind of paste-up board while putting together this account of our recent history. You’ll also find all our graphics in color and material that didn’t fit on the cutting room floor. We like having the bigger canvas and the opportunity to weigh in on breaking news.



Brain Damage

The studies reporting brain damage have all been widely publicized by the mass media and accepted as Scientific Truth. For example, the *New York Times* ballyhooed Gilman’s findings in an October 29, 2014 article wittily headlined, “This is Your Brain on Drugs.”

“The gray matter of the nucleus accumbens, the walnut-shaped pleasure center of the brain, was glowing like a flame...”

Times reporter Abigail Sullivan Moore visited Dr. Jodi Gilman at the Harvard Center for Addiction Medicine and rhapsodized: “The gray matter of the nucleus accumbens, the walnut-shaped pleasure center of the brain, was glowing like a flame,” as Dr. Gilman explained what addiction looks like on a computer screen.

Moore of the *Times* was hooked: “Even in the seven participants who smoked only once or twice a week, there was evidence of structural differences in two significant regions of the brain. The more the subjects smoked, the greater the differences.”

The self-styled “paper of record” ignored the study by Weiland et al, although, as the authors note matter-of-factly, “The analyses we performed duplicated those previously used (Gilman et al., 2014) with several important differences.

“Our study included more subjects in adult and adolescent samples, and compared extreme groups of non-marijuana users to daily users.

“Most importantly, the groups were closely matched on an alcohol problem measure (AUDIT) and were not different on many possible confounding variables (e.g., tobacco use, depression, impulsivity, age, and gender).

“In other words, the present analyses had greater power to detect group differences, while closely controlling for other effects.

“We found no evidence of differences in volumes of the accumbens, amygdala, hippocampus, or cerebellum between daily versus nonusers, in adults or adolescents.

“Moreover, effect size data suggest that potential effects are modest and would require very large sample sizes to detect significant differences.

“The lack of significant differences between marijuana users and control subjects in the present study is consistent with the observation that the mean effect size across previously published studies suggests no clear effect of marijuana on gray matter volumes.”

The new phrenology

“The new phrenology,” is a term Tod Mikuriya, MD, once used to describe a study showing marijuana use causing changes in the brain. And although structural changes would be worrisome, Mikuriya said, it would still have to be shown that those changes result in adverse cognitive or behavioral changes. Weiland et al make the same point:

“It is also unclear how variations in the morphology of cortical or subcortical structures would be interpreted. For example, others have interpreted reductions of gray matter volume in the accumbens as evidence of the deleterious effects of alcohol (Makris et al., 2008), yet increases in accumbens volume associated with marijuana use were interpreted as deleterious (Gilman et al., 2014).

Future research should link structural differences to behavioral or functional measures to better understand the implications of differences in brain morphology. In addition, the morphological techniques used for analyses show substantial variation in results depending on processing and software, particularly shape analysis (Gao et al., 2014).”

What will get taught?

When we first dummied this issue of *O'Shaughnessy's*, the editorial was going to be a demand — the same demand we’ve been making since the first issue in 2003 — that Cannabis-based Medicine be added to the medical school curriculum.

But now we see how inadequate that demand is. The endocannabinoid system is about to be added to the curriculum. The MCPHS class described by Matt Metcalf is surely a harbinger of many more to come in the period ahead.

The problem is: who will determine the content? Metcalf declares, “The entire course is based on what the primary, peer-reviewed, research literature has revealed about medical applications for cannabis and drugs targeting the endocannabinoid receptor system.”

But Barbara Weiland’s powerful critique of the primary, peer-reviewed research literature based on neuroimaging reminds us how unscientific that literature actually is.

We also intended to join the chorus of praise for Sanjay Gupta. His “Weed” Specials on CNN brought cannabidiol to the attention of the American people, and he acknowledged having been systematically miseducated on the subject of marijuana.

But he also paid homage to Dr. Staci Gruber at McLean’s Hospital, New England headquarters of the psychiatric establishment (a wholly owned subsidiary of Big PhRMA).

Dr. Gruber, the director of McLean’s Brain Imaging Center, is a PhD, not a medical doctor. Here’s the script:

GUPTA (*as if awed*): She’s using high-tech imaging to see what happens in the brain when you smoke.

GRUBER: What we see is a very big difference in people who begin to smoke prior to the age of 16 and those who smoke after age 16. What we call “early” versus “later onset.”

GUPTA: Gruber’s brain scans show that the white matter — those are the high waves that help the brain communicate from one point to another — are impaired in those who start smoking early.

GRUBER: Maybe that there’s underlying white-matter-conductivity differences.

GUPTA: Those white matter highways are just more disrupted in people who start smoking early.

GRUBER: That’s what we see.

GUPTA: Perhaps not surprising given what we know about the young developing brain.

Preliminary research shows that early-onset smokers are slower at tasks, have lower IQ’s later in life, higher risk of strokes, and increased incidence of psychotic disorders. And while these studies are not conclusive,

some scientists are still concerned because in 2012, 35 percent of high school seniors lit up, and that could mean a generation of kids with damaged brains. And many fear something else.

Cut to a teenager identified in the CNN transcript as “Joel Vargas, Addicted to Marijuana.” Joel tells Gupta, “I never really told myself I need help.” We wonder who told him. Probably dear old mom and dad.

GUPTA: A generation of marijuana addicts. When we come back, the truth and the science behind what’s being called a growing epidemic...

Gupta does not make good on his bold claim. “In fact,” he says authoritatively when we came back, “nine percent of marijuana users will become dependent. Now that’s not as high as other drugs, like heroin — 23 percent of users become addicted — or 17 percent with cocaine, 15 percent with alcohol. But it’s still approximately one out of every 11 marijuana smokers.” This deceptive riff is reenforced by an accompanying bar graph.

There’s nothing like a specific number to make an assertion seem like a fact. The “9-percent-become-addicted” line has been put out by the National Institute on Drug Abuse since the 1990s. It is supposedly substantiated by the number of people in marijuana treatment programs. But very few people go into treatment because they think they are impaired by marijuana. Most go because they’ve been forced to by a judge, an employer, a school, or a parent. For many so-called marijuana addicts who use the herb for pain or insomnia and go to work unimpaired, the real “problem” is the metabolite level detected in their urine. For depressed teenagers the real problem is the situation and/or environment they find so unbearable that they want to alter their consciousness every day.

Essentials of Prohibition



9% ADDICTION RATE AND BRAIN DAMAGE: the “scientific” basis for the war on marijuana.