DANNY LENNON: Hey Brad, welcome to the show.

BRAD DIETER: Hey, thanks Danny it's pleasure to be on.

DANNY LENNON: It's going to be a good conversation I think, because you put out some really good quality information and like we'll get to; I really like the approach behind a lot of it. But before we get into any of those specifics maybe could you just bring us through a bit around your background both academically, but then also maybe your personal goals that have been behind setting up Science Driven Nutrition.

BRAD DIETER: Yeah. My background is a little bit probably unconventional compared to a lot of people that you have on the show. I actually kind of started out early on to be a doctor, so kind of started out the pre-med route in my undergraduate degree, and then kind of working, spending summers in the hospital and doing things like that. I got a little bit disenfranchised I guess with the way clinical medicine was and decided that research is probably more within my wheelhouse, but I also was really a big athlete growing up and into a lot of the unconventional approaches to medicine. So, I actually went in and got my Master's and PhD in exercise physiology and my dissertation research actually looked at how can we – we know that exercise has a lot of benefit on chronic disease like diabetes, heart disease and things like that. So, we actually

instead of taking that traditional pharmacology approach of finding drugs and seeing how those apply to disease we actually used exercise as a model to look at how genes are differentially regulated in a disease state versus an exercise state, and so now I've kind of used that training and transitioned into more bio-medical research. So, my background is everything from exercise physiology to bio-statistics to molecular biology, so it's a really good blend of skills that range from humans to basic science to epidemiology that has actually served really useful in a lot of different contexts.

DANNY LENNON: So, I think something that I believe that you and I are relatively well aligned on is trying to put out this message of using scientific evidence as the foundation at least for nutrition and health decisions or recommendations. It's great to see the concept of science based practice slowly increasing further in the mainstream. However, something that I've actually recently been chatting with Ben Esgro about is some of the pitfalls that come along with some people claiming to be using science, because essentially just making appear that they are using science when in fact they are not really following what good scientific practices. So, what pitfalls do you see with people who are perhaps looking at studies, and then drawing conclusions from them as opposed to actually practicing good science?

BRAD DIETER: Yeah. I think you bring up a really good point and that there is a big push of science based decision making, especially in the health fitness nutrition world, but I think a lot of times there is a lot of, I don't really want to say, intellectual dishonesty, but I think a lot of times a lot of people they use science and studies to put forth their own hypothesis in kind of confirmation bias. So, it's really easy to – you have sort of your own kind of pet theory on something, and then go find a single research study that can support it. One of the hard parts about science is it takes a lot of admitting you're wrong and really searching and asking deep questions. So, really what science based approaches to making decisions should really be about a concerted effort to question your own current understanding and trying to grow. So, instead of having an idea and just seeking out the evidence to support

that one idea it's really generating your own hypothesis, and then trying to prove it wrong. I think that's one of the things that – there's kind of disconnect sometimes as people have this assumption that science is gathering the evidence to prove yourself right and really when you boil it down to its core science is really trying to gather the evidence to prove your hypothesis wrong and that what we really want to do at the end of the day is we really should be more concerned with finding the truth than proving our own answers right. I think that's a really important mindset that we should try to bring whenever we decide we're going to make evidence based decisions.

DANNY LENNON: Yeah, sure and I think it kind of ties back nicely then to something you'd actually mentioned to me in one of the emails we'd been sending back and forth around this idea of looking at studies and people using, oh I'm citing science, or they have a couple of citations to supposedly backup their point to make themselves look science based, but again kind of what you're alluding to that's not really looking at the overall body of evidence?

BRAD DIETER: Yeah, exactly. You know and I think that's one of the really important things of understanding and trying to take research studies in context, because a single study is only as good as its methodology, it's only as good as its population, it's only as good as the analytic tools that are used for the data. So, it's really important to – whenever you're trying to find an answer is to get as broader scope and as much context regarding that question as you can. Taking a single study out of isolation can often times lead you down the wrong path of enquiry? So, it's important the more contexts you have of a topic, it's really important to understand how a single study fits within the whole context. It might be something that you're trying to see if certain supplement is effective or certain foods lead to heart disease or things like that and it's really easy to find a single study that can fall in either side of the fence. So, you got to really take things in the context.

DANNY LENNON: Is there kind of example that jumps out of you where someone has taken something out of context that can

potentially lead to a misleading conclusion based on drawing or not using science in the way it was meant or the context that it was given in?

BRAD DIETER: Yeah, and I think that's one of the great things about the nutrition and exercise physiology literature is that it's really kind of rife with a lot of these intellectual issues that we kind of deal with and one of the things that I think a lot of people misunderstand, especially when we deal with – perfect examples are training studies where people will look at rep schemes or weight schemes, and a lot of times they won't find a significant difference between certain types of rep schemes for strength let's say, and you'll draw the conclusion that, oh it doesn't matter if you train in the 1 to 3 rep range or 8 to 10 rep range doesn't really matter for strength. Well, a lot of times just given the nature of the studies with high variation and really small sample sizes is we don't really have the adequate statistical power to draw that conclusion. Your chance of a type-2 error are basically saying is you have a false negative that you don't find a signal and noise is really high. So, you might read one study and say you know it doesn't matter based on the study, but when you really step back and look at all of the literature and you also use some of your own experiences we know that's not the case. So, it's really important to understand that each individual study has these limitations and that if you just use – like if that's a perfect scenario where you would come to the wrong conclusion.

DANNY LENNON: Just on the lines of some of the stuff you've mentioned there one of the biggest issues in interpreting data published in different studies is looking at the statistical methods used, for example. Now, for those without a background in statistics could you perhaps just explain the role of statistics in interpreting data and findings of studies and is there just anything that people listening should be aware of when it comes to the statistics if they don't have that background?

BRAD DIETER: Yeah. It's kind of a two-part question, so I'll try to take it by pieces. To address the first piece is how we analyze data is actually really important and depending on what type of statistical tool you can use you can find what we call a

significant difference. Whereas another tool you might not, and what that means is we can be looking at the same dataset and essentially end up with two very different conclusions based on whether we used you know t-tests, ANOVAs. If you're doing longitudinal studies, if you do a paired t-test or repeated measures ANOVA all these things have a really big difference on the ultimate conclusion. So, it's really important to understand and know what the limitations of each of those are and what the appropriate setting is.

And then, was your second question how can people kind of use that to interpret it is one of the things I like to remind people is especially when we talk about human physiology is we have to remember that there is a difference between statistical significance which is just achieving an arbitrary probability number versus physiological meaningfulness. A perfect example of this is recently I was talking with Brad Schonenfeld and Alan Aragon about this, but there is a study that was just released showing that people taking branched-chain amino acid supplements versus carbohydrate supplements that there was more fat mass lost in the branched-chain amino acid group statistically and there wasn't in the carbohydrate group, but when you look at the actual means that carbohydrate group lost twice as much fat as the branched-chain amino acid group in this one study. I mean while one achieve statistical significance when you actually look at the data there is a big disconnect between – there's arbitrary P value that was reached and the actual meaningfulness of the outcome; so if I was somebody who was trying to lose some fat and I could achieve statistical significance but only lose half-a-kilogram or I could not achieve statistical significance lose one-and-a-half kilograms that's a big difference physiologically and we can't always – sometimes you have to take into consideration the limitations of statistics you know that there is a lot of times a disconnect between statistical significance and physiological meaningfulness. So, we need to really look at what are the actual data, what are the effect sizes and take that into context too.

DANNY LENNON: That kind of ties into something I did want to hear your thoughts on, and it's something I actually remember talking

with Kamal Patel about and it's in relation to the hierarchy of evidence because, for example meta-analysis are often seen as the gold standard and I totally get that, but there are also certain drawbacks to 100% hanging our hat on something found in meta-analysis like I mean we can learn a lot of stuff from individual randomized control trials and even taking a step further from looking at individual data points or outliers in a study because again that's going to be looking at on an individual basis that people maybe outside of those means that you mentioned. So, how do you think about the whole hierarchy of evidence and what way should people think about that in their own minds?

BRAD DIETER: Yeah, that's one of those really, really good questions. The problems with when we look at meta-analysis is meta-analysis is only as good as the quality of studies that are included in the meta-analysis. So, if you have some severely flawed studies in the meta-analysis we can't really rely on the results of that meta-analysis, and then another way to look at those is meta-analysis are really broad strokes. It's a really generalizable picture that applies to most population data, and so it's really important whenever you're trying to really uncover the granularity and the truth in the topic is you know the individual studies, the randomized control trials are also really important and also the mechanistic studies, because a lot of times to really answer a question you need to know the mechanism of action is actually true and has been validated you know more than once it's been repeated. In randomized control trials you see consistent results with fairly repeatable effect sizes, and then that the meta-analysis you see a general consensus among the literature. One of the ways that we can show that this piece – why you need all three to really have a clear picture is I think diet and heart diseases is a perfect example or even diet and cancer. When we look at mechanisms of heart disease or mechanisms of cancer they are really all over the map. We have some general good guiding principles of what those answers are, but we don't have a single defined mechanism. When we get to randomized control trials diet and heart disease we get varying results across different populations, across different dietary interventions, across different adherence levels and

those sorts of things. Then we have these meta-analyses where we draw these conclusions from and that's a perfect example of where meta-analysis break down. If we look at the meta-analysis on saturated fat and heart disease, and I'm actually writing a paper right now on that, so it's kind of pointing a topic but there's been three meta-analyses really conducted on saturated fat and heart disease and they all find fairly desperate different findings. So, that kind of shows you if we don't have a really clear mechanism and we have randomized control trials that aren't really coherent and congruent amongst themselves and then we get these meta-analyses that show different picture you know that's a really good way to show this hierarchy of evidence and where we really need a solid foundation of mechanism, we really need a solid foundation of randomized control trials, and then we really need some really good solid meta-analyses and any hitch along the way kind of amplifies that effect of the hierarchy.

DANNY LENNON: Yeah, I think that's just such a huge point, because it essentially gets the ship setting out on a certain course and diverts by just like 1 degree and the farther you go along you're going to be just skewing further and further off course and I think the same thing happens there that if you don't have like you say those foundational tiers taken care of then the farther that you go up that chain and by the time you reach the meta-analyses it's just all over the place and you can't really draw anything solid, and one thing that I find super interesting that has both pros but also some massive pitfalls is that due to the current state of the Internet and technology it's literally never been easier for vast numbers of people to share their experiences, and so now we have large numbers of people who are not only conducting their own personal any equals one experiments but because of Internet forums and such they are now been able to collate these reports and share them in large numbers. While in one sense it's completely fair for someone to claim that the results of such a personal experiment are unlikely to be valid enough to draw conclusions from, which I totally agree with, surely there then comes a point when you get a whole host of people that are reporting similar things with different

experiences in personal experiments they've done, and you can start to see maybe some patterns are worth looking into. So, do you feel that there is any value in that despite it not being an actual control trial where we can control variables and it's just one person's report but if we get these large enough numbers of people sharing experiences is there enough value to at least maybe generate some hypothesis for us?

BRAD DIETER: Yeah. This is such a great point Dan and I'm glad you bring this up, because I kind of battle with this myself you know I have the science side that I am trying to do and I also have the pragmatic side, and so I think pragmatically what I really care about at the end of the day is how can we get people results whatever it is and I think these anecdotes and these experiences if those manifest in practical results I think that's fantastic and I don't really care that the mechanism is true from a pragmatic side. If we get these anecdotal stories and we get these kind of mass building of people that have experimented on themselves and found something that works; whether that works in the way they think or not, as long as it's working and it gets good results I think that is a okay thing and I think it's actually beneficial for a lot of people. But then on the flipside, there's always two side to a coin, is I think we need to be very careful and realize that these are not scientific truths. They are places to generate hypothesis from that we need to then fair it out in the literature and really do some experiments and some controlled science and really figure it out, because I think a lot of times individuals are prone to confirmation bias, and so myself included we all have a lot of things that we have confirmation bias on. Anything that works we say works because of a certain reason. Anything that doesn't work we just kind of forget about. So, confirmation bias is really strong.

DANNY LENNON: Yeah. I'm glad you mentioned that because I think it ties back to the whole piece around just critical thinking of not just trying to find out does a certain method work, because to a certain degree lots of people can find a number of approaches or methods that will work but if we don't have that critical thinking to ask why and look at what is going

underneath that is actually making this thing work then we really don't understand the principle that we can then apply in other scenarios, to other people and so on. When we talk about research this I think particularly applies to research on supplements, one of the big potential issues to watch out for publication bias, I mean, we've all kind of seen different reports of this generally big difference between the number of successful trials that gets published on a topic when the trials are funded by, let's say, a potentially biased source versus an independent trial. Now, I don't want to sound like a conspiracy theorist and I do want to make it a hundred percent clear to people that there are ton of research studies that are funded by pharmaceutical companies, supplement companies, food and industry, etc, that are completely legit truthful data and really good quality research. But it's probably fair to say that it's not always the case, and in some cases we don't always see that. Similarly we see many papers where the totality of the raw data maybe doesn't get published and some kind of weird things going on with statistics. So, where does publication bias come in and why is that potentially damaging to the overall body of evidence?

BRAD DIETER: I think what it comes down to is a more fundamental issue too in the literature is that negative studies hardly ever get published and that's a really big thing for people to remember. So, while you see one or two positive studies of a specific supplement just remember that negative studies or negative results in a lab usually aren't published. So, there might be 20 negative studies and 2 positive studies and only the positive studies get published. So, before we dive into anything else that's a really important thing to remember in the back of our mind. So, that's why when you see seven or eight studies published on the same thing showing the same result that's a really important thing to remember, because that means that this data is actually true and repeatable. But then to your point of bias in the literature based on industry pressure or industry driven issues that's something that – how I like to view it is whenever I read a study that's funded by an industry partner is I just try to be a little bit more critical, so I don't dismiss it and say no this has to be biased, but I do look at things a little bit more critically and I look at

things and try to find a little bit more – have a hold on things, you know like you said, it's really important to look at the raw data instead of just what's reported, because I think a lot of times – data manipulation is a big thing, and that's not just industry sponsored that's scientists in general that's kind of the whole field. So, whenever you see a study funded by industry remember just to be a little more critical of things.

Now, another thing that's really important, and this is something that I think we should do more of, especially when we talk about a supplement literature is, you know, publication bias can actually be assessed metrically, so we can do things like a funnel plot where we look at the effect size and we look at the sample size, and usually what happens is the larger sample you have you get this kind of regression to the mean or the central limit, the larger sample size you have the truer the effect is going to be. So, if you see large studies that generally have different effects than the smaller individual studies then that's an indication of publication bias usually in the smaller studies. So, these are actually really easy tools, you know, you can actually go out yourself, let's say, you're interested in a specific supplement pull up 10 to 12 papers on it, figure out the results and the sample size and you can actually – I think there's even online tools like funnel plot generators, and you can see measures of publication bias to actually see if that's out there. So, I think what's going to be really important in the coming years, as we start to gather more evidence on supplements, is doing things like looking at metrics of publication bias, because I think it's a really important thing to understand. I don't think it's inherent in every industry sponsored paper like you mentioned, but it is something we do need to consider.

DANNY LENNON: We've kind of been talking in around issues related to research, but if we maybe just for a moment turn to some practical takeaway messages for people, so that they can just takeaway something of use from all this. Based on what you've learned over the countless number of years that has shaped your current philosophy what would you say are perhaps the most important concepts or principles that

people should keep in mind about nutrition and health, especially from that kind of evidence based viewpoint?

BRAD DIETER: I think probably the biggest lesson I've learned and learned it the hard way is, especially in the nutrition realm we kind of get the swings of the pendulum to each of the extreme whether if it's calories, whether it's macro nutrients, whether it's supplements the pendulum always swings for a lot of us and I've found that most often times the truth falls in the middle and that that's a really good thing to remember when you are thinking about nutrition pieces, and trying to follow dietary advice, and implementing nutrition plans and things like that is the far edges of the extremes usually are a little bit more off based than the other things in the middle.

Another thing is for most people very basic principles get people a lot of the way. Spending a lot of time and energy really trying to nitpick the nitty-gritty details of your diet whether it's optimizing nutrient timing to the nth degree, whether it's trying to find the perfect supplement combination, whether it's stressing out about should I be eating 35% of my diet from carbohydrates, should I be eating 40% you know a lot of those nitty-gritty details are the things that end up being more distracting than they are helpful and a lot of times it's really just the basic fundamental principles that most of us know to be true and just doing those consistently. I think that's probably the biggest practical advice I can give people, and then when it comes to the nutrition research and kind of your own learning and understanding is be as open minded as possible. I can't tell you how many times in my career I have changed my views on things, I mean, I change them all the time, I'll probably learn something today that I'll change the way I think about things. So, one of the things that's really important is to always be open to having your ideas be wrong to learning and growing.

DANNY LENNON: Kind of in line with that and at the risk of this being just a big broad generic question. If you could change one thing about the nutrition history or the health and fitness industry right now or even like a message that's often perpetuated in the nutrition field what one thing would you like to change or

that you would like people to realize maybe not be a useful message?

BRAD DIETER: Gosh this is a big question, but probably two things that – and these are very pragmatic things is one; people get wrapped up in this idea of needing to have perfection to see progress, and I think that hinders a lot of people. You know just trying to develop some really basic good core principles of nutrition and just applying those to your life and doing it more often than not is really what you need to focus on, and perfection is not attainable, I mean, even people like myself perfection is not what I strive for. A lot of times it's just can you do a good job most of the time and gets you most of the way, and I think for most people in the world being competitive figure athlete is not the end goal. The end goal is how can I feel good, how can I look good, how can I live long enough to dance in my grandkid's wedding that's kind of for most people I think a really good goal and that perfection shouldn't be the pursuit.

And then, the other pragmatic piece is just don't let it be so stressful and consume your life. Nutrition is really what I live and breathe and I still kind of try to make it so it's not super stressful. It's something that I add to my life by trying to be healthier, and trying to eat right, but letting it really rule your every waking moment and letting it be stressful. I know those aren't really sciency things, but I think those are really important messages that I think right now kind of the Zed guide stuff the nutrition world is not really keying in on, and I think those are really important things for the human being part of the fitness industry to really kind of understand and grapple with.

DANNY LENNON: Yeah, I completely agree, because it's something that took me quite a number of years to realize but had such a massive impact, and I remember the strength coach Jim Laird talking before; he was talking in the context of training, but essentially the same thing goes for nutrition. He was talking about how training should be something that is there just to enhance your life. So, in all the things you want to do, and the way you want to feel, and the activities you want to do training is there to enhance and make you feel better rather

than completely consume and become everything, and I think the same thing tends to happen with nutrition in that as we maybe start to learn a bit more from a kind of a baseline level that we start to get into, again, those small little details and trying to make everything perfect and soon we get away from original goal of changing our nutrition for the better and trying to eat healthy which was to have a happier and healthier life, and then so we get down this kind of route of just everything is focused about having the perfect diet or what would seem to be the perfect diet on paper and it's maybe something around maybe the most nutritious diet in terms of the nutritive value that you could put on paper. It's not the same thing as the most healthy way to eat in general, because there are so many other aspects to your life in terms of the anxiety around food and social occasions and all that sort of stuff.

BRAD DIETER: Yeah, I think that's one of those things that – the biggest bang for your buck in terms of how to get a lot out of your nutritional approach to life, there's so much more, like you said, there's so much more to life than the macros, and the calories, and the six-pack, and the 20 inch biceps or whatever and just really trying to figure out what are your main goals in life and making a feasible and attainable plan. One of the people that I really enjoy talking to and listening to, and you had him on the show, is Spencer Nadolsky and his approach is very similar in the fact that with his patients, he works on the obesity side of things, with his patients he really just focuses on those key principles and trying to figure out how to make good choices most of the time and not pursuing perfection, and that really makes a big difference in a lot of peoples' approach.

DANNY LENNON: Perhaps there's misconception for a lot of people that in order to get the best possible goals or they see that the people at the elite levels of body composition the things they're doing, if they are not at that level they are just either not trying hard enough or they're not doing things correctly. Whereas, that's not necessarily something that they need to aspire to, because every decision that someone makes in regards to the nutrition or their lifestyle has a tradeoff. So, yes something could help you get closer to 40% body fat, but

that's going to take away from something else that you might want to do in your life. So, it depends on what you find important to you and to be okay with not being at these extremes if you have other things that you would prefer to put your time and resources into, and then the vice-versa. If someone wants to go down that route and wants to step on stage then yeah they have to go the tradeoffs in the opposite direction. So, I just think for people to bear that in mind that there is not one predetermined goal that is good and then others are failures. It's about just knowing the tradeoffs of any one decision and being okay with where you want to be with that. One thing that maybe related to something I just mentioned, and again it's maybe a bit of an abstract question, but is there a piece of advice that you received along your journey that has maybe informed the way you do things or informed the way you think or influence the way you think?

BRAD DIETER: One of the things that is important for a lot of people to remember, and especially those in the fitness-nutrition industry, and especially those people on the coaching end of the spectrum is that each person has their own struggles and their own things in life that they deal with. A lot of times if you are the personal trainer or if you are the nutritionist is to make sure that – now kind of what you talked about, that everything that we try to do is a positive. So, a lot of times we focus on the negative things; don't do this, don't do that, you're doing this wrong, is really focus on the positives and trying to build skills in people and that's one of those things that I try to take in the lot of my work. So, a big motif in our industry is to pick apart other peoples' work and show what's wrong with other peoples' philosophy or dietary approaches and I don't really find that to be the most helpful way to go about doing things, because you don't get as much out of a conversation with somebody telling them what they do wrong or why they are wrong or what they've been doing that's not appropriate. Whereas, trying to build skills and trying to put out positive information is usually a much more helpful approach and trying to change peoples' lives and peoples' thinking. So, in a lot of my work I try to focus on building information, giving positive things like oh go do

this, instead of don't do this. So, I think that's one of those really important lessons I had to learn the hard way and it was one of those things that your family tells you, you know, you are having conversations with them and they're like you know it's really hard when all you do is tell us what we're doing wrong why can't you give us something to do right. So, I think that's a big thing that we should all try to aspire to do more, especially when we're working with people because a lot of times the people that come to us is coaches, as practitioners, as professionals is – they are really bearing their big emotions in life the places they struggle with, and so the best thing we can do is try to make it a positive growth experience instead of really hammering on what they're doing wrong. I think that's a really important thing to remember.

DANNY LENNON: Yeah, 100%. I think that goes all the way from the overarching theme of things all the way down to very practical steps of – when working with someone at least initially of like you say, those kind of first few interactions or modifications to what they're doing being something you're adding in or a new habit they're trying to proactively go after and include in what they're doing in their lifestyle or with their diet as opposed to it being something that's restricting what they're doing or something they need to eliminate or something they need to take out immediately as opposed to that first step being something proactive to go and do or something to add to their diet, and I think just the way things are framed can have such a huge impact. Before I get to the final question Brad I'd like you to maybe take a bit time to mention what you've got going on with Science Driven Nutrition, because you've got some really cool information over there. You got the journal which is obviously putting out really top quality information, so maybe let people know what you've got going on there, the kind of real mission behind it, and then where they can find you online?

BRAD DIETER: One of the things that I found is there's a really hard balance between the scientific literature which is really hard and dense to read. It takes a lot of nuance to understand, and the popular articles on Men's Health, LIVESTRONG.COM and that a lot of times the information in the popular media isn't

correct, and a lot of times the information in the scientific literature is hard to access. So, Science Driven Nutrition is kind of created out of this, how can we bridge the gap and use our scientific training and bring it to a level that's kind of in the middle where people can really get a grasp of kind of what the truth in the answers are, and we do that through our blog that we have on sciencedrivennutrition.com, and then the monthly journal where we put out – usually it's about 50 pages a month of just really high level content where we've gone through the research, we've written articles that try to give you the truth of information. We cover everything from supplementation to dietary frameworks to any of the hot topics. So, the whole goal is to bridge the science and the mainstream media and bring that information to the people.

DANNY LENNON: Awesome and for everyone listening I will link to all that in the show notes to this episode, so please do go and check it out. It becomes highly recommended, it's really, really good stuff. And so, Brad that brings us to the final question we'll end the show on, and it's simply if you would advice people to do one thing each day that would have a positive impact on some aspects of their life what would that one thing be?

BRAD DIETER: I'm a big believer in trying to be as thankful as possible as you can be and just knowing that life happens and it gives us a lot sometimes we wonder we can handle and how we respond to things is really important, and so one of the best things to try to improve your life as just a human being is really to try to think about the things that you're grateful for and thankful for. In all of our lives we have at least one or two things that we're really glad that we have whether it's our health, whether it's our family, whether it's our job, our kids, if it's our dog, if it's your morning cup of coffee just really trying to focus on the positive things and not letting the details and the nitty-gritty stuff kind of consume you, I mean, Danny like we're talking about when it comes to the nutrition piece focus on the real basic broad concepts, and try to do those consistently and in life try to focus on the big important things and not let the rest of the stuff get you too much. So that would probably be one piece, and then the last piece I would say – and the last piece of advice would

just be try to find a way to do what you enjoy doing every day. I think that brings a lot more happiness and fulfillment in your life than chasing the paycheck. I'm in science, science is not one of those jobs that is super lucrative but it's one of those things where I get to get up every day and go and try to find answers to really hard questions and try to make a difference, so that's what drives me. So, those would probably be the two things I would suggest to people.

DANNY LENNON: Yeah, I couldn't agree more with those, I mean, just across the board the more people I see that are really clued-in to what they're doing, really intelligent thinkers that are doing good things in the world; how often people respond with the gratitude being the key cornerstone of the most important thing to be doing, it's just astounding and it just continually hammers home that point to me, and I think even on when you mentioned around doing something that people have a true interest and a passion, and I think chasing interest and something they enjoy and the passionate thing as opposed to things that are seen externally as accomplishments is often the better way to go, because if you just chase things that you're interested in and fascinated in then you end up just accomplishing things that are cool without looking at these outcomes beforehand you're just focusing on that process. So, yeah I just completely agree with those and I think it's the perfect way to round out this episode. Brad this has been a great conversation really, really appreciate you taking the time to share this information and for the great work that you're doing. It is noted and it's really well appreciated.

BRAD DIETER: Yeah, absolutely Danny. I think it's a pleasure to be on and I've been a big fan of your work for years, so it's great to finally chat with you.

DANNY LENNON: Awesome. Thanks so much Brad, and I'm sure we will talk soon.

BRAD DIETER: All right, take care.