Your Questions Answered - Bret and Heather 59th DarkHorse Po...

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**SPEAKERS**

Bret, Heather

**Bret** 00:11

Hey folks, welcome back to the Dark Horse podcast live stream 59 reason to wag your tail and point your snout in the air. Alright, it's q&a time.

**Heather** 00:22

It's q&a time. Here we go. We'll begin with a few questions from last time as we do have you guys rift on jealousy, the emotion through the evolutionary lens? If so, I'll look for that. Thanks for all you've done in 2020.

**Bret** 00:37

I'm not sure if we have done it specifically. Let's say a little here, and we can come back to it. All right. So first of all, jealousy, like so many things is an adaptation, right? All negative emotions would have to be How else would they have come into existence? Now jealousy obviously has implications, you know, if we take sexual jealousy, for example, it has a role to play in maintaining a pair bond, right? That is to say, policing your pair bond such that it does not come apart on you or get parasitized, or whatever it is, is obviously a an important thing to do to the extent that pair bonds are also an adaptation. Hey, that's more cats than usual. So anyway, there's that we might have an investor we have, we have something close to an infestation. So the only other thing I would say is that it's fascinating and not surprising that because male and female are real phenomena. Well, I know real phenomena. And because male and female, not only are they real, but they're different. That the sexual jealousy is distinct between males and females in a predictable way. Because that is to say that the things that threaten a male and a female are distinct.

**Heather** 02:01

So we can historically have been reliably throughout history and slightly less distinct now in the modern era, but still, the patterns of jealousy across sex hold,

**Bret** 02:12

right they hold. And so let's say our let's say generally, males have a lot to lose, evolutionarily speaking, if they end up investing in offspring that are not genetically theirs. Now, it may be that we shouldn't give a damn about this because who the hell cares about whether or not your children have your genetic Spelling's for their enzymes or not, but we are wired to care about it, because those of us who were more wired to care about it out competed those of us who were less wired to care about it. So males and by the way, this is a feature that females carry, but do not express that is to say, we all have the human genes with very few exceptions, there are some Y chromosomes, things that women don't have. But in general, women have all the same genes trying to get into the future. And so they express those that match the, the womanly interaction with the universe, and they have lightened to the ones that match a male pattern. But nonetheless, men tend to be very concerned about sexual infidelity. Women have less to lose in sexual infidelity, not zero. Sexual infidelity can result in the loss of a mate to somebody else. So there's reason to be somewhat jealous over it, it can result in disease or other things. So there are reasons that women should try to police the sexual behavior of their mates, but not as strongly as males. But females, at least in humans have to fear especially his abandonment, because to the extent that raising offspring is an extremely expensive behavior, signing up with a male to jointly raise children and then having him disappear, which then makes that female much less able in traditional terms to find a new mate because she's got a burden that doesn't carry the genes of whoever the new mate would be. means that this is a very serious matter. So in general, men tend to be more sexually jealous and females tend to be more romantically jealous. And

**Heather** 04:11

so men tend to be more concerned about controlling physical infidelity. And women tend to be more concerned about controlling emotional infidelity.

**Bret** 04:22

Yep, that's that's correct. All right. So I think that's a pretty good that's a good summary primer on sexual jealousy at least and then there are other prestel is

**Heather** 04:30

all of our conference Oh, man. This from last week? Our Biden's recent appointments visual or merit based. curious if evergreen writ large relates at all also unity 2020 You were right all along.

**Bret** 04:46

Shocking. Yeah. Yeah, you have specific things to say on

**Heather** 04:50

now. I mean, I I like this question enough that I brought it brought it back up for this for this time, but it feels it feels like The prediction that we were making that he would you know, he was going to pander. And you know, it's impossible. I mean, this, this is the problem with with tokenism and things like affirmative action is that? What if, what if the most qualified person for a job is in fact, a disabled black woman, you hire a disabled black woman in this environment, and it is going to be nearly impossible for anyone's first second or even third interaction with them to assume, oh, wow, what an awesome person for this job. Because of the culture that we're in. It's it's impossible to know, and the person themself must recognize that all of their interactions are tainted with us.

**Bret** 05:44

Yeah. Yeah. It's uh, and, you know, we learned this in the affirmative action era. Right? So this is a new version of it, but you know, we're reinventing the same problem. So yeah, I see very little, that's helpful in Biden's appointments. I see a lot of pandering. I see a lot of machine politics reasserting itself after, what may one day be understood as a refreshing break in the form of insanity that made no sense, but

**Heather** 06:12

wasn't saying I'll say, Well, yeah,

**Bret** 06:14

it was it, you know. And, you know, I must say, I know I'm just gonna take crap for this, because I always do anytime I indicate any sort of ambiguity about which the right side is when they're both wrong. But you know, I said, When Trump was elected, that at least we were all awake, right? At least we were all await in, and that the thing that I feared if Clinton had won, and he tossed me off the ledge. I mean, metaphorically, I did and I'm no different lunch, but you know, it's all ledges. But the, the fact was, there was every danger that if Clinton had won in 2016, that a whole lot of people were going to feel like, not perfect, but it's good enough. And those of us who regarded as not nearly good enough, and very much a matter of an intense kind of political corruption, that yes, may very frequently be illegal, but why would you care about that? Right, right. But the fact of the corruption is legal is its own problem. It does not make it better. Yeah, right. So what we had was a break in the narrative and the narrative is now reasserting itself and you can see it reasserting itself in Biden's appointments and statements, and a lot of people who saw nothing but the horror of Trump for four years are suddenly going to feel like whatever. Okay, it is what it is, it is what it always is. And the answer is, you know, that thing that it always is, is going to get us killed. So yeah. Try not relaxing about it.

**Heather** 07:44

There we go. Have you read any Haruki Murakami? He is wonderful and loves to play with our conceptions of reality worth reading? Thank you both and happy holidays? I have not but I wanted to include this this question. Because one of our most amazing students on our last study abroad trip I was constantly recommending morikami to me, and I still have not read any of his work. But I have I have received this recommendation from a number of sources. So we'll do so. And if anyone has a particular recommendation for where to start, I would be interested to hear it. Cool. How does the rate of mutation affect the I presume the answer your answer to that question is now Yes, I am not. How does the rate of mutation affect the evolutionary process? Can the species mutation rate be considered fine tuned for the species for optimal evolution?

**Bret** 08:36

Good question. Yeah, it has a huge implication. And the answer is even better than you're, you're anticipating here. So there, you have rates of evolution, that are highly variable. You know, HIV, included our initial ability to do anything about it, because it was so rapidly evolving. Likewise, things like cold and flu are so rapidly evolving that, you know, even if we can make some inroads against flu, for example, they're not durable. So in that case, high mutation rate which has a cost, right, a lot of the mutations that occur, in fact, the expectation would be the vast majority of them make things worse, but to the extent that it discovers some new thing, you know, you can afford a lot of dead viruses. If you come up with some new innovation that

**Heather** 09:24

advances the ball or evades and extend vaccine for instance, right invades

**Bret** 09:28

an extent vaccine or Yeah, I mean, escapes the memory cells that

**Heather** 09:34

are either endogenous or exogenous or are built in our onboard immunity, or one that we've received the

**Bret** 09:39

shot, right, here's where this gets really interesting, which is even within a creature, the mutation rate is not one thing, and there is clear evidence that different properties are moved around in the genome and altered with respect to their rate of mutations. You have certain things like In fact, The adaptive immunity we talked about is contingent on a kind of genetic shuffling that takes place. So basically, there's a random number generator phenomenon in the genome. There is also the ability to move things on chromosomes where they are more and less prone to be disrupted, and therefore to change in ways that could be selected. So for example,

**Heather** 10:24

like more, like closer to the casma, more and less susceptible to crossing over. Right,

**Bret** 10:29

exactly. So I, I learned from Bill rice, who we mentioned on the program last time, that the fastest evolving gene known at the time, and I don't know that it's changed, the creature may have changed, but the likely the the process is not the fastest evolving gene known. Was the gene for the Aqua zomo proteins in I think it was abalone, if I recall correctly in the sperm. And the idea is that there's a

**Heather** 11:02

it's acrosomal proteins are, is that is it tail proteins, or is that like the coding?

**Bret** 11:07

No, it's the protein that the hatches the egg. Yeah, so I thought it's kind of arms race between males, the one that activates the egg first has an advantage, obviously, because it's shutdowns, it shuts down the eggs availability to other sperms, where there's firm competition, there's intense selection for a better formula. And it may be that this is part of an arms race where there's actually resistance on the part of the, the substrate, there's evolutionary resistance on the part of the egg. And so anyway, rapidly evolving proteins in acrosomal, acrosomal, proteins and sperm, slowest evolving genes known are those for histone proteins. histone proteins being proteins around which DNA is wrapped, partially just to keep it organized. So it isn't a huge tangle that breaks up and can't function. But we have learned more recently, that the way in which proteins are wrapped around, I mean, the way in which DNA is wrapped around these histone proteins, which look like rods and balls, and they packed in a very regular form. In fact, you can see it in an electron micrograph. So yeah, you don't see, you see these, I forget what they're called nucleosomes. But anyway, you see these regular balls that are created by the way that the DNA is wrapped. And then there's sort of a fractal process where it's wrapped, and then it's wrapped in a higher level and higher level. But anyway, the way in which the genes are wrapped around the histone proteins dictates whether or not they are available for transcription, and so on. What this means is that this is a mechanism for turning genes on and off. So if you think about the fact that your eye has all the proteins necessary to make your liver work, but most of those aren't useful in your eye, so they have to be silent. So you can rap genes in such a way that they are effectively invisible to the cell and not interfering with anything they're dormant. So the point is, in histone proteins, these are extremely ancient structures, they go back to the beginning of eukaryotes, what you labeled as how far back you're wise 1.2 to 2 billion years 1.2 to 2 billion years. That's a very ancient structure. And the idea is any alteration you would make to a histone protein is almost certain to be catastrophic and not just catastrophic for some process, but catastrophic across the whole genome, because everything is dependent on Being Well wrapped and organized. So anyway, very slowly evolving. So yeah,

**Heather** 13:36

lowest mutation rate there. Yep. Very cool. The next one, we have not yet gotten to these kayaking existential threats piece, I took a real quick look at it and want to spend a little more time but we will come back to it. Chadwick Thank you. Would you consider mirroring your content to alternative platforms such as mines or rumble?

**Bret** 13:57

Sure, mirroring would be smart in light of the various hazards that clearly go with these these big platforms. So yes, it would be a good idea.

**Heather** 14:10

Okay. Question from the discord conversation this week. What would be the evolutionary logic behind self imposed celibacy, as seen in clergymen, hermits and philosophers throughout history?

**Bret** 14:23

Gonna have to put this one on pause except to say that the the fact is there are lots of ways the things that cannot reproduce end up doing the equivalent. And so that's what that's that's good. Yeah. It's it's an important principle. And so the counterintuitive thing is that it's like people and but we will come back to it in proper form with an excellent, long, I think, satisfying explanation. And anyway, I'm looking forward to doing that. And if it can't be if it turns out that this locked stuff is going to go on and on and on. Maybe we have to do it some way other than renting a hall. But it has been my my hope that we would rent the hall and have the discussion.

**Heather** 15:09

Okay, first question from this last hour. Why did you describe the success of the new alpha fold two as scary? So this was we had this conversation a couple weeks ago, and I thought we sort of explored it in our conversation. I find it more more terrifying than you do. And you had a more tempered response.

**Bret** 15:30

Remind me of where we were in that discussion

**Heather** 15:33

of so alpha fold. Two is the is the Google solution, the AI solution to protein folding, right? And this came in this hour, and I felt obliged to read the question, but I'm not sure I feel like we should have had the conversation. I don't have anything to add. I have not been thinking about this anymore for a couple of weeks. So

**Bret** 15:54

I think I can I think I can recover it. And I would say the my expectation was that there is actually a simple logic underlying the whey proteins fold something that is effectively explored closer to what Legos are like, then building stuff from the ground up. And that's right. And so my hope, I guess, is that what the program did was Intuit something about the heuristics that go into exploring the space. And therefore that basically, this is hinting at a discovery we might be about to have, but it does not imply that the awesome power of artificial intelligence is right there. And we are standing at the singularity and etc.

**Heather** 16:42

Yeah, I guess I mean, regardless of certainly it's less scary. The closer to true that is, the less complex this question actually was, that has just been solved by AI, and is less terrifying. But really, whatever. Whatever the bounds on that range of possibilities are. The fact is, I don't see any evidence that anyone thinking in this space with power to do anything about it is seeing what they're creating is an evolutionary process itself, into which checks and balances must be put as selection would be putting it on organisms, such that a human being could override a runaway process that happened. Yeah, I don't see any evidence that's happening. So that's, that's why sort of any AI gains and kind of any space I find a bit terrifying because I see no parallel conversation around. What where's where's the kill switch? Yep, I don't, I hope I'm wrong. I hope I'm just missing it. I'm not aware of it. This is not a literature conversation I pay attention to but I don't know if it if it's there. Well, I

**Bret** 17:45

think there's a lot of thinking around runaway AI, and what might be done about it. But so far, it's in the context of, you know, libertarian solutions, which are voluntary to be workable. So, I guess what I would say is, it is time that we started taking all of these things like, Okay, you got CRISPR cast nine, since the end of the world, it's not the end of the world, right? We got a typewriter for genes, we don't have the Rosetta Stone, but the Rosetta Stone is coming. It will at that point, CRISPR cast nine becomes a much more frightening phenomenon. Okay, you've got alpha fold two, does that mean that we're about to be able to design proteins to do whatever we want? And, you know, you know, be molecularly interfering with the world in a way we can't undo? Not yet. But it's coming, right. So, you know, likewise, gain of function mutation research, right? Is, is COVID-19, the product of such thing could well be could well be, but even if it's not, it could happen. So it's time that we get used to the idea that our power is now so great, that we're going to be you know, we're going to Fermi Paradox ourselves out of existence, if we don't get wise really, really quickly. And so, each one of these things and stop.

**Heather** 19:04

We need the best brands on every possible topic. So this is not the moment to be virtue signaling around immutable characteristics.

**Bret** 19:13

Yeah. Going backwards. So yes, I think that's the point we got to stop going backwards, it's time to start going fat forwards at a rate that is conceivably fast enough to catch up to the dangers we're creating. And those would have us going backwards are a threat to the endeavor very clearly,

**Heather** 19:33

and many of them aren't contributing anything good. I work in tech as an artist, this ideology. In fact, even scholarships, I saw a woman in game scholarship evolve over the years from being for women, to when I don't even know how to pronounce this. Women. Who wl m x n, trans and non binary. I can't help but feel like I'm alone in my field when I wouldn't believe in meritocracy. Yeah, there's no question there. But to comment and I feel you. Yes.

**Bret** 20:04

Yeah, it's it's gonna be everything until we get over the idea that it should be everywhere that it's always good to, to behave this way. Yeah.

**Heather** 20:17

So that's why I kind of remember the question, but I don't remember us. Anyway, didn't really get an answer to my question from last time about how people can stop giving away their power. Could you please share your thoughts? Also, do you have a peel box for people to send holiday cards and gifts? So I'm going to look up the PO Box while you answer the question.

**Bret** 20:33

The question is how can you not give up your power? I guess I wish I understood which version of give up your power

**Heather** 20:40

Yeah, I think we answered some version that wasn't what this person wanted. And we still don't necessarily know what right is being asked for. I mean,

**Bret** 20:51

I you know, I'm going to give you a placeholder answer since we don't know exactly what what domain you're talking about. But there's something to be said for advertising for First of all, cultivating your ability to be trustworthy with power. Right? And when you demonstrate trustworthiness with power people are much more likely not to see you're having power as a problem and to go about tearing it down. So I would say this is something that worked very well for us inside the classroom where we knew our students and they knew us which was we demonstrated that we would do the right thing if we got something wrong we would come into class and explain where the error was and upgrade things and so as people got the sense that a you did care about them be that you were honorable and not lying to yourself they were much more relaxed about the power dynamic whereas you know otherwise there is a an asymmetry which in the wrong hands can be abused so I actually

**Heather** 21:53

I actually talked about that in my Impact Theory conversation with with Tom bill you. So that's that's out and I actually did listen to it, which I don't always listen to these conversations afterwards. But I recommend it. So there's some stuff in there about power and how you can use power effectively. If you're interested in pursuing more impact, their

**Bret** 22:10

impact their impact their podcasts, is that the name?

**Heather** 22:13

I think so it's definitely Impact Theory. It's on all the podcasts and it's also on YouTube, I guess. So we do have PO Box, one for flat stuff and one for packages PO Box 1703, Lake Grove, Oregon, 97035 dash 3401 either of our names on it, or for things that are more three dimensional 15875 Boone's ferry road number 1703. And then same everything else Lake Grove, Oregon. 97035 dash 3401. All right. Have you read? Oh, I forgot to get it. Have you read Matthew Walker's book, why we sleep. It offers some alarming and compelling evidence for the ways modality has devastated our sleep. and by extension, our health. Yes, it's terrific. In our forthcoming book, which is still months from publication, but will be published in 2021. We have a list of we have recommended further readings for each of our chapters. And for our chapter on sleep, it is exactly Walker's book that we recommend is further reading. And of course, there's lots of other places you could go but it really is terrific. So anyone who's interested in a savvy, careful, nuanced understanding of sleep. I recommend that Matthew Walker's why we sleep. I lived in LA for three years. So I must ask how to two people who grew up in Los Angeles end up normal and reasonable adults. Oh, well, we fled.

**Bret** 23:45

That's what we did.

**Heather** 23:50

Yeah,

**Bret** 23:51

yeah. I don't know I have. Alright, I have a greater fondness for LA than I once did. I had so much I guess for it growing up or, you know, in the decades after leaving, but, you know, I now I now understand the value of a weather pattern that allows you to spend a lot of time outside even in the winter. I mean, I remember that as a kid. I remember at one point, my parents were very concerned. And they confronted me and asked me to tell them what order the seasons came in. I struggled with because you know, wasn't that obvious?

**Heather** 24:31

Oh, well, one of the struggles in my house is that my mom grew up in the Midwest. And the South. Always wanted me to be wearing socks. That I hated socks. I really preferred to be barefoot. And my sense was, it's LA. Why do I need socks? Yeah, I

**Bret** 24:45

mean, I wonder about these people who think you should always wear socks like they don't shower. I mean,

**Heather** 24:53

you're gonna hear about that from my mother who watches these.

**Bret** 24:57

But let's just see if you're watching. Don't wear the socks in the shower. It just, it doesn't end. Well. I

**Heather** 25:02

think she knows this. Probably. Yeah, she's

**Bret** 25:04

very sensible. Undoubtedly she Yeah.

**Heather** 25:09

Yeah, no, I feel I feel the same way. I had very little patience. I mean, I actually did enjoy part of La growing up. And then as I sort of, as I came of age as I, as I became a woman, it struck me as a ridiculous place to live, especially for a young woman. And it was so clear, not to be there and couldn't imagine ever wanting to go back. But but it was actually it was one of the places that we considered moving. When we knew we were moving from Olympia, right? Like we actually really did think about it.

**Bret** 25:39

That isn't saying very much because we considered moving just about everywhere. I don't

**Heather** 25:43

think that's true, but I mean, but la like most places was just, frankly too expensive, unaffordable. Yeah. But But yeah, there there's a particular kind of crazy that is in the mindset of a lot of especially people on the west side in LA and I grew up on the west side. You did not but I don't think the gray group is considered the west side. I don't know.

**Bret** 26:10

I don't I don't know either. I grew up near the tar pits.

**Heather** 26:16

In the tar pits, no,

**Bret** 26:17

we call it the pits. You didn't

**Heather** 26:19

know no one ever called your neighborhood. Now didn't happen. Okay, well, the soundcheck may no longer be necessary. I always enjoyed the ritual and humor that came with it. I miss it now that it's gone. Bring it back as a short, lighthearted bit before the heavier subjects of the show.

**Bret** 26:34

Alright, but we need a new reason for its existence as the Tech has become reliable. So I don't know we'll find something.

**Heather** 26:45

TJ said calm okay. This is going to be Thomas Jefferson said constitution should be rewritten every 19 years, Jordan Hall has discussed a Jubilee system wherein reboots occur every 50 years to prevent capture and collapse. Do you have thoughts on systematize, civilizational reboots or formalizing the cycles? We were just working on this. Yeah, final chapter of our book.

**Bret** 27:06

Yeah, we definitely do have similar ideas. Some of them are not completely independent. But yes, there is something about the fact of a static target being gamed, and there is something to the idea of a self refreshing process. The devil, however, is in the details. Because for one thing, if you decide a fresh sheet of paper, then you're going to make new mistakes that you would have gotten over if you had continued some things. So there has to be some mechanism for sort of intentionally carrying things over. There has to be some rubric for dealing with the Chesterton's fence problem. There has to be something precautionary. And yes, I know, every time you say precautionary principle, there's a whole group of people who start clutching their pearls and looking for their fainting couch and asking for the smelling salts asking for the smelling salts. And the fact is, the precautionary principle is difficult to implement. But it is vitally important that we figure out how to take the spirit of the precautionary principle and install it into the system.

**Heather** 28:10

But yeah, you know what, we're smart species. We should be able to figure this out

**Bret** 28:13

as species go, we're smart. If that's all you're gonna give me. That's all I'm gonna give you. Okay, we, here's the thing. We have the potential being so software based to become very smart. And I'm looking forward to us deciding to do that.

**Heather** 28:32

Brett, would you be able to share the How to for the bike you made? Other than the bike and driving to the Amazon? Are there other things you did from first principles that were majorly rewarding? Okay, before you talk about bikes, you can't drive to the drive to the Amazon. There's the whole issue of the Darien gap in Panama, through which the Pan American highway does not go right. So political rather than geo logical reasons.

**Bret** 28:54

He stepped on my joke.

**Heather** 28:58

It's still sad. I don't know what to say.

**Bret** 28:59

No, I take it back. It was no joke.

**Heather** 29:04

Yeah, you can't drive to the Amazon. But

**Bret** 29:07

you could have your car put on a ship and you could go around the Darien gap. But we have never driven to the Amazon we did drive to. We got as far as Guatemala. Once

**Heather** 29:19

from Los Angeles. Yes,

**Bret** 29:20

we are actually technically probably fugitives in Guatemala.

**Heather** 29:24

I doubt I have a new passport at this point. I can now go back to Oh, no doubt

**Bret** 29:28

that we could get away with going to Guatemala. Speaking I believe that you at least are a fugitive from justice in Guatemala for having sold a car without authorization

**Heather** 29:37

to a lawyer who gave us paperwork and then said Actually, we didn't need it at all. So it was all on the up and up until we got to the border. It's a long story. But yes, fugitive from justice from briefly until I because it had expired was going to expire that my new passport at which point I now feel free to go back to Guatemala and

**Bret** 29:55

All right, well, yes, we should do that. So yeah, the secret. So I'm going to tell you the embarrassing secret It's not so embarrassing, but you want to build your own bike. And you should, it's great. And in fact, it's economically if you were thinking of buying a custom bike for yourself, the expense of making your own bike is actually quite reasonable if you have the couple weeks to do it. But it is the United bicycle Institute in Ashland, Oregon, a lovely little town where there's very nice biking and nice walking around in the evening and nice swimming in the reservoir and all kinds of stuff.

**Heather** 30:33

There's not COVID, one of the best Shakespeare festivals in the world. Fabulous live theater and not just Shakespeare, super.

**Bret** 30:40

Yeah, so the United bicycle Institute has a building there where they have a school, they can teach you basic mechanics, advanced mechanics, if you want to work in a bike shop and never make any money at all, you could get a advanced certificate for bike mechanic stuff, or you can take their frame building course. And you can, does the whole thing probably my guess my feeling having done it is you should be technically inclined, they say on their site, you don't need to be but I think you wouldn't do very well, if you didn't have basic, you know, skills, you got to have good hands and a sense for how that kind of thing works. But you probably wouldn't do it if you didn't. So if you're inclined, you go there, you live there for two weeks. you design your bike based on your particular measurements and what you want your bike to do, you draft it, and then you build it, you get the parts and you braise them together. Or if you're doing a lug frame, you solder them together. And it's really spectacular. And I will tell you that riding a bike that you've built is it's like nothing else. It's It's a great feeling, especially if you've done anything unusual where your bike is not just like any other bike, but it has special characteristics. It's it's a pretty cool thing.

**Heather** 31:59

And your experience, there was also my 40th birthday present to you. Yes,

**Bret** 32:03

I was gonna say that. It occurred to me that I didn't say it. This was a I think probably the greatest president I present I ever got.

**Heather** 32:10

And it's not something you were unaware of you you were you, you had your eye on it. And you also had your eye on flight lessons, which is part of why I just

**Bret** 32:21

never know where we'd be if I'd gotten flightless.

**Heather** 32:24

probably somewhere else. True.

**Bret** 32:28

But yeah, you can't go as far as you can. It just takes longer and well I guess if there's water, yeah, you

**Heather** 32:34

can't cross places. You can't You can't bike to the Amazon.

**Bret** 32:39

Yeah, well, right. Okay.

**Heather** 32:46

Regarding meritocracy, most gets spit out the bottom. Limited job opportunities for scientists, artists, etc. means there's no equality of outcome or opportunity. Even with equal ambition and ability, will AI make a quality redundant? Try it again. Regarding meritocracy, most gets spit out the bottom, there are limited job opportunities for scientists and artists, etc. which means there's no equality of outcome or opportunity, even for people with equal ability or ambition etc. Will AI make quality redundant?

**Bret** 33:21

Will AI so I'm struggling over what that last thing means. Doesn't mean we have to engineer a system that isn't based on the same things because the idea that merit is the same thing as productivity is wrong. Right? It at one time may have been some kind of proxy, but we're living in a very different world. And so the real question is, what would we like people to be doing? What kind of goodness would we like them to be bringing to the world? And how can we make that remunerative, right. And so as we've said, here before, it is essential, that we not reach equality of outcome, that's not a desirable state, what you want is a state in which people who have brought the most value to the world, things that are truly valuable, rather than just things that sell, right, you want those people rewarded at the highest rate so that we all attempt to produce things that make humanity stronger, better, happier, more fulfilled, freer, those kinds of things, right. Now the question is, is there any way to do that other than architecting? In other words, you know, the place where a traditional libertarian and we would depart from each other would be over whether or not there's something to be done by intentionally trying to structure the system rather than their correct recognition that intentionally trying to structure a system carries all kinds of hazards and that you're actually pretty likely to screw it up if you don't have a good mode for figuring out what actually works and what the unintended consequences might be. And what you might do to mitigate them. Yes.

**Heather** 34:58

I don't know how to pronounce this word. I've seen it a lot, ivermectin ever machten. It's an anti parasitic drug in use for decades. There is strong evidence for its efficacy as treatment for COVID. But it's being ignored by the mainstream media. And then he has parentheses desk, which is your brother's acronym, which stands for the distributed idea suppression complex. Does this does the presence of ivermectin and the fact that there is a lot of evidence for its efficacy as a treatment for COVID? Not significantly altered the vaccine situation. I don't know nearly as much about ivermectin as I might, I think it it does, it should be being talked about. I think the one. One important way, though, that effective treatment is different from vaccine is that there is real concern from a number of different across a number of different like anatomical physiological domains, that simply having had COVID may produce itself long term effects. So even if you treat it such the symptoms don't go so bad that you end up dying from it. With which ivermectin seems I believe what little I know to be effective against. There is I don't, I've never I at least have not seen any evidence suggesting that ivermectin also has the capacity to shut down all the any of the long term effects. How could we know at this point, because the things only been around the whole virus has only been known for maybe a year? Who knows? A year? Yeah.

**Bret** 36:27

Yes, I would say I am beginning to see some very high quality conversation about the foolishness of a single silver bullet theory of how we're going to address this. And at some level, it is certainly true, that we should have been way better at generating high quality testing so that we could in fact, say, who does have it, who doesn't have it

**Heather** 36:55

with sort of relying on PCR testing, right, all of the testing

**Bret** 36:59

is bad, and it's creating a lot of problems, including it is fueling conspiracy beliefs that are not well founded, because it is very hard to establish that they are false. And so in any case, the we should have had an intense lockdown, followed by very high quality testing and control of the disease where where there was an outbreak. Longer term measures should be much more surgical. A vaccine is great if it works, but running a huge, dangerous experiment by trying to get everybody vaccinated. And certainly assuming that that is what is the thing that gets us out of COVID is a crazy gamble. I read today something that surprised me, which is I hope this is correct. I don't have it on the ready. But Thailand had a total Thailand, which I believe has a population of 70 million has 60 COVID deaths total. So and Thailand is not one of these authoritarian countries that did all right, because they were able to order people around. So anyway, Wow,

**Heather** 38:15

man, it's got a climate more like guy keel and mouse, which have had appalling, appalling death rates, right? Yeah. So anyway, we go to Ecuador, which we talked about a lot in an earlier episode on my mouse in Brazilian Amazon.

**Bret** 38:30

Yeah. So in short, we blew it by not taking the virus seriously. By politicizing it, we have made it impossible that we could deploy a rational policy because half the population will suspect it's a trick no matter what.

**Heather** 38:47

And the other half the population has decided that if you question anything about the policy at all, you're a Nazi or something, right? You're, you're an anti vaxxer, you're at this year that like, yeah, and that largely from the people who claim to be all pro science,

**Bret** 39:01

right? So in effect, because we blew all of the other opportunities, we had to control this. We're now in a situation where, well, these vaccines damn well better work, because we have, you know, we've blown every opportunity to limit this in some other way. Yeah,

**Heather** 39:17

well, I mean, I have I hope, I have hope for ivermectin or avermectin. However, it's pronounced. Just put that one important caveat that it can't it's not one for one replacement for a vaccine, you know, vaccines and treatments are different approaches to diseases. And, you know, we have been, you know, hoping for we've been actively hoping for, for instance, malaria vaccine since we back began trial since that moment when I ended up on the run in Guatemala. Not really, but on that, you know, that very first trip that we took through through Latin America where we got all of the necessary vaccinations for tropical diseases that you don't end up with if you're just living in the US, but also had to take malaria prophylaxis with us and there's not a good malaria prophylaxis out there at all has weird side effects, and then the treatment is different. And, you know, a vaccine would simply be preferable,

**Bret** 40:10

right? simply be preferable. Sometimes they're possible, and sometimes they're not. And you know, and for malaria,

**Heather** 40:15

it seems highly elusive. Right?

**Bret** 40:17

So, I mean, the lesson here, and actually, I think it was Jeffrey Miller, who, he had a tweet poll that he put out asking people if they thought that our experience with COVID would make us better next time worse next time, or no, it's interesting. And my feeling is actually it's gonna make us worse. I think that didn't win in his poll. But But anyway, the lesson for next time where we inclined to learn lessons anymore, would be you take every opportunity to limit these things, right, and you use them for their value to the extent that you can make some people less sick with some sort of with a drug, for example, even if they are second still transmitted, less SEC is less sick, to the extent, you know, the lockdown thing. It just so clear to me, it would have been very, it would have been harder to sell people on a lockdown that really kept you away from other people early on, because it's more extreme, but at the very least now that we've had endless lockdown, and everybody has grown so fatigued of it, we ought to understand, you know, the wisdom ought to be Wow, I would prefer if you could teleport me back to the beginning of this. I'll take the six weeks. I really well, I'll take the six weeks gladly, well, in order not to be here.

**Heather** 41:41

And six, six weeks of isolation and loss of economic activity seemed impossible back in March. And now we're looking at nine months and more and more and more and more Yep. And you know, some places have gone well out of lockdown here in Portland. And we've we've been in some sort of soft, either hard or soft lockdown the entire time. Yeah, nothing, you know, things have never gone back to normal since mid March.

**Bret** 42:05

Absolutely.

**Heather** 42:09

All right. Let me get through two more here. And then actually three more here cuz one of them's just a comment. And then we'll move to next hours. UK minister Liz trust gave a speech at the Center for Policy studio studies. Wow, thoughts duties, that's not a word duties. now. I'll try again. UK minister Liz trust gave a speech at the Center for Policy Studies, that equality should be based on facts, not fashion. She even talked about Foucault. Again, UK kemmy. Bad knock, don't know, is openly critical. On CRT, there is hope. Thanks. That's just a comment, but always good to hear. And, boy, it does feel like in some regards, especially it's just one of the part that I'm most highly attuned to, is the sex based differences and the inroads that trans rights activists are making to sex based differences in the law. That the UK is well ahead of the US and Canada on this, and I'm not sure exactly why that is. But you know, whatever, whatever you guys are doing over there, please, please export it. Please bring it over here. Okay, what's the evolutionary advantage of the human's female menstrual cycle being so similar on average, the lunar cycle, I postulate the hunter gatherers hunted when the moon is full, but spent the darkest nights making babies.

**Bret** 43:32

I'm not sure what we should do with this. There is, I believe, a very compelling hypothesis. Is this the place for it?

**Heather** 43:52

Sorry, I give you nothing. Yeah, with that, let's just say I believe in that maybe not, but I will I will say that I don't think that 100 when the moon is full and spend the darkest nights making babies is going to be the answer because we are precisely not typically linked up like that, that even within populations and there have been you know, for a long time it was thought oh, you know, women you know, in all in like an all female dorms and such, you know, end up having mentees together and it turns out that's much less true than than early evidence suggested. So specifically, one of the reasons that we are as little sexually dimorphic as we are and the we're as much tenant to monogamy as we are as humans, as compared to say chimps or bonobos, our closest extinct relatives is precisely because we don't have monopolized double timing on reproduction. That you know, all women are not actually making, you know, getting pregnant at the same moment in like a lunar cycle. So I think that the second part of that is not going to be right, right.

**Bret** 44:52

So here's what I will say, I will give you a teaser and you know, I understand that there's a debt involved in this that I owe you the explanation. We have held back here, but what I will say is that I believe this has everything to do with the moon, that it is the moon, it is not the moon's gravity affecting women as it does tides, or any of the other foolishness that's been suggested on this front. But that this is not an accident. And there is something very special about the moon in that it shows up in all kinds of places that you don't expect. Not all of them having to do with reproduction. So anyway, yes, think about the moon and, and its phase timing and things like that. And we will revisit this sooner rather than later.

**Heather** 45:37

Awesome. Just the book recommendation for Game Theory, Prisoner's Dilemma by William poundstone. part for Norman biography, part game theory overview part Cold War history. So that sounds like potentially exactly the kind of thing we've been looking for. Thank you for that recommendation. Again, it's called Prisoner's Dilemma by William poundstone. I'm going to switch I like that. Yeah, I just did. I'm going to switch now. But there's a question here. from someone who says, I'm a lesbian who's never conformed to sex stereotypes. And I'm curious what makes real trans I promise we will return to that one. In Episode 60. Now I need to find this hours. Questions. Did you draw a line here, Zach? There it is. Alright. Woke ism is so infectious, because it fills the religion shaped hole in people's lives.

**Bret** 46:32

What I like, I like that way of putting it actually.

**Heather** 46:35

So so the question for Can I just read the rest of the restroom? First, what is the best way to prevail over it is to come up with a new religion shaped thing? Can you think of some tenants to base it on?

**Bret** 46:46

So again, I think you've nailed the phenomenon. Exactly. Right. It's the religion shaped hole. And the problem is people who notice that there is a religion shaped hole in general in people, when they lack a religion, often come up with the idea that we need to create one, which we don't. But the idea that one has to come up with something that conforms to those constraints is probably right.

**Heather** 47:14

Well, I like the framing to in the second part of the question, or religion shaped thing, right?

**Bret** 47:18

That's what I'm saying. Yeah, exactly. It's exactly the right idea. Right. So in some sense, and we advocate for something like this, in our book, not with respect to religion, but the idea that there are certain human needs that exists as a you know, that they are wired into us in a way that we cannot just simply wish them away even if we wanted to, right, you know, jealousy is actually good, good example of this, right? Jealousy is deeply built in. And the, you know, the wisest people in the polyamorous community recognize that working around that thing is a huge struggle. And we can debate whether or not it's worth it. But the point is, you can't wish away the jealousy just because it doesn't make any sense in 20 names

**Heather** 48:01

are because you find it unfair,

**Bret** 48:03

right? It's there. So the question is, how can you work around the constraint? And there are lots of places where this is what we have to do we have to recognize what kind of animal we are, you may be living in novel circumstances where that thing that we once were, is a bad match. But you have to, you know, Jim Wright is fond of saying that no system predicated on a new man is viable. Right? Yeah, that there are lots of people who want to rebuild humans so that they can live in some better way. And the point is 90, anytime you do that, you've just told us you don't know how to build the system. So

**Heather** 48:41

no one that's I mean, that's the other place where that shows up. And a more common form for probably everyone has heard, like when you're getting when you're getting into a relationship with someone, if you imagine, you know, if you really liked them, except they really need to change in order to conform to anything you're going to be able to live with like, No, it's not that people can't change. But if, if, if having, having functionality requires the change will happen in some way that you have in your head, you can't expect that it will be functional. Yeah. And so just to say, you know, Jim Wright, who many viewers, in this case, just viewers will be familiar with. But he along with Jordan Hall, who we earlier had a question that included, and you were sort of a substantial part of the game B group that was talking about things like Jubilee as possible responses, right? So

**Bret** 49:29

we were talking about how to build a system that would replace this one would preserve its values and not suffer its its harms and unintended consequences. And so we spent a lot of time Yeah, and basically the ability to say, look, anything that depends on us being different than we are is not worth talking about. Right, right. We are what we are, and then you have to build a system that works for that. So yes, yeah, the religion shaped hole is the point. So well done. Yeah.

**Heather** 49:57

Bah humbug. The next one says now This one Brett, should I read up? Sure, okay. Sam Harris recently said he was no longer in the ITW. Could it be because of your remarks about his Trump derangement syndrome? seems very childish. Either way, what's going on with Sam? Is it time for Brett Sam conversation?

**Bret** 50:18

Let's be careful here. I do think he was responding to our comments. And I also think that I owe him an apology, I think he probably thinks I'm an apology, I don't think it's for the I don't think I owe him the apology for the thing he thinks it's for. But anyway, I would be very interested in having that conversation with him. And frankly, I think there's a very good reason to do it, which is that, to the extent that we find ourselves on two different sides of something, you know, how to understand Trump and the Trump era, it's a pretty good mirror for a civilization wide wound, you know, a tear in the fabric of our collective sense of ourselves. And so, basically, I think, I think I screwed up. But I also think that I don't think I screwed up on understandably and the ability to figure out what one does, having been in that situation is, I think, a model for lots of people who are going to find themselves confronted with people in their lives that they no longer know how to interact with on the basis of stuff that went down during 2020 as we tried to figure out what to think of the election and Trump and all that. So anyway, Sam, if you're out there, I would certainly welcome it. And I think it could be useful for more than just us.

**Heather** 51:54

Hey, what are the skulls and moth behind you guys? So now there's a mask?

**Bret** 52:05

Yeah. Well, this is a lepidopteran. Let's put it. Put it at that. Yeah, these goals. We have a bear and a another bear. This one being also a seal. And the moth is a sculpture from

**Heather** 52:28

artists on salt spring Island. Yeah. Well, here in the US, we refer to them as the Canadian center, San Juan's in Canada, they actually call them the Gulf islands off islands. off the coast of British Columbia, in the state of San Juan de Fuca ish between Vancouver Island and Vancouver city in Vancouver Island and the mainland, Vancouver and Vancouver.

**Bret** 52:50

Right. Right, exactly. Anyway, very gifted, interesting artists who works in metal and glass. And anyway, if you're up on saltspring Island,

**Heather** 53:00

we have a few of these be too hard to find. Yeah. But yeah, two bears, one of which is a seal. Yep,

**Bret** 53:07

two bears, one of which is a seal. That doesn't sound like English to many. But it is

**Heather** 53:13

one Gilbert's natural reward drives the advancement of life is that similar to explore a mode and those like

**Bret** 53:22

natural reward drives the advancement of life. Well, that sounds more like selection to me explore modes, is if to give a short version, explore modes is the idea that if finding adaptations, is good, which it clearly is, in evolutionary terms, then one of the adaptations that is surely likely to be discovered is a way of accelerating the process of adaptation, and therefore exploring space in a deliberate space. I mean, design space, exploring design space in a deliberate way, rather than a haphazard, random way. Anyway, so another one of those concepts that I really want to spell out in rigorous detail, because I think it is worthy of scrutiny and challenge and I think it will triumph if properly viewed, but we haven't gotten there yet. So far, what we've gotten is an informal description, which has caused a number of people to get their knickers in a twist.

**Heather** 54:30

How should someone who is recovered from COVID handle the calculation between the uncertainty of lasting natural immunity versus the risks of a vaccine?

**Bret** 54:39

This was about someone who has recovered from Yeah,

**Heather** 54:42

if it were me. I would not try to be first second or third in line for the vaccine. I mean, it depends on how forward facing your work is.

**Bret** 54:54

I gotta say I don't understand why we haven't had this conversation should people who have had COVID be Getting this at all?

**Heather** 55:01

Well, that's so presumably. And I actually don't remember what's in that New England Journal of Medicine paper with the 40 plus 1000 volunteers, none of them, I think that they made sure that they were looking at naive participants who had not been exposed to not tested positive for COVID. So I think the answer to this is, at least as far as I know, we have no idea what the vaccine might do. If you've if you've already had it, is it you know, exactly as safe, which is to say, hopefully, very safe, and maybe not, but much less effective? Because it's only building on natural immunity you already have? Is it really hardly effective at all? Because you've already got all the efficacy that your immune system is going to have? Because you've already been exposed? Both of those are possibilities. Well,

**Bret** 55:54

let's put it this way. What we do think we know, is that at least on this timescale, very few people get COVID. Twice. Yeah, so if that's the case, yeah. And the dangers here exists by virtue of the fact that we don't know what happens. Nevermind whether it has a different I mean, not Never mind. But you know, it's a secondary layer of consideration. Whether there's some effect that comes to people who've had COVID, because their immune systems aren't, and I even will look at the virus look at the vaccine differently. That's a likely thing. Yeah. But before you ever get there, the good of giving people who've already had COVID, this vaccine is pretty small, as long as their immunity from COVID lasts. And so we shouldn't be experimenting on anybody. When a there's not enough vaccine to go around. And be we don't have any idea what the hazards are the you know, at the very least, we got a large number of people who've had COVID. And they shouldn't need this. So and then, you know, this gets right to the question, which is, there is going to be some kind of draconian, you're not allowed to do these things with air travel or go to a concert or whatever, unless you can establish that you've had this vaccine. And is that the reason that we're going to expose people who have had COVID, to a vaccine that as far as we know, they don't need and might never need, in order to come at a lockdown in order to make sure that everybody has some card that says they've been vaccinated, this is insane. So we should absolutely and you know, if we had been slower on the testing front, we would have tested against different groups, there were a lot of people who were excluded. Apparently, from this study, it wasn't that big a study. And in order to be able to see the effects, this was very limited who it was, who it was given to. And so there's a lot we don't know about how this will interact with other other parameters. And there's really no excuse for us seeking to vaccinate everybody, especially a category of people who have effectively been vaccinated by the virus itself.

**Heather** 58:02

What is what is the purpose of symptoms like a runny nose when you're little know when you're ill? Is it mostly the virus manipulating your body to conquer territory inside and outside the body? To what proportion are symptoms useful to us, ie for purging

**Bret** 58:19

so Dickie Alexander my PhD advisor used to talk about the moment when you stop coughing on behalf of your pathogen and start coughing on your own behalf The idea being that initially it's triggering you to cough because it gets spread by you're doing so and at some point you are coughing to get rid of you know, mucus that has to do with dead cells and other particles

**Heather** 58:46

is so brilliant and this is I mean this is again the problem with categories which we need but in 2020 Everyone is scared of the person who's coughing and some coughs there's no reason if you'd be scared if you know you don't want to be in their physical space like you know wants to be coughed on but but part of that is just because it's hard to tell the difference between an infectious cough and a I'm trying to clear myself with this thing, but it's all dead and I'm not infectious anymore. Cough

**Bret** 59:15

Yep, totally. So your question is a good one I think the runny nose as a lot to do with spreading stuff because I mean if you think about it, also we have the benefit in so many different ways of you know, running water and soap that you know, just happens to be distributed around the landscape all over the place. You could imagine yourself sick with you know, whatever, the flu or a cold or whatever, and having no access to running water or having it only in a river where you have to be over there, right. You're constantly like you're dripping and you're not rocketing, and it's all over you right and at some point, the, the particles are dead and they've been out in the world long enough that they're not liable anymore. But the point is you're kind of an active spreader of this stuff until you're not sick anymore. So yes, anything that triggers a symptom, like causes spread is obviously going to be favored. And you know, we have extraordinary examples of this in other realms, like rabies, you know, causes you to froth at the mouth and be angry enough to bite just about anyone. And, you know, it just so happens that it's transmitted by a frothy mouth bite. or quarter ceps fungus that causes Yes, that's insects to climb a blade of grass before or a tree or canopy tree something I think there's one that they climb a blade of grass and they grip it with their, with their balls. Yeah, what's the other term for them?

**Heather** 1:00:50

teleserye if they're spiders, cannot read.

**Bret** 1:00:53

But anyway, they grip before they die and sprout fruiting bodies, you know, so they're there when a sheep comes along and I'm mixing two things

**Heather** 1:01:03

I think you are because I have found sheep to be vanishingly rare in the rain forest. We're Christians tend to be That's

**Bret** 1:01:09

true. But anyway, I think there are two things going on, there's one creature with a two part lifecycle that puts itself in the path of a grazer and then there's another one which is quarter steps, which just goes to a high place and

**Heather** 1:01:21

a quarter steps that genus it's like there's like hundreds and many of them maybe maybe the vast majority of the quarter steps fungi are, like, specialized for a particular host. So you got like cicada hosts and grasshopper hosts. And you know, of course cicada isn't one thing and grasshopper isn't one thing. So you know, highly specialized, but they cause behavior in the host that enhances transmission of the pathogen. Absolutely.

**Bret** 1:01:44

And this reminds me last time you and I were in the Amazon which was

**Heather** 1:01:47

this year which wild I can only say that for another two weeks I'm just gonna keep saying

**Bret** 1:01:54

we encountered a very nice corpse of a quarter steps in foot difference you know, very nice corpse was a very nice corpse of a quarter steps infected insect and I remember how successful I was at photographing I think I did all right. But anyway, it reminds me

**Heather** 1:02:12

know when we were there, right? Oh, you were just gonna say yes,

**Bret** 1:02:15

we should do an episode. Yes. Where we look at the photographs that we have brought back and talk about what's out there and what it's like to go looking for it and yes, all those things. Yes, definitely do it.

**Heather** 1:02:29

100% being so self aware, or are you philosophical zombies? How do you to consistently stoke the flames of romance? Can relationships transcend their evolutionary biological origins and contain meaning beyond being mere strategies of Darwinian evolution? Also, hashtag free little Wayne,

**Bret** 1:02:49

totally interesting question. You know, I mean, look, I mean, you are adaptively wired to to want what is good for you. And the fact that nobody else can tolerate me means that it makes perfect sense for me to find you unendingly Wow.

**Heather** 1:03:12

That's a terrible thing to

**Bret** 1:03:13

say. Not taking it the wrong way. To say things are very clear from my perspective, I don't know what keeps you going but am I making this worse? Yes.

**Heather** 1:03:26

Thanks, dude, thanks for the question.

**Bret** 1:03:29

Yeah, I don't know what to say no, I think I do notice but

**Heather** 1:03:33

you can relate. God

**Bret** 1:03:37

it's it's a never ending adventure and it I will speak for myself though. I have a feeling I'm partially speaking for you here too. Which is that having been on an adventure since we were you know, 20 Yeah, not quite 20 means that there's a whole huge history and storehouse of stuff that we share you know, in some sense we partially grew up together

**Heather** 1:04:03

and we've known each other since we were 16

**Bret** 1:04:07

Yep. And have been together since we were very young and that means that there's an awful lot of stuff there which I don't know

**Heather** 1:04:16

like stuff but you know, if you believe if you believe sitcoms if you know you've you've take the sitcom model of monogamy that that should just mean that we're even more tired of each other and and bored and you know, haven't haven't had any fun since 1990 something now that was the year we got together ish, eight nine, something like that. Anyway, um, but that's not right. And so yeah, being able to actually adventure together be that in you know, geographic space or psychonaut space or physical space or you know, any number of things. Yeah. And, and not being able to predict with exactly accuracy and precision what the next day week month year is going to look like is amazing and it's it is part of what makes lockdown hard for everyone yeah absolutely everyone is that things have become so predictable in so many ways that it's harder to remember what is exciting and serendipitous about life

**Bret** 1:05:20

yes in fact I was talking to a friend quite recently about how how terrible frankly locked down is and on so many different levels you know all of the ways in which it's socially corrosive of just all the most normal stuff and I was you know, I was reminded of a thought that keeps occurring to me which is how lucky we are to be locked down in this way I mean we're fortunate we are Yeah,

**Heather** 1:05:45

four of us the eight of us who live in this house together including for humans and for Coronavirus yeah

**Bret** 1:05:51

totally sucks but if you have to be locked down being you know locked down with people you like being with and who challenged you all the time and who know you well enough to say you know you need to go get on your bike

**Heather** 1:06:06

I don't care if it's been night and just do it.

**Bret** 1:06:10

Anyway So anyway, I do you feel super lucky. And I also think, yeah, figure out what makes you feel super lucky and then pursue that no matter what.

**Heather** 1:06:21

Get a following write up on that one. Why do the butts of bees and other insects always shake? Do they think you know APS honeybees do a waggle dance in which they intentionally shake their butts. But it conveys meaning and you don't see it. Because it's in the hive. Yeah, we don't say well, no, there's one. There's one part there's like three different pork Yeah, there's there's like three different things that are being conveyed. I don't remember which is which. And but yeah, two of them happen in the hive. And then once the bee gets the attention of some of her hive made, she comes out and does one last thing. So there's like, direction distance. And what's the third? I can't Oh, it's

**Bret** 1:07:00

angle. It's angle.

**Heather** 1:07:05

So that's direction direction. So

**Bret** 1:07:07

there's height, which I was at

**Heather** 1:07:09

height. Okay, so yeah, it's like it's like a 2d vector, right? Yeah, yeah. So I think distance may be conveyed outside. I don't remember. I don't know. But yeah, one of them is and we can we can see them do that. But I don't know do other insects typically shake there but I mean, they are some of them actually are releasing pheromones, there's a there's a but releasing move that involves pheromone release,

**Bret** 1:07:32

there's but releasing move or wiggling move that does that there's a there's a heat releasing stuff that's fluttering on the surface of the hive, thermo regulation of the hive. But I think this person is talking about the isolated bee that you encounter out in the world. And it's interesting, there's, there's bound to be an explanation. It may have something to do with. I want to be very careful. I don't make an error, but I'm wondering if it could have a respiratory component?

**Heather** 1:08:04

Well, it's possible.

**Bret** 1:08:05

So I enjoy that breathing through spiracles that are all over Yeah, yeah. Yeah. But

**Heather** 1:08:12

I don't I don't know insect ANP?

**Bret** 1:08:14

well enough, yep. To say, Alright, maybe we'll look into this one. But there's, there are a number of possible answers. One is communication of something like, hey, there's a bee here don't, you know signal to grazers that you don't want to eat this leaf because you'll get stung. You know, this is an animal, it's advertising its presence. So that could work could be a respiratory thing. It could be a orientation thing. You know, the way birds Bob their heads, it's effectively holding something steady as they move. Yeah. I don't know. That's like, Well, you know, that kind of movement is there. Anyway, there are a number of possibilities. I wish I knew the answer. But maybe it's it's sort

**Heather** 1:08:54

of seemed to do that. Sometimes. They'll be totally stuck on the note. And then I

**Bret** 1:08:58

think they do that. Yeah, I think they do that. And you're right. And chameleons, obviously,

**Heather** 1:09:03

not insects.

**Bret** 1:09:04

quite true. quite true. I actually knew that.

**Heather** 1:09:08

If you did. DNA replication is costly. So why do differentiated somatic cells retain a full genome? Why not only keep the genes they need and ditch silenced genes? It's a great question. It's

**Bret** 1:09:20

a marvelous question.

**Heather** 1:09:21

I mean, you could also be I got a slam

**Bret** 1:09:25

dunk.

**Heather** 1:09:26

Like I got little bits and pieces, but go for it. What I would

**Bret** 1:09:29

say is the rip a, the genome is not filed in a way that makes that simple. So you're talking about a huge amount of editing, huge amount of editing and that editing is liable to be error prone. So you're talking about potentially a huge In fact, oh, that's a good connection. So long ago, as I was studying telomeres, and senescence My co author and I were looking into the question of Hutchison, Guildford's progeria, which is this phenomenon that makes little children often boys, very old physiologically early in life. And there was a question back then in the 90s, about whether or not this was a real old age, or it just sort of seemed like it turns out, it's real old age, they have almost every pathology of old age with two interesting and important exceptions, one of them being they don't get cancer. Yep. You want to show that? So here's a young boy have the classic facial features, actually, can you show this one here? Your three suffers. So anyway, the the two pathologies that these kids don't get, they don't live very long. They don't get cancer, and they don't have mental decline, right? They have the mind of a child and they don't get dementia, and they don't get cancer. And so those two things are conspicuous. And we can talk about why that would be another time. It has to do with the fact that the brain doesn't age the same way as every other tissue. That's one thing and those of you who think that we're going to defeat aging and live forever, even if you figured it out for the body, which you won't, you'd have to figure it out for the mind to and you won't, so there's that But why was on this topic? Oh, yeah, the editing. So here's the thing. So I predicted in that paper, that it would turn out that people with Hutchison Guildford's progeria had short telomeres, which did not turn out to be the case that prediction was wrong, but it was wrong in an interesting way. It the answer turned out to be something I didn't think to predict because I didn't know about it, right? So in the same way, just like the calitri, kids with the the twinning thing, it was like this case where, you know, yeah, I didn't predict the right thing. But it's definitely it's the exception that proves the rule kind of thing. Which was the cells of kids with Hutchinson Gilford is progeria don't stick and so I think they don't stick. Yeah, I mean, what do you mean, don't say die, they have to make, they have to make a number of copies of a cell before they get one that lasts. So they basically going through a lifetime of cellular reproduction very, very quickly persist and survive. Yeah, okay. And so their bodies go through all of these pathologies. Because this is, of course, what happens to all of us over a very long period of time is that you run out of, you know, your cells age to a point that they need to be replaced. And at some point, your ability to replace them is expanded, because you have a limit, because you're avoiding cancer your whole life. So anyway, the point is, were you to build a system, where you had to edit out the part of the genome that wasn't necessary and all of those other cells, it would have to be really, really good at getting exactly the right fraction of the genome. And if it didn't, then it would end up screwing up a bunch of cells where you've edited out something that they need, which would require you to have more cellular turnover. And so the point is not worth it. Now, there are cells that we remove genomes from entirely red blood cells and mammals are a nucleated. The story is to make more room for hemoglobin so that they're better at transporting oxygen. I don't know if that story is right. I know that it's not true in birds. And so it's suspect because birds have even greater requirements, at least flying birds.

**Heather** 1:13:23

Yes. Interesting. There's so many converged, weird, complex characters between mammals and birds. And that is not one of them. That's interesting. Indo thermae for chambered heart. So like so many things that have to do with running hot and fast, but not enucleated. Red blood cells? Yep. I actually

**Bret** 1:13:42

never put them to last and put away wet.

**Heather** 1:13:46

Some birds get put away wet. Yes, yes.

**Bret** 1:13:49

But here's the thing. All right. Love your question. And here's what I'm going to argue that you have cryptically, you have happened on to a case where the answer is phylogenetic constraint, right? There are lots of things about the design of any creature that cannot be made better, not because the better design isn't obvious and doesn't exist in some other creature. But because getting there is impossibly complex and difficult and or dangerous, right? So, for example, the optic nerve, our optic nerve comes through the front of our eye, which causes a blind spot. cephalopods have it in the back of their eye, which solves the problem. So the design is possible, but you can't get there because the pathway to reverse the AI goes through blindness, presumably, and so we don't do it. But in this case, I think the point would be, how much better off would you be if your genome was organized in such a way that all of the stuff ups, you know, in some direction, some physical direction from that point in development was no longer necessary and could be edited off right now. So you can't read design the genome around some Dewey Decimal System that would make everything logically oriented relative to each other, you're stuck with the genome that you've inherited, which is chaotic in the way you've gotten it. That sort of thing. And then the one last thing I would say is, it is also the case that because genes tend to have more than one useful configuration arrived at by editing. So a gene may have something like five different versions that get produced. The point is a gene that is no longer useful in version a maybe still useful for using that version, you know, C, and D,

**Heather** 1:15:40

I think this is going to be a big part of the answer that alternative splicing of genes into totally different forms that that code for very different outcomes, is one form of molecular epigenetics, what we would say epigenetics sent to strict I like the narrow sense of epigenetics, which has come to become the dominant way that people think of it when they say it, we just say how is it that a genome with only cut what do we think at this point, like at 100,000 genes?

**Bret** 1:16:09

I think it's like 20,000, with Oh, I bet it's

**Heather** 1:16:12

even less Yeah. Can make something of this much complexity. It's going to be in things like methylation of histone proteins and alternative splicing and yeah, that sounds like a lot of gobbledygook, but it's basically different ways of making the base stuff code for a lot of different things. So you know, this this min DeLeon min Dalian idea of you know, you have a gene for wrinkled this on peas and color of P is and you all have this like he got he got really lucky with the particular plant he was looking at and the particular characters that showed up as very simple what would become known as now as mammalian traits. But almost certainly those same things that he was selecting for to get smooth versus wrinkled peas, etc. Were also changing other aspects of the plant. Just like we see with like dog breeds. When you select for something, you end up with something else that you weren't intending. Yeah. Brett, what are we at Sac? Our. Okay, let's go to the end of the page here. Okay, my page. I think there's more beyond it. But but I think you have circumcision wrong. And I'd recommend you listen to Majid Nawaz on this. He had done it to us for a summit is allowing his second son to grow up and be free to decide for himself.

**Bret** 1:17:35

Yeah, you know, I think if I'm recalling correctly, we actually talked about this with Martin when we saw him in London.

**Heather** 1:17:42

We did years ago. Yeah, no, that was in May of 2019. Or June or may. Yeah. When I was when? Yes, it was definitely in the past. It was. Yeah, it was in May of 2019.

**Bret** 1:17:56

Yep. So anyway, look,

**Heather** 1:17:59

had a wonderful, wonderful dinner with him. Yes, yeah, that's

**Bret** 1:18:02

fabulous. Here's the problem. You got to take the two parts of the story that go together that tell you just how complex this is likely to be. Right? The four skin passes the test of adaptation, it's clearly adaptive. The process of removing the foreskin also passes the test for adaptation. Right? what that tells us is that the foreskin is serving a purpose, and that its removal is serving a purpose. And this is a Chesterton's fence problem, right? We don't know what the purpose is, exactly. And there is mixed evidence or worse about immunity to pathogens, it's quite possible that in modern circumstances, the removal is not necessary, it is possible that it is serving a purpose that we would regard as immoral, it's possible that it is still serving a purpose, and we just don't know it. And so the point is, I don't think it's a question of wrong, right? To the extent that your argument is the foreskin is a natural part of the body and therefore removing it is wrong. You have not understood that it's removal worked. We don't know what it worked to do. Right. And so it's not there is no wrong here. There is a recognition of what we do not know. And to the extent that anyone says we know enough to say, you know, it is wrong to circumcise. I don't think they do know enough, or maybe I'm just not up to date, and they've discovered in the last year, but fall short of that. The point is, it's it's not clear this is this is an open question, and I believe we should no more. On the other hand, what I will say is the belief that this is a disaster for civilization. I can't To FTM No, it's not a disaster, right? This is a judgment call based on what we do not know. And based on some interaction between Chesterton's fence and the precautionary principle. And in light of that, I just don't think i think the vitriol around this is completely wrongheaded.

**Heather** 1:20:25

Given your interest in philosophy of science, where do you come down on scientific realism, anti realism, structural realism, etc. I don't know exactly what those are referring to. So there's just so much languaging around the various various ways of thinking about science. And I just don't, I don't know exactly what these are referring to.

**Bret** 1:20:49

I don't know I sort of have the sense that there is reality that we're a little bit hamstrung figuring out how it works that science is the best tool you've got that you've got to be very careful about how you deploy because it's easy to do science wrong and to look like you're doing it right and which one of those is that

**Heather** 1:21:06

right? I retract my unity vote after Crenshaw did that skydiving vid lol? I don't know about this. You do some skydiving video about this? Oh.

**Bret** 1:21:19

We're talking about Dan Crenshaw? Yeah, blame? I don't know. I don't know that there is a sky there must be. I guess I have to look it up. Here's the thing though. The election is over. Thank God. So I don't know. I don't know that you need to retract any vote. You know, we're just

**Heather** 1:21:40

it ends lol. Okay, this is a weird question to end on. Maybe I'll find another one. How do I find myself a girlfriend or wife? Like Heather, serious question. Thank you. Thank you.

**Bret** 1:21:51

Yeah. Find knew the answer to that.

**Heather** 1:21:57

That's all you're gonna say?

**Bret** 1:21:58

Well, I don't know. I mean, I don't want to put it in these terms. But if I knew the answer to that, I'd be extremely rich because I would, or something I would have to, you know, fear people hunting me down and extract the answer. But fortunately, it's not that kind of question.

**Heather** 1:22:15

I mean, one one thing that we have said in the past with regard to finding finding your would be soulmate, whether or not you like that languaging is looking for someone in this just just given sex differences will be more difficult to find and a woman than a man, someone who engages in things that provide them physical feedback, feedback from the physical universe. And one really good way to find such a person is to courtside and so you know, be be looking, you know, either all bets are off with COVID and lock downs and such but, you know, go join organizations that go on, you know, group hikes or backpacks or you don't draw and biking or any sort of thing like that. You're or taking classes that involve, again, physical feedback in the universe, such that you know, someone who lives an entirely social life who can negotiate what an outcome means, and thus change forever after the history that is written about it is going to be a much harder person to deal with.

**Bret** 1:23:22

Yeah, I agree. But I also think, in some sense, if I may now take a serious crack at the question. In part, I think we just have very wrong expectations about finding a mate. And the idea, you know, there's this thing that one does playing video games, or I don't know, I don't know what modern video games are like. But back when I used to play video games, there was this template Pong, what it was, like, didn't play Pong. But I definitely have some that were more sophisticated than that. But But anyway, there's a temptation. As you start a video game, and something gets by, and your score drops, reset to reset, right? Because what, you know, if you're trying to get a high score, it doesn't make sense to invest in a game where you're already starting out behind, right? And so there's a sort of sense that like, you know, and even the mythology around romance is all about finding the one right now, it's not really about finding the one. It's about finding somebody whose properties are such that they will develop into what you're looking for. And, you know, I think in in our case, there is a I used to be embarrassed about us having gotten together so early, because there's this kind of implication that that's a sad story, right? That, you know, you didn't encounter other people. And I quite think the opposite that

**Heather** 1:24:46

we both did. Yeah, we didn't. We didn't get together in

**Bret** 1:24:50

high school, right? Well, that's true, but we got together early. And so the thing is, if you're looking late in life, if you're, you know, you're gonna get through your 30s and then You're gonna find somebody right? You're finding somebody who's already you know there are mostly what they're going to be rather than developing together and having influence on each other which I think is has been very positive so anyway I don't know something opt out of whatever garbage is going out there with somebody who has the you know the right foundation.

**Heather** 1:25:24

So one more just a comment. This is a holiday bonus for Zach. I think I speak for many listeners when I say we are so impressed and grateful for your producer skills over 59 episodes. Thank you to the whole family for modeling a great family business. Awesome. Yeah, Zacks Zacks a rock star, he's doing fantastic work and very

**Bret** 1:25:42

much a keeper. Yeah, yep. All right. I think we've we've done it.

**Heather** 1:25:49

I think we've done it. So yeah, all all the all the usual stuff that we can say if I can find my notes. Yep, you can go to as Zach's outro doesn't say any more. It's not working. dub dub dub dot store dot Darkhorse podcast dart.org. Use code Christmas all caps to get 10% off to Christmas. Join either via Patreon right now, the 48 hour period is open to ask questions on mine at the $11 and up level for the private q&a that we have in the last Sunday of every month. Brett's gonna have a bonus conversation for people to his Patreon at $100 a month and up level next Saturday of the reasonable Yep, yep. And does every month usually the first Saturday and Sunday for the other group of the month. Also at our patrons you can find the discord server and go the clips channel. All that have a great Christmas. hope you had a great Hanukkah, lovely Solstice pagan rituals for everyone. Try to stay stay whole and happy and get outside almost no matter how bad the weather is. And that'll help

**Bret** 1:27:05

Yeah, and if you can do something, watch the sunset on the source to something to just mark that point. It really is you know, it's the point of hitting bottom and heading back up. Yeah, slowly at first but but anyway, we're heading the right direction. And you know, here's the thing today. We can say Winter is coming. Next time it will be Spring is coming. All right. Be well everyone