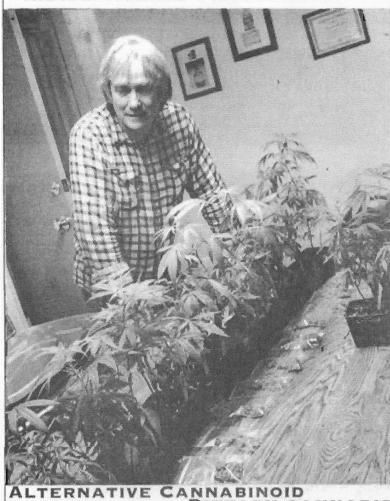


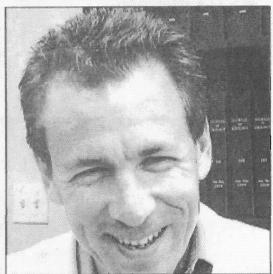
NEW SETTLER INTERVIEW

THE SISTERS OF MERCY INDIVIDUALIZED PHYTOGENETICS









Love In The Time of Prohibition

Dads doing science: Urologist Aaron Spitz, MD applies The China Study & delves into contemporary Mesoamerican medicine . Dr. William Courtney experiences another leap in understanding the evolutionary strategies of the cannabis plant & announces a run for the House of Representatives in the 2nd District of California • Brian Hill makes a not so ordinary patient visit • Aaron Morales branches out to leaf delivery • the week Hank Sims moved on

The strain of plants we have recently identified I'm now calling 'Alternative Cannabinoid Dietary Cannabis'—that's AC/DC.

The name, in part, was selected because of the humorous nature of cannabis strains.

In this case, the humor is: If you heat the plant, you will decarboxylate THC-acid & you will get high, you'll get your 10 milligrams. If you don't heat it, you can go up to five or six hundred milligrams & use it as a dietary cannabis.

—Dr. Wm Courtney

AC/DC Alternative Cannabinoid Dietary Cannabis Dr. William Courtney

I have a photo of you sitting on a stool in a dark cavern, watching, talking with a small group of Moroccan men preparing hash . . . A month later you left a message on my answering machine full of excited anticipation, driving back to Mendocino County from an analytical lab in southern California where you have just had tested the harvest of the feminized Cannatonic seeds hybrid in Spain, grown out in Humboldt. Let's begin this interview with that arc . . .

Dr. Wm Courtney: During the same trip that took us to the celebration of Raphael Mechoulam's 80th birthday in Israel we stopped in Barcelona to meet the individual who had isolated Cannatonic at his company, Resin Seeds.

As your regular readers know, I am always on the search for high CBD strains, and classically in marijuana chemistry Morocco has been identified as having hash plants that have very high CBD content. So my interest was fairly specifically about the genetics, and identifying strains that would give us a big jump start on the amount of CBD they provided. We gave some presentations while we were there, but the primary goal was to find more broad profile genetics.

And how did that go?

Dr. Wm Courtney: Those strains have not been tested yet, but given a period of time we will have a chemical analysis and see if they are as reported in 1970, when *Marijuana Chemistry* was first published. But on that same trip we also stopped in Barcelona to meet the individual who had isolated Cannatonic.

This new version of old fashion itinerant medicine—you sitting on a stool in a dark cavern in Morocco absorbing information in translation . . .

Dr. Wm Courtney: Actually, it was in an individual's home.

We had to pass through an anteroom where there were a couple of goats chained to the wall and a plant hanging from the ceiling, a living plant that the goats were eating on—they would hang a bush and the goats would nibble on that, and you had to kind of negotiate your way between the goats and the plants to get to the back room. In the back room was where they were processing the dried cannabis.

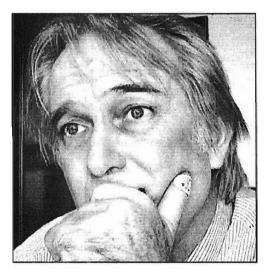
They had a rhythmic pounding sound.

As you descended on foot into the valley, the whole valley was droning. It raised the hair on your arms, it was so rhythmically beautiful.

From all of these dwellings, the sound reverberated through the valley. We had a contact to help us identify the particular type of plants, as well as the process that they used.

And so they demonstrated: They had a fine mesh on top of a percussion chamber; they would cover it with plastic and they would pound on the entrapped cannabis, and the kief would fall through, and then they would collect the kief. And there were very large bags of kief, seemingly hundreds and thousands of pounds of kief in multiple bags stacked. It had to take a lot of labor to do that. It's a sound that at some point I will probably put on my cell phone as a ringtone so you will here this peaceful drumming.

— And the whole family hved there. We met young children and mothers and grand-mothers. A very tight knit family. They made teas; it was a very pleasant experience.



Is this an aboveboard or underground economy?

Dr. Wm Courtney: It's kind of on-the-side. I don't know if it is legal, but the government knows it brings in revenues desperately needed by many people. And while I believe the US had mandated that Morocco clean it up, and was continually trying to encourage them to put an end to this activity—and probably if there were other means of sustenance it would be easier for them to insist on it.

At this point it is a 'Don't ask, Don't tell' situation where there is a whole area to the north where hash production goes on valleys-by-valleys.

And if not condoned, is allowed.

We haven't confirmed this yet, but somebody mentioned to us that Morocco may be the only place on the planet where men live longer than women.

The cultural aspect is that men sit around and smoke this hash together that is 40-50% CBD.

And so, by accident or societal prudence, they are consuming a significant quantity of these 'prophylaxis' cannabinoids, and it appears to have given them a capacity to weather the rough lifestyle and add years to their lives.

We were trying to figure out how to research the longevity factor, how to do an epidemiologic research, and survey individuals who do and don't indulge. You would probably have to go to Casa Blanca to find individuals who don't consume kief on a regular, daily basis (who have assumed a western identity) and check their vital statistics against those who culturally do. And we do have a very strong contact in Morocco who could help us assemble that data and conduct that survey.

—And if not that practice, there is still something going on that is of interest: What's the genetics on the men over there that they survive so well?

In the last issue of New Settler, Kristen commented that the biggest surprise for her was that the men mashed the kief with tobacco, and felt the tobacco an essential ingredient to the . . . I don't know if Moroccans refer to it as "medicine", what context they use. **Dr. Wm Courtney:** I know that in younger circles here it is a popular blend—a crowd that lives and dies by nicotine. The combination of nicotine and THC probably produces a state of mind that has aspects, which if not addictive because of the nicotine, is accelerating

—It's the speed of the body's reaction to a substance that determines its addictiveness. So anything that accelerates the onset, generally accelerates the desire to engage on a regular basis.

It undoubtedly has effects I can't speak to, but I know it is very popular with high school age young people.

Blending tobacco with cannabis is the mix used in Jamaica where cannabis strains (like the Moroccan strains) are known to be higher in CBD than those grown in the United States ... It seems there must be some efficacy, especially in the better balanced traditional blends.

Dr. Wm Courtney: Nicotine blocks cyclic AMPAs, and cyclic AMP is elevated as you're stimulated. What happens is: rather than that being broken down in a respiration of a lower level of arousal, a sustained arousal is maintained by keeping the cyclic AMP at higher levels. It kind of gets you up and keeps you up, and there is a sense of competence and euphoria that would come from that sense of stimulation. And so, it brings that into the mix with the Delta 9 aspects.

But it's pretty clear from Taskin's work (Donald Taskin at UCLA) that even though cannabis by itself appears negatively correlated with cancer—it could possibly protect you from cancers and alcogenic influences in an environment like Los Angeles—when you mix the tobacco in, there is not enough antitumor effect to compensate for the nicotine. And so, there is an incidence of cancers that come along with it in combination.

It's an activity that has its consequences that are quite serious.

Hopefully we should draw attention to the fact: Consumption of tobacco in that fashion is with the risk of carcinoma.

Down in the Moroccan village where the goats were nibbling on a cannabis bush suspended from the ceiling, was there any effect on the milk? Did anybody comment on what they felt the benefits were?

Dr. Wm Courtney: The plant they were hanging was not cannabis; it was more like you would go out and cut a green bush and hang that from the ceiling to provide your goats with something to eat while they were indoors before being let outside.

There is however, a group in Mendocino that is interested in providing cannabis to animals—to chickens and goats and pigs—to see the effects of these cannabinoid acids being available through the food chain. There are no results yet confirming that is the case: that there would be a higher level of the cannabinoid acids in either eggs or meat.

—They certainly would be healthy animals; that I know.

Did you have conversations with the Moroccans making kief about their use of the leaf? If they used it, how they used it?

Dr. Wm Courtney: I did. It was something that they were unfamiliar with. They were interested in the heated product and the Delta 9.

As we've gone over repeatedly, one of my biggest issues with Delta 9 used solely, is it will always restrict your comfortable dose. And that using the plant as a vegetable has to be distinct from the psychoactive because THC toxicity is such a state. Most folks have experienced it once and don't want to experience it twice. If you are consumer of THC you know what your limit is and you respect and protect it significantly; you don't want to risk using 3 or 4 times what is a comfortable dose because it is quite dysphoric, and if you push it much farther it becomes psychotoxic. One experience with psychotoxicity with THC, and most will never accidentally end up there again just because it is so unpleasant.

The nice thing about a hash that is 50 or 60% CBD, is that you will get some psychoactivity, but it is still extremely minimal compared to the heated examples that dominate the rest of the world and most of California. The Emerald Triangle is a truly unique place in the world, because of our right to grow individually, and the ability to do that, and the knowledge and support on how. And so, it can easily be a vegetable for everyone in Mendocino and Humboldt, and no place in the world is that a possibility.

This is the only place where you can grow a cannabis vegetable garden. Because you are consuming 60 to 100 times more than you could smoke, a significant quantity is consumed—not relative to broccoli or arugula of other leafy green vegetable—but it is significant to the heated examples that dominate the rest of the world and most of California.

Did the men have specific questions about use of leaf that they asked through your interpreter?

Dr. Wm Courtney: The THC effect is so dominant. It rules 99.9% of California and if you add the rest of the world you can add a couple more 9s. We've established its value because of the small amount it takes to be psychoactive in a euphoric fashion. And because a very small amount over that makes you dysphoric, there has never been a demand for access to hundreds of milligrams, because 10 is all that you need. You don't like 20 and you hate 30, so the whole idea of using 60 times that amount—using 600 milligrams or 1000 mil—just doesn't occur to a culture that is familiar with the use of THC.

And so, there was a curiosity about the health benefits and a comfortableness with the plant: We've been doing this for tens of thousands of years, it is a part of out culture; and here is a whole other way to use the plant that is different than what we know.

From those with whom I could speak with in depth, there was a definite interest: Here's something that could prevent diabetes? Something that could prevent high blood pressure? Something that would reduce mild cardio infractions by 66%? All cultures have medical issues and if there is another way to use the plant, and I can explain it, the curiosity always rises. . . . In Spain that was very dramatic.

Early in 2010, one of my patients who knew I was very interested in high CBD plants (Soma A+ didn't quite materialize the way that we all were hoping) brought me some Cannatonic seeds, and those we preceded to grow over the year and it became part of a test that we can speak about later.

But well before we got to testing our own plants, I was under the influence of whatever sources that I could contact, and the seeds I was provided with were feminized seeds in which you take two genetically identical plants, and you stress one of the plants, and the plant normally will go hermaphroditic, meaning that the females can turn into males and produce pollen to prepare the seeds to survive the winter.

There is tremendous drive within this plant to survive the winter. Stressors like light, heat, hydration, chemicals; anything that really pushes the plant will force it to make its last ditch best effort to survive. And so this plant as a survival mode has the ability if there is no male around, to create pollen.

around, to create pollen.
Because without the seeds,
it's not going to be there next
spring, and that is a threat to
its existence that allows it to revert
to this monatious sexual style.

And it seemed reasonable that these feminized seeds would be similar to the parent plant.

The parent Cannatonic plant was 6.9% CBD to 6.2% THC. And so, I had told probably thousands of individuals in this county that there were local dispensaries where you could buy these feminized seeds, and I was kind of vouchsafing that plus or minus 2% (maybe a couple of plants would be a little lower, maybe a few plants higher) that somewhere in the 5%-9% range, you could count on a significant amount of CBD with the strain.

—Because! You have two genetically identical plants, and you produce pollen from one and you fertilize the second. There is no new pollen coming in, no male pollen from a different strain or different plant, even, that could introduce additional material that could alter that ... But it turned out to be dramatically different.

In which direction?

Dr. Wm Courtney: In the direction of the range of expression, the range of chemotype chemical development and accumulation.

Rather than being 5-9% CBD, the Cannatonic plants that we grew out and had analyzed in southern California were essentially less than 1% CBD-to-22% CBD. An incredibly huge range. And the THC ran from 1%THC-acid to 30% THC-acid. You had from one end of the spectrum to the other end of the spectrum across just 17 seeds.

We're not talking about looking at 100 or 1000 seeds, which would tack down both corners of what was possible.

Just recently, within the last couple of days, as I'm preparing my paper for ICRS this year, it occurred to me why.

—I was anxious that these plants were stressed chemically. So I'm thinking: That's negative, that's bad, that's a horrible thing. But then I remember other people in Potter Valley who dry the plant out and stress it in terms of water supply. Or if its light is intermittent, that would push it to create pollen.

Then suddenly, feminization was not just a horrible human intervention; it was this plant stating: Wow! This is a rough environment, and we need to put our best foot forward. We need progeny that are divergent.

We need skinny ones, we need fat one. We need this one, we need that one. We need the best of everything if we are going to get through next year, because we almost didn't get through this year. We had to revert to this different style of producing seeds to get through this year. And, maybe next year is going to be worse.

The epiphany was: the plant becomes hermaphroditic to survive. And in doing so it may throw its wildest cards down on the table.

Like, This is it! One of these crazy kids has got to pull us out of the hat.

And so, you've got phenotypes from one end of the spectrum to the other. Chemotypes—chemical expressions—all over the place. Maybe one of them will meet the rigorous demands of this change in an environment and allow this plant to proceed ahead.

So despite all the huge negatives of hermaphroditic changes, the fear—All feminized seeds are going to select for hermaphroditic and we must steer clear of them!—the hermaphroditic tendency is a survival tendency.

Yeah, we get a *little* pollen on our females. Yeah, it decreases the quality of a very *small* portion of the plant that actually produces seed. I mean I've seen a male being produced on the limb of a very large plant being grown outside, and the pollen barely seeded an 18" sphere.

This plant was a huge, hot, Potter Valley plant. And the whole ramifications were a small amount of flowers that produced seed that could possibly provide an incredible divergence in the genetics of the next generation that could

improve its survivability.

It wasn't like one little bit of pollen ruined all the sinsemilla by turning it into consemilla.

So, it's like this new respect for the ability to take matters into their own hands and say: No males around? No pollen around?

We've got to bring the pollen back. We can step back to that level of structure and produce seeds on our own. And the seeds that we produce are not going to be like clones.

And I had told thousands of your readers that this was like the seeded version of clones: maybe not be quite identical, may be a little re-assortment of the genes.—But it was huge. It was dramatic. And I would just love to see what a thousand hermaphroditic seeds would look like. This plant is reaching out to master its environment to survive. And if something was going to survive, one of that range is as wide as it can vary.

Bodes well for climate chaos . . . That's good news.

Dr. Wm Courtney: That and the cockroaches will be on top. They will master the environment.... I want to go back and do Barcelona.

But the long story here is the issue of individualized phytogenetics. We are now in position to begin to identify a plant that works with your physiology and pathophysiology. Whatever your illnesses are, whatever you are consuming, whatever your genetics: there is a plant that will dovetail best, specifically to you and your conditions. And I think now we know how to identify such a plant expeditiously.

In the past, it was people struggling in the countryside, or people who accidentally stumbled onto one:

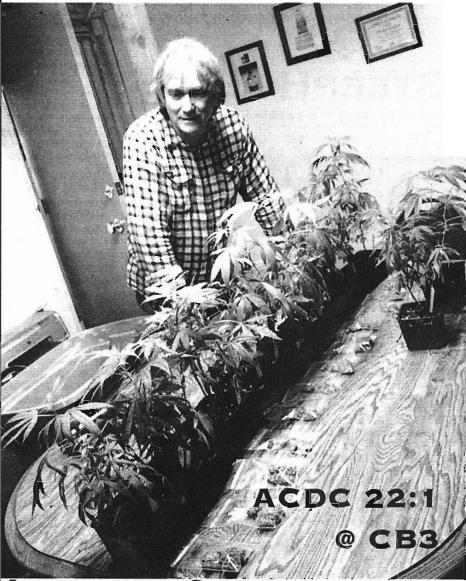
—Wow! This really is beneficial to me. Fve tried them all—in Garberville—and this one right here really, really makes me feel good. Makes me feel restored.

And now, rather than having to go through 20 or 30 years of trying every plant you can find to stumble onto your doppelganger, we now have an ability to cut quickly to that.

How is that?

Dr. Wm Courtney: Maybe we'll do a little bit on the analysis, first; about the development of this series of plants we got from the feminized Cannatonic seeds: We grew about twenty Cannatonics and seventeen got to flower at the same time. We kept back living plants from each of those, so we have a clone of each plant that went to flower.

THE SISTERS OF MERCY INDIVIDUALIZED PHYTOGENETICS



ALTERNATIVE CANNABINOID
DIETARY CANNABIS

This image shows what I call 'The Sisters of Mercy', the 17 plants with individualized phytogenetics — different widths, different growing patterns. Each with their own processed female flower that we took down and tested.

I'm looking at this group of plants and wondering what they are going to be like. And we went down to southern California because I wanted to use a High-Pressure Liquid Chromatography machine, which runs cold. A gas chromatograph heats the sample, so you extract the cannabinoids from the dried flower, and then it vaporizes it and injects a gas in to be analyzed. But when you heat the plant you convert the CBD-acid, the CBG-acid, the THC-acid into its counterpart neutral molecules

So CBD-acid becomes CBD. Whereas an HCLP, High-Pressure (some people also call it 'High Performance') Liquid Chromatography will tell you, 'you have this much CBD-acid, and you have this much CBD. You have this much THC-acid, and you have this much THC-inches the control of t

That information is very useful because this plant provides a phenomenal amount of acids.

Essentially, the entire chemotype of this plant is presented—after thirty-four million years of evolution—as acids. It's only the human that takes THC-acid, heats it and converts it into THC.

Why do you think the plant's preference after that long evolutionary journey is acidic?

Dr. Wm Courtney: Because it has another carboxyl group on it.

I think I mentioned briefly in our last interview, the conference in Israel this fall, where Ruth Ross, out of Aberdeen, England presented her series of studies where she was looking for the messenger molecules (or ligands) that bind to guanosine-coupled protein receptor 55.

GPF-55 had been called the 'orphan receptor' for twelve years, because we didn't know what bound to it.

Ross decided: Okay, CBD doesn't bind there; THC doesn't bind there; synthetics don't bind there. We don't know. It's this receptor with no messenger molecule. She went: Let's try the acids. Give it another spin.

Lo and behold, CBD-acid is 200-to-400 percent more effective than CBD.

So CBD-acid is very potent as an antagonist at this pro-inflammatory receptor site. And when you block that pro-inflammation site, you act in an anti-inflammatory fashion. —And she redirected the entire synthetic pharmaceutical industry to that carboxyl group: It's got to be in everything we make hecause it allows it to block inflammation.

The whole industry is like: Oh wow! The acids.

If you are an Industry group, how do you work with this? The acids are associated with the fresh, unheated, nor dried plant matter.

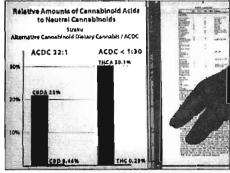
Dr. Wm Courtney: They'll make that bond tighter. They'll support it, They'll make molecules that really don't look like cannabis. —And cannabis really doesn't look like amandamine. They both have the same number of carbons, but if you build models side by side, they're fairly different molecules. But, somehow they bind at the same sites. So, they will be able to make a synthetic molecule that probably looks like neither like the endogenous or the phytocannabinoids, but will in fact be able to bind at that receptor.

The biggest problem is that it's characteristics, which will be unique, are likely to bind at other places and introduce the whole side effect profile that is so characteristic of very rapid development.

Pharmaceutical companies need to bring something to market to pay for the research cost and the marketing; there is tremendous pressure to get the next whiz-bang in line to support the whole industry. And so short cuts are taken left and right, left and right and products are produced that last for a year or two until they are recalled, or the corporation suddenly decides paying off the big fatalities are eating into the projects such that they are going to need to stop. Like Vioxx.

Here's an interesting graph: What it is telling us is the strain of plants that we have recently identified I'm now calling 'Alternative Cannabinoid Dietary Cannabis—that's AC/DC.

The name, in part was selected because of the humorous nature of cannabis strains. And in this case, the humor is: If you heat the plant, you will decarboxylate THC-acid, and you will get



high; you'll get your ten milligrams. If you don't heat it, then you can go up to five or six hundred milligrams and use it as a dietary cannabis.

The series also, always lists the amount of CBD-acid first, and the amount of THC-acid second.

It is the only nomenclature out there that puts a priority on CBD-acid.

This is your graph. This is your paper.

Dr. Wm Courtney: Yes. And this shows that in the unheated plant, the amount of CBD-acid is 22% of the weight of the entire plant. Ninety thousand milligrams in a pound! And the amount of CBD, which is the basis of numerous patents in research, (probably 90% of the research has been done on CBD) is so minimal

—I consider CBD a synthetic molecule for all intensive purposes, because it is present in such a low amount that other animals don't have access to it. It's almost like a spin-off product of CBD-A

And now that we know that CBD-A is 200-to-400% more effective than CBD, why would you want to heat it? It destroys the molecule that is effective and replaces it with a molecule that has just a fraction of efficacy that is found in

the living plant. The molecule that every other animal has used for thirty-four million years, and every other animal uses today, except for humans. So, this is a human endeavor. And it is because we want to get to THC.

The nice thing about this plant is it never conceived of this being a delivery molecule. Another plant had 30% weight-to-weight THC, which is a huge amount of THC. But in that plant where a third of the weight of this flower was THC-acid, less than a quarter of 1% was the amount of free THC. So, you would have to eat so much of it to get high, no one could eat that much to get there.

But we stumbled on this fact, and then go on this ten thousand year-long journey to eliminate so many of the cannabinoids because we were so interested in THC (which comes from THC-acid). In 2009 ElSohly discovered another nine cannabinoids that had never been known before. Why? Because they are present in such a small amount that no one had ever seen them. Why? Because we wanted THC so badly, we got rid of the other seventy-nine cannabinoids! Why? Because we were so unwise.

We took cannabis and tried to make it a pure THC plant. At the expense of these other cannabinoids that are involved in bone remodeling, and immune modification, and intestinal motility, neuronal firing, and guides and directs the growth of the nerves in the fetus. There are so many things these other cannabinoids do, and the idea that we had eliminated them to the point that required very sophisticated equipment to detect them!

—Wow! There's another cannabinoid in there! Look at that. And these ones that we've deliminated have potent antimicrobial activity against Leishmania.

We know that they are there now. But there is not a plant out there that provides enough of them to really give you that safety factor that you need.

As we lean towards dietary cannabis, we're looking for strains that have the cannabinoids that protect you from Leishmania, an organism that lives inside of your white blood cells. The last place you want an organism to be hiding is inside your immune system. It protects you from tuberculosis; it protects you from Legionnaire; it protects you from these intra-cellular pathogens.

Have you found some of these strains by name?

Dr. Wm Courtney: No. But! We are hoping that this plant can kind of heal itself, and begin to re-express these cannabinoids. And hopefully, it will not take us ten thousand years to get them back to where we were before we began this selective hybridization program... We have people going all over the world looking for strains, just keeping our eyes open will be valuable.

One of the projects I have launched is the Cannabinoid Analysis Standards Association, org. It's a website, primarily for labs; encouraging them to sit down together and talk about sampling

What part of the plant are we going to sample? Because if you cherry-pick the plant you can produce very high results

There have been results that have not been rigorous or scientific, and we're hoping that as that field matures, the labs will begin to share information on Standards, which is a very big issue.

One company in Montana wanted to have a Schedule 1 license and the DEA said, Don't ask us for that . . . Do not ask us to be a Schedule 1 lab . . . Do not ask.

The lab kept asking, and eventually they got raided. And then all the labs went, Oh, oh. They're serious about this —'We are not going to give you access to the Standards to make your results significant.'

If you can't get access to pure chemicals, then you can't say: This is what pure CBDylooks like, so you can adjust your machine. The feds want to continue to dominate that market. They don't want to let this sudden, rapidly evolving new entrepreneurial industry in.

So labs around here have to produce their own Reference Standards. They have to run it through a column, pull it off, and determine the peak: Okay, this is a peak. We can purify this. This is 99% pure CBD-A. So now we have a Standard that we can then standardize our machine regularly.

Once a week, once a month, once a year, whatever it takes.

—I just put this link up on our website, under Net Resources:

It's the 'National Cancer Institute Review of Cannabis'.

It's a definitive and current review of cannabis,

signaling a change at the top.

Anti-tumor effects found in preclinical animal studies is what got the National Cancer Institute interested. The site has links and at the end they give you lists of medical uses. So, if you've got cancer, this is a pretty good source: there are 24 links to cancers, to the human clinical studies; a very well-written and succinct adverse effects section, a definition of terms. You can find this at our website http://cannabisinternational.org/net-resources.php
Another link on our website I want to talk about is what I call

Wikipedia 101, an on-line self-education course.

A series of Wikipedia pages that you can progress through in a sequential fashion

that will develop a sense of inorganic chemistry, a sense of organic chemistry, a sense of the micro-biochemistry, a sense of microbiology, a sense of the endogenous cannabinoids.

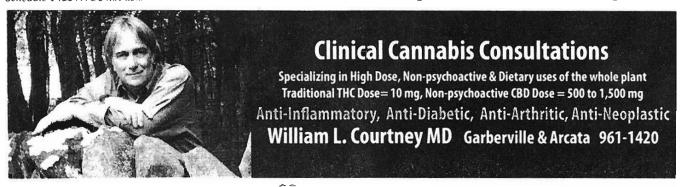
There will be two courses: the three-hour, weekend, armchair warrior course; and a 100 to 200-hour I really want to know more about this course.

How do people apply to your university?

Dr. Wm Courtney: There is no application. You just go to CannabisInternational.org and find Wikipedia 101. There will be a brief course and then an extensive course. And if you complete that course, you will be in the top 0.1% of lay people, and you'll probably be more knowledgeable than the vast majority of physicians.

I understand how the body uses cannabinoids, produces them, and what their function is. And I have a sense of why the plant (which is the exogenous or the phytocannabinoids that come from the plant) dovetail with that system to regulate cell function. I have a sense of the scope of that utility: whether we are remodeling bone, whether we're conducting nerves, whether it's intestinal motility (secretion or absorption), whether it's fibrous tissue. Each cell has a particular function and the Endogenous System helps that cell to function normally.

if that cell is over-active, it will down-regulate it; if that cell is under-active, it will up-regulate it. So that whole feedback regulation of cell function is the bailiwick of the Endogenous Cannabinoid System. And the exogenous cannabinoids come in and augment that.



If a cell is functioning normally, everything bypasses it. If it is over-active, it will help down-regulate, slow it down—often the case with the immune system which is a hair-trigger system, that was meant to probably be in play for thirty years, and now it's sixty, seventy, eighty.

That hair trigger and cascade—which means a single event just triggers a whole series of episodes because the immune system is there to prevent a bacteria from getting into your blood and circulating in your body and killing you in 48 hours. It has a very, very powerful system.

But that very same power, if it is applied to an erroneous signal; like it sees an antigenic marker on a bacteria, develops a response to that. But then the antigen on your heart valve is very similar to the streptococcal antigen; and so this system that is attempting to kill that strep bacteria, destroys your heart valve and produces rheumatic heart disease.

With that analogy the immune system becomes an autoimmune disorder as it does in a lot of different illnesses—the immune system is not down-regulated enough.

And cannabis comes in, augments the body's intent to not suffer harm from its own immune system, and helps down-regulate it and calm it down.

That reduces inflammation, reduces the autoimmune disorders.

We were headed off to Whittle when we launched off on Net Resources.

If you go to the Patent Page on our website, Patent 6,946,150 B-27 is by Brian Whittle; it is called 'Pharmaceutical Formulations'. Download that patent, and go all the way to Table 2. You'll find 'Target Therapeutic Groups of Different Ratios of Cannabinoids'.

So, if you have cancer pain or migraines, you may be best served by a plant that provides you with 95% THC to 5% CBD. This would be like an almost pure THC plant. If you have Multiple Sclerosis, spinal cord injury, peripheral neuropathies: you're likely to benefit more from a plant that is 50%THC / 50% CBD.

If you get rheumatoid arthritis, inflammatory howel disease, Crohn's, ulcerative colitis: you're probably going to benefit from 25%/75% CBD.

If you have a psychotic disorder, epilepsy; are having disorders like stroke, head injury; if you want to modify the rheumatoid disease process; have other basic inflammatory conditions, or appetite suppression you're going to want 5% THC/ 95% CBD.

You go from pure THC to pure CBD with a couple of stop points, and this type Table will grow. We are going to find more and more conditions that have specific ratios. The fellow at Pacific Medical Center in San Francisco was looking at a 4-to-1 ratio for aggressive breast cancer.

tions taken by people, strong actions taken when strong actions are required. This is a time now for concerted effort of all those who are conscious of the whole biosphere. We are in the middle of the 6th mass extinction. I was at the Field Museum in Chicago; they described this period as such. That normally one species every four years becomes extinct, and we're now going extinct at four an hour. Thousands a day.

50% of species are endangered—that according to Science Review—these by activities that lay at the feet of mankind. There are many things that we need to pay attention to and number 1) is our unwitting acceptance of this with obliviousness to its ramifications to us, our children and our children's children.

We here must become a Warrior Nation. We're the ones who have taken the risks, and have led the global world to a reversing of the Convention 1 Treaty — the treaty which commands that if you have cannabis, if you grow cannabis, if you transport cannabis you should be imprisoned. That's the watchword that we have leveraged the world to accept. In Jamaica they were very clear that any efforts to improve access to cannabis would be responded to by a loss of financial support from the US.

We have used all of our resources to coerce the world into this position, and a lot of the world just bought it. Over decades and decades they were born into it: Just Say No. Everyone say No! And we demonized probably the most important food substance on the face of the planet.

So that needs to be undone. That is part of what we must embrace and put as much energy into correcting, as we did to belaboring the world with.

The other thing is corporations:
They have all the rights of an individual and they have none of the social skills of an individual. They have none of the concerns for other; they have none of the moral upbringing: the diverse religions and philosophies around the world; none of that is taught at the school of corporate individuality. It's sociopathic embodiment. We've deified the sociopath and have turned it loose to aggrandize nothing but its own self-interest.

And it is built into laws. But laws are made by people, and they can be changed by people. And if we don't address the corporate issue we will become its victims more severely in the future. This obviously arises out of my concern about genetic modification of this plant—as in soy. And yeah! We can go in and chop the DNA up. Yes, we can identify the part of the cannabls genome that is associated with fertility, and we can eliminate that from the plant.

With genetically modified soy, estrogen spikes totally reversing the benefits . . .

Dr. Wm Courtney: Antigens spike. When you are in there mucking around, you throw a few errors here, a few errors there, and

But what about CBD-A, THC-A? Where do the cannabinoid acids enter into a Table like this? Is this a situation where you are forced to compare apples and oranges.

Dr. Wm Courtney: If you look at the research, I would say 99.99%! of the research has been done on CBD. There is now up to 20,000 articles that are on the plant cannabis; a lot of those are involved with CBD. And you look at the number of articles on CBD-A, and you are probably looking at two.

What's the problem with CBD-A?
It is delicate. It grows in a plant.
You can produce a bundle of cannabis
for \$13 a bale. It doesn't have strong
market upside. It falls apart
if you put it in a pill.
It can't stand it on a shelf for 5 years.
So it's a fragile, natural-occurring
molecule that doesn't have a
lot of potential to draw investment.

[William Courtney's medical office is nestled beneath his dwelling. Upstairs his partner Kristen Peskuski, 7 months pregnant has fainted.... We continue when Dr. William Courtney returns. }

Bill, you speak in a parlance analogous to the linguistic change represented by the King James Bible 400 years ago this year. Which transposed the rough-spoken accumulation of religious writings by at least five different authors into the courtly prose of a Shakespearlan play. Blank verse—you speak the science and politics of cannabis in blank verse, and I've seen you hold rapt a roomful of rustics (which included a future sheriff) not only with the information but also with the cadence you used, your reaching back into evolutionary history the personification of little Hydra; re-humanizing the plant by re-legitimizing it's role in science with spell-binding precisely blochemical and medical explanations peppered with continuous new discoveries. And the lov that these discoveries bring you. The new vocabulary you spread, the constant giving of credit to your patients and local hill-folk farmers have glided you into a secular sainthood in the Emerald Triangle. I'm sure you have felt the mantel of that role, the responsibility of it. When I first interviewed you, I was listening to a lonesome person with an oceanic mentality. Literally. An inventor of deep ocean rescue devices that could link a whole subset of human beings In distress by one means. That same urge has glided you into this path, I think.

Dr. Wm Courtney: One time you asked me if I thought of myself as a warrior, and I shied away from that with: *No, I'm an advocate.* We have much to cover before we get to the end of this; but because of your comments . . . It's time that we *all* become warriors. This statement is due in part to my. concern about Monsanto being granted the rights to manipulate alfalfa and more plants are falling under its spell of sterilized and made Roundup Ready, and you certainly have that sense that humans are just around the bend from sterilization and Roundup Readiness.

Over the millennia there have been ac-

suddenly you make a plant we become allergic to because you've changed its surface cell antigens and it no longer represents a food substance, but a food substance with some mayhem inside.

Possibly for good reason we are now developing allergies to it.

Yes, we can insert genes into the genome, but do we really know enough to do that. It's clear, we cannot even catalog the constituents of cannabis. And yet we're at the ready to begin to alter it genomically.

—With devastating potential results. Make it so it is no longer going to provide benefits, and creates pollens people become allergic to.

You seize the globe by wind drift.

—This is my pollen and if it blows on your plants, you're stealing my genetics and I'm going to take you to court and sue you for stealing my genetics.

And so, anyone downstream from this concept becomes subsumed because it has the force of law: —You must buy my seeds. They're sterile. So you must buy them every year. You can't save them. You can't take care of yourself. You come back to me and I'll sell you seeds next year, and anyone that is downwind from me, I'll take your property and everything else . . .

Which happened to Percy Schneider, the Canadian canola farmer... who fought back and lost in the Canadian courts, but sparked the global movement against GMO crops.



Dr. Wm Courtney: It's happened to a lot of folks. Monsanto has cadres of people who travel around and enforce their "legal property".

How do you counter this? Crowd politics are at work in the mid-East. The flock prevails, which is a prettier way of looking at the Egyptian Spring. Situational leadership. The Grecian roots of the word 'Democracy' literally means 'the mob takes power'.

Dr. Wm Courtney: There has to be a line drawn. "Give me liberty or give me death: has got to be the depth of our commitment to the process. We've decided that the air represents a resource of every individual on the planet—every animal, every person—and that you cannot wantonly destroy the atmosphere. The water is for everyone and you cannot wantonly destroy the water.

The genome is just like the water and the air, and is a resource for all of humanity. Wanton predation and self-aggrandizement, those are the prerogatives of a sociopath and we've canonized the sociopath and called it a 'corporation'

and it can do anything and ignore all of its consequences because it advances the benefits of a very small group. But there has to be limits drawn, or the corporation has to be downsized. I know that is a huge process because of the extent of time that corporations have been accepted and the amount of case law that protects them.

That's what revolutions are about. We have got to decide that the genome of this planet is not for any one person to manipulate and benefit from. It is for everyone to be able to count on. That this plant represents thirty-four million years of evolution to keep ourselves healthy, and an individual or a corporation does not have the prerogative to destroy that genome and make it sterile, and alter its antigenic character so that it creates an allergy in people who wish to use it.

We are a GMO-free county. We need a GMO-free globe. Because what bappens in Sonoma County may just effect us here in Mendocino County. What happens wherever Montsanto is may effect us here. It's clear that we have unleashed some forces. They say you can never can get back into Pandora's box. Well, we have to decide that just because it is out of the box does not

mean we are going to allow it to continue the course that it is following. And optimally, by dint of education, we can make clear why the genome of this planet is not for anyone's manipulation.

The genome being the entirety of an organism's hereditary information ... Bill, in the course of your discourse you seemed to be interchanging the words plant and planet.

Dr. Wm Courtney: Yeah. The plant is a part of the planet, the animals are a part of the planet and humans are part of the animals and Monsanto is part of the humans without the human aspect. The corporation has no benefit other than its dividend holders. Whether it wastes resources or lays waste to the environment.

And it takes a social network to say: You can't pollute the water any more. That may save you some money, but the costs are too great to society.

— Okay: we'll just spew the chemicals out into the air and let it blow down over to another country.

And we said, No. You can't create acld rains that destroy environments. It's not a prerogative of yours. We've gotten to a point where that is not a prerogative.

This intentional alteration of genomes
—and particularly, in my mind,
to genetically upgrade cannabis
to make it sterile so that you can't
collect your own seed;
to make it Round-up Ready
so you can grow it in fields,
but must buy pesticides to work with it
is not a prerogative that I will tolerate

And, it requires each and every one of us to declare: We've developed some precedence, and it's difficult to change those, but this is one that must be changed.

It's pretty clear that there is no middle ground on allowing predation of the genome of this plant or any animal or organism on the planet. We have these rudimentary skills, and we're going to exercise them on an organism that we do not understand?!!

The fact that such a prestigious institution as the National Cancer Institute has acknowledged that there are direct antitumor effects, means that at the top things are beginning to change.

But that will have a double edge sword:
—If cannabis really is that beneficial, let's get out there and make it Round-up Ready, and grow it cheaper and make sure it is sterile seeds so you have to buy it from Monsanto. So people can't propagate it on their own.

It's the next wave: If it's not basically illegal the world-over, then let's make it inaccessible—unless you buy it from a company that owns its genetics.

William, on your drive back from Los Angeles, you left a message on my answering machine. One of your comments was that Kristen had left her audience in tears...
Would you talk to me more about that trip. It also involved a visit to a cutting edge lab.

Dr. Wm Courtney: We went to Los Angeles and presented at the Laguna Woods, a

senior citizens center on the south coast. Kristen has been refining: getting more medical records of her medical treatments—we found more pictures of her from that period where her body was swollen from steroids; she didn't even look like her current self. And her ability to express what she's been through, what she's tried—the 14 surgeries, the various medications, none of which have been availing and many of which destroyed her vision. She has many permanent side effects from her dance with western pharmaceuticals. And yes, her presentation had that effect on the audience. Brought many of them to tears.

This is a group of elderly individuals generally fairly well off, which is why they were able to mount a conference like this, and now are requesting the center bring in fresh cannabis juice. They are able to see this is a dietary situation, determined to make it available. And there is a supplier there who has committed to undertaking the big experiment.

The Big Experiment is: the Food and Drug Administration has approved 600 milligrams a day. The problem with 600 milligrams is that it cost you sixty times more to use this plant to sustain health than it does to stimulate the CB1 receptor and develop a THC euphoria (or dysphoria).

The huge issue is: How are you going to afford 600 milligrams?

The dispensary will sell you chocolate cookles with 10 milligrams of THC, and wants \$5-\$10 a cookie. And everybody's fine with that. Okay, this is a dose of THC and I'll pay you \$10 for a brownie, for a candy, for a sucker. A few \$5 things, a few \$15 edibles...

But the whole economy is based on 10 milligrams. So the production, distribution, resale and use is all built on this 10 milligram economy,

and we now know 10 milligrams is going to give you none of the benefits that you need from this plant in terms of the prevention of diabetes, the prevention of myocardial infarction, the resolution of diabetic retinopathy.

These don't occur at the very low doses it takes to stimulate the CB1 receptor.

So many of my patients honestly feel they cannot 19 afford to eat the flower of this plant because it is too valuable.

We have painted ourselves into this hole of: It's too expensive. Our health is not worth as much as this plant is.

This is a sad commentary. It's very serious and it is very deep. Individuals who survive in this world with this plant don't feel they are entitled to use it as a dietary supplement or as a dietary essential.

So you've got a bunch of elderly folks going: Yeah, I'd do 600 milligrams. Well, that's \$600 a day, and none of them are quite well off enough to swing full market value.

I have no idea how the community will

react to this very difficult fact, that there are seven billion people that need six hundred milligrams a day. And so, if you are going to use it like a vegetable, you kind of have to grow it like a vegetable.

If you put thousands of dollars of electricity and supplements under the plant, and you need thousands of dollars to pay for its growth and development...

But you don't need to incur all that expense. What is needed is the freedom to take your grow out of the closet. Like putting solar panels on top of the roof of each dwelling instead of relying on nuclear reactor plants in the flood plain. Most people live in habitable climates where a rugged strain of cannabis could be grown near year-round with greenhouse assist.

Dr. Wm Courtney: And it will need to be grown also, in an agricultural situation. People living in high-rise apartment complexes, they also need cannabis. People in ghettos with little yard space. Every one needs it.

And as this plant grows to provide seven billion people with an antioxidant that can prevent diabetes and heart attacks and strokes and cancers, it will have pulled carbon dioxide from the air, & will have healed the atmosphere from our activities of a century.

But it needs to be affordable. We can't expect people to pay \$600 a day for a glass of juice to keep them from getting cancer. To me it's worth it.—And, once you've got cancer, then it's worth it to a lot more folks.

What's the route to decriminalization, period. Because it is the criminalization and now state government attempts to overregulate that has hiked the price, not the requirements of good farming practices.

Dr. Wm Courtney: At CannabisInternational, one of our major projects is the production of a billion pounds of seed and the distribution of those to folks who are living on a dollar a day. If each person that grows their own medicine and food had enough seed to put in ½ acre or acre of cannabis, you'd sequester five billion acres of trees in terms of the CO2 sequestration.

While preventing illness and being able to treat what illnesses they have not prevented already, imagine the amount of CO2 that could be removed from the atmosphere while nurturing, feeding, healing and preserving the health of a billion people.

—And "the last shall become first." If you live on a dollar a day, this plant could be all that you would have; and if you eat this plant every day you're health would be quite remarkable. Plus, you could do carbon swaps. You could find a car manufacturer—if they put up enough money to grow a billion pounds of seed and distribute them, they could buy a carbon swap that would counteract the consequences of our considered CO2 production and civilization.

We need a planetary revolution. A planetary revolution is commonsense. The more! know about this plant leads to me under-

stand that I probably don't know much about other plants, and that there are probably interactions between other plants that are quite meaningful. And if we study the world around us as we study cannabis, if we study beetle leaf and poppy plants and other medicinal plants and consider using them as a whole organism, rather than extracting a single element in our traditional reductionist approach to things—undoubtedly losing a lot of the value because there is no synergistic interaction between other elements that are present in the whole plant that have been eliminated by our identification of the single active element and the isolation and the synthesis of that single element.

Like this last finding in Israel where CBD-Acid—an unknown player! this delicate molecule—is hundreds of percent more effective than the molecule that is *patented* as an anti-inflammatory, the molecule that is *patented* for the prevention of diabetes, the molecule that is *patented* as antioxidant, the molecule that is *patented* as a neural protectant by the federal government.

We've got the anti-inflammatory down. I'm a speculator, and I believe that CBD-A is going to really show its forte in a lot of areas. If it is just restricted to inflammation, that's involved in the vast majority of illnesses. It aggravates everything from Alzheimer's, arthridides, through the autoimmune disorders and inflammatory bowel disease. So, even if it is just inflammation (which I seriously doubt) it's still is a stunning upset.

I want to return you to an essay you composed in 2006; you must have just begun your Immersion. You wrote: "The term 'cannabinoid effect' is more accurate than 'placebo effect' in describing the sense of well-being that follows the expectation of well-being."

Dr. Wm Courtney:

I like the term 'Hygeia effect'.

—Hygela, the daughter of Asclepius, the Greek god of Medicine. Hygela was the goddess not so much of the act of healing, but rather the maintenance of health, the prevention of sickness and the continuation of good health.

Galvanizing the full force of the conscious and unconscious is the mind/body interface and effect that occurs when one makes an epigenetic commitment to health.

We've got the genetic aspect, and then we've got the symbolic aspect—or the epigenetic inheritance—which is the symbolism, the belief in world views, the motivations, the fears. And if one's health is compromised and you bring the attention and force of the symbolic world to that issue, you make your best effort to pay attention to the stress and to the visualizations. I think you galvanize every system, including the immunologic when you recognize that your thoughts really have an impact on the body. So rather than it "being all in your head", it's that the head really does have an impact on the body, and desiring and taking risks to heal yourself is a commitment of the Placebo.

It's like: Here's a sugar pill, and here's a medicine. This medicine may cause renal failure, may cause liver failure: 5% of the people die who take this medicine. But! I want to be healthy so much that I will take a risk to improve my chances of survival. That strong desire to heal really gets all the systems on their toes

And when you engage as a subject in that scientific paradigm, the risk you take is that you are not receiving the medicine that offers the promise, and yet the very taking of that risk is beneficial . . .

Dr. Wm Courtney: The example I am most familiar with has to do with an antidepressant drug: Take 100 people: 50% of them are getting Imiperine, 50% of them are getting a sugar pill. Turns out the 50% that really do not want to be depressed anymore and have been given the sugar pill, 50% of that group are significantly improved. And in order for the antidepressant to be allowed in the marketplace, it has to be at least as good as the placebo.

— If you are not as good as the placebo, then we are not going to grant you a license to be sold for thousands of dollars a month. But! if you are effective in 54% of the cases, 4,5,6% more than the placebo, you can sell you that drug

Any number of antidepressant medications are only *minimally*, more beneficial than the mind. And so why don't we celebrate the 50% of people that dig themselves out of the hole through their intense desire to heal themselves on the back of sugar pill? That to me is the glorious spot.

That's not: - It's all in their head, it's a placebo effect . . .

It's in your spirit . . .

Dr. Wm. Courtney: It's the Hygeia Effect. And if you are going to sell me something that has side effects, it had better be better than what I can accomplish through the motivation of my mind to engage in the physical plane to improve my situation. It would seem like you would want to do a full course of self-healing before you ran the tests.

If 50% of those 54% could have accomplished the effect (which is what the statistics are showing us) then it would be only 4% of the people that need to risk loss of libido, weight gain, suicidal ideation and the side effects that come from the pill that is going to make us feel better. And there's a much smaller group of individuals put at serious risk for what in my mind, seems like a relatively small amount of improvement.

You wrote—five years ago—"If it is the nature of living things to pool resources to fuse when possible, we would have a new way of accounting for the progressive enrichment of living things." In this piece you address the evolutionary risk we take by doing better, or being able to get more. Out of the endeavor comes aggression, comes war, out of it comes the chaos only human beings have the capacity to create. . . . And somehow you figure out how that possibly gets mended in the end. Do you remember that passage . . .?

Dr. Wm Courtney: One of the pivotal books for me was *The Lives of a Cell* by Dr. Lewis Thomas. He challenged society (back when we were trying to destroy ourselves with nuclear weapons) to under relatedness. He found his example in Australia where there are organisms that live in the intestines of the termite that are involved in breaking down cellulose that allows cellulose to be recycled and the carbon cycle to kind of be completed.

In the intestine of this insect was a protozoan-like structure that looked like a big dirigible. Inside of that dirigible were various bacteria that actually were doing a lot of the work. And attached to this dirigible were these spirochetes with their flagellated tails that provided propulsion. You had this huge collective of individuals that were in the process of scurrying about and converting cellulose into carbon that could be released as CO2, that the plants could then fix back into sugars and cellulose.

Thomas said, "If we could understand the relatedness of what goes on in the intestine of this termite, we would have greater respect for our place in the world, and our relatedness with organisms around us, and how we are not out there all alone."

Meaning, our unique individuality, this 'apart from the world', has put us in this path of destroying 50% of the species around us. We are going to hit the tipping point, biodiversity is going to begin to crumble. And there will be huge consequences if we are going to disconnect ourselves from acting biologically as we move into this symbolic-driven overdrive situation—if we don't take that symbolism the next step and ask: What is symbiosis? What is the relationship between independent organisms that allows them to work together for the common good that preserves the carbon cycle without which everything creeps to a halt?

Over time, Thomas's organisms turned into a eukaryotic cell, and those spirochetes became part of the cell, and those bacteria became mitochondria, and eventually their individuality gave way to a collective presence and they then became a part of a larger—and solely a part of—a larger organization.

And that is the area of Evolution that has my greatest interest: is how the cannabinoids in exchanging information—and maybe initially, were just about regulation of resources at the single cell level for billions of years.

But, as the cell tried to manage the amount of minerals and water and glucose, and tried to survive, it used the signaling systems that incidentally could glance off and maybe contact another organism. An organism going: —Oh, somebody out there, I'm needing water. Some one clse might have a lot of magnesium. And suddenly there were other organisms that were hearing messages. It was like, here we are broadcasting signals into outer space looking for intelligent life.

We do that now from this planet.

Dr. Wm Courtney: We send out pictures of humans. We're sending out signals. Stephen Hawkins was saying, "You may get more than you bargained for. Be careful, because anyone who is going to pick up and come and visit us is going to be down the curve quite a bit and our glorified position might suddenly be at the back of the line." He was a little concerned about advertising for interaction

when we may not be up for the extent of what that means.

But a single cell that is sending out signals that are intercepted leads to an interest between two very individual, very independent cells. One going: You know, I can catch sunlight better than your average. I can take those photons and create carbohydrates better than just anybody around.

And the other one says: Yeah, well I'm particularly good at picking up water and minerals and I've got the capacity to reach out and bring back the elements. And so, if got the synthetic capacity and I've got the absorptive capacity; we can come together and support each other and create these symbiotic relationships.

—That for all the world look like an organism, but! they are really just two individuals living in an association.

And then those relationships progress further: one of those organisms may incorporate the other organism; now instead of two individuals you've got one combination. Suddenly the blue green algae is living inside of the cell that has the ability to provide it with the resources it needs to make, and becomes an endosymbiont. And there is that one example on the hills of Austria of a symbiotic relationship that goes around the bend and it is no longer a symbiotic relationship because it's now a more complex organism that has consumed its better half and the two of them together form a single organism, and so it is thrown out of the symbiotic family because no longer is it a relationship between two.

I believe that those forces played a large part in the development of the eukaryotic cell, which with all of its internal organisms and complexities then lay groundwork for the multi-cellular organisms to evolve. But the mechanisms by which they regulate and provide feedback as to function, and modulate activity to keep their function optimal, that system is what we call the Endogenous Cannabinoid System and it's roots go back billions of years.

So the hydra, that was 600 million years ago—before animals and plants left the ocean. It was early. But wind the clock back (in my mind, billions of years before that) when these first efforts to signal and manage resource status, to balance intake-output and try to optimize survival: those are the origins of using these structural fat molecules that comprise the membrane, and develop the ability to turn this kind of fat molecule that is in the membrane into a messenger molecule.

And I believe it actually circumnavigates the cell through the lipid layer of the membrane (this fatty core to the membrane). The shortest distance across the cell was around it.

That these molecules actually traveled through the membrane.
There was a very interesting presentation in 2008 (at ICRS in Scotland) where they showed that the active site for the receptor was in the lipid layer.

Every picture you look at on the Web shows the active site facing out into the environment and the cannabinoid comes in and attaches there, and that alters the downstream signaling and causes the cell to destroy itself, causes the cell to divide, causes the cell to up-regulate

its level of activity, causes the cell to down-regulate its level of activity. But it turns out that the messenger molecule has to dissolve into the membrane and then travel through the lipid layer to dock into that receptor.

Which is why it would seem that early on the first organelle in the cell was the membrane. Before there was a nuclear membrane.

If you look at Archaea: this organism was so primitive; it was neither plant nor animal—it was like so way, way, way back there that they created a whole kingdom for this single cell organism because they have no internal cellular structure: there are no Golgi bodies, no Golgi apparatus, no mitochondria, no nucleus. Nothing going on in there in this bag of life.

But around that bag of life was this membrane. And this membrane had a very consistent lipid layer.

And things could move (in my mind) much more quickly through that fatty layer, because there weren't all the obstructions of life in the way.

If you are going to try to get a message across that cytosol, the fluid inside that cell (it's like DNA; proteins, and all this stuff going on in the way) it would be a very slow course as opposed to whipping around to that fatty layer where there is no obstructions.

What I loved about Lewis Thomas's termites was the way they waited around for some intrinsic headcount before they got anything done. These carpenter ants, renown for vast complicated, chambers, lethargically just hung out together until at least six of them were at the same place at the same time, before they started creating and constructing their magnificent arches. That there has to be a critical mass of other individuals of your own species before real work gets done.

Dr. Wm Courtney: [laughs] So we've got to get the heads in Mendocino and Humboldt to all stand up and into the line of fire, and we have all got to count. We all have to be committed.

I was going to do an article pondering, Where does the Earth come from? How long does it take hydrogen, to run through all of the solar furnaces and billions of years to fuse and fuse and fuse, to create the elements that comprise the rock upon which water and forces led to the organification of the soil and the world around us?

This is a huge, huge, huge experiment and our activities are causing it to go extlnct. And we're bright enough to recognize that we are having a deleterious impact. One that could destroy or set back this experiment.

--You know, we do have symbolic inheritance. We have told stories around the fire, and we now have printed matter that has turned into electronic media that is now in cloud computing. And we are tweeting our way around the world. And everyone in the world is staring at California. The one patient in France is staring at California. The one patient in Italy is staring at Humboldt and Mendocino. The forty patients in Germany are very curious about what we are doing.

I'm curious as to how this man, Whittle, gets a patent on the arduous lab work pursued by other researchers? What exactly is his invention?

Dr. Wm Courtney: Lots of times it's a method that is patented. This patent is about formulations. This is the company that led to Sativex.

I still consider the single most important document the US patent. It's about cannabinoids as antioxidants, which we know is central to almost all illnesses; and neuroprotectants, which is a subclass that has very dramatic presentations: Huntington's, Parkinson's, Alzheimer's, brain surgery, brain trauma.

Because we are so much in our

heads, damage to the head damages us deeply, so they separate out neuro-protectants from antioxidants, which is every other organ system in the body that are not as highly valued as the cognitive self.

The US patent is hugely educational. There are very sharply articulated, effective oral human dosage schedules. There are mechanisms. There are the oxidative-associated diseases that are enumerated. It's stunning.

Every time I read it, I am stunned. Go through and highlight every time the patent uses the word 'prevention'. Every one of us in Mendocino & Humboldt should be able to recall the number of different medical conditions that can be prevented as identified in this patent — and 'prophylaxis' is another term for prevention; they vacillate back and forth between those terms.

This is a Department of Health & Human Services patent. Hampson is the fellow who did the basic research. He is listed as one of the inventors of the scientific article behind this patent.

The next patent is 'The Medicinal Acidic Cannabinoids'. We met those folks in Rotterdam several years ago after the 'International Cannabis As Medicine Conference'. We were at that conference when they degraded the name to 'International Cannabinoid Conference'. I was the only one who stood up. I was shocked and horrified that they wanted to bounce the term Cannabis out of their name so that they would become more "scientific". They were afraid they would be left behind if they did not deal with cannabinoids...

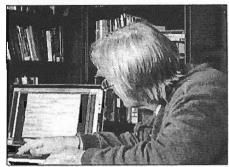
There's no room for the terpenes, no room for the flavonoids, no room for the synergistic effects that we know this plant is about.

I was very upset. They struck all the political activity out of the Articles of Bylaws of the organization.

I stood up and said, "People are getting their heads cut off. That's a political situation. And as much as we are interested in how these molecules act with these receptors, there are crimes against humanity being committed against people that want to benefit from the plant, and that's political, so we in part must be political as much as we must be basic scientists."

And these people were more basic scientists than I and they were all looking at me like: Must be from California. He's got that California rant thing going.

Here is a patent for the pharmaceutical composition for the treatment of chronic obstructive pulmonary disease with cannabis. Here is an antinausea, anti-vomiting with CBD. There is a whole patent on the role of cannabinoids for the treatment of peripheral neuropathic pain issued in 2010. This is cutting edge intellectual property that is coming out as patents. Here is the US patent on "Treating or Preventing Diabetes with Cannabidiol". A whole patent, just on the prevention and treatment of diabetes with CBD.



And here is the one we were talking about earlier by Brian Whittle, about formulating; it identifies how different medical conditions depend upon different cannabinoid ratios. Some are heavy on THC, some are 50/50, some are 25/75; some are 5/95. And that list obviously needs to be expanded significantly as we develop the individual phytogenetics, which is really the subject of our interview today.

It's the idea that you may really benefit from a 15/85 ratio of 15% THC-Acid/85% CBD-Acid because of your bio-availability, which is the ability of the amylases in your saliva, the acidity level of your stomach, its ulceration, obstructions, dysfunctional contractions; the issuance of bile from the gall bladder and whether it is obstructed (has stones), what's involved in the specific illnesses of the gall bladder; issues of the intestine—it's contractility, absorption, its ulceration, its polyps, its diverticular, its irritable bowel, its psychological overlays on the intestine and the liver.

All things absorbed from the intestine pass through the liver where they are filtered. It's called the 'first pass effect'.

How much of what you absorb gets into the arterial system, so the liver is the last final net that says: No, we don't want that. It's the final filter, and if you've got liver pathology—if you've got hepatitis, got sclerosis, if you've got liver cancer, if you've got mechanical obstructions, if you've got fatty livers; if you've got other drugs that you are taking that increase the enzymatic apparatus, that will decrease the amount of cannabinoids that are able to negotiate through the liver.

So you've get 100 people with 100 grams coming at the liver; some will allow 5%, some 10%, some 15%, some 20%; and if that liver is over-amped because it's taking a lot of western phanmat eutical drugs, that liver is going to be more overactive and it is going to block the passage of more cannabinoid; because of that heightened level of activity induced by the kind of pharmaceutical situations.

All of those things together comprise bioavailability Each individual's.

If you take 1000 people, they all eat 100 grams of identical raw flower they're all going to have slightly different levels in their blood system as a function of what we call 'digestion and absorption'. But there are many, many facets that go into digestion and absorption, and we're trying to develop a relationship with the Department of Justice in order to use the methodology they have developed for testing THC-Variant, and use that same methodology for testing CBD-A, CBD, THC-A, THC, CBG-A.

There is a whole bunch of incredible expense and time it takes to draw the blood, process it, spin it down, send it to a lab, the lab runs a test. And I would give anything to be able to assess the level of cannabinoids that make it through the liver.

If you took these 1000 people, some with Crohn's, some with irritable bowel, some with hypomotility (diarrhea), some with constipation, some with genetic enzyme deficiencies that would affect absorption, and if we could do a serum test — 1000 people, they all had 100 grams but they produce varying levels—then the individuals could adjust their dosage to compensate for their individual illnesses and physiologic unique absorptive abilities.

If we decide that 10 nanograms per milligrams is a very effective dose, those that are running at 2 milligrams know that they need to eat more; those above can reduce their dose. We'll begin to tailor dosing once we really can assess the amount that is actively absorbed.

One last link on the Patent page: The very last link takes you over to cannabis-related patents > united states government>us patent and trademark office. Each one of these is a different patent on cannabis, cannabis synthesis, processing, cannabinoid actions.

There are another 140 issued intellectual property rights on this plant: a plant for which 800,000 people were imprisoned because it has no medical value.

And this page stands testimony to the ludicrous position stating that this plant has not medical value and incarceration is the answer to anyone who grows, has, uses or transports this plant.

This is reality! [pointing to the Patents site] and that's the politic. And the politic requires a response, and that response (as you stated) requires each and every person to stand up and articulate that:

This is our country, and we are responsible for its actions and if it is time to correct misunderstandings, we must figure out how that's to be done and without relent pursue that course.

Because the world is suffering because of our actions. I mean, how long would it take you just to read Intellectual Property on this plant? It is a dizzying amount of information.

Strain specifics—when it comes to specific ailments, at least—what do we know?

Wm. Courtney: To illustrate some of the difficulty, let's return to The Sisters of Mercy:

Each of the 17 plants we grew out from the feminized seed of the same plant is very unique genetically.

They range from 22% weight-to-weight CBD-Acid to 30% THC-Acid. The genetics that were displayed, I've never seen before and I've not had anyone interpret them for me, though I assume the THC-Acid and CBD-Acid would be inversely proportionate. Meaning: as one goes up the other would go down because I've been told they compete for as single allele, a single site of a chromosome so effectively you can have pure THC or pure CBD or some ratio in between.

What was demonstrated from this particular study is that the genetics of CBD are distinctly different from those of THC.

Fifty percent of the plants had 12% or higher CBD-Acid, and 50% had less than 1%; there were no plants that had 5, 6, 7, 8, 9, 10, 11. It went from nothing to everything! Whereas THC-Acid was continuous incremental. It went from 1-to-30—1, 4, 5, 6, 7, 9, 11, 12, 16, 17, 20, 26, 27, 30%.

Those are two different mechanisms.

And once again, it was back to the drawing board. How are these chemotypes expressed? And what are the relationships between the two of them?

So, just the use of the word 'strain' is such a simplification . . .

Dr. Wm. Courtney: Oh my god, yes: such a simplification. . . . If you smoke, you'll get 10 milligrams of THC, and you'll get 1-to-20 milligrams of CBD; but, you need 600; so you are still 590-580 milligrams short of a daily dose. So unless you are going to sit down and smoke 60 joints for breakfast, you are just not going to take full advantage of what this plant can do for you.

You can do the juice or eat the plant raw, get your 600 milligrams and smoke a joint and get your 10 milligrams and all the benefits that come from the THC.

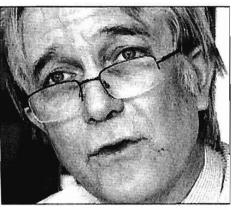
But be certain that you are getting the THC-Acid. Be certain that you are getting the CBD-Acid. And those are only present in the unheated plant.

And repeat for the first-time readers what the raw plant avoids, and enhances.

Dr. Wm. Courtney: When you heat the plant, the biggest problem is that THC is so potent and in excess, is so toxic, that no one will risk overdosing. And if the one brownie is wonderful, few are the people who will eat three and none who will eat six, when one is all you want because of that level of toxicity.

We're not talking about eating 60 brownies.

Contemplate sitting down and eating one after another and going through 60 brownies. That's what you'd have to do every day if you want to enjoy the benefits of bone remodeling and prevention of cancer and diabetes, and Alzheimer's and Parkinson's, and modulation of cell function that the plant can assist us with. But 60 brownies would obviously be quite disabling. An ounce of raw juice is not.



The interesting thing with the feminized-seeds from the one Cannatonic plant we grew out is that we go from 22% CBD all the way down to 0.08%, which is eight one hundreds of one percent. Essentially, from no CBD to almost one quarter of the plant is CBD-Acid. An incredible range. And the THC (because it is sorted numerically) varies from 1.1% up to 30.08%.

Have you juiced the leaves of the 18 samples, used yourself as a test tube?

Dr. Wm. Courtney: No. We are now just beginning the process of cultivating the clones. I would feel bad about growing and eating a plant that can be turned into 100 plants for other people to have access to.

But you are such a sophisticated test tube.

Dr. William Courtney: And every time I look at them, I think: *Today should be the day we start.* Then I run into people whose forearms were snapped from the muscular spasms of Parkinson's. Their hand is in a knot, from the stricture; and they are living on morphine from the exquisite pain. Do I take a plant that this person needs, maybe more than I do?

There is such formidable illness around me. That's the one aspect of my incredible job of being able to talk to all these people, is that the pains are unimaginable: The two-year old child with brain tumors and 39 hours on the operating table, and multiple courses of chemo, and adult-level radiation seven days a week for six weeks.

And then the parents told: "We're sorry we can't help you. We're stopping all of your therapy: we are stopping your antibiotics, your antifungals, we're stopping the antivirals; we're sending your daughter home on morphine to be under the care of hospice."

And a local pediatrician says, "Well, I guess Western medicine is at the end of its rope. You spent a year down at the Pediatric Oncology ward, and all they can give you is morphine to die on." She recommends juicing raw cannabis.

And the young lady drank eight ounces.
Eight ounces! I can't imagine. I thought I was at the edge of the edge when I was doing an ounce. And this young child is now living on the fruits of Comptche, the bushels of leaf that are being juiced today.

So what is the dose? I have no idea. I just

pass along stories I hear. This little girl did juice for a couple of weeks, then slept for a couple of weeks, and has been doing the juice since. The MRI taken after the radiation showed that the tumors were growing and multiplying, and effectively there was absolutely nothing left to do but give into the situation.

And then, in October, the MRI showed that there were no new tumors and nothing was growing, and in February 2011, there were no new tumors and the tumors were continuing to shrink.

—Of course, It really was Western medicine that achieved that, in retrospect Western medicine would claim.

Whereas, it was actually the farmers of Comptche showing up with enough leaf to keep her baby bottle filled. Would you talk about how a small rural community came together to keep this two-year old alive.

Dr. Wm. Courtney: The family wanted and needs some confidentiality, so its best we not use names. And the community is so small I want to assure they don't receive more attention than they want. Because my fear is that this child is so unique, the pediatrician vulnerable ... And yet, the family knows this needs to get out, that this needs to be shared. And I know this is an enormous story. . . .

A poignant family saga, acted out somewhere in Mendonesia, nested in the Emerald Triangle. The human dilemma central to a new epoch of dietary cannabls you are initiating, other professionals are joining

Dr. Wm. Courtney: And so given children like this, for the sake of "publishable research", I'm certainly not going to go out there and eat one of the scarce plants that is 8% THC-Acid and 16% CBD-Acid.

I have a group of people that I call "the short list", and each one of them would be the subject of a whole New Settler interview; each one of those folks has serious medical conditions, battling for their lives. — I can't imagine having muscle spasms that are so strong as they snap the bones of your arms. What is it like to live with that level of muscle spasticity? [sighs]... So, this is the heart of my ICRS paper. And I have to submit that paper by Friday... And, I need to check on Kristen. She's hypoglycemic

and hasn't been eating. Why don't we continue next week.

A week later

I get asked a lot about specifically which strains do what in our known world, in terms of your research and research elsewhere.

Dr. Wm. Couriney: I've been talking about CBD/THC ratios rather than strains. Let's return to Brian Whittle's patent. Table 2 lists different cannabinoid ratios associated with different conditions. The first ratio is 95% THC / 5% CBD. If I recall, that ratio is associated with the relief of cancer pain.

50% THC / 50% CBD is associated with multiple sclerosis, peripheral neuropathies, nerve conditions. 25% THC /75% CBD is associated with inflammatory bowel disease and rheumatoid arthritis.

Then the Table goes to 5% THC / 95% CBD, and that's associated with psychosis, psychiatric issues, and modifying the rheumatoid arthritis at a chemical level.

In addition, Sean McAllister at Pacific Medical Center noticed that in aggressive breast cancers, there are particular ratios of cannabinoids that have more potent effects—that more so than just THC or just CBD, when you combine the two there was a synergistic effect. And I believe the ratio he found was 75% THC-to-25% CBD.

There's another patent on the Patent Page about peripheral neuropathies; they apparently wanted their patent to be totally exclusive, so they went from 10-to-1 to 1-to-10; essentially saying everything and anything is part of our intellectual property. You always have to tease out from a patent whether they are looking for broad claims or specific information.

Can you name strains that have emerged in Mendocino and Humboldt counties that approximate those ratios of THC and CBD?

Dr. Wm. Courtney: In Mendocino, we were very excited at first about Soma A-Plus. But it never quite came to fruition: there were problems with reproducible lab results, problems with cloning. That was a 5% CBD plant.

A number of strains have been identified elsewhere: a Sour Diesel in Sacramento that is associated with an elevated amount of CBD. Harlequin was in the 10% range of CBD (that 10% weight-to-weight CBD). This all up from Northern Lights, which was a previous high producer of 1% here.

As we've discussed in our previous interviews, most of the strains in Mendocino County are .8, .7—less than 1% CBD. There have been a couple of falters, but it appears at this point, we are going to begin to see tested clones. And, it's very important that your clone come from a tested plant.

CBD-acid will always be higher than CBD because it has that carboxyl-acid group, which is two additional oxygen molecules

on a carbon molecule, and when you decarboxylate it —when you remove that carboxyl as a group each atom loses a big chunk of weight. So that number will jump back down.

Interestingly in our Catatonic series there is also high THC-Acid.

Have you been naming the individual plants you will be cloning?

Dr. Wm Courtney: They are all called AC/DC, and their name will include a ratio number. So, AC/DC 22-to-1 would be Alternative Cannabinoid Dietary Cannabis 22% CBD-Acid to 1% THC-Acid.

The name AC/DC was selected because I wanted people to know that if you take one of these plants and heat it, you will generate THC, and THC peaks out a tolerable dose around 10 milligrams. So if you smoke an AC/DC strain, you will have a psychoactive effect, but that limits you from being able to use that plant for its dietary benefits, which occur (once again) when we are at 500, 600, even 1000 mgs.

The name was selected for a number of reasons: 1) it is a dual nature plant: heated, you get the psychoactive effect; unheated you can then push it up to the anti-oxidant and neuroprotective levels which come into play at hundreds of milligrams.

—As an aside (with everything going the way as it should) the next child will be called Unani

We liked the sound of the name. And after liking the sound of it, come to find out it is branch of Ayurvedic medicine which was involved in the juicing of leaf four or five thousand years ago.

Here's a group that was juicing the raw plant thousands of years ago! It's like we are back to the knowledge that we gave up for four or five thousand years. That cemented our decision.

In Sanskrit, Ayurvedic means 'complete knowledge for long life'. —Actually, 'science' is an even closer translation into contemporary English than 'knowledge'. You chose sound as the primary criteria for your next daughter's name.

Dr. Wm Courtney: A babe is going to be hearing the name a lot, and that will be something she identifies, and becomes the handle by which society and the culture hold her. I would like a sound that is as unique as the individual, and is pleasant to say and hear. The way a word sounds evokes immediate memories in our culture. (Plus, there are hundreds of cultures and myths so its always tricky as to what a sound signifies—What does this word mean in Sanskrit? What is its meaning in Norwegian? It's impossible to go through all those derivations.)

And we are in pre-term labor as we speak. We'd like Unani to stay inside for another three, four weeks. That's kind of dominated the day. Trying to keep Kristen in an inverted position. Trying to the best of our ability to get her to stay put. Kristen wanted to finish writing a book before Unani was born, as well as finish all the paper work. So now I'm trying to get the two of them to take a breath, and calm down, and simmer a little longer so we don't have any problems with surfactom and breathing; all the issues of prematurity that sometimes come along with a thirty-four week-old delivery.

Tell me about your ICRS paper as succinctly as you can.

Dr. Wm. Courtney: My paper for the International Cannabinoid Research Society this year is based in large part upon our travels to Barcelona; meeting the individual who had isolated Cannatonic which took Gold Medal in 2008 and took awhile to drift across the land into my lap, brought here by a patient who knew I was headlong determined to find a plant that actually had CBD.

Then there was the serendipity that the paper I presented at the Patients Out of Time Therapeutics Conference calling for the cannabinoids to be recognized as a dietary essential—as an unique functional food—had been reprinted in its entirety in the magazine, *Treating Yourself*, issue #24. On the cover of that issue of *Treating Yourself* was Catatonic, a plant I have come to see as a poster child for dietary cannabis (even though I did not know so at the time.)

But once I heard about the plant, I arranged to meet with the fellow who had isolated that plant. I'm willing to travel half way around the world to the mountains, to the Alps of Austria twice, trying to find high CBD plants. So it was two people very excited about the breadth of this plant, trying to move it off the pure THC realm, into a plant that provides other usable cannabinoids.

—And this is critical. There is probably going to be a lot of pressure to remove cannabis out of the reach of ordinary individuals. A huge paper just came out taking the position that cannabis can't be used for medicine until it is quantified and purified and approved, and run through the testing and trials. There is a huge effort by the specialty that deals with addictive medicine to really reel in all this "cannabis-as-medicine" talk. It is a very ominous paper. I will reprint it in its entirety on CannabisInternational if I can legally do that. (It's always a question as what I'm entitled to.)

Treating Yourself is a very powerful magazine that really tries to focus on strains and usage and medical issues. It makes a concerted effort to provide education and continued updating. Another article in the same issue is 'Cannabinoids and Reproductive Health'. We know that when the sperm hits the egg it produces a reaction that shuts down the egg from a second sperm entering. And that whole protection of the fertilized cell is mediated by the Endogenous Cannabinoid System. So the cannabinoids begin with conception, through implantation, through suckling —the highest levels are in breast milk.

—If we could step back from the notion of cannabis being a horrible drug that is going to ruin society; if we could look at it in the context of the physiology of cell regulation, as a group we could make tremendous progress much more quickly because we wouldn't have the knee [erk reactions that lead to

these white papers by people who don't have the time or inclination to look at the range of research that has been done and appreciate it for what it's worth.

And this is the key point: If we look at cannabis as a dietary essential, that removes it from the realm of regulation as a medicine.

And it is in that realm that it will be shut down.

If you don't call it a medicine: if you call it broccoli, if you call it spinach and arugula, and you preserve the right to raise it as a vegetable, we're on our solidest ground as being able to preserve the right to keep this plant for the prevention of illness. —Ironically, we probably won't be able to say those words:

How can you say it "prevents"?
Well, the federal government says it prevents over and over...

And so we struggle. Because of the name, and because of the history of the name and the legacy, progress is stymied.

Another key point: In order for us to know how much cannabis we need, we need to know how much of these cannabinoids are in the plant. And we don't have access to the Reagent Grade standard.

We have labs that are so well-intentioned, and so well equipped. But without access to those reagents, we know that it's there, but each machine kind of gets a different snapshot. It's like we've got seventeen analytical labs looking at an elephant: one of them sees an anaconda:—It has this huge, snaky structure: obviously, it's like a snake. Another lab is looking at the side walls:—Wow! It's got this huge flat surface. Another goes:—My gosh! It's like a trunk. It's like the base of a tree.

And that's what we have right now. We're getting analytic results. But the variation is unacceptably divergent, because all these labs can't run a known Standard against which to compare these unknown samples.

Somewhat like in the early history of the United States of America, each of the states had its own currency.

Dr. Wm Courtney. And that's what we have: 15 labs with 15 theories, and we get fifteen results. And I don't know whether to tell you to eat 50 grams or 100 grams; it depends on which lab is doing the analysis.

And it is for the want of the right to have access to a non-psychoactive medicine.

I could go to Haymen Pharmaceuticals, order a gram of CBD, pure 100% Reagent-grade CBD, with which you could standardize and then make sense of all this. But you have to have a Schedule 1 license. And If you ask for a Schedule 1 license they will come and take your lab down—as happened in Montana: This is politics on top of science. It's so upside down, and so incredibly wrong. And so, you have individuals trying to create their own Standards.

It's like Let's reinvent the wheel. And yes,

you can get information from libraries of data, and kind of make an estimate based on published findings. That's going to get us into the ballpark.

—And we are in the ballpark. We know that we got 10-20 percent. But it horrifies me, that I've gone to the two finest labs in the state of California, and I know it's somewhere between 10 and 20, but I don't know more than that. So I can't tell you if you need 50 grams or one hundred grams, because I don't know what is in the plant.

And someone else is over there, holding the chemical that would allow all these labs to come up with a common number that would allow an understanding of what is in the food.

If the situation was: We're not going to tell you how much Vitamin C is in an orange because this is a political situation, it would be unconscionable!

Here we have a non-psychoactive, raw vegetable that prevents diabetes, and we can't get a Reagent-grade sample so that we can standardize lab equipment, so we can tell you: 'Okay, if you eat 50 grams of this plant here, your chances of getting insulin-dependent diabetes are 58% less.

— Because the truth is, you may need 100 grams, but we don't know because our machines don't work because the federal government won't allow us access to the Standard."

Your colleague in Spain: What plants did he cross to produce Cannatonic? Did his lab have the Reagent-grade Standard?

Dr. Wm. Courtney: I'm not a journalist, and I wish you traveled with us all the time because there were hundreds of stories on this last trip that needed someone with a video camera and an attention to detail, and asking the historical questions. I am more the: How do I take care of my patients whose arms are being snapped by muscular spasm doc. All I want to do is cut to the quick. So I don't know all of the history.

We both had an interest and a curiosity, and he wanted to know what our analysis would show. In Europe, in association with universities, often times you may be granted a Schedule 1 license.

—If you are the University California of Berkeley and we know it is not being diverted.

In other words, that someone is taking this drug that can't get you high and trying to turn it into something that can make you high. The travesties that would occur if someone took a gram of CBD and figured out how to turn it into THC!

I met folks in Leiden that had access to Reagent-grade standards. And there are companies in Europe, like THC Pharm that does have very high quality (90, 95%) pure CBD-Acid.

Interesting, how Pharm sounds like 'farm'. Growers in our region are beginning to refer to themselves as. Farmers.

Dr. Wm Courtney: What we are doing now, is taking some of these AC/DC strains

to individuals who have access to prototypic Ruderalis strains that have not been crossed to AK47 and LA Confidential stuff.

In the hands of someone with an undeclared Ruderalis, if we cross these to our 10-20% CBD plants, we're going to be able to produce an auto-flower, which is a single room window box, small greenhouse-type plant which will be much simpler to grow.

And that always brings me back to the issue of access. The only people in the world that have somewhat easy access to this plant as a vegetable are those of us that are farmers. And here you can grow it like a vegetable and eat it like a vegetable if you can allow yourself access to this plant.

Six hundred milligrams a day. Many of my patients are taken aback at consuming that much flower: the electricity to grow it is expensive. Its value. We've turned this plant into gold, and we're afraid to use it because we can't afford it. That is a very common problem with my patients:—Yeah, we'll eat the leaf because we're composting that

But when you start saying, "Let's toss in some mature flower," even here it's difficult because of the valuation.

In issue 150 of New Settler Interview you taught readers how to juice the flower. Repeat for the folks new to New Settler how the mature flower, the bud, enhances the juiced leaf.

Dr. Wm. Courtney:

Because the cannabinoids are found in high density in the flower, it takes a very small amount of flower to produce a large amount of these cannabinoid acids.

Rather than a bushel or two of leaves, maybe an ounce of flower could provide you with a lot of the benefits. I believe leaf has the potential to have chemicals in it that are not found in the flower, and I recommend using the entire plant, the leaf and the flower. But the flower, definitely, is going to provide very high concentrations; which will allow us to get to that 600 milligrams target dose that the Food & Drug has approved of as an investigative new drug. And I concur that that is a good dose.

Why do you concur?

Dr. Wm Courtney:

Because I had calculated it based on the numerous studies that recommended five-milligrams per kilogram body weight.

That's a dose that you see as the peak of a biphasic curve, which is a curve that the benefits keep increasing until you get in that area, and then some studies show that in amounts greater than that the efficacy begins to fall off.

There is a certain amount that is good, too much is not so good, too little is not as good. And if that's the case, this five milligramsper-kilogram appears to be pretty much at the peak of those studies.

—That's the dose that is identified in the Department of Health and Human Services;

it's at their low end: they say from 5-to-20, and then they go on to say, "in particular twenty." So, they're at a dose much higher than that. The Food & Drug Administration, at 600 milligrams would be for what they consider to be a man of average weight. I had a 190 pound individual using 500 milligrams, that's what's published in my paper.

But the whole issue of whether it's 500 milligrams or 600 is how much is in the plant, and the whole issue of bio-availability:

What kind of enzymes do you have in your saliva,
and what is your saliva production?

How is your gall bladder working? What is the acidity in the stomach?
Are there any outlets in the stomach? Any ulcerations?

Are there any issues in transience in the stomach?

You get into the small intestine: the bile is added from the gall bladder; are the enzymes there for breaking down proteins and fats? Are they all present and in a viable amount, or is it obstructed? Is there an issue with the bile duct that prevents that?

And how does a patient figure that out about him/herself?

Dr. Wm Courtney: We're working on getting access to a serum level for CBD-Acid. I mentioned that in Israel, Ruth Ross presented that CBD-Acid and CBG-Acid (Cannabigerolic acid), both of those bind potently at the orphan receptor.

I just sent her a couple of emails: I asked her: "Does this mean we can call the orphan receptor CB3?" I want to lead with that in the title, because in my mind, it could be the most important receptor In the body. This is the receptor to which the molecules that are found in highest concentration in this plant, bind to.

I want to call it CB3 so that it is brought into the cannabinoids: We have CB1 in the brain with the psychoactivity; CB2 is huge and very important . . .

And, I'm hoping we can elicit the support of this community and its founding fathers and mothers, and those who have done well providing this medicine through the dispensary system. I would like to gather the most able bodied and financially sound individuals because I would like to bring to Fort Bragg the first International CB3 Conference.

CB3 is the name I am giving to this orphan receptor (which is also called GPR55), and I would also like to have it subtitled the 'phytocannabinoids receptor'.

Phytocannabinoids are the cannabinoids that come from the plant; they are a class of the exogenous cannabinoids (the other ones are the synthetics) and there would be a lot of focus on these cannabinoid acids as an object of synthesizing new drugs.

The plant has got that all-thing curve. Is there room for improvement? Could we stumble on something by accident? Possibly. Could we produce products that have an enormous number of side effects? Most definitely. And it shakes me to my core, the idea of our becoming involved in organic chemistry with these molecules. Because I've become convinced that we should first understand what 34 million years of research and development has provided before we decide how to improve upon it. We don't even know what is in this plant, yet alone how to improve upon it. We need basic understandings of how multiple molecules combine synergistically to affect the outcome.

And so I have become an quite an afticionado of: —Let's look at this gift from Shiva and go slow on trying to improve upon it until we understand how it works: all the parts and pieces.

There is a path forward. That path forward might be to supplement a particular plant with another cannabinoid. Because there are so many constituents, and it may be hard to get one plant to reconstruct the ten thousand years of damage that we've done in our shortest course to the optimal use of this plant.

Maybe to combine (in my mind) a couple of plants, to supplement the deficiencies that have accrued from selective hybridization. So strain X and strain Z: take the two together and you get closer to a true heirloom, a plant from ten thousand years ago, before we became involved.

And so, if some of these AC/DC strains are 500% more Cannabichromene than anything we've seen before, using some of this plant to supplement for that cannabinoid could be one avenue, until we can find a plant, a plant closer to the heirloom strains. I was just speaking today to someone going to Putan. A fellow from Harvard who is an ethnobotanist looking for heirloom strains, hoping that some Taoist temple has allowed this plant, just to be this plant. Has not taken this strain (because it gets you higher than that one) and crossed it with another one, and pushed it in this direction that we find ourselves in here in northern California where 95% of all the cannabinoids are THC.

I've been told of a temple in Tibet where the higher you ascend, the more hemp

grows wild along the steps. Unattended.

Dr. Wm Courtney: It was here 33 million years before humans ever arrived. It's here as part of the interplay, the biome of this planet; and it's role is to mediate the production of these molecules that are so essential for the regulation of cell health.

And as we have gone from single celled organisms to symbiotic relationships of multi-celled organisms, these molecules are so incredibly Important, that there is this whole aspect of life on this planet that is committed to the sequestration and the synthesis and the provision of these molecules to help the rest of the planet deal with requirements for an amount in excess, or deficiencies that may arise from genetic changes. Or just to supplement our own synthesis of these molecules.

How do suppose it is going to deal with the radiation poisoning?

Dr. Wm Courtney: The federal patent talks about radiation illness. Ionizing radiation produces a lot of reactive oxygen species, and cannabis as a superlative anti-oxidant helps to neutralize those. At the cellular level, it helps to undo the damage caused by ionizing radiation. Being aware of dietary maneuvers to minimize uptake is an excellent and probably first prong effort. If you can keep the body from taking in radioactive iodine because all of the sites that would bind it are full, then you don't have the iodine radiating the thyroid. But if you've absorbed radiation and that is part of who you are now, that radiation is damaging cells; that damage will be oxidated damage, and as an anti-oxidant cannabis will help to mitigate the extent and severity of that.

So, seaweed and hemp . . .

Dr. Wm Courtney: Seaweed and hemp. Hemp because you are still alive, because you were born, or because you are about to be conceived is a consideration. The drug companies put out a CD about the female reproductive tract and the Endocannabinoid System that they provided to physicians when they were trying to educate physicians about the Endocannabinoid System when they were trying to produce Rimonabant, the CB1 receptor blocker. Most physicians, even those coming out of residencies right now, don't have any knowledge. Biochemistry texts leave out the fact that it arises from the same precursors as the prostaglandins and the thromboxins. It's crazy that our emotional fears are more powerful than our common sense. And yet those are the decisions that are made at the top by publishers and people who write textbooks.

Can I have the name of the fellow who put together the small plant-a-seed, eat-a-plant indoor grow? I've been asked several times the details of such a set-up.

Dr. Wm Courtney: There are several people who are working on this. And I need to check to see who needs anonymity the least. I am trying to replicate the various situations that people have developed on their own and there are lots of people trying to negotiate this task of how do you keep the plants always growing.

—And the movement towards an auto-flower. If we had a plant that didn't require two rooms, it would be so much easier: you put the seed in the ground, and this plant is going to produce a plant in 45 days regardless of the amount of light. That then is what would really make this a vegetable garden plant that someone who thinks: Well, I grew radishes once when I was seven. . . It would allow any person to be able to stick a seed in the ground every morning.

Are you saying someone in the Emerald Triangle is growing a Ruderalis?

Dr. Wm Courtney: That call came from Lake County, which is part of the basket. It's a group very motivated to produce a simple auto-flower plant that provides something other than THC. We've got all the low riders, the high-THC small plants, but we will get a simple seeded, single room system set-up so that you don't have to have all the sophistication that is currently required to run a double room to keep those two going.

—We have so many topics going here, Beth. This is what is coming from the American Society of Addictive Medicine: "The Role of the Physician in —quote — "Medical" Marijuana'. This supposed specialty of "medical marijuana."

What do they seek, and what do they see as the problem?

Dr. Wm Courtney: What they seek appears to be an effort to apply pharmaceutical standards and practices, and to call out the fact that there is inconsistency with the product, with its analysis, with the delivery: —If you take this pill of Valium, you are going to get 10 milligrams of Diazapem, each and every time—plus or minus 5/100ths of 1 percent....

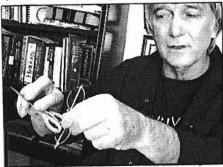
Do they compare the side effects in this paper?

Dr. Wm Courtney: No. Their point is you can not be calling it medicine because you don't know what it is: — We don't have the research. And you certainly can't provide it until we know what it is you are providing, the amount you are providing, how good it is, how clean it is.

These are physicians that are focused on addiction. In their minds cannabis is highly addictive and probably has no medical benefits. And if it does: —Obviously, the only people that can produce a product we can consider acceptable are the pharmaceutical companies. And they'll put it in a little pill and they will deliver it, and then we'll be able to say, "Okay, here's 600 milligrams of CBD." Let's just do synthetic CBD. Put it in a capsule.

And (sigh) I am a part of that. I work with a fellow in England, and the fact is we have approvals based on a synthetic molecule.

But when you use synthetic CBD (and I've asked the question several times and have not yet gotten an answer that I believe is fully accurate): when you synthesize a molecule, you generally produce it symmetrically: you'll produce a right-handed molecule and a left-handed; and that's how those atoms are assembled in three-dimensional space.



And it's very difficult to always assemble just a right-handed molecule unless you do it inside a cell where it is done by enzymes. And an enzyme takes two molecules and brings them together, and it attaches them in a specific way.

So, it can control stereochemistry, because its intimately involved in the formation of that bond.

Where Chemistry just takes five gallons of this, tosses it in, bang them around, and half of them come out one way and half of them come out on the other side.

So you have a left handed molecule and you have a right handed molecule—both the same atoms—but there is a stereochemistry involved.

Only the right-handed one will interact with the body. And the other one won't, because it's a left-handed molecule and won't fit into the receptor.

So there are many problems with the pharmaceutical approach to this plant because this plant is not about a single molecule. This plant is about flavonoids and terpenes and allosteric modulators and other antibiotic protection from organisms that would take advantage of an organism that was eating this plant for its anti-oxidant ability. It's an incredibly complex, synergistic living thing.

And yeah, you can spray Avid on there and get a lot of people sick in your headlong rush to make money. And Lord knows, that is a very serious issue, and there are those

who will take that issue to the bank and shut it all down. —You call this medical? You sick people that are coming in to heal yourselves, and are getting poisons! That's not right. That will be the issue that will be the death knell of our right to access this plant.

So the question becomes: How do we get everyone to stop using poisons to boost the crop and their turn around?

Mendocino County Sheriff Tom Aliman has made a remarkable start in that direction in his interpretation of 9.31, the County ordinance that allows for cultivation of cannabls for more than personal use. The third-party inspectors he has chosen check for illegal stream diversions, potential diesel spills, advocate for cleaner and cleaner medicine, offer testing for contaminants...

Dr. Wm Courtney: ... somewhere along the line of consumption: if a person is walking into a dispensary in San Francisco with emphysema or Crohn's colitis; or has some serious condition and they are there to find something that helps them deal with their pain, the last thing they need to be doing is eating a bunch of contaminated cannabls. Citizens of Humboldt County known as 'Grow It In the Sun' are having an effect on selections patients elsewhere make, molding more conscientious preferences when it comes to carbon footprint, ecological concern, clean medicine. . . . Earlier you were saying the Feds developed Standards specifically to check for the THC-Variant, developed a protocol that could give percentage Information on other cannabinoids but won't share it. Why were the Feds specifically interested in the THC-Variant?

Dr. Wm Courtney: Because if I'm a police officer and someone I think has been abusing cannabis tells me, "No, I don't use cannabis. I just use Marinol. I'm prescribed a very common Schedule 3 drug and what you see in my blood is a prescription medicine that is provided to me by my physician under all the duties and prerogatives and privileges of medical treatment."

And the officer goes, "No. I think you are smoking cannabis, too."

So they developed a test by which they can decide. There is no THC-variant in Marlnol. And if they find THC-V in your blood they can go: —"You're not just using Marlnol. You are consuming recreational cannabis and you are covering it with Marinol."

What has been developed is the ability to draw a blood sample, process it, ship it out, have it analyzed. And it's a very refined test methodology because they are looking for a very rare little molecule. You don't smoke cannabis for the THC-V.

—There is one strain owned by GW they consider their intellectual property that is relatively high in THC-V and I'm not even privileged to know the elevated amount. But the amount of THC-variant in 99% of the plants in this county is low. And so you have to have very sophisticated analytic equipment to detect that molecule because it so rare. But present enough that it can be identified as of botanic origin.

And since Marinol is not a botanical extract (Marinol is a synthetic molecule, only half of which is biologically active: only half the molecules will bind to the receptor; the other half won't because they are the opposite stereoisomer and they don't fit in the receptor.) there is no THC-V in it.

Where we could join forces is that when they are drawing your blood and analyzing it for THC-V, they can also analyze it for CBD-A.

There is so much to getting a serum level: how you draw the blood, how it is stabilized, how it is spun down. Is the serum old?

They could take the blood, draw it all the way through: Here's this pure unknown, and we see a THC spike. Down the block an inch or two on the meter there can be another spike. If we are looking for CBD-A then all we would have to do is add in a CBD-A Standard.

Then we could say: We've got a spike; we've identified it as CBD-acid and it's 5 nanometers-per-milliliter of serum. With that knowledge we then could say: Okay, the person's been eating 100 grams for three weeks and it produces 5 milliliters.

If we start collecting enough of those we can say: Here's these 100 people with rheumatoid arthritis: one person has a 2, one's got a 5, one's got a 10. Five seems optimal, meaning, that controls the symptoms sufficiently. The person that has a 2-nanometer blood serum level, they need to eat 2 1/2 times more.

In other words, they need to go from 100 grams to 200 grams of flower to get them up to a therapeutic dose.

That one individual that absorbs very well, they can actually eat a little bit less; they could probably get by on 50 or 25 grams and still have an optimal level because their liver is in good shape: they don't have an alcoholic issues, they have no other concurrent drugs, their intestines are looking good; they don't have any rapid transits or irritable bowels. So they are more efficient at recovering from an oral food substance the amount that it takes to produce that level.

We're hoping to be able to work together. There is no legal benefit to CBD-A, but there is tremendous nutritional and medical knowledge that can be gained from how we adjust the amount of this raw plant that you are eating to make sure you are getting as much of it as you need for optimal health.

We struggle with a very complex, high pressured lifestyle that doesn't allow us to juice five times a day with different plants. If we begin to have juicers in our cities on every block, then theoretically, if each of those were doing a different plant, you begin to reproduce the protocol, so to speak, of the fauna. And along the way what happens if we get the mini ice cube? Rather than having one shot of juice for the whole day, at home you can put one ice cube in your breakfast drink, one ice cube in the lunch.

It's got to be easy, it's got to be delicious, it's got to be fun. Or it will not be adopted, except by those who really are interested in health and its preservation, and most often, by those who are trying to restore their health.

There is nothing more motivating than the attempt to restore health. You look at the health that is spent on youth:

—Oh, if I could have the health of youth I would be so protective of that gift!

Yet, it is generally the loss of it that begins to bring our attention to diet:—What about my diet? How is that impacting my health and my ability to restore my health?

It's the ill individual who will say: It's a pain in the ass, but I am going to try to eat four or five different types of cannabis plants rather than one. —And one is so much better than none, and one five times-a-day is so much better than one once-a-day. So there is different levels of engagement.

And then the most complex: The title of my paper is 'Physiology to Pathophysiology: the Beginning of Individualized Phytogenetics.' I personally have a family history of diabetes, and an uncle who lost his knee and nearly his life to diabetes; and a history of Alzheimer's; and there is some history of cancer. So you look at these predispositions, you look at your current health, and you produce a plant that matches the pathophysiology, which is the illness you are currently suffering with the most.

—I've got arthritis, or I've got a post traumatic whiplash from a car accident, or a sport accident. Slipped and fell. Now I've got some architectural issues in a joint and that joint is rubbing and is inflamed. So I look to a chart for arthritides, and whether it's an autoimmune disorder or a rheumatoid arthritis or a sclerotic arthritis, post traumatic arthritis. You want something to shut down that inflammation.

Look to 34 million years of evolution! that binds to GPR55 (which could become CB3 as an anti-inflammatory) and you find this raw plant is the way the plant was meant to be used. Compared to the twenty thousands articles about the heated molecule CBD, which really is a synthetic version, that is grossly inferior to the one that occurs in the unheated plant.

And therein lies the silver bullet? The doppelgänger as you sometime call it?

Dr. Wm Courtney: And that's exactly the most important part of the paper I will delivering at ICRS: If you have a specific illness; if you have migraines, If you've got cancer of the breast, if you've got Crohn's disease, if you have psoriasis, there will be a specific ratio of cannabinoids that will be beneficial for that condition.

Because, your health has broken down considerably. You don't have a couple of cells that are struggling: you've got clusters and groups and tissues of cells that are now in a failure mode, and the symptoms have risen to a point of the attention of the organism: It's like: —My fingers are flaring. I can't use them. Can't open the car door: I've got a condition! Well, that condition began a long time ago, at a cellular level; which is where prevention is best applied. Keep the cells happy so that they don't develop a condition that finally gets to your attention.

But once you've got rheumatoid arthritis,

that condition needs a very, very focused and pointed anti-inflammatory. So that's going to throw you down into 25% THC-to-75%CBD, or down to the 5%THC/95% CBD. Your particular plant for that particular condition is at that end of the spectrum. You are going to want a low-THC, high-CBD; you are not necessarily going to want pure CBD, you are going to want a ratio.

The point is: Start out with somewhere between 25 to 5% THC and a comparable amount of CBD. With the series of AC/DC strains, you would grow the 22-1 (which is almost pure CBD) and the 1-30 (which is almost pure THC. You would take 25 grams of one flower and 75 grams of the other flower. You now have a 25/75. And try that for two or three weeks in a divided dose where you're using it three or four times a day in small amounts.

And then go ahead from 25/75 to 20/80; try that for a couple of weeks. And if that is better, go to 15/85 or go down to ten grams of THC to 90 grams of CBD. You're now doing the 10/90 ratio. It's the bio-availability we were talking about: the ability to digest, absorb and move through the liver. Anything that comes in from the intestine gets filtered first and foremost by the liver.

So, the health of your liver: Are you taking other medicines? Do you have a hepatitis: do you have hepatitis A, B, C? Do you have cirrhosis? Any fatty changes? All of those issues will effect how much of what you put in your mouth gets into your blood.

That, is bio-availability. Factors known and unknown.

We will discover more things that will affect the ability to move something that you have eaten into your blood supply. The serum tests that we are developing will help us determine dosage.

There are 100 of us, we all have rheumatoid arthritis; we're all eating 100 grams of a plant that is 10% THC/90% CBD. These hundred people are going to have different serum levels: one person also has a little bit of Crohn's, or has some irritable bowel, or has hypermotility and diarrhea; and someone else has hypomotility and constipation. Each of those individuals will require less or more to get to an optimum serum level.

There will be a bell shaped curve with those 100 people: a majority will need those 100 grams, a few can get away with 50 and a few need 115, and a couple need 200 of this personalized plant.

—And I say 'personalized plant' because how could it be the same for 100 people? It will not be.

The individual phytogenetic is a ratio of those two cannabinoids that personally provide you the best relief.

If you have 20 people with rheumatoid arthritis, some may like 25/75; some may like 20/80; some may like 30/70, some 10/90. Even though they all have rheumatoid arthritis, those different ratios will provide each of them with the best optimal of their conditions.

And the only way we can do that now is start out in the ballpark, and then go up and down and look for that individual's sweet spot.

And when you find it, you'll he able to take that ratio, and go to a series like the AC/DC series. Okay, AC/DC 20/80 and that's available in a Ruderalis; it's available in an Indica, it's available in a Sativa.

—It can be available in four or five Sativa and Indica strains, and those plants will also provide a whole terpene profile. You take the cannabinoid ratio, and once you've identified what is best for you, then you move it into a range of different plants that will provide other anti-inflammatories that come from other aspects of that plant:

Pretty soon, it's an Indica 20/80 that really provides me with the best relief. That's what I call "cloned mono-therapy." Because it's going to be pretty hard to produce an heirloom stability in such a specific plant.

That plant is most likely is going to be provided to you best through a cloned plant. Because it will consistently provide you within a small percentage, that exact ratio that you want with that terpenoid overlay.

Where can folks go to get close?

Dr. Wm Courtney: As soon as the AC/DC series is off of the mother plant and through the cloners, hopefully it will be available at every dispensary. The dispensary in Arcata is a little further down the road growing the mothers up, so they will have clones sooner. But they will be available in Mendocino and Fort Bragg. You will be able to buy a clone to home grow your own Mother for those who can grow. For those who can't grow, I would hope you would be able to go someplace and get a juice. ... [laughs]. .. It might be hard to get a specific phytogenetic juice. If you go to a dispensary outside of the Emerald Triangle and ask: Do you have an AC/DC 20/80? They might look at you like: ---What planet did you drop in from?

Baskin Robbins went from chocolate, vanilla & strawberry, to 128 choices ... What about the shampoo effect? Every now and then, I run across a shampoo where my hair is glorious for a few weeks and then suddenly goes limp, as if it has "overdosed" on the particular natural ingredients or ratios.

Dr. Wm Courtney: Or the season has changed and you are in a drier environment; you're producing less oil and suddenly you don't need a strong oil scrubber in the summer time. As our environment changes, that can change our need for a product. And with cannabis as you age and more medical conditions come up, your pathophysiology will evolve and change and that will effect how effective you are for getting a viable serum level. The plant has not changed, your needs will have changed

Dictators and kings are living into their 80s and holding on to the power it takes years to consolidate: what effect is ever-more longevity going to have on leadership on this planet? Wisdom does not seem to come

with age when power-over vast populations is the stake. — Hence the Arab Spring.

Dr. Wm. Courtney: I raised up the name Monsanto earlier: A lawsuit was filed March 29, 2011 in the Southern District of New York, Federal Court, United States District Court. The plaintiffs include Frey Vineyards, include The Mendocino Organic Network (and it should include every person who can sign their name; this needs to be a class action suit against the degradation and predation of the genome of the planet.)

You do not have the right to destroy the genome of a plant. The plant is only 34 million years old, but it has brought together elements that are billion years old. So Cannabis is not just at 34 million year project; this is like a four billion year project and no "individual" without a conscience has the right to go in and alter, destroy, modify in perpetuity the structure just because they have some rudimentary skill that allows them to claim this their prerogative.

Monsanto is a company that wants to own the genome of everything on the planet, and regulate your use of it. If you want to grow grapes, they can come in, grab that genome, make it sterile and then sell you the start. They can sterilize the entire genome of the planet, own it all and then rent it back to you each and every year.

There is a domination thing going on here that is so destructive. For me, it started out with my appreciation for cannabis and the fear that someone would want to seize control of that genome for their own benefit when their prerogatives are simply self-serving. And then it moved from cannabis to other plants that they have already done this to, to the precedent that is already established. —"We've already done this. This is nothing new. We have legal precedents!"

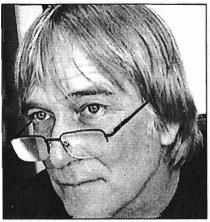
Yes. And that was wrong. And we're here to change that precedent. And to change precedents is a huge thing in the legal system. We're demanding a jury of the world, because this is not a small issue. This is all of life on this planet. And when you create an individual without a conscience and give it a perpetual life

—You say a corporation is as an individual, but it never dies and it was never reared to have any respect for anything other than its own greed. And so it's like this phenomenal structure, where self-aggrandizement is the only value that it will work for or towards. It doesn't really care if it destroys other people, other planets, other systems. It's in its short-sighted course to self-advancement. That's the only principle. And if you get a board

of directors that is just as greedy as the structure:

—I'm 80 or 90 and I'm not going to be around, so I'm just going to get as much as I can now because I'm at the top of the pile. I'm going to worry about my grandkids, and I'm going to make sure they are well taken care of. But that's it. I'm just going to grab it all.

—But! I don't want any liability! I'll put some money on the table, and you can have that if we get forced into a court. But I want protected liability to rape and pillage and plunder, and I don't want to take any responsibility for that.



It doesn't get anymore messed up than that model. We need to deal with that model? And how do you change precedent? With revolution. And that's where we are at. Because it is going to take a mighty shift to stop this process. Which means if a corporation is to have the rights of an individual, it must have the training of a human society in a village, educated as to how you use privileges and prerogatives, use them within a framework of concern and regard?

And Monsanto has none of that. All a corporation does is protect people from the consequences of their own greed.

I truly would like to launch a CB3 Conference held here in Fort Bragg at Cotton Auditorium. We could bring in 100 researchers. It would be the first international CB3 conference. I would like to have Ruth Ross as the keynote lecturer because of her groundbreaking research into these delicate acid molecules. —She might not even know that they are primarily there in the raw plant. Her research is based in the pharmaceutical chemistry industry, and she has redirected that industry to include that carboxyl group in future attempts to synthesize new medications.

There are a lot of other individuals who have been struggling with this receptor for 12-15 years. Ross could help identify the presentation list. Each of those labs has doctoral stu-

dents that are actually doing the work, and a conference is where the pre and post docs who are working on their thesis or their undergraduate degree often come and present the paper or the poster.

The idea that we could have an annual conference on the Mendocino coast that would bring together researchers from Japan and Spain and Israel and all over the world to come in and present their annual findings, it would be tremendous. It would be great if four or five individuals would come forth and help bankroll the initial groundwork. We'll need to book a block of rooms,

and, if we could provide stipends for the graduate students to attend the conference our influence on Western medicine would be felt in a matter of years.

Theoretically, we could put four, five, hundred Mendocino and Humboldt people who would like to attend a conference like this in the back of the auditorium. I would provide a strong Internet course for individuals as to the terminologies, the definitions and subject matter that would be presented. We could actually do a one or two-day conference before the conference where we would go over the general areas. It would be a question & answer period so that people would be prepared to make sense of what's about to come.

I remember the first time I went to one of these conferences. It's a dizzying intensity of information. Intoxicating. And the assumption is, if you are in the audience, this is what you have been focusing your career and future on. People speak in acronyms, and we would develop a glossary of all the acronyms and we would talk about them and talk about all the various drugs that are used to identify receptors in the knock-out mice. (GPR54 knock-out mice do not have the genetic ability to make the molecule; they are used so that you can study the effect with and without GPR and find out what binds there and doesn't bind there, and you compare that to CB1 knock-out mice and CB2 knock-out mice.)

You'd be able to get a look at all of the genetic tools that are used for studying and trying to identify what a receptor does, what acts at it, what modifies it. It's a complex process. But it's like a nice jigsaw puzzle: you get these pieces that are very important and pretty soon you've got a couple in a row and they begin to touch and the picture gets

clearer.

We need some upfront money to set it in play, and then we would sell tickets to five or six hundred people, and if they are paying two to three hundred dollars, which is what it normally costs to go to a conference like this, it would raise a block of money that we could use to expedite the attendance. Research scientists are just about the poorest, just trying to keep funding in the current environment; the Faustian bargains that are hammered out each day to keep a lab open would embarrass Machiavelli himself.

People do occasionally come up and say that they are interested in supporting this work. And there is a really good chance that the start-up money would get it off the ground and then we would sell tickets and would be able to pay back that money so that it is more a short-term speculative float.

I went to a business meeting as to how to keep the Mendocino Coast healthy financially and gave a talk: As we begin to contemplate how we provide 600 milligrams of cannabinoid acids to seven billion people—and the plant becomes a staple for health maintenance and disease prevention and avoidance of pharmaceutical side effects:

Where does Mendocino County move forward in this picture? We're a 10-milligram, guerilla product producer. We'll grow in the bushes and take risks to generate THC doses. But when you move into a new economy where suddenly people are using sixty joints-worth of cannabis everyday, every person—where does all that lead us?

It's time that we developed a raw food cuisine. We've got a raw food institute here in Fort Bragg, why not develop a regional cuisine? A raw food cannabis cuisine that was delicious. There is an art form to learning how to use this plant with a refined palette. And if people from around the world come here to learn to use cannabis as a raw food, and if we have restaurants where you can walk in and have access to humus and sautés and dressings and salads and juices integrating the plant . . . Ruminate the possibilities: It's a vegetable! It should not be a criminal!

I've talked with folks at a local community who think we may be able to grow cannabis in a limited, safely controlled environment where you could be producing a half acre, an acre. Because the amount of raw plant material that would be required—like for

that young girl who is utilizing eight ounces of juice a day. Maybe hers was just a massive therapeutic dose that is needed to stop an incredibly out of control situation; or maybe, that's a dose that it takes to cross a threshold when things begin to happen. That's the kind of clinic research we need...

You are talking about a specific experimental five acres . . .

Dr. Wm Courtney: And the concern I got from the local establishment was that they wanted assurance that If we are producing five acres of fully mature flower, that it is going out as a juice, it is not going over to New Mexico or Colorado; it wasn't being shipped out . . .

You got this feedback from Sheriff Allman?

Dr. Wm Courtney: Well, I don't want to use anybody's name.

But you are trying to enlist permission for a five acre plot for . . . ?

Dr. Wm Courtney: High volume production for it being used for juicing.

If we are going to supply 1000 people with 600 milligrams: 1) it can't cost \$600, so it can't be grown

under \$3000 lights.

2) It doesn't have to be tight, high density buds that are going to compete on a market with people

from all over the state.

But, cannabis as a good, outdoor-grown organic vegetable is a huge next.

And it's a terrifying proposition for the guerilla community . . .

But it is also a terrifying opportunity.

There is every indication Emerald Triangle legacy growers are readying to move into something next...They've established themselves as a region of ocuvre farmers...

Dr. Wm Courtney: And there is always going to be the boutique strain.

Mendocino is global. It's a brand identity known throughout the world. If we drop the ball now we are idiots. The whole world is focused on the names Mendocino and Humboldt. If we move that forward into a cuisine, it just takes it to the next level. We are definitely ready to do that.

And yes, I'm in conversation with the sheriff about doing that 5-acre plot as a work farm where inmates at the Mendocino County jall can learn themselves new, marketable skills.