The Tim Ferriss Show Transcripts
Episode 143: Patrick Arnold
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Tim Ferriss: Greetings, my little Mogwai. This is Tim Ferriss, and I'm going to redo a legal disclaimer for this episode. I don't do many of these, but at the behest of my ever-so-competent legal counsel, allow me to read the following. I am not recommending, endorsing or supporting any of the substances or compounds discussed or described in this interview, particularly, when this applies to illegal, illicit or dangerous compounds or substances. I am interviewing

Patrick, furthermore, as a journalist seeking additional information regarding matters of public interest and concern. You should also notice that we have removed a number of names of different folks to protect the innocent, guilty or otherwise. With all of that said, since I've covered my little white ass, please enjoy.

[Intro]

Hello you freaks out there, and aren't we all freaks at the end of the day? This is Tim Ferriss, and welcome to another episode of The Tim Ferriss Show. If you liked my episode with Dom D'Agostino, the incredible scientist who fasted six, seven days, whatever it was, dead-lifted 500 pounds for ten reps, and continues to do amazing work for the Department of Defense with exogenous ketones, etc., etc., you might love this one.

So here we go. Patrick Arnold is widely considered the father of prohormones. He's also an organic chemist known for introducing androstenedione – remember Mark McGuire – 1 androstenediol, marketed as 1AD, and methylhexanamine, if I'm getting that correct, into the dietary supplement market.

I'm going to mangle quite a few of these types of words. Now you may recognize the name and say, "Why do I know that name, Patrick Arnold?" He also created the designer steroid tetrahydrogestrinone, best known as THG or the Clear.

THG, along with two other anabolic steroids that Patrick manufactured, perhaps the best known of the two being norboletone, not banned at the time of their creation – this is very important – were hard to detect drugs at the heart of the BALCO professional sports doping scandal, which thrust Barry Bonds and

others into the spotlight. I was in the Bay Area when this happened. BALCO distributed these worldwide, world-class athletes in a whole slew of sports, ranging from track and field to professional baseball and football.

More recently, Patrick has been innovating in the legal world of ketone supplementation, and that's actually how he connected with Dom, including breakthroughs in performance in taste with products like KetoForce, like KetoCaNa, Both of those ended up coming up, I believe, in my conversation with Dom because they have some very, very, very interesting applications.

If you'd like to meet Patrick in person, the infamous Patrick Arnold in person, you can find him at the Arnold Classic in Columbus, Ohio from March 3 to 6, 2016. So that's coming up very soon, for those of you who are listening to this when it first comes out, at Booth 328.

I believe that will be the Keto Sports booth at 328. Otherwise you can check out his current concoctions for athletes at ketosports.com, as well as prototypenutrition.com. In this science dense conversation we cover a ton. Most of it's related to better performance through chemistry. We also discuss Patrick's biggest successes and mistakes, his path to science, exogenous ketone supplementation for sports, of course, as well as nonsense in the media about anabolics and performance-enhancing drugs. For example, the Delta II scandal that came out not too long ago, and lots of misinformation related to that.

So I will, with one more caveat, let us get into it. This is a dense conversation, and as always, with my podcast, with my blog posts, I don't try to put out an episode that everyone will love. There's no such thing. I try to put out episodes that a fraction of my listenership, in this case, will love and really get into because there's tons of detail in the weeds.

If this episode isn't for you, that's okay. You can try something else, like Jamie Fox or Josh Waitzkin, the chess prodigy. My goal is, with every say five episodes or so, to hit everybody in my audience. But this is a very cool episode. It's highly specific, and I do hope you enjoy it. So here is Patrick Arnold.

Patrick, welcome to the show.

Patrick Arnold: Thank you very much.

Tim Ferriss: I have been looking forward to this, and hoping that we might cross paths for such a long time. I've had many requests, and when I look back at the supplements, for instance, that have had an impact on me, and I look at the common thread kind of in retrospect, you've had a hand in pretty much all of them. It's an area where I have a very high degree of insecurity. I've never studied say organic chemistry to any extent.

It's kind of like Latin insomuch as I've read a lot of these words, but I'm sure I will mispronounce a lot. Feel free to correct me. I wanted to begin at the beginning, I guess, just to ask you if you could talk about how you developed a passion for chemistry. It's not a hot subject in the same way that say computer science is very in. How did that start?

Patrick Arnold: Sure. I would say that, to tell my story, I'd have to talk about how I gained a passion for weightlifting, bodybuilding, at the same time that I grew a passion for chemistry. I'll start with the weightlifting part because that happened earlier, and that happened when my grandfather had an old set of York weight in his basement, and we brought them all down to our basement.
We ended up buying benches and whatnot from this guy in Walford, Connecticut that had his forgery there, and he made this really cool hardcore stuff and everything. We set up our own little gym. I was around 12, 13 years old. We were one of the first people in our neighborhood to start lifting weights and really got into it and all that. Later on – I always was very science oriented. My father always had encyclopedias, science books, and I used to read about the universe and astronomy and be fascinated by that. Later I got fascinated by nutrition.

Part of that had to do with the fitness stuff I was getting into, all the weightlifting and all that. I got into what do I eat to gain muscle, to be healthy, so I could run farther and all that?

Later on, I remember the first time I ever heard about anabolic steroids was a book that I bought, just one of those standard whatever. I don't know what publisher it was, but one of those standard books about weightlifting and everything. There was this one little page or paragraph that said anabolic steroids. I said, what is this? It said: do not take these, and I got worried. They are bad, and some athletes resort to this, but you have – I'm like, Okay, this means that there's something good about it."Then I got kind of curious, and I'm thinking, well maybe there's a drug aspect to fitness too, not only nutrition and whatnot.

I also wasn't the most perfect youngster either. I would go out with some friends, and we would smoke pot or whatever, and occasionally experiment with other things.
I just became very interested in pharmacology of building muscle, pharmacology of mood enhancements, whether it be nootropics or psychoactives or recreational, whatever. The whole thing fascinated me. I originally wanted to be a pharmacy major. I couldn't get into the pharmacy school, so I got into the chemistry department, which I'm very happy that I did because I think I'm much happier learning how to make stuff than – though you could be a pharmacologist or whatever and work in research – but studying chemistry, and specifically organic chemistry, organic synthesis, you learn how to make stuff.

If I never learned how to do that, I never would have done all the crazy stuff I've done, and we wouldn't be talking right now.

Tim Ferriss: And the performance enhancement side of things, a mutual friend of ours – we have quite a few mutual friends – was telling me that you used to go down, and maybe you could place us here, in terms of where you were at the time, but go down to the library stacks and try to find molecules or patented molecules that you could tweak or look at variations of. Is that true? Or is that an aspect of this same timeframe?

Patrick Arnold: You're confusing two timeframes, but I'll clarify.

Tim Ferriss: I do that a lot.

Patrick Arnold: It started when I got my first job out of undergrad, and I went to work for a chemical company in New Jersey called ISP, formerly GAF. I don't know what it's called now. But I had a boring job. I did organic synthesis. I mostly did polymers. I did some other stuff. My boss was absent most of the time. My job by day consisted of setting up a reaction, and then every half hour or so, injecting a catalyst in there and checking the temperature and whatnot.

There was a chemistry library, a well-stocked chemistry library, on that floor, and I started thinking, I've got a chemistry lab here, and I would like to fool around and make some stuff. I would like to make some bodybuilding stuff. I also was thinking about making other stuff, recreational stuff, which turned out to be a learning experience.

Tim Ferriss: We'll definitely come back to that.

Patrick Arnold: Yeah. What I would do is I started out very naïve. The first thing I wanted to do was make testosterone. I started off really stupid, thinking that I should make it the way it's made from scratch, which is actually from a plant.

[Inaudible]. It's a yam, Dioscorea yam. I was able to get extract or chopped up, and I just made a completely huge mess. It was the stupidest thing to do because later on I realized if you're a chemist, if you're a synthetic chemist, you find the raw material that's commercially available, that's closest to the molecule you're trying to make. It's like if you want to build a car, you don't make your own rubber or make your own steel. You know what I mean?

Tim Ferriss: Right.

Patrick Arnold: You buy whatever things, as premade as possible, and then put it together, and you save yourself a lot of –

Tim Ferriss: You assemble.

Patrick Arnold: You assemble it, yeah. I found out that DHEA was easily available and cheap at the time, so it was actually sold to a lot of age barring clubs and anti-aging people.

I was able to get a good supply of that. From DHEA you can make testosterone, Dianabol. You can make a lot of things from it. I was able to make several steroids from that. There were other classes of steroids I could make too. It took a long time for me to really get my feet wet, but I learned a lot of techniques. I learned how to purify things, more so than if I had ever just done my job that I was supposed to do there because I was learning nothing pretty much.

Tim Ferriss: So you tinkering when left unsupervised?

Patrick Arnold: When left unsupervised. I would come back at night many times and stay late. People must have been thinking, boy, that guy's working hard.

Tim Ferriss: It was. Just not on the things you were assigned, right?

Patrick Arnold: Yeah, yeah. I always wondered if they're talking to my boss, saying, "Your guy's in here all the time." After a while my boss caught on though.

Tim Ferriss: How did you choose the molecules to create? You mentioned boldenone, which I mean the only reason – I associate that with sprint cyclists and I'm not sure if that was in the news in the last few years. But how did you choose which molecules to go after?

Patrick Arnold: First and foremost, it has to do with availability of the raw material. There was a precursor that was commercially available and it wasn't controlled that I could buy, and in one step I could make boldenone from.

I was able to buy androstenedione. It wasn't controlled, and I was able to make testosterone from that. I was able to buy something called epiandrosterone, which I was able to make some DHD derivatives from. I also fooled around with some 19 NOR stuff as well; several things.

Tim Ferriss: In the – I've always called it – and this is again, getting back to this I've only read it and never had to say it – the androstenedione. How do you pronounce that properly?

Patrick Arnold: Well, I like to think I'm the one that pronounces it properly, but I've never – androstenedione, I would say.

Tim Ferriss: Yeah that – correct me if I'm wrong, sort of came to the media limelight with [inaudible]. Is that correct? Am I thinking of the same thing?

Patrick Arnold: Yeah, well yeah.

Then the connection there, which is interesting, is that when I was looking up androstenedione, looking up the best way to make testosterone from androstenedione, I came across a German patent from the former GDR, East Germany. It had to do with the use of androstenedione as an acute performance enhancer, using mostly nasally, but also orally.

They said that it elevated testosterone for 90 minutes or so, and that people would have an acute central nervous system effect or whatnot. God knows why East Germany would publish a patent telling the world how they cheat is beyond me. But I don't really understand. But I took note of that and said, well, I found that interesting.

Then I just sort of forgot about it. Later on, I left that job and I ended up out here in Illinois, and this guy that I was partners with

at the time, his name was Stan Antosh, and he had a company called Osbo out in San Francisco.

He and I were, with this Locke and my current partner, were trying to make some stuff. Trying to make CLA. I came up with a process for that. Anyway, he said to me one day: I want to put together a kitchen sink creatine product that has every best thing in the world. Can you think of any ingredients? I'm like, well, there's something called androstenedione. I mean if DHEA is legal, this stuff should be legal. It's not controlled and its' one step away. It's two hydrogens away. He said, what is it? I told him what it was. He says, how do you know that that's not illegal? And I say it shouldn't be."

I say it should be very widely available in China, too, because it is an intermediate in the manufacture of contraceptives and all sorts of steroid drugs."

Since China, at the time, had a one-child policy, I'm sure contraceptives were a huge market there. So lo and behold, there was a ton of androstenedione at a very cheap price. So he started to bottle it and it took off.

Tim Ferriss: And that, just for people who are listening who might not be familiar with this world, that would be referred to as a prohormone, correct? I mean I've heard you refer to it as the father of prohormones. But these compounds that are one step away, like you said, or two steps away, like two hydrogens away from testosterone, so it's not controlled when you consume it, but it's converted into something, that if you, like testosterone, if you consumed directly or injected directly, would have sort of legal restrictions associated with it.

Patrick Arnold: Well, the whole concept of prohormones was sort of something I came up. I mean it was a term, but to me, actually DHEA was the first pro hormone, but nobody really marketed it as that. They just said DHEA does all this stuff, blah, blah, blah. I knew that it turned into testosterone, but negligibly. When I came up with the androstenedione, the whole marketing scheme with that is that it converts to testosterone. It is a pro hormone or pro steroid. That became a whole genre of supplements.

There were subsequent products. Then I came up with a 4AD, which was androstenediol, and eventually I came up with something called 1AD, which was the first one that actually really worked like a real steroid.

That's when things went crazy. That's when the money really started pouring in. But as far as your analysis of the technology saying that if it is an active hormone, it's illegal, that's not necessarily true because, at least as far as illegal as controlled substance goes, because there's a lot of active steroids that are not controlled substances. Now in 2003 or 2004, I think – or maybe 2002 – people started selling the active versions of these. They started selling, instead of 1AD, which was converted to 1 Testosterone; people started selling 1 Testosterone itself.

I got very upset because I was working with Rick Collins, the attorney. You're probably familiar with Rick.

Tim Ferriss: Yeah, Mm-hmm.

Patrick Arnold: And we actually had a lot of –

Tim Ferriss: Specializes in this type of case, or these types of –

Patrick Arnold: Steroid law, supplement law and all of that. So our whole defense of these products was predicated on the fact that these are not active hormones, and that your body has to convert them, and your body has a finite capacity to convert them, so they have sort of a built-in abuse or proof potential to them. Now when people started selling – Rick and I were actually going to see lobbyists in Congress and whatnot becusae there was rumblings that there were going to be bills, they wanted to get rid of these Andros and all that stuff. People started selling these things, and they wanted in on all this let's keep this stuff legal.

I said guys, we can't – you're going to ruin our whole argument. Then they got angry and said: oh, you just want the market for yourself.

Well, that ended up being – it was a fail. But I tell you, our efforts did keep the prohormones and those other active ones on the market for maybe two, three, four years longer than they may not have been if we'd done nothing. So actually going out there and making some noise helps.

Tim Ferriss: In the case of say 1AD, so 1AD is one of the supplements that I used after seeing a friend of mine seemingly – of course this isn't literally true – but double in size. He was a jujitsu competitor, and I was just like – and everybody just was like, what are you using? Because we don't believe it's broccoli. And it ended up being 1AD.

Can you describe for folks the advantages of 1AD? Or I guess before that, it was 4AD – If I'm mixing things up, correct me – compared to androstenedione?

I want people who are saying unfamiliar with some of the basic chemistry here to gain just the basic vocab. Is there an aromatase component? I'd love for you just to describe what the advantages are, compared to plain Jane [inaudible]–

[Crosstalk]

Patrick Arnold: Well, I can make a progression from androstenedione, which is like the Model T, to 4AD, which was better, and then 1AD, which was quite different. Anyway androstenedione circulates in your blood with testosterone. It's constantly inter-converting. Its concentration in your blood is significant.

It does aromatize easily, which means that it'll turn into estrone, which can then turn into estradiol. At the dosages people were taking, they would get a disproportionate increase in estrogen compared to testosterone, and that would lead to estrogenic problems, such as gynecomastia and whatnot.

Tim Ferriss: Just for people, who don't know, gynecomastia is, it's a terrible nickname, but the nickname is bitch tits because you develop fatty deposits in sort of your breast tissue or pectoralis tissue, which is why a lot of bodybuilders have that type of surgery. I just want to provide a little bit of context for people. Please continue.

Patrick Arnold: Okay, then I came up with 4 androstene diol, which I knew about because back when I would make testosterone in New Jersey, I always had this 4AD contaminants, and they were basically over-reduced. You don't need to know. That's a synthetic term. Over-reduced androstenedione.

I thought to myself, let me look at this stuff, and I went to the library and I saw that, yeah, it's natural metabolite and everything. Then I found some articles to say that it actually converts to testosterone a lot better than androstenedione. Not only that, but it can't directly aromatize. It was easy for us to make. I mean it was a very simple reaction. Just get the androstenedione, and just use this free agent called sodium borohydride methanol, and dilute, wash, the simplest kind of reaction. So that had a great advantage, and that superseded the adrostenedione. Still people would not get – like what happened to your jujitsu friend. You said it was jujitsu?

Tim Ferriss: Yeah, it was jujitsu.

Patrick Arnold: Jujitsu? Okay. So when I came up with 1AD, and that was kind of a feat at the time. I probably would be able to figure it out a lot quicker now. It's been 15 years or so. I took a long time trying to figure out how to make this stuff. Because I looked it up. I went to the library, and I was looking up what other natural metabolites of androgens are there in the body that could be very anabolic? I found this one German book on steroids, and I saw this one metabolite that had the double bond. I don't know if you know enough about organic chemistry that there's single bonds, there's double bonds?

Tim Ferriss: Yeah.

Patrick Arnold: I think that's –

Tim Ferriss: That's about as far as I go.

Patrick Arnold: Alright. A steroid molecule has four rings. The first ring in testosterone, androstenedione, in 4AD, it's in the lower part, which is a Carbon 4 to Carbon 5.

Which this 1 stuff is Carbon 1 to Carbon 2. So it was in a weird position. But that had tremendous ramifications, as far as power availability, or more so conversion, and receptor affinity. It also would not aromatize. I looked it up, and I'm like, man, this stuff looks like it's going to be strong. So I made some of the dione, and for some reason, the compound intrinsically burns, like putting wasabi on your tongue.

Tim Ferriss: And was this – you were ingesting it orally? How were you taking it?

Patrick Arnold: Orally.

Tim Ferriss: Orally? Yeah.

Patrick Arnold: Yeah. The thing is it would also burn as it went through your system and everything.
As pure as you could get it, it wouldn't matter. It was not an impurity. It was a property of the compound itself. So I said man, I can't be selling this stuff. The few people that tried it just blew up, but they were like, man, I don't know. My gut. I'm like, alright, I'm not going to put this on the market. So I quickly came up with a diol version, which was a little more complicated than I thought,

when I found some catalyst that allowed it to do what it had to do. That didn't have that problem. Then we came out with that, and it quickly became extremely popular. I remember going to one Arnold – you know the Arnold class?

Tim Ferriss: Yeah, the Arnold class. It's the Coachella of muscle heads. I mean it's gigantic. I mean what is it? It must be like 100,000 plus people easily, in Columbus. Right?

I mean it's just gigantic. It's an entire city of people. It's like the Burning Man for people in tight pants with big muscles.

Patrick Arnold: What is that? A motorcycle thing up in North Dakota?

Tim Ferriss: Oh yeah. I mean it's that type of sort of draw.

Patrick Arnold: But it's more than that now. Now it has like 30, 35 different sports.

Tim Ferriss: It's gigantic, yeah.

Patrick Arnold: Yeah, so it's just not even just bodybuilding. But back then it was mostly bodybuilding. I don't know if you've heard of a distribution company called Europa?

Tim Ferriss: I have, yeah, definitely.

Patrick Arnold: Well back then all the Europa guys were 350 pounds and monsters. I remember them coming around and they'd say, Patrick, what's up with that 1AD? I love it. I'm taking 20 a day. I'm like, 20 a day? Are you insane? You're only supposed to take three to six a day. These guys, they do what they want to.

They weigh 400 pounds.

Tim Ferriss: So just to touch on that for a second. I mean there's so many different questions I want to ask here. I guess where I'd love to steer this for a second is, when you're on the cutting edge, sometimes you get cut, right? So if we rewind – and I can think of a lot of examples as a consumer, not a creator of these things, but as a consumer, where I'm like, oops, took much yohimbine hydrochloride and took it too close to ephedrine, and now I really feel like I'm going to die of heat stroke.

Really, in retrospect for me, I think I was really haphazard and just felt like I was immortal, which is not the case. Let's rewind back to the – you mentioned the recreational drugs. I don't know if this was

in terms of placing it in time when you were in college or otherwise. Did you have – you said there was a learning experience there. Do you want to elaborate on that?

Patrick Arnold: Yeah, that would be back in New Jersey. At the time – I guess just to kind of preface it, actually the whole thing kind of started in high school, in that I was on the wrestling team, and wrestling practice is really hard. I looked in my mother's medicine cabinet, and I saw there was an old prescription for Percoden. It said for pain. I didn't even know what it was. And I'd say, I've got a lot of pain during my wrestling practice, so I'm going to take one of these before my wrestling practice. And I did. And I had the best wrestling practice ever. People were bending my arm and my neck and all kinds of positions, and I'm just staring ahead. I don't care.

I kind of grew an affinity for that sort of drug or whatnot. But I never did anything about it or whatnot.

But then when I moved to New Jersey, and I had all that free time, I thought to myself, wouldn't it be nice if I could synthesize something like a Percoden or something along those lines. So I looked into all the different derivatives that exist. I looked into Demerol. The morphine derivatives are kind of out of the question because they all start with a morphine type substructure, which is all controlled. I found that methadone was something that all the raw materials were not controlled, were cheap and available. It was a three-step synthesis.

It wasn't that easy, but I was able to figure out how to do it. Now I didn't know what I was getting into.

Tim Ferriss: Right.

Patrick Arnold: I'd made my first tiny amount.

I took 40 milligrams. Because I looked up – it said 10 milligrams is a regular dose, and I said, a regular dose is nothing. I'll take four times that. I took it, and then at work, I waited out an analytical scale, and then I walked to the lunchroom, and I was feeling kind of giddy. I ate my lunch. On the way back from the lunchroom, I started spinning really bad, and I just made it to the nurse's office. I just started throwing up. My face was itching, my nose was itching. I just lay there. Every time I would move, I would throw up.

I lay there for an hour or two. I made it up to my lab. I continued throwing up the whole afternoon, throwing up. Everyone laughed. I made it to my car, throwing up all the way to my car. Drove home 10 miles, pulling over every mile or so, throwing up, throwing up, throwing up.

I didn't get back to work for like three days. I was just throwing up. I said I'm never going to touch that stuff again. This stuff is horrible. Then I had a skiing injury a couple months later. I was prescribed pain killers or whatnot. And I thought to myself, well, I got that methadone. Maybe I'll try it again. I'll be more careful with it though. Maybe I'll take it intramuscularly. That way I don't have to wait and see. I'll just start with a little amount. I won't have to wait an hour to see whether it's going to hit me or not. So I took it, and I was like, you know, this is pretty good.

It's pretty good. Then I started to – and it would last sometimes 36 hours at first.

Tim Ferriss: That's a long time.

Patrick Arnold: Yeah, it is a very long half-life.

But time went by, and I guess it was about a year that I was taking it. It took months before I realized I had an addiction. I realized, because one time I just sort of stopped, and I was just like, oh my God, I feel terrible. What is wrong with me? Geez, I feel terrible. I wasn't even thinking. I went to work and I'm like, I'm just going to take a little methadone, and all of a sudden, wow, I'd feel good. I'm like, oh no. Oh no, what an idiot. Why did I not realize that this was? And then from there, I was like, well, you're going to have to deal with this, man.

Tim Ferriss: How did you get yourself off of it?

Patrick Arnold: I was sort of thinking, and it was really stupid thinking, there was a book back then. I think that guy Andrew Weiler and someone else wrote it.
It was called *From Chocolate to Morphine*. I don't know if you remember it. But it was a very candid book about drugs. An honest book saying which ones are harmful, how they're harmful, how they're not harmful. In there they said opiates are very addictive. They can kill you with an overdose very easily. But people can take them controlled for decades and not suffer serious health consequences, other than maybe being fatigued or whatnot.

I said, well, you know, Patrick. You could just hang on until maybe medical science will find some way for you to magically get off this stuff without discomfort or whatnot. What ended up happening is they ended up finding out because I had a big mouth and I was very reckless. They ended up finding out what I was doing at work, and they drug tested me, and they laid me off. So I was stuck with nothing.

By that time my tolerance had grown considerably, and I was taking a lot. It was a horrible, horrible experience. I didn't know what to do. I went to methadone clinics, where the heroin addicts go, and they just looked at me and said, "Get the hell out of here. You don't belong here." I tried to explain my story, but it didn't fit their paradigm. Eventually I went to my doctor. He took one look at me and he said, you need to go. They made some calls. He said, you need to drive 75 miles south to Summit, New Jersey. They've got a place for you down there, and they'll take care of you.

I drove, and I got there, and they didn't believe me either. Because who comes in saying, well, I'm a chemist. I made my own methadone and now I ran out. You know? You don't hear that story.

Tim Ferriss: That's not the usual story.

Patrick Arnold: It sounds like someone that's coming in for free drugs or something. But I was just like, please, you've got to help me.

They did their best to detox me. I spent the first three or four days on the couch shivering with a blanket over my head. It's even hard for mem to remember. It's just the worst thing in the world. And it went on and on and on. I didn't feel normal again for two or three months. That taught me to respect drugs, especially drugs of addiction. And don't think that you're immune or somehow you're unique and it won't bite you, especially a serious one like that.

Tim Ferriss: Yeah, yeah, opiates scare the hell out of me. It's part of the reason that I've always tried to – I shouldn't say always – I mean back when I was in my younger even dumber years, not always the case.

But I try to stay away from anything really fast acting, in terms of no intravenous, etc. I was very fortunate, and I was really happy in a way, when I had my first reconstructive surgery, they gave me Vicodin and all sorts of different opiates, and they made me viciously sick. I couldn't take them. They made me extremely nauseous, and I was really grateful.

Patrick Arnold: You know, it's funny, Tim, because I've had some situations where I've had to be prescribed opiates recently, and also had to have them in hospital itself, intravenously and whatnot. And they don't make me feel good like they did back then. I mean if I'm in a lot of pain, yes, they will numb the pain. But they just make me feel kind of yucky and moody and nauseous.

I lost the affinity for them. There's no recreational value with them anymore, thank God.

Tim Ferriss: Yeah. I remember, so the follow-up question I wanted to ask was what other drugs that athletes take you think have a high abuse potential, or are dangerous? The example that comes to mind, so when I was in – I must have been in college, because otherwise I wouldn't have been able to afford it – had to have been working, was a newsletter – I can't remember the name of it – but by Dan Duchene.

Patrick Arnold: Oh, [inaudible]?

Tim Ferriss: That was probably it. I remember when he started talking about DNP. Am I getting that right?

Patrick Arnold: Yeah.

Tim Ferriss: And the stories. I mean they were told to be entertaining, and I was like, Jesus Christ. It just seems like rolling the dice and waiting for the reaper, like snake eyes to come and take you out.

Because it seemed so, so dangerous. Are there any particular drugs or classes of drugs that come to mind that you think are dangerous or have a high abuse potential, that athletes use?

Patrick Arnold: Well, DNP is probably the most dangerous one. I do not think it has a high abuse potential because it doesn't make you feel good. There's no reinforcing effect of it. But you mentioned Dan Duchene. He's actually the guy that sort of propelled me into this industry, and he was my mentor sort of. I knew him quite well, and discussed DNP with him. I knew his fiancée also. She used to call me all the time. It was a very strange situation. But she had told me how – well, Dan's gone and everything.

But Dan was reckless and didn't always have his – I have a lot of good things to say about Dan, but I've got to be honest. Dan was reckless, and he used a lot of clients – his clients were almost all

women – as guinea pigs, and did some things that could kill them. He had this girl taking DNP and insulin at the same time. She said that she almost died. Now coincidentally, later on, Dan convinced her to go get calf implants in Mexico, and ended up becoming infected. She ended up getting her legs amputated.

Tim Ferriss: Jesus.

Patrick Arnold: She was a very depressed, almost suicidal woman to begin with. I remember when that happened, I was just like this is just – well, we're going off on a tangent.

Tim Ferriss: No, but it's dark. I mean Dan –

Patrick Arnold: It's dark. Dan was – yeah, Dan –

Tim Ferriss: You could tell, I mean just in the writing, you could tell he was very conflicted. He was very smart, but very conflicted.

Patrick Arnold: He could be a very, very nice person, but he could be a very selfish person, and heh could just not care about people sometimes. Although I think the way he was towards women sometimes, I wouldn't call him not physically sadictive, but psychotically sadictive, sadistic.

Tim Ferriss: Aside from the say methadone, and this is related to the other question in terms of what is dangerous or potentially dangerous, let me put it that way, is there anything that you avoid testing yourself, for any particular reason? Or using for extended periods of time?

Patrick Arnold: Bodybuilding type stuff? Well, insulin, I'm not sure about.

Because I have no evidence that taking insulin in a fashion where your blood sugar stays under control, is particularly dangerous. A lot of people say that taking exogenous insulin will lead to insulin insensitivity. But I don't think that insulin itself leads to that. I'm not so sure, so I'm not convinced of that argument. Certainly insulin, if taken without the right amount of food or at the wrong dosage, could lead to hypoglycemia, and if not addressed appropriately, could lead to coma and possibly death. Insulin is one of these things that I don't think, if used judiciously, it's not necessarily going to hurt you.

Now it could lead to, probably would lead to adipose or visceral fat deficits.

Tim Ferriss: Fat? Mm-hmm.

Patrick Arnold: Specifically, visceral fat, which is the fat between your organs, which is the fat that's associated with metabolic syndrome, you know, hypertension, Type 2 diabetes.

Tim Ferriss: Things you generally don't want?

Patrick Arnold: Atherosclerosis, yeah, exactly. But in the context of bodybuilding and a diet that's of a certain type, I don't know if that's necessarily going to happen. But I'm sure if you just eat crap and take a lot of insulin, that will happen.

Tim Ferriss: Yeah. Well, if we took a slightly different tack on it, what are some of the biggest wastes of money that, if you look at just the world of competitive athletes and trainers and so on?

Patrick Arnold: I think the biggest waste of money is this IGF LR3.

Tim Ferriss: Mm-hmm. Can you explain what that is?

Patrick Arnold: Well, IGF –

Tim Ferriss: It's [inaudible] growth factor, but LR3, I've actually never heard of. I've never heard those three letters.

Patrick Arnold: Okay. Well, I'll make it brief. IGF1 is the most – it's a big anabolic hormone in your body. When you take growth hormone, pretty much all the anabolic activity that's growth hormone manifests itself through is IGF1, that's made in the liver. You take growth hormone, there's growth hormone receptors in the liver. They get turned on. Your liver pumps out IGF1. IGF1 goes out. That's what makes your bones grow, your ligaments grow and whatnot. If you're young enough, maybe your muscles too. Now back in the '90s, there was no IGF1, regular IGF1 available.

What was available was this derivative, or this analog of IGF1 that had an amino acid taken off to allow it to not bind to what are known as IGF1 binding proteins. The reason why they did that was because it was meant for petri dish, in vitro studies, and they wanted the IGF1 to be free to do exactly what it had to do, and not worry about binding to stuff, and then it would throw the experiment off or whatever. So this stuff was never meant for humans. But it was available, so people were like, "Oh, it's the best

IGF1 because it doesn't bind to binding proteins," and people were taking it.

The whole thing is the fact that it doesn't bind to these binding proteins, means that when you shoot it in your body, your body breaks it down almost immediately because the way your body uses IGF1, it actually has to bind to something called IGF1 binding protein 3.

Which titrates it, extends its half-life, delivers it to the tissues at the right time and whatnot. So people are still stuck under this illusion that this in vitro version of IGF1, which is cheap, still works. By now, people are not really talking about it because enough people have tried it and seeing it doesn't do anything. But it's still in people's arsenal for some reason.

Tim Ferriss: The IGF LR3?

Patrick Arnold: IGF – yeah, LR3. Yup.

Tim Ferriss: What, if you look at the various compounds that you've either created or resurrected, which are you proudest of?

Just from a sort of creativity, problem-solving standpoint, what fills you with the most pride?

Patrick Arnold: I think something I made called 6 Oxyl.

Tim Ferriss: You know, I was going to bring up 6 Oxyl, because that was another one on my list that I've encountered over the years. So please explain 6 Oxyl to folks.

Patrick Arnold: There's no other compound that my company spent as much money on to show efficacy, to show safety, and also to show that it had no anabolic activity. It was purely an aromatase inhibitor, and aromatase inhibitor being a compound which prevents testosterone or certain endogenous androgens from converting to estrogens.

That's all it did. Trying to learn how to make it was quite the experience because it's a very violent reaction. You kind of keep it really cold, and you've got to learn to add one thing to the other.

Tim Ferriss: Violent meaning it could explode in your face? Or how violent?

Patrick Arnold: Well, not actually fire violent, but actually go out of control and boil and just spray solvent and reagent all over the place. I mean it

could – it's called Nexel Therm. So I had to do this in my lab. Then we had to scale up to production level. We got it down to where we were able to make reproducible batches, great purity. I remember that was the first aromatase inhibitor product on the market that actually worked.

I mean there was chrysin before. Actually, chrysin was something that I originally came up with and offered to Bill Phillips. I actually worked at EAS for two weeks. It didn't work out very well.

Tim Ferriss: Your employment record kind of sounds like mine.

Patrick Arnold: You know, I went from place to place until I found my little home in Illinois, and I've been here since '96. I have a great business partner. We are very synergistic. I'm the guy in the lab, and he's the guy that knows business, and he's the guy that puts together the huge reactors and all the [inaudible] stuff. But I digress. 6 Oxyl, put it on the market and everything.

We paid Thomas Inkledon, who, I forgot where he was.

Tim Ferriss: Arizona maybe?

Patrick Arnold: Yeah, yeah, Arizona, yeah. He did a study, and I remember I went to a show in New Orleans, and I was sent the results. I was like, wow, this stuff works. I was showing everyone: look, it works, it works. It was really great results. That made me very happy. We had results presented at a poster presentation and whatnot. I was able to tell people about it and do an ad on it. It became a very good product. The thing about it is I knew that the prohormones, the 1AD, 4AD and all that, that they were going to be gone. They were –

Tim Ferriss: It was just a matter of time?

Patrick Arnold: Yeah. The whole industry had become polluted.

People were selling methyl 1 testosterone. People were selling synthetic liver toxic versions. In 2005 they all went off the market. But this was a product which was not an anogenic anabolic steroid. It basically reduced your estrogen, which then prompted your pituitary to make LH, which then caused your testicles to –

Tim Ferriss: Glutenizing hormone, yeah.

Patrick Arnold: Glutenizing hormone, yeah. Then would cause an up-regulation of your testosterone production, a natural testosterone production. So your testicles would not shrink. They'd actually probably grow a little and whatnot. The product became quite popular. I remember at the time, my brother, who had been an investor in our business, an unhappy investor after a while because things didn't move fast enough for him, he got out.

Then he met some people, and he actually started the [inaudible] company.

Tim Ferriss: The supplement company?

Patrick Arnold: Yeah. So he was the CEO of [inaudible]. And one of their biggest products had 6 Oxyl in it. I remember actually – I hope I'm not breaking any HIPAA laws here, but I saw [inaudible] bloodwork on the 6 Oxyl, and he got a very good effect from it. So he was a big believer in it. His company didn't last too long. There was a lot of – I don't know – infighting and whatnot. It was a great product. In 2009, a pitcher named [inaudible] had a positive for androstenedione, and it was blamed on the 6 Oxyl.

I had read I t, and people were calling me, and I was just pissed off. I'm like, don't blame it on that. That's stupid. There were all kinds of theories I had that it's possible that the 6 Oxyl itself could be used as – because androstenedione can metabolize to 6 Oxyl or whatnot. Or he could have been taking something else or whatnot. I say I know my product. I know it's not contaminated with androstenedione.

We certainly didn't spike it. I remember talking to my attorneys, and they're like, Patrick, you know, they're taking this stuff very seriously. You're not supposed to tell anyone this, but there's a hearing about this, and they had some big expert saying that he believes that androstenedione was deliberately put in the product. I'm like, what?

But yeah, he's talking to important people and like, so you guys should be ready for anything. I'm like, this is BS. Then a couple days later, I'm getting ready for the gym, I get a call on my phone. It's like 5:15 a.m. Is this Patrick? Yeah, I'm such and such from the Drug Enforcement Agency. We need to be let into your plant. I thought it was one of my friends screwing with me. I said, fuck you. I can't swear, but –

Tim Ferriss: You can swear on this show.

Patrick Arnold: Alright, alright. I hung up, and then I was like – and then it rang again. I'm like, hello? It's a raging snowstorm out, and at the time, I didn't have my license and everything. I'm just like, oh, no. I'm thinking, what could it be? I thought to myself, it's not the 6 Oxyl because there's nothing wrong with the 6 Oxyl. So I went there thinking, what do they think I'm doing?

I was just so confused. So my partner had to bring me up, go through the raging snowstorm. We get there, and lo and behold, they're there for the 6 Oxyl, and they have a search warrant, and they believe that we are spiking it or something. I just remember getting very angry and frustrated. That whole situation turned into a huge nightmare because they were determined to not let it go. They did not understand the technology at all. They did find a trace of the stuff in there.

Tim Ferriss: Androstenedione?

Patrick Arnold: Yes. It was below the detectability of the instrumentation that we used for quality control. So they were never able to prove that we knew it was in there. But I mean it's in the parts per million range, and it's physiologically insignificant. Yet they were determined to somehow make me pay.

My attorneys, Rick and at the time, Mike Demaggio, they went up there and gave a presentation that I helped them with, that totally – there were like 15 people there from the DEA, FDA, whatnot, and they completely knocked them down. I remember the investigator – he said the investigator slammed his fist on the table and ran out of the room, they were so pissed off. Not only that, but they came to town and they visited all my workers, and then they dragged them to New Hampshire for Grand Jury hearings. They read my secretary her Miranda rights on the stand because he thought she was lying.

It was insane. But after five years, no charges, but the damage was done. It took away our biggest moneymaker, and it was a big blow.

Tim Ferriss: It sounds like an exhausting five years.

Patrick Arnold: You know, the thing about the government is that they can accuse you of something, and ruin your life, and you could be completely innocent, and you do not get compensated. I'm not saying my life was completely ruined, but I'm saying that it was significantly

downgraded. I don't want to go into detail. But a lot of – yeah, it was not good.

Tim Ferriss: What was your first contact with Victor Conti? How did you come in contact with Victor?

Patrick Arnold: Well, I used to argue with him all the time on the internet.

Tim Ferriss: And for people who don't recognize the name, could you provide some color? Not color, but who is Victor Conti, or who was he at the time?

Patrick Arnold: Well, he has this little slimy used car salesman mustache – I don't know. Oh, you don't mean describe him physically?

Tim Ferriss: No, no, no. But this is – you know, we can back into that though. So you used to argue with him. What did you guys argue about? Roughly what time, what year was this?

Patrick Arnold: This would have been around '99 to 2000. There was a – there was something called – what did they call them?

Tim Ferriss: Usenet, the bulletin boards and so on?

Patrick Arnold: Yeah. They were very cumbersome, but that's how people would chat back then in groups. There was one called Miscellaneous Fitness Weights, and Victor was on there, a guy named Lyle McDonald from Schneller.

Tim Ferriss: Lyle McDonald of the ketogenic diet?

Patrick Arnold: Yup, yup. Many other people.

Will Brank, you name it. Anyone back in the time. And Dan, of course, was there too. Victor came on and would push his ZMA all the time.

Tim Ferriss: Yeah, that's zinc magnesium aspartate? I don't remember.

Patrick Arnold: Yes. Yup, yup. Which I still take. I think it's a decent product, only because I think that a lot of people are deficient in zinc and magnesium. I think it's as good as any. So he would talk about this product and the studies he did, which were sort of structured to give the results that he wanted, I guess. It was sort of hard to believe and whatnot. People like Lyle, who tends to be pretty

negative, if he sees anything that he thinks is BS, he's going to lay into you.

He really went and laid into Victor, and I kind of laid into Victor a little bit too, but not so much because I would read it and think, well, you know, at least he did a study. Let's see if there could be something here. Don't just assume that all of it was fake or whatnot. Give the guy the benefit of the doubt or whatnot. So he saw me as someone that was not necessarily an ally, but at least had a degree of objectivity.

Tim Ferriss: A semi-neutral party.

Patrick Arnold: Yeah. And he also used to make fun of my prohormones. Oh, your pro hormones don't do anything. They suck. They suck. Then one day I get a private message from him saying, hey, tell me about your prohormones. Do they beat drug tests? And I'm like, well, no. But I know something that does.

If you want to go down that path, I'll tell you how – what I sold him at the time was this stuff called norbolethone. That's an anabolic steroid that was never marketed or, if it was, it was marketed very briefly. But it's mentioned in a lot of the original literature, for instance there's certain famous books, one by a guy named Charles Kochaki, and another by Julius Vida, who wrote sort of research compilation books on anabolic steroids. And they talk about all the ones that are made and what their properties are, toxicity-wise, anabolic energetic ratio, potency. And norbolethone always was a standout. It's a very odd chemical.
But I always knew that it was closely related to a very popular or very widely available progestin used in birth control pills. And that progestin is known as levonorgestrel. It's found in something called Norplant. It's also found in a wide variety of well-known birth control pills. So I knew that I could make this norbolethone from levonorgestrel by a simple selective hydrogenation, which is simply adding hydrogen molecules to one part of the molecule, which is done with catalysts and hydrogen gas, whatnot. I always wanted to do that.

At one time our company had a partnership with Metrex, and partly because Scott Connelly and his deceased, God bless his soul, partner – he was like his Smithers. I don't know if you remember –

Tim Ferriss: The Simpsons?

Patrick Arnold: Yeah. Billy was like Connelly's Smithers. I loved Billy. Billy was a great guy. He put up with a lot of crap. They really liked me, and they wanted to pick my brain. I think that was one of the reasons why they partnered up with me. We would have our meetings, and then they would say, hey, Patrick, you, me, Billy, let's go into the office. And then it was like, alright, what can you make? What can you do? It's funny. But I was like, you know something? There's this stuff called norbolethone I've always wanted to make.

I just needed some raw material, and I know it can be gotten from China. They're like, yeah, we work with TCI, one of the biggest distributors of chemicals out of China. We can get you whatever you want. I said well; get me some of this levonorgestrel. I gave them the CAS number, which is a number that is associated with chemicals, just to make sure that you don't screw up.

Tim Ferriss: Yeah, important to get that right.

Patrick Arnold: Yeah, it is. You get the wrong thing, and you die. He said, yeah, I'll get you some levonorgestrel. I'm thinking maybe he'll get me a gram or something. So I get 200 grams shipped to my lab. And I'm like, oh my God. So I'm just thinking to myself, wow, I could probably do a lot of things with this. I thought to myself, I could probably get into a lot of trouble too.

Tim Ferriss: If you had to buy that yourself –

Patrick Arnold: Oh my God. You know, if you were to buy a gram or so through a research chemical company, it would be like $300.00.

Tim Ferriss: Wow, okay. Yeah.

Patrick Arnold: Yeah, you just don't –

Tim Ferriss: That's a serious payload right there.

Patrick Arnold: And it's for free. Just said, hey, here you go. Make some. So I made some. I gave it to Scott and Billy, and they loved it. I had a friend over in Greece who's interested in things like this. Gave some to him. Several other people. Then I had already –then a spring cyclist, actually several, many Grade B athletes used to contact me back then, and I shook them up. I have too many stories to tell you, really screwed up stories.

We could just go on forever. But eventually, there was this [inaudible] who came into the picture later, who was a sprint

cyclist girl, and she took a lot of it and everything. She was not very careful what she did. But this was all before I even met Victor. So I met Victor. He emailed me saying, hey, do your prohormones beat the drug test? And I say no, they don't, but I have this stuff, norbolethone. So he said, can you send me some? I sent it to him. I didn't really know who – I knew who Victor was, Mr. ZMA guy, Mr. blah, blah, blah.

But I didn't know he was connected with a lot of the high profile athletes like he was. So he comes back and he says that [inaudible] loves the stuff.

So he was one of the guinea pigs. Victor says he loves it too and whatnot. And they passed it through their inside guy at the UCA lab, who I found out his name was Victor Yurelitz. It's very funny, the whole BALCO story, that people don't know, is how many people worked both sides and just got away with – were never indicted or chastised in the media or whatnot – that facilitated this whole thing.

Now Victor had this guy, Victor Yurelitz, that worked in Don Catlin's lab. And he would send urine to him, and he would put it through the rigmarole and it would come out clear. So that's how the Clear came about because Victor Yurelitz would say your urine is clear.

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Tim Ferriss: So the Clear is the norbolethone?

Patrick Arnold: The first Clear. There are actually –

Tim Ferriss: The first Clear?

Patrick Arnold: – the first Clear was norbolethone. Then back to [inaudible], like a man, it was a wonderful woman. She looks like a woman now, by the way. She's not competing anymore. And it's amazing sometimes how women can become devirilized and then stop, and for the most part, revert, though the voice sometimes retains some of the – because larynx doesn't totally shrink.

Tim Ferriss: Yeah, and I think, just to pause for a second, so for those people who are wondering what androgenic versus anabolic means, do you want to just quickly define the difference? Because people think of steroids, but then you also hear like AAS.

So when you're looking at the profile of these things, just since we brought up the voice and the vocal cords and stuff, can you distinguish between anabolic and androgenic?

Patrick Arnold: Well, anabolic precisely means growth of muscle tissue. That is the goal, when people were developing anabolic steroids, was to develop a compound which only grew lean muscle mass, muscle primarily. Now testosterone also brings with it secondary sexual characteristics, such as growth of pubic hair, growth of the prostate, seminal vesicles, and beyond that, you have androgenic alopecia, which is male pattern baldness. You have growth of the larynx, acne, body hair.

These would be – anything that's outside of the realm of muscle building, and that's something that obviously a woman would not want to have happen to them, that's androgenic.

Tim Ferriss: Got it. So that's why it's important for people – people look at the relative sort of anabolic strength versus androgenic effects when looking at which of these drugs to use potentially?

Patrick Arnold: Yes, they do. But people also make a fatal mistake in thinking that just because a drug has a good anabolic-androgenic ratio means that they can take that drug at any dose, and it won't be androgenic. The thing is that these drugs that are low androgenic, they are low androgenic at a minimally anabolic dose basically.

So there's a selectivity there that's dose dependent. So if you take 5 or 10 times that dose, you're going to get the full androgenic activity pretty much.

Tim Ferriss: I see. So if you're popping oxandrolone like Pez or whatever, you're still going to end up with a good amount of androgenisy or whatever.

Patrick Arnold: So when that girl comes to you: I don't understand. They told me it was Anavar.

Tim Ferriss: Right. That's because you're taking mega-doses. Got it. I took you off track a little bit though. You were talking about norbolethone.

Patrick Arnold: She was so obviously on something, and she just became a target. Don Catlin's lab was out to find out what the hell she was on. So they were examining –

Tim Ferriss: Just for context for folks, who's Don Catlin?

Patrick Arnold: Don Catlin is retired right now. But he was the head of the largest drug testing laboratory for the Olympics, in Olympic drug testing, in the United States back in the late '90s, early 2000s and whatnot.

So he had his UCLA laboratory, and they made a project out of finding out what [inaudible] was taking. So they determined, by looking at her urine, that she was taking norbolethone. I forgot how they – they may have actually looked at metabolites and then made some, and matched it up. But the funny thing is that that guy, Victor Yurelitz, who I mentioned before, had told Victor that way back when they conceived the anabolic testing protocol, he wanted to include norbolethone in the list of drugs to be test, but Don Catlin and these other people said no, no, let's not bother with that.

That stuff's not – no one can get that. It's not commercially available. So Don kind of was proved wrong on that. But anyway, so they found out that she was taking it. The thing is, is that I was told – actually I got my timeline a little wrong. But even before that, Victor Yurelitz had told Victor Conti that they're on to norbolethone, and everyone has to stop taking it now.

And I told [inaudible] don't take norbolethone anymore. Do not. Do not take it anymore. I got some new stuff. It's called TH – well, I called it trend stuff. But it became known as THG or the Clear, the [inaudible] whatnot. But she really liked the norbolethone, so she kept taking it, so that she got caught.

Then that really screwed things up. Then the BALCO thing came down as a result of an investigation that an IRS agent was doing. But that's another story.

Tim Ferriss: Well I just, for just personal context, the reason that, when BALCO just exploded in the media, I followed it so closely was I moved to the Bay Area in '99, and I lived in Luden Mountain originally, but also San Jose, and traveled to San Francisco. And I guess BALCO was what? In Birlingame? And it's like Bay Area Lab Cooperative? Is that what it stood for?

Patrick Arnold: Yeah.

Tim Ferriss: But I remember seeing the sign, and so it kind of got incepted. And it's like, oh, like the red door knob in the – what the hell was it? Not Sixth Sense, the one where the main character ends up being dead the entire time. I'm completely blanking on the movie.

The point being I followed it really closely, and also at the time, was involved with sports nutrition and met athletes who had some ties to BALCO, but it didn't mean anything to me at the time. And when we talk about say Catlin and the cat and mouse game of drug testing, you mentioned THG. I'd love for you to just describe how that came to be. And that's what? Tetrahydrogestrinone? Am I getting that right?

Patrick Arnold: Tetrahydrogestrinone.

Tim Ferriss: Oh yeah, close. This is a rare chance to actually correct it on this stuff. So how did THG come about?

Patrick Arnold: Well, I told you before that norbolethone was made from a progestin.

Tim Ferriss: That's right.

Patrick Arnold: That's a drug that's found in birth control pills. There's other progestins out there too, lots of weird ones.

And there's one called gestrinone, which is actually not used for birth control pills, but used for a disease called endometriosis, which is a female disease, inflammation of the uterus.

Tim Ferriss: Uterine lining, right? Yeah.

Patrick Arnold: Yeah, uterine lining. So I was just looking through the Merck index. I look at structures. I can –

Tim Ferriss: What is the Merck index? That's M-E-R-C-K, right?

Patrick Arnold: M-E-R-C-K, yeah, the Merck index is a compilation of compounds. It's not every compound in the world. The compounds that are natural ones or drugs or ones that have significant use in the industry. And there's maybe about 10,000 in there. They add ones, they take ones away. So I go in there and I look up – they have an index for progestins. So I find this one called gestrinone.

I look at it, and it has – it is a hybrid of Trenbolone, which you've heard of.

Tim Ferriss: I have. Yeah, its' a favorite among power lifters, among other people.

Patrick Arnold: Yes. And among cattle too.

Tim Ferriss: Among cattle? Yes. Another thing that I do not advise kids to try at home, is to take these pellets and turn it into something you can inject in yourself, necessarily. Yeah, but Trenbolone.

Patrick Arnold: Trenbolone. So it was a hybrid between Trenbolone and norbolethone. It had the three – the triene – the three double bond structure of Trenbolone, and it also had this weird extra carbon coming off the ring structure that norbolethone had.

And I say if I turn this – add the four hydrogens, turn it into an acetylene, into an ethyl, which basically makes it less progestational, and way more anabolic-androgenic, I can do the same reaction that I did with norbolethone and come up with something that no one's ever seen before, and probably is a lot stronger. And that's exactly what happened. So the really cool thing about it, is I made a molecule that no one's ever made before.

Tim Ferriss: Yeah, yeah.

Patrick Arnold: But the thing that I didn't know, which I found out later, which I'm reluctant to admit because if I just don't admit it, it would make me look so much more brilliant than I am, but I'm an honest person. But I did an interview with Bob Kostis, and in part of that interview, he interviewed Don Catlin, and Don Catlin said you know, this molecule, it just disappeared in our instrumentation, and we were amazed.

We were like; whoever's doing this must be brilliant. And I thought to myself, well I didn't know it would disappear. Though it kind of makes sense because of the way they test it. They have to add these – they have to derivatize it through gas chromatography, and it would be very unstable, so it makes sense. But I didn't think that at the time. So they actually had to change their whole means of testing steroids. You had to use different instruments because of that. But all I know is that it worked, and it worked at a very low dose. Victor was using it at extremely low doses and getting very good results from people.

But I tell you, that stuff was weird. I mean I had tried it.

Tim Ferriss: What made it weird?

Patrick Arnold: It made you feel angry. It made you feel – it dried you out and made you feel really hard and strong.

It had an anti-mineral corticoid effect, which is anti-aldosterone, basically sort of like a spironolactone. I only put that – I think you know what I'm talking about.

Tim Ferriss: Yeah.

Patrick Arnold: Put it simpler, it's basically your adrenal makes a hormone called aldosterone, which causes you to retain sodium and water, and excrete potassium. And this blocked that. So basically, you would excrete water and sodium, and you would have a diuretic effect, and you would look shredded.

Tim Ferriss: So was the anger a result of just feeling like you were cutting weight for wrestling, so you're just in that type of dehydrated sort of high heart rate rage state?

Or was it something else that caused that?

Patrick Arnold: No, it wasn't anger. It just made you feel irritable.

Tim Ferriss: Irritable, yeah.

Patrick Arnold: Yeah, certain steroids do that. I mean another one that does it is halotestin or fluoxymesterone. There's no – no one really knows why certain steroids have effects on the brain. There's ones like Dianabol, which supposedly make you feel good and whatnot. No one has a valid explanation for that.

Tim Ferriss: I've heard, and maybe you can speak to this. I know Chris Balin and Mark Balin, they did the documentary – I always get the order wrong – I think it's Bigger, Faster, Stronger. What types of other drugs are contraindicated to take with anabolics?

Because it seems, and I might be pulling this from hearsay, but many of the cases of say people committing suicide or committing homicide, say, when they're on anabolics, is often while they're simultaneously taking say SSRIs or anti-anxiety medication. It's hard to say if it's correlation or causation. But are there any particular drugs that you think are contraindicated for athletes – let's just use that example – who are taking anabolics?

Patrick Arnold: As far as psych drugs go, I don't know of any. But certainly, with orals, you do not want to be on a blood thinner, lime Coumadin or anything like that.

In fact, I had a friend who was taking superdrol. Superdrol was one of those over-the-counter designer steroids that was quite potent – and they actually thin your blood themselves. They're anti-thrombolytic. So if you combine them with these blood thinners, let's say your doctor thinks you have blood clots in your legs or whatnot, and you're also taking steroids, especially an oral steroid, you can easily have excessive bleeding.

And my friend ended up having bleeding ulcers in his stomach and had to go to the hospital. He was like, why is this happening? I was like, what are you taking? I'm taking superdrol and my blood thinners. I was like, well, you shouldn't do that.

Well, you didn't tell me. He didn't ask me. But yeah, never take a blood thinner, and that's a lot – I don't know if you know this, but with a lot of anabolic steroids, people get bloody noses. And that's exactly why.

Tim Ferriss: I did not know that. That makes perfect sense.

I mean there's a lot more to it, but the image that came to mind was people doing – you know, power lifters competing in meets and getting bloody noses. But then again, they also have like 1,200 pounds on their back, so it could be a combination of factors.

Patrick Arnold: The blood pressure, the transient blood pressure that they experience during a lift is phenomenal. If you could measure it, it would – I don't know – my blood vessels would just want to split and explode.

Tim Ferriss: Now you've been involved with a number of different companies. I have to ask because a friend wanted me to ask you, and I'm going to get – is it yursolic or ursolic acid? I have no idea. But he wanted to know when is he going to be able to get more ursolic acid? And maybe you could explain for people what it is.

Patrick Arnold: Oh, okay. So we –

Tim Ferriss: And this is prototype nutrition we're talking about.

Patrick Arnold: Okay, so this is the spray. Okay. So I first heard about ursolic acid when a study came out in a journal called *Cell Metabolism*. It was written by a guy from the University of Iowa. He was a researcher. He used some technique to identify genes that were turned on or off in muscles, genes that had to do with metabolism or anabolism. They were basically looking for catabolic genes that were turned

off, and anabolic genes that were turned on. They used something called some sort of a library, a database of genes, MRNA, expression signatures or something.

They used 1,300 chemicals, natural chemicals, drugs, whatnot or whatever. And they put them through this algorithm or whatever, and it came out that ursolic acid just seemed to do everything. The second one, which was – the far second one, was metformin [inaudible].

Tim Ferriss: That's very interesting. Okay.

Patrick Arnold: Which is a very interesting molecule in itself. However, it didn't really have the anabolic effects. So they ended up giving the ursolic acid to mice and rats, and they found that the muscle fibers grew bigger. They got stronger grip, and they didn't gain any weight, but they had a proportional decrease in fat mass. And they also looked at what's going on with hormones or the mechanisms in the muscle, and gene expression.

One of the big things they found was a large increase in muscle derived IGF1. We talked about that earlier. Earlier we were talking about IGF1 produced in the liver, but there's also localized IGF1 produced in the muscle, which is more relevant to muscle growth. So the ursolic acid had an effect on that. Then there was a second study done by the same group, which found that it increased the amount of brown fat –

Tim Ferriss: Yeah, oh yeah.

Patrick Arnold: – quite significantly, which caused the mice to have higher levels of energy expenditure because they would eat a lot and not gain any weight and run around. The brown fat would just burn off all the calories.

So I originally came out with a product which was just ursolic acid extract from rosemary, and I realized quickly that the stuff had no solubility in water or oil. You basically put it in water, and it won't even wet. It just – you mix it up and it floats, and it's completely dry.

Tim Ferriss: Sounds fun to drink.

Patrick Arnold: Yeah, you can't. That's why you put it in capsules, but still, it's in your stomach and it's just going to sit there. Unless it somehow solubilizes, you're not going to absorb it.

Tim Ferriss: I tried to do some stuff with, I think it was Lucene recently, and I got this industrial hacket of Lucene, and the same thing happened. It was just like I could shake it until my arm fell off, and it would just sit there on top of the water. It was horrible.

Patrick Arnold: Well, the thing with Lucene is that it will eventually wet and go into solution. You've got to be very patient.

Tim Ferriss: You just have to keep going.

Patrick Arnold: You have to keep going, and they have ways to instantize it.

But ursolic acid just will never – 100 years you can store it and it'll come to the top. So I went about trying to find derivatives, and I first made an acetate out of it, which is basically taking a hydroxyl group and making ester out of it, an acetate ester. Then there was another functional group, which is a set of atoms that are attached to the molecule, that was a carboxylate group, which I could then make a salt out of. So I ended up making an arginine salt acetate, and I found out that the solubility properties of that, it wouldn't be soluble in water.

It would wet in water; however, it would be soluble in solvents like methanol and whatnot, which are good indicators of something that could absorb through your intestines or through your skin.

I decided to make a spray because I thought that, well first of all, the manufacturing method required a solvent to begin with, so I figured I would use a transdermal type solvent and sell it that way. It ended up becoming a very popular product, and it worked quite well. I mean people could really feel something from it. They would get, within a week or so, greater vascularity, greater muscle volume. So that has been one of our best-selling products.

Tim Ferriss: One of my friends gets ridiculed by his significant other because it's just like cht, cht, cht, cht, like 40 times at night.

Patrick Arnold: Yeah, yeah.

Tim Ferriss: When will people be able to get that again? It seems like it's been sold out for a while.

Patrick Arnold: Well, I just made 2 kilos of the stuff, so next week.

Tim Ferriss: Soon, alright.

Patrick Arnold: Well, by the time this airs, it will have been a few weeks in the past.

Tim Ferriss: So yeah, people who are listening, if you're listening to this first, I would not dawdle if you're interested in getting this stuff because it will sell out. If it's increasing hypothetically, and this is just a question that I get a lot, so I'd like to bounce it to you, if it's increasing IGF1 production or IGF production in any number of ways, does that – at what point does that increase the risk of cancer or cancerous growth?

Patrick Arnold: It's muscle specific. So I don't think it – I think it kind of does this activity in the muscle and sort of decomposes.

It doesn't really affect systemic circulation. So unless you have some kind of a tumor in a muscle or something, I can't see it really having an effect. Because it's not going to lead to systemic circulation and then say go to your prostate and stimulate a tumor there or anything.

Tim Ferriss: Right. This is a totally selfish question, but I'd imagine there's some people listening who would be asking themselves the same thing. If you were – and you're probably so sick of getting this question, but I have to ask it – I would like to get better at chemistry and understanding organic chemistry, clearly out of school, what would you recommend I do? I mean I have the cognitive apparatus, I think, to learn it.

I just have never approached it any type of systematic or interesting way. I mean are there any resources, any approaches that you would suggest if I want to become basically, in a rudimentary way, fluent in more of the language of chemistry so that I can just be more informed?

Patrick Arnold: Well, you're absolutely correct. I do get that question a lot. And to be honest with you, I don't have an answer because the way I learned organic chemistry and all this was a very laborious process of taking courses and being frustrated, and not knowing what the hell anything meant, and working and studying and taking exams until it clicked. So to say that you're going to pick up some book and read it for an hour at night or something, and suddenly start to understand all this, unless you're some sort of genius, amazing person – yeah, like you learn Chinese in two days type of person – I don't know.

That's a good question.

Tim Ferriss: Here's maybe a slightly different question. Because I think what I might do honestly is just reach out to one of these extension schools in the Bay Area like UC Berkley or whatnot, and see if they have some type of introduction to organic chemistry that isn't going to want to make me slam my head in a car door, that has some type of decent teacher instruction to it.

Patrick Arnold: You've taken general chemistry?

Tim Ferriss: I have not. I don't know. That's embarrassing to say, but I don't recall if I have or not, partially because in a very undirected myopic way, I mean most of what I've learned – I feel like most of what I've learned from chemistry – I have taken basic – I'm almost 100 percent sure I've taken basic chemistry, and then also some neurochemistry in the first few years of college. But most of what I've ended up learning is through self-experimentation and then wondering what could go right, could go wrong, did go right, did go wrong.

I mean a very, from an athletic standpoint as a consumer, I think it just came down to, similar to yourself, it's like, oh, well that's very curious, but I'm not sure the journalist is getting it right. Let me go to the library. Let me go to Pub Med. Let me try to figure out; is there even a plausible mechanism? I remember reading a story about you early on with, I think it was Yohimbae, and like the testosterone, and that whole experience where you're like, wait a second.

Patrick Arnold: Yeah, yeah. That was actually before the [inaudible]. They said that – the advertisements used to say that Yohimbae contained testosterone, so I bought a bunch of Yohimbae capsules, broke them open, and extracted them with a solvent, and got this green yuck, and am like, testosterone is not supposed to be green. And then an NMR, which is a nuclear magnetic resonance test on it, and I'm like, this is a bunch of crap.

And I realized, once I started looking through the chem abstracts, which was in the library that was on the floor that I worked on, and cross referencing Yohimbae with testosterone, there was zero connection there. So I realized that the whole thing was a lie.

Tim Ferriss: No, no, I was just going to say, looking at it from a slightly different perspective, what happened with me, is I was – Yohimbae and Yohimbian were popular at a point, where they kind of made

the rounds. I mean they're fads and supplements for fat loss. And it was thought, well, because of these particular receptors, it might be effective for reducing body fat in say the legs or wherever it might be. I took this Yohimbian, and my body does not agree with that stuff. I just get extremely overstimulated, and I feel like I'm on the verge of vomiting the entire time that it's, I guess, peaking.

That made me interested in looking at – so you read beta agonist, and then you realize there are different times of beta agonists, and like what the hell is an agonist? Okay, well then by learning what an agonist is, you start hearing about antagonist. Then down the rabbit hole you go. So that's a long answer to a short question, but I don't – I really – if I have taken chemistry courses, I need a significant brush up.

But where do you think – what were the biggest wastes of time for you in the classes that you took? The things that you were like, this actually had no application to the practical side of what I'm interested in. Is there anything that comes to mind?

Patrick Arnold: Well, one graduate course really pissed me off because it had to do with analytical chemistry, advanced analytical chemistry, instrumentation and whatnot.

And it was very interesting. We didn't really deal with the instruments directly very much at all. But I studied my ass off, and I wrote one of the best reports, the best papers, and the guy complimented me on it. And I learned a theory and all that. And the exam ended up being what is the inner diameter of a column that we put into a GS390?

And I'm like, what the hell? You look this stuff up in a manual, and everything is like stuff – you know, if you're a tech or something, in other words there was almost no theory. And I was just like, what is wrong with this teacher? I just was so frustrated and I ended up not passing the course. The course was useful but the exam and the way the guy approached what the students should come away with was completely out of whack.

But I also hated physical chemistry, thermodynamics. It's good stuff if you want to be an engineer or whatnot but I want to be a synthetic organic chemist. And it involved a lot of math. I hate calculus and all that, so –

Tim Ferriss: I'd love to ask a couple of fan questions that have come in, and then we can segue to some of the stuff that you're working on right

now. The first is, and I would love to know the answer to this, too. This is from Michael Taphouse: When will we be able to measure our own BHB levels without blood? BHB, for those people who don't know, is beta hydroxybutyrate. So currently if you're experimenting, as I have been often with ketogenic diets, exogenous ketones which we're going to get into, I'm using the Precision Extra device from Abbot Labs to measure my ketone concentration in millimolars.

So when will we be able to measure our own BHB levels without blood, and I'll just modify that and say or in some easier way?

Patrick Arnold: You know that's a Dominic question, right?

Tim Ferriss: That's a Dom question, okay.

Patrick Arnold: And I didn't listen to the entire Dominic interview but I listened to most of it. But I imagine he probably brought that up. And what his answer would have been would be the acetone breathalyzer. I don't know how accurate that is. Dom seems to think it's relatively accurate.

Tim Ferriss: The ketonics, or something like it. The Dominic we're talking about, for people who haven't heard, I did an interview with Dominic D'Agostino, who is a fascinating researcher and scientist who also dead-lifts like a friggin' monster. He's really, really savvy with this stuff. I have a ketonics device.

Side note, because I was doing this whole series of strange experiments where I was getting 100 grams of Vitamin C intravenously and doing all this stuff. And I wanted to monitor my ketone levels while getting this infusion. Because you can't use a glucometer, I realized, because I scared the living hell out of myself while I was getting one of these IVs because I started to feel a little funny. And I was wondering if I was hypoglycemic because I had been scared by some horror stories that I'd been told by folks. So I used a glucometer and it came out 385.

I was like: uh-oh, that's not good. It came out at 385 and my millimolar concentration was probably about 6 at the time; it was high. I was like, that sounds like ketoacidosis if the device is accurate. The doctor who was supervising me said there's no way that's accurate; it has to be broken. He tested it on himself: 80. And just to place this for people, this was around 5 p.m., right over the Golden Gate Bridge, gridlock outside.

Not immediately close to a hospital. I had a doctor supervising me but if I required some type of sophisticated operation, I was not in a good place. Then I tested it again, 389 and I was just like wow, this is usual for me. And that's why people should always do their own homework and get a tattoo that says don't try this at home. Don't do that folks, actually. Like one in 1,000 will probably go and get it.

But when I feel like I might have actually done it, meaning oh, I think this might be it; I've finally statistically just gotten to the point where one of my self experiments backfires to the extent that I'm going to die. I looked at it and I just kind of laughed. I looked at the doctor and I was like, that's not very good. And it turned out that the Vitamin C causes the strips that are used for reading the blood drop in these glucometers to malfunction.

It messes with the electrical connectivity or something like that. So I wanted to track my ketones but I knew that I would get an error with the BHB through the finger pricks, which always happened after these IV infusions. So I was playing with the ketonics, the downside of the ketonics and maybe there are more advanced versions now. But it's basically like keto sticks with a peon. And it says if you're light, moderate or heavy. But it's no more specific than that. So I was like, eh, I know I'm high; I want to see how it varies over time. But sorry for –

Patrick Arnold: I understand. I'm working on improved versions of exogenous ketones. I'm actually ready to file a patent. I can't give away what I'm doing or whatnot, but we have a whole bunch of strips here and we've been doing our own blood tests.

They're vital. You need an exact number to make a graph.

Tim Ferriss: So let's talk about the exogenous ketones, because it's come up in a few other interviews including in Dominic's interview. So Keto Cana, Tropicana – that's it; I'm remembering it. Keto Cana, keto sports – I'm flashing back to this conversation that I had with Peter Attia and he was talking about drinking jet fuel in his kitchen at one point, just like dry heaving for a hour and trying not to wake his family up. That was like the Model T version of the ketone salts that I think Dom had shipped him in some nondescript container. But you've made a lot of advancement.

So I guess the questions are how did you get introduced to the exogenous ketone world, and because I've heard it from so many people, this is long. But it's not androgynous ketones. I don't know

what it is on the internet but so many people refer to them as androgynous ketones. I'm like no, they're not androgynous: exogenous, like exoskeleton from outside the body. That's it. Exogenous. How did you get introduced to all of that?

Patrick Arnold: I'm so glad that I did because at the time, I was kind of stuck in the whole bodybuilding supplement world which is very limiting and not very rewarding. And for someone like me, I love the sport and there are a lot of great people in it but it's just dead. It's all how am I gonna get a pump, or what is the best stimulant I could take to make me insane before I work out?

Or what's going to be anabolic? And you can't sell anything that works anymore. So Dominic D'Agostino sent me an email saying I'm looking for some contract sensisis work. I know Patrick and I saw you on the boards; I know you're a chemist and people have mentioned you. I haven't had any success with anyone. What I'm looking for is to make what's known as a ketone die ester. It is a pro drug to the acetoacetate, which is a ketone. I said yeah, I know what ketones are; I know all about that. I thought to myself, this sounds like some really cool stuff.

Because I had known about the ketogenic diet and everything, and I knew about ketones and that they are a fuel that your body uses.

I started doing some searches and said okay, there's a big opportunity here. So let me make the ketone ester for him, he can do his studies. It took a few months. I was able to make some good stuff and his first study, which was a CNS toxicity study on the rats –

[Crosstalk] – which had applications for the Navy Seals and their re-breathers. He had tremendous success with that. And then it went on that he got a grant or approval to do cancer stuff, and he got tremendous results with that. And as you know, he's continued to do research and some phenomenal things with these exogenous ketones.

He started off with the die ester, and I thought to myself, I would like to get in on this gig. I wonder if I can come up with some kind of a supplement version? So I said I know you can make salts out of these. I know that the sodium, being a hydroxybutyrate out there because I've seen it before, but I know it's like a million dollars. And I said I've got to find a way to make this cheaper. I did a lot of research and I did find a way to make it at a price that people could actually afford to take it in effective dosages. I made potassium

sodium, which was the original stuff. I don't know if that's what Peter took or if Peter took the stuff from Oxford.

It may have been my stuff, the original KetoForce, which by the way is not meant to be drunk straight; you have to mix it with an acidic beverage.

Tim Ferriss: I think what he took at the time was just some equivalent but I remember at some point I got these ketone salts from Dom. They just sat in my refrigerator for months. I was like; I cannot build up the courage to take this stuff down.

Patrick Arnold: You weren't given appropriate directions. If I drank that stuff straight, it would be like drinking salt water out of the ocean, kind of. Yeah, you throw up. And then Dom did some research and found that it raises the blood ketones. We did a patent together. I had an idea.

How do we patent this? You can't just patent the salts. And I said let's combine it with MTCs and see what happens? And we found some results that looked like there were some significant changes there. Then there was a patent applied for with that. That's a whole other rabbit hole. That's a mess. I don't want to go down there.

Tim Ferriss: No worries. What are the most interesting applications of exogenous ketones? Because I've used it while fasting, I've used it while just making the transition to ketosis to make it a little easier as you're going through that very grumpy, grey zone. It effectively alleviates any of what people might call keto flu for me. I know a lot of endurance athletes use it, or take it prior to aerobic workouts.

What are the most interesting applications, in your mind, of these exogenous ketones?

Patrick Arnold: First and foremost, endurance athletes. Many teams at the Tour de France were utilizing these ketones, whether they be salts or the mono ester, the Karen and Clark, Richard Vites – I don't know if you know their BHB ester?

Tim Ferriss: Yes.

Patrick Arnold: I know the team that one, they had an exclusive contract. They denied taking it but the writing's on the wall. I have all these messages everywhere.

But there are also people who were on ketogenic diets and also taking exogenous ketones, keeping their levels up in the range of 5 millimoles per liter. That's up there.

Tim Ferriss: Yeah, that's up there.

Patrick Arnold: Obviously, that's not an easy thing to do so they wouldn't have been putting themselves through all that suffering if they weren't getting the results. And they were getting the results. I've also had iron man people, MMA people that love it, that use it. Certainly if you are avoiding carbs, if you are on a ketogenic diet and you want to go to the gym, normally people that are on regular diets, they'll drink some carbs before/during their workout. Because your body is going to burn up carbs and you need to replenish to keep your blood sugar up.

But if you're on a ketogenic diet, your body is not using carbs; it's using ketones. So you're going to go in that gym, and you're going to start working out and your ketones are going to be used up really quickly and you're going to tank. So if you are in ketosis and you need something during your workout, you drink exogenous ketones and it will be like drinking carbs. Your brain will be energized, your body will be energized; you won't tank. It's pretty amazing. I've given it to people who are like, I'm on the ketogenic diet, I work out and I feel like crap. I say, try this. And they're like, wow! I didn't tired.

My body had all the fuel it needed.

Tim Ferriss: And for me also, just on day one or two of converting from carbohydrate dependent to fat adaptive, trying to get to at least – before I hit about 1.5 millimolars, if I have to do an interview or something like that, then I'll just take a serving of the Keto Cana 15, 20 minutes before I'm set to start the interview and I've been really impressed. Are there particular types of people who should not take it, or who should get some type of supervision or permission from their GP or whatever to consume it? Is it contraindicated with anything?

Patrick Arnold: The BHB part, I don't think so.

People who are diabetics can go into diabetic ketoacidosis but that's a special condition and I don't think this little bit of ketones is going to exacerbate that or anything. But some of these products, the sodium load is not really; really high .You can have a pizza and have five or ten times the amount of sodium. But if you are on a

sodium restricted diet, you have to take that into consideration. But other than that, I don't think there's any problem.

Tim Ferriss: What makes you different in the world that you've inhabited up to this point? In the creation of these different things, the creative problem solving, coming up with THG, etc., if you kind of look back, what are the things that make you as good at it as you are?

There are a lot of folks trying to do these things but you've had an incredible amount of creative success.

Patrick Arnold: When I got started in this whole thing in the early '90s, there was no internet back then. Like I said, there were chem abstracts, which are this endless volume of large books with extremely small writing that you'd have to cross reference. And they were very, very hard to understand. And I learned to understand these things and would look up articles. And I had the patience to drive to our library, find these things. And I learned how to research in a very primitive way, and I learned the patience of researching. I got a head start before anyone else started doing what I was already doing.

There are a lot of researchers out there that sure, they could research and they could find a study that this does that, that does this. But do they actually have a lab? Can they actually make this stuff? Can they actually test the product to see if it really is what it is? I've also developed a certain intuition that tells me if something is worth exploring more or not. That depends upon a lot of things. It depends upon the journal. That's not really intuition; it's actually logical. It depends upon the impact factor of the journal it's published in. Are there other publications by unrelated authors? Is there a plausible mechanism?

I don't know. I think it's just a lot of experience and an affinity for this kind of thing.

Tim Ferriss: When do your best ideas tend to come to you? Is there any pattern to it?

Patrick Arnold: That's interesting because I'm not a consistent producer. My mind tends to go through periods where I just am not creative. I'm frustrated; I don't feel as though anything is going to happen. Then I'll come across something and get a spurt of energy and creativity and all these things will come out. Sometimes I'm laying in bed trying to go to sleep and I think of four or five different things, and

I'm like: wow, wow. Then I try to remember what they were. I should write them down.

And then I work on them. I guess that's not unheard of.

Tim Ferriss: Do you have any particular morning routines that you find helpful, aside from the usual? It sounds like you wake up on the early side. What time do you wake up and what does the first, say, hour and a half of your day look like?

Patrick Arnold: If I go to the gym, I'll wake up at 5. First thing I do is I make my coffee.

Tim Ferriss: How do you make your coffee?

Patrick Arnold: I just make it with a coffee maker.

Tim Ferriss: Do you just drink black coffee?

Patrick Arnold: No, I put cream in it and some Splenda. I don't put any butter in it or anything like that because I do it before I work out. And nothing against bulletproof coffee but I find it to be a little heavy on my stomach if I go into a gym.

Tim Ferriss: You might also have higher disaster pants potential.

Patrick Arnold: Yeah. No MCTs before the gym, for sure.

Tim Ferriss: What does your workout routine workout look like on a weekly basis, or whatever you happen to be doing now?

Patrick Arnold: I start with preparing my workout drink. I have this stuff. My friend is a trainer, his name is Ian Danny. He has a product called Amino Matrix. His company is called Optimum EFX. It's very expensive but since I've worked with him – we make some of his products – I get it for free. But it's basically a full spectrum essential amino acids, [inaudible] amino acids with some other things thrown in there; lipoic acid, citrulline malate and a few other things.

I mix that with about 45 mils of KetoForce, which is the stuff you're not supposed to drink straight like Peter did. So if you mix it with amino matrix, which is very tart, it buffers the alkalinity of the KetoForce and it ends up tasting quite good. So I drink a little bit of that. I take it to the gym. Lately I work out maybe three to four times a week. Sometimes if I feel motivated to get into extra

good shape, I'll work out more. I usually combine; I do legs and arms in the same day a lot, chest and back and then shoulders, abs. I mix it up sometimes. I do cardio.

I haven't gotten into a lot of the kettle bell or some of the athletic different kind of things.

Tim Ferriss: Metabolic conditioning stuff?

Patrick Arnold: Yes, exactly, which I would like to do but I just don't have the time to learn it all. I'm an old dog; you can't teach me new tricks.

Tim Ferriss: Speaking of old dogs, how are you thinking about longevity or extending lifespan? Is that a high priority or do you not spend a lot of your brain cycles on it? And if you do think about it, what do you think are promising?

Patrick Arnold: I worry about my health over the next year or five or ten years.

I go to the doctor and sometimes I have abnormal blood values, and I don't know what's going on there. I worry about that. Because I don't want to come down with any sort of condition that's going to knock me out or anything like that. I worry about cancer and all that stuff. I'm not worrying about whether I live to be 85 or 105. Why worry about that, at this point? I'm worried about quality of life in the immediate future. I was taking metformin for awhile. I stopped. Sometimes it upsets my stomach. But I've read a lot of research on it and it seems to be maybe the most promising of the anti aging drugs out there.

Tim Ferriss: It does seem to have a fair amount of interesting data behind it. Rapamycin is interesting, too, that entire kind of class. I haven't taken either at this point. For whatever reason; I don't know why I have so much trepidation about it. I guess it's because I feel like once you're on it, if you're taking it with the explicit purpose of extending longevity, it seems like once you're signed up, you're signed up unless some typically of contradictory data comes out against the efficacy or indicating side effects.

I'm going to switch things up just a little bit because I know you are in a different time zone and I want to be respectful of your time. I have a couple of what I would call rapid fire questions. The answers don't have to be short; they can be short or long.

When you think of the word successful, who's the first person who comes to mind and why?

Patrick Arnold: Successful. I guess Bill Gates. He's financially successful but he's also become quite a philanthropist. He's done a lot of good things. He's not just made a lot of money but he's also put a lot of effort into making the world a better place. I think he seems to psychologically feel good about himself.

Tim Ferriss: Is there any particular book or books that you've given a lot as a gift?

Patrick Arnold: As a gift? I've received books as gifts. I gave my mother the Kennedy book by I think it was Chris Matthews, the guy from MSNBC. Because I know she loved Kennedy. She met Kennedy at his inauguration. It was a weird story. But one of my favorite books is by an author named Jared Diamond and it's called *Guns, Germs and Steel.*

Tim Ferriss: Guns, Germs and Steel, yeah.

Patrick Arnold: I read that. That really gave a big eye opening on why certain people of the world are more advanced than others and behave a certain way, as opposed to just genetics and this person is smarter because of this or that.

There are so many aspects to it. It got to be quite a scholarly feat, though, near the end. He was quite detailed.

Tim Ferriss: What are the most common misconceptions about you? Or is there anything you would like to clear up in any way?

Patrick Arnold: I used to have a persona on the internet of being short tempered and arrogant. And I have a sarcasm that doesn't always come across in the written word so well. I've kind of toned that down. But there are still a lot of people who – maybe they just want to believe that I'm a jerk; I'm not sure.

I don't get out and travel and go to shows, go to conferences nearly as much as I should. And I know I really should because I'm kind of a recluse when it comes to that. I know a lot of my colleagues, they're here and there and everywhere and everyone's meeting each other. And I feel as though everything's happening and I'm being left behind. So this year, I'm going to try to change all that. I am one of the people who runs a business here. We do production and we have to be testing every batch, and I have to be here. So it makes it kind of hard.

Tim Ferriss: I think you and I have a lot of shared DNA in that department where I can pretend for very brief periods of time to be an extrovert but I find it very exhausting. That's part of the reason I'm cutting back significantly on all of the shows and conferences and whatnot that I attend this year.

I just find it extremely draining. You also end up being reactive in the sense that when you're in the cave working on production, I would imagine it's easier to set your priorities and get less distracted by shiny objects than if you're out and about being bombarded by all of these inputs at a conference. It's been a long time since I've been in that world but that's what I would imagine to be the case. What advice would you give your 30-year-old self? And maybe you could place where you were and what you were doing at the time.

Patrick Arnold: 30 years old is when I moved out here. I would say don't listen to that Stan Antosh guy; stay the hell away from him. Because there were like two or three years where I could have jumped ahead a lot quicker if it hadn't been for him.

That's hard to say. If I knew all the stuff I know right now, I would just say hey, I know how to make this. You can't say that, you know?

Tim Ferriss: Right, it's like buying Apple. If I knew then what I know now – right.

Patrick Arnold: It's just an unfair question. You mean like philosophically as far as demeanor and all that?

Tim Ferriss: Anything. It's a wide open question. But we can also table that one for now.

Patrick Arnold: I would be more patient with people on the internet and whatnot. In person, I was always good and everything.

But I kind of grew my reputation on the internet and would become impatient and belittle people. Some people thought it was really funny but it did turn a lot of people off. I'm ashamed of that. It's not who I am.

Tim Ferriss: This is just because it's topical; I want to at least bring it up, and we don't have to discuss it. But there's a current scandal that's been discussed pretty widely about Delta II. Do you have any

interest in commenting on that or would you prefer to just leave that be for the moment?

Patrick Arnold: No, that's interesting. That all came about with –

Tim Ferriss: Yeah, and if you could catch people up who are not – just give people some context, for those who aren't familiar.

Patrick Arnold: I wish I had that guy's name.

The whole thing came about with the doctor in Indianapolis that was prescribing growth hormone to his wife. I guess a couple years after, someone went to work for that organization and he heard about that. I can't really remember but Al Jazeera did an undercover thing about this guy. Part of what this guy was also doing was selling this stuff called Delta II which was an anabolic steroid that was never marketed. I heard a lot of people talking about it. For instance, I asked Victor Conti about it and Victor doesn't know what it is, obviously. He said it was no good, it was weak.

It's actually something that I made back in the early 2000s and tried it out. It's weird stuff to make because it turns into fiberglass and expands. You can't filter it. You have to make it into [inaudible] acetate but that's all chemistry stuff. I made it into a spray, and I was thinking about selling this as a supplement. I never gave this to athletes as an undetectable type thing or anything like that.

It's actually a pheromone that female Asian elephants tend to excrete in their pee in very large amounts at certain times of the month. It's strange. And it's also found in human sweat, believe it or not. I think the bacteria in human sweat takes some of your endogenous hormones like androsterone, which are metabolites and they convert it into this Delta II.

I ended up making it for a couple of people to try; not athletes or anything like that – into an oil based injectable at 100 milligrams per milliliter. That was based upon some studies that were done that showed that the stuff actually was quite potent; it was pretty much equipotent to testosterone, milligram per milligram but not as androgenic. The people that tried it liked it very much. That kind of came and went and I never bothered with that. My guess is that some of the people who tried it, word got around.

Someone else got it made and did the same thing – this guy was one of them – and started giving it to athletes years after. In retrospect, I think I heard about this stuff being given to athletes a few years back but didn't believe it. Because I didn't think that the drug testing organizations would not be able to find it; I thought it would be way too easy. But maybe not. It was just interesting because I read about it and said oh, man, that's that stuff I fooled around with.

Tim Ferriss: It's old news from 2001.

Patrick Arnold: And then I see Victor saying it's no good. And Victor is saying it's a pro hormone and it's oral. He doesn't even know what he's talking about. It's by injection. As the acetate, it's very effective. It is.

Tim Ferriss: Delta II. What are other drugs or molecules that you think we'll be hearing more about in the next few years in the media?

Maybe they've been around for a long time, maybe they're new. I'll rephrase it. What types of performance enhancing drugs or therapies do you think we'll be hearing more about in the next few years?

Patrick Arnold: A lot of the most promising ones have to do with gene therapy. Those have been around for a long time but they don't seem to go anywhere. There are a lot of safety concerns. I can't think of any actual small molecule or peptide drugs that you just inject that do a heck of a lot. That's a good question. But I did talk to someone from ESPN not too long ago. He asked me a question about what do I think is going on; what is the most advanced thing that is going on?

And I say I always had a suspicion that the Chinese may be using gene therapy. And what they could do is they could actually probably engineer embryos probably in certain genes that express certain growth factors or repress certain other genes. And these kids can grow up to be super humans. That could have happened as far back as mid to late '9o0s. Those super kids could be coming of age right now and competing.

I've seen some of these Chinese athletes that just don't make any sense.

Tim Ferriss: They look like the bully whippets that have the myostatin inhibition.

Patrick Arnold: Right. And at the same time, they have completely smooth skin and there's no androgens going on, you know what I mean?

Tim Ferriss: It's a puzzling combination of characteristics. Do you have any opinion – and I don't; I'm getting pretty deep in my ignorance pool, here but SARMS, selective androgen receptor modulators? Is there any there? It's an acronym that I've heard kind of thrown around a bit recently. Do you have any familiarity with those or thoughts on those?

Patrick Arnold: I have a funny anecdote about those and then I'll tell you my thoughts.

The guy who shares my lab right now, he used to be a salesman for another chemical company in town that we had done some work with. They would make small amounts of drugs for research for other drug companies. They were basically a contract synthesis place. They made thousands of SARM candidates. There was one that looked amazing on paper. They gave it to the rats and within a day, all the rats were dead.

Tim Ferriss: Oh, God.

Patrick Arnold: So that just shows you that something that works in vitro, you don't know what's going to happen. But as far as SARMS go, they're basically trying to do the same thing that androgenic anabolic steroids do. They know a lot more about the mechanisms from the receptor to the nucleus and everything that happens in between.

There's a lot of chemical molecular events that happen there that can determine whether a compound is potent or whether it's selective in a certain cell or not. So they know a lot more, and they have molecular modeling where they're able to come up with theoretical compounds to say this attaches to that. And then they find a custom synthesis place to make the molecule and they try it on the rats. Plus they're not confined to the steroid structure because these structures are so divergent. They're completely different looking, yet they all will combine in some way to the androgen receptor.

So they're not confined by any one structure so there's thousands and thousands of possibilities out there. However, they have yet to eliminate the androgenic anabolic separation. They have yet to eliminate the hepatic toxicity, basically the cholesterol.

Tim Ferriss: The liver issues.

Patrick Arnold: Yeah, the AST/ALT enzymes.

Tim Ferriss: What do you mean by the anabolic androgenic separation? Just reducing the androgenic effect?

Patrick Arnold: You'll never get zero androgenic, 100 percent anabolic at any dose. They've gotten very good separation. I don't know if it's that much better than, say, a premobolan. But they do find that at higher doses, like I said before, the androgenic effects do start creeping up.

I think they are doing better. And they certainly haven't done anything about the HPTA shutdown, which basically means shutting down your body's own testosterone production; that these compounds still will do that. So there's no great improvement there. It's sort of like better anabolic steroids but they're still the same thing, pretty much.

Tim Ferriss: They're not the breakthrough, at least at this point, that a lot of people would hope them to be. Are there any molecules – and I'll ask just a few more questions – are there any particular molecules to you that you think are exceptionally beautiful or elegant? Are there any that just really stick out to you?

Patrick Arnold: As far as how they look on paper?

Tim Ferriss: Whatever. The reason I ask – it seems like a weird question and it might be a bad question, but I know mathematicians, for instance, who find certain equations just to be very elegant to them. They're like, wow, that does so much for so little; I would call that beautiful. I don't know if that exists in your world of chemistry. But if it's not something you think about, then there doesn't have to be an answer to that question. I was just curious.

Patrick Arnold: I wouldn't say a specific chemical structure but there are certain compounds which crystallize beautifully. I don't remember what it was, I was working with something. And by crystallize I mean a lot of times you purify things by heating them up in a solvent or solvent mixture until you reach the point where it goes clear.

It's cloudy and when it gets hot enough, things are more soluble when they get hot, it goes clear. And then you let it sit and it cools down. Then the pure chemical tends to sometimes crystallize. And

some things crystallize into this big, long needles, and the needles get bigger and bigger. That's what I find beautiful, because that means that I have a pure compound and that makes me very happy. Now, when things don't crystallize, and sometimes they'll sit there and they'll turn into this nasty oil; that pisses me off. I don't like that. So I love nice crystals. Nothing makes me happier than nice crystals.

Tim Ferriss: On that note, Patrick this has been a blast. I enjoyed getting into the weeds.

You're constantly selling out of everything so the best place for people to find the Keto Cana if they want to experiment with that is Ketosports.com? Or is there a different place you would suggest they check out?

Patrick Arnold: Ketosports.com has the information but we have to get the ability to sell of that page. So go to prototypenutrition – one word – prototypenutrition.com. That's where you get the Keto Cana.

Tim Ferriss: Or Solic acid.

Patrick Arnold: Or UR spray. We also have other products under the Keto Sports brand. They're all sold under the prototype site. We have a CA propriolic acid product which is an MCT that is only the CA, which is the best MCT. We have a combination coconut and D product that's good for cooking that's keto friendly.

We're about to introduce a product that reduces blood glucose by inhibiting absorption from intestine and speeding up elimination of glucose through the urine, which will cause your blood sugar to drop and will help you reach ketosis a lot quicker.

Tim Ferriss: That's very interesting. I will go check that out right now. That's very, very interesting.

Patrick Arnold: There's been studies on it. There's enough safety. I don't want to give away exactly what it is.

Tim Ferriss: No, no.

Patrick Arnold: We have the material here; we're just having trouble tabulating it. We have to do some granulation work. By the time this interview comes out, this product will probably be available.

Tim Ferriss: Fantastic. Then people can check it out: prototypenutrition.com. and of course as always, everybody, you will be able to check out plenty in the show notes.

All the links, everything else at fourhourworkweek.com\podcast. Are there any other sites – and of course I'll put these in the show notes, as well but any place that you'd encourage people to see what you're up to or find you online?

Patrick Arnold: I have PatrickArnoldBlog.com. I don't keep it updated much lately but I probably have about 30, 40 articles from the past; a lot of them pretty unique stuff that you wouldn't find anywhere else.

Tim Ferriss: Perfect.

Patrick Arnold: I have a Facebook page but that's mostly for just being a wise ass.

Tim Ferriss: Alright, so people can find you on the Facebook. I'll get that from you, as well. Is it a fan page or is it just a personal page?

Patrick Arnold: It's just a personal page.

But we also have a company called E-Farm Nutrition, which has not been a big priority lately but they have a Facebook page. And Prototype Nutrition has a Facebook page. I think that's about it.

Tim Ferriss: That's great. I'll list everything out. Patrick, there are lots of rabbit holes we could go down, of course. Maybe we'll do a round two with some additional rabbit holes. But thank you so much for taking the time. This was a lot of fun.

Patrick Arnold: Yeah, I agree, Tim. Thanks.

Tim Ferriss: And everybody listening, as always, thank you. And until next time, work smart, play often and experiment well.