

Somnology Part One with Dr. W. Chris Winter

Ologies Podcast

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Ohaaaaay, it's your little step brother who tries to trade you their calcified banana-flavor Now & Laters for your mini Reese's Peanut Butter Cups and you're like, "Little dude, step aaaall the way off, that's not how life works," Alie Ward. Back for another episode of *Ologies*. This is coming out in October, so let's get deep into something that happens usually in the dead of night, if you're lucky: sleep. You do it every day, or night, probably, and it should be an exercise in comfort, restoration, and flirting with death's hotter, friendlier twin. But just looking at the word sleep probably made your bowels drop with dread, because you know you're screwing it up a little bit, we kind of all are. So, in the next two episodes (that's right! Part 2 with your questions is out next week) we are gonna go head-to-head with the Sandman.

But first, let's get ready for bed with some business. First things first; happy, happy birthday to my amazing mom, Nancy Ward, who is so funny, and so smart, and inspiring, and accepts me even though I swear like filth on this podcast. She also gave me the best cure for insomnia and it has never failed me. We don't talk about it in Part 1, so you'll have to wait until Part 2 next week, but it is an actual lifesaver and I can't wait to tell you. Happy Birthday Mom, me and my sisters, and Pop love you a bunch.

Thanks to the Patrons at Patreon.com for donating as little as one shiny American quarter an episode to help fund the show, thanks to all who are sporting *Ologies* wares from OlogiesMerch.com. Thanks to people who post on Instagram, Tweet about it, tell a friend or a foe, scream into the night about it and rate, subscribe, and review. That all helps get the show in others' ears. And very often you make my day with your nice words in the reviews. So, like a succubus, I pluck one from the bunch every week to read, and this week, Tipath [phonetic] says:

10/10, would scream about sharks in my car again. While I love so many different podcasts, none have the "something for everybody" enjoyability of Ologies. I recommend this podcast to anybody and everybody. As stated above, 10/10, would look like a complete nutjob screaming in laughter about sharks in my car again.

So, thank you. Please continue, Tipath, to do that. And thanks to everyone who left reviews, that I savored individually, over a cup of herbal tea this week. I just appreciate 'em so much!

Okay, Somnology. Very much a thing. It's the study of how we sleep. I looked up the etymology of it after I wrote that intro, and holy smokes: Somnus is the Roman god of sleep, and yes, the brother of Death! I had no idea when I wrote that a few minutes ago. So there you go. Also, Somnus was probably a remake of the Greek myth of Hypnos, the Greek god of sleep and the half-brother of Thanatos (death). Hypnos lived in a dark grotto in the underworld - what a bachelor! - but was kind of a helper of humans. He was a good dude. His dad was darkness and his mother was Nyx, or night. Even Zeus was afraid of her. He was like, damn, lady, you're kind of a bitch, but I respect that!

So, Somnology is the study of the god that comes in darkness to incapacitate and recharge us, and it seems to vex us more and more. Yes, we have cars, and antibiotics, but when it comes to sleep, we're kinda boning ourselves, fam.

In this two-parter episode, I am determined to help fix your sleep. And by 'your' I mean 'our.' I appall my own friends, physicians, and even my Fitbit with my poor sleep habits. As a result, I sometimes forget which month it is, and I have eaten more stickers on produce than you need to know about.

You're gonna learn the difference between deep sleep, light sleep, REM sleep, what aspects of sleep hygiene are important, the root of insomnia, how much sleep you really need, if you should go somewhere and get wires taped to your head while a stranger watches you, and how to help the molecular janitors that live in your skull.

This guest has been called The Sleep Whisperer and works with professional athletes and normies alike to perform better and remedy their sleep issues. He has literally written the book on sleep, called *The Sleep Solution: Why Your Sleep is Broken and How to Fix It*. Based in Virginia, he's the owner of the Charlottesville Neurology and Sleep Medicine clinics. We scheduled this interview months in advance for a time he was in Southern California to give a talk. We met up at a hotel and I barraged him with so many questions that he was held physically captive answering them for close to two hours and I was like "yesss, double episode!"

So get cozy, zip up your onesies, and get ready for Part 1 with the gently Southern-voiced dulcimer wisdom of neurologist and somnologist Dr. William Chris Winter.

Alie Ward: You are a neurologist, but you're also a somnologist, because you study sleep?

Dr. Chris Winter: I am. Correct.

Alie: Why sleep, for you? Because I read your book, which is great. Your book is, by the way, so funny. I was like, oh my God, this is keeping me up because it's so funny. And you mentioned in the book that you like sleep and you're a good sleeper, so what drew you to this field if you have no problems in it?

Dr. W: So, what drew me to the field is, just because I don't have a problem with it doesn't mean I don't love it, number one. Number two, I came into the field completely accidentally. I decided around third grade that I would become a doctor and I'm pretty certain that there was a phenomenon going on. My parents were both the first people in their families, I believe, to go to college on both sides.

Aside: Dr. Winter says he didn't grow up in a family of academics, but that his Appalachian Meemaw and Papaw supported big dreams for little whippersnappers.

Dr W: We'd go out and visit mamaw and grandpa in the remote reaches of West Virginia. If you told them that you would be a doctor, they would give you a quarter and some candy. So, I think very from a very young age, I realized if I tell Papaw that I'm going to be a doctor, he gets really excited, he calls Mamaw in, I get some candy and some money, and this is awesome. I think that probably had a big role in shaping me. So, I wanted to be a doctor. I didn't really want to be a sleep doctor or neurologist, but I started doing research in sleep just to get beer money and biology credit hours as an undergraduate.

Aside: Quick question: how much does this pay? According to one *USA Today* article I read, about \$150 a day is the going rate for research studies, but there are accounts of folks making over \$3,000 for a nine-day sleep study. But based on the fact that the article was titled, "How to Get Paid to Sleep," I'm guessing the job competition might be stiff. Drooling, farting, and unconscious, but stiff.

Dr W: A guy said, "Here: they'll pay you to do some research and you can get some cool things for your med school resume." So, it was completely accidental, but the field is fun, the people within it are inviting, it was a new field, so anything you, sort of, dreamt up [*repeated in slow-mo: "dreamt up" – ba-dum tssss!*] had never really been looked at before.

Alie: At what point did you get to start doing research on humans, and what was your end goal? Did you want people to sleep better and thus be happier? Like, what did you want to do as a neurologist?

Dr W: That was my undergraduate experience. From there I went to medical school down at Emory and was introduced to Don Bliwise and David Rye who run the sleep center down there. When I was an undergraduate, I was working at a sleep lab that was mainly pulmonary, looked at breathing. These gentlemen were more neurology-oriented, so that was my first taste of neurology. I really thought that the brain was really cool. So, I would go to medical school during the day, and then at night I would run these studies.

This was when I first started interacting with real human subjects. One was, the idea of: if you pull an all-nighter and stay up all night, or if you have a night where your sleep is fragmented, like being on call or something of that nature, how is that?

Alie: Yes! Oh! Sorry I just screamed at you... it's just my life.

Dr W: No, no, it's good! I'm sure it is. I've heard all about you, you've got a lot going on. I'm worried about you, Alie. [*Alie laughing in the background*]

So, the question was, how is that affecting our brain's blood flow in the morning? A lot of the subjects were my friends, they were medical students who were looking for a little bit of money and I would say, "hey, you should come do the sleep study." So, the sleep study consisted of three nights. The first night, you would sleep normally. The second night, you would not sleep at all. The third night, we would fragment your sleep. And the way we did that was we had these little C-3PO alarms that made this unbelievably grating sound.

Aside: *[R2-D2 squeaking and beeping for a few seconds, then C-3PO says, "What R2-D2 is saying is that you have to get up right away!"]* Oh my God, that is the worst. I'm so glad I looked this up.

Dr W: We had them bolted underneath the subject's bed. So my job was, on the sleep deprivation night, I just had to make sure they were doing whatever they wanted to do, they just couldn't sleep. On the fragmented night, I had to watch them, and every time they would fall asleep, I would give them five minutes, and then we would start sounding the alarm.

Aside: *[R2-D2 squeaks again, then C-3PO says "R2 you shouldn't be so blunt, this little rebel is going to be late!"]*

Dr W: So, they would get little 5-minute chunks of sleep throughout the entire night. And the funny thing was, all my friends would make these big arrangements for the sleep deprivation night. But for the fragmented night, they're like, "so I get to sleep, right?" And I'd say, "yes you do, but as soon as you fall asleep, you'll sleep for a little while and then we'll wake you up. But you can go right back to sleep after that." They wouldn't make arrangements for that.

They were a mess after those studies. One guy actually woke up and walked out of the Sleep Center with all the wires hooked to him and was trying to get into his car. He had no idea what he was doing. Another person actually got up and went to the bathroom, hooked up with everything. They were absolutely hysterical. And what we found was, it was much more dangerous, from a blood flow perspective, to have fragmented sleep than it was to actually stay up. In fact, when you stayed up all night and never slept, for the first few hours of the morning, your brain blood flow is really happening. So, I think that's sort of the background. If you pull an all-nighter for a test, the next day you feel kind of euphoric for a while, and then you crash.

Aside: Real quick: as if being a walking skeleton covered in raw hamburger isn't chilling enough, please take a moment to remember that the thought-sponge nested in your skull is soaked in blood. During some stages of sleep, the blood volume goes down, but in REM, it can be engorged with more blood than when you're awake. So yes, you're snoozing and your brain has a dream boner. Unless some factor screws it up, like a creep in a lab coat with a C-3PO alarm clock.

Dr W: But that fragmented night, when you think about that in relation to people who are on call, or a new mother with a baby that's crying out throughout the night, it's a real risk factor potentially for things like stroke. Just not a healthy situation to be in.

Alie: Do you have kids?

Dr W: I have three, yes.

Alie: How did this affect you? Because it's not just new mothers, I imagine. Like, papa's gotta get up too, right?

Dr W: This papa does. And I always felt so not-helpful, and somewhat inadequate during the whole situation that I would always get up. Even when our first child (my daughter) was born, when I was a third year medical student, I would get up and just sit with my wife while she nursed, because I felt like, "okay, well you go take care of this creation I put inside of you and I'll be getting some sleep over here..."

So, I felt really guilty by that, even though I would often nod off when we were talking. And the guilt really started from the birth of my daughter; at one point I fell asleep during labor, and my wife said, "did you just fall asleep?!" And this is what I said, I was so sleep deprived from being a medical student, I said something like, "I just didn't know it was going to take this long." [*repeated in slow-mo: I just didn't know it was gonna take this loooooong.*] Those are those words that leave your mouth, and you're trying to grab them as they leave, to shove back in your face. I think that part of the guilt stemmed from that comment.

Alie: [*laughs*] Oof. I imagine also as a med student, I feel like there's no one who is more sleep deprived than a medical student. You had these insane long shifts and hours, and then it's like, "Okay, you haven't slept in 36 hours, fix this person so they don't die."

Dr W: Correct. Yes, we were very sleep deprived. It's not an accident that a lot of mistakes are made because of sleep deprivation in hospitals. At one point I was at a computer entering medications for a patient, and I got a call on the phone right next to me. I picked it up and this woman said, "Who is this?" I said, "This is Dr. Winter, who's this?" So she goes, "This is Phyllis in the cafeteria. Why are you sending us medications through the cafeteria pathway??"

I had somehow, in my sleep deprived haze, gotten into the completely wrong system on the computer, and instead of sending dietary orders to the cafeteria, was putting all their medications through there. Fortunately it didn't hurt anybody, but I had no idea what I was doing. It was really bizarre.

Alie: Just like, a Viagra Scone? A scone with Cialis in it?

Dr W: [*laughs*] That's right.

Alie: A poppyseed Klonopin? That's horrifying.

Dr W: [*laughing*] That's right! Good for you, these are great. Really, these would sell really well, I think!

Alie: Now, tell me a little bit about: what is sleep? That's the golden question, because it does seem crazy that for eight hours of the day we just kind of semi-die. It seems we're so vulnerable to predation. We just clock out. Like, what? What is sleep? Exactly?

Dr W: Yeah. I don't think people really know. I mean, there's all kinds of theories in terms of sleep being something important for energy balance. There's a metabolic pathway that sleep's very important for. You know, we get some insight into the answer to that question if we look at sleep deprivation models. They used to put these little mice on these rotating platforms over water, and if they fell asleep, the platform would rotate and push them into the water, which they really didn't like.

And so, you found that after a very short period of time, there's a lot of brain dysregulation that starts to happen, particularly with the brain's regulation of our cardiovascular system. Our body temperature gets really screwed up. We have difficulty fighting infection. And generally, organisms die fairly quickly with sleep deprivation. So, I don't know that we necessarily know exactly what it is, but it's a very important thing for reestablishing balance within our body throughout organ systems.

And you know, every organism does it. They do it differently, some fish that always have to continue to swim, they'll sleep one half their brain and then the other at other times, and really fascinating things like that. But it's this very preserved process that allows us to, sort of, reset and go forth about our day. But to answer that definitively, I don't think anybody really can, which is shocking. It's something, like you said, so basic, and we don't really know why we do it.

Aside: WE DON'T KNOW? Is this true? I fact checked it and yes, pretty much all legit scientific papers start with, *[echoey, like on an old phone]* "even though how and why we sleep is a fucking mystery..." For real. But we do know that there are different stages of sleep.

Alie: So what happens in the different sleep stages? I just got a Fitbit to track my sleep because...

Dr W: Yeah, I see you're wearing it!

Alie: Yeah, I am. It's like, "you've made 200 steps this week..." So, the different stages of sleep were kind of elusive to me. Can you go through the different stages of sleep and when they happen in the night or the day?

Dr W: So, it's easy to think about sleep in terms of three stages, there's light sleep, deep sleep and dream sleep. A lot of people think dream sleep and deep sleep are kinda the same thing; they're not. They're very distinct. So, we spend about half of our night and light sleep.

Aside: HALF in light sleep? Is normal! That blew me away. Light sleep is like the shoe you wear on most days. Versatile, essential, not the fanciest, but you need it.

Dr W: And that's the sort of sleep that moves us through all the different stages. We're awake and we fall into light sleep, and from there we might dream. Then we'll go back to light sleep, and then we might have deep sleep, back to light sleep, then maybe wake up and go to the bathroom. So, light sleep is not only the foundation of our sleep, but it's also the portal

through which we move to the different stages. About 90 minutes after we fall asleep, if we're on a schedule and relatively well rested, we'll have dream or REM sleep. [pronounced as a word, "REM" not as an acronym "R-E-M"]

REM sleep, rapid eye movement sleep, and dream sleep are the same thing. Generally, about 90 minutes after you fall asleep, you'll have your first dream. It's a very short dream, typically, and very fragile. If you're in an uncomfortable situation, (a lot of anxiety in your life, sleeping in a bad hotel) you may drop that first cycle. Then, every hour to hour-and-a-half we'll have another cycle of dreaming, usually lasting somewhere between 25 to 45 minutes. And those get longer and longer as the night goes on.

Aside: So, light sleep starts as a stage called N1 as you're starting to drift off. You might have a quick funky dream, that kind of like, "oh shit, yay, I'm falling asleep and nothing is real!" feeling. And then your brain waves slow down, and then a little deeper light sleep is called N2, when your breath and heart rate slow down. Almost half of your night is spent in N2 but it's not terribly restorative.

Now, what are the N's? They're short for Non-REM sleep. All stages of sleep that aren't REM are called Non-REM... which is like if you had 4 kids and you named the best, most interesting one Jeremy and then all the rest are just Non-Jeremy 1, Non-Jeremy 2, Non-Jeremy 3. Sure, they all have their place in this family and your life wouldn't be the same without them, but they're not as interesting as Jeremy.

So, think of light sleep as your day-to-day shoe, nothing fancy but it works. Another kind of shoe in your sleep closet, let's say the UGG of the shoes, is deep sleep. Also called slow wave sleep or delta sleep, or if we're being an asshole, N3 (Non-REM 3). This stage of sleep happens more at the beginning of the night, and during this deep sleep stage, our bodies repair and heal themselves. We release human growth hormone - which is dope - for free, no shady prescription necessary! And the more of this deep sleep we get in those first few hours in bed (usually around 25% of the night), the more chipper, and refreshed, and not sleepy, groggy, or crawling-toward-a-triple-espresso we feel.

Dr W: The first three hours of our night is predominantly when we have deep sleep. So, if you track somebody through a typical night; hop into bed, should take you about 10 to 15 minutes to fall asleep. You go into sort of a transitional or light sleep, into deep sleep. About 90 minutes later you'll have your first little cycle of dreaming, back to light sleep, some more deep sleep, maybe a little bit less this time, a bit longer cycle of dreaming. As the night goes on, we're having bigger and bigger cycles of dreaming, and smaller cycles of deep sleep.

If you cut the night in half... and I often asked this question to patients, if you're having difficulty with your sleep, do you feel like the first half of your night is better or the second half? And depending on their answer, the first half is predominantly deep sleep. The second half is predominantly REM sleep. So you can get a little bit of a sense of what might be going

on with somebody's sleep. In terms of the function, the deep sleep is what makes you feel rested. So if somebody is nodding off, listening to your podcast...

Aside: Ouch, unless you're Dearest Scooter churning out the *Sleep with Me* podcast, who is a one-man human flock of sleep.

Dr W: Or if you're falling asleep at a stoplight, or in church, or wherever you like to fall asleep, you know very quickly that person did not get enough deep sleep, either because they didn't get enough sleep, or there's something inhibiting their deep sleep. And then REM sleep has a lot more to do with focus, concentration, mood, even pain perception. So, it's a little bit more of a finesse sort of situation, which is probably why it's second in the night. Your brain really needs the deep sleep to make the motor go, to find the food, to get through your day. The second half of the night, it's a little bit more detail oriented.

Aside: So if light sleep is an everyday sneaker, and deep sleep is a comfortable UGG, REM sleep is the shimmering dress shoe: full of dreams, increased breathing and heart rates, more blood in your brain, and our eyes are darting around like kittens under our eyelids. REM sleep was discovered by a scientist only in the 1950s (pretty recently!) He was just...watching children sleep. That's a job. Just go to the office, to watch babies dream. And he's like, "Hey, look at that, maybe there's a 'rapid eye movement' stage of sleep! And they're like, "Well boy howdy, hot dang, there is." So in this state, our brain is as active as when we're awake, and REM sleep (they think) is supposed to help with memory, concentration and mood.

Now, if you're like, what's up with R.E.M., [R-E-M] the band? If that's confused you, you're not alone. Because up until about 5 minutes ago, I wasn't sure if it was called 'REM' or 'R-E-M' sleep. I had no idea, and I would just never say it out aloud. Michael Stipe just flipped to the dictionary, added periods between the letters, and confused us all for decades. So the band is 'R-E-M', the sleep is 'REM'. This would not have happened if R.E.M. had stuck to the original name, Jars of Piss. True story.

So, the dress shoe takes care of memory and mood, and happens for about 25% of the night. The cushy, comfy Ugg (deep sleep or N3), also 25% of the night, repairs your bod and keeps you from feeling sleepy. So yes, that light sleep is the majority of the night at 50% but... what does it do?

Alie: And then, what is happening during light sleep?

Dr W: So, light sleep is important. Again, it's sort of the foundation of sleep. There are a lot of processes going on. I don't want to use the word 'filler', but it's a lot of the general rest for our body (our bodies being inactive for a period of time). The interesting thing about light sleep is, for a lot of individuals who struggle with their sleep will misperceive light sleep as wakefulness. And we all do that: my wife will sit down on the couch and put on *Property Brothers*. God, that show! It's the same episode every time! There's no shocker here, you know, they're gonna get thousands of dollars of worth of renovation for like 600 bucks and I

don't know what place they're living in.... I'm kidding, I love *Property Brothers*. Good for those guys. This is just jealousy talking.

[clip from Property Brothers, a man with an American accent saying, "come out here, have a look at your pool."]

So, she sits down to watch *Property Brothers*, and she'll fall asleep. I'll grab the remote, I flip it over to the Dodgers game, and after 20 minutes she'll wake up and say, "Why did you do that? I was watching that show." And I'm like, "No, you weren't. You were sound asleep." And she goes, "I was not asleep. I know everything that's going on." Then she'll flip it back over, now it's new *Property Brothers*, a new couple, and she's so proud that she will not admit the fact that that is not the couple you were looking at before. That it's not the little ranch that they were renovating. Now it's coastal! You know, whatever.

So yeah, we all have that perception. Some people, particularly if they have a lot of anxiety, can really misperceive that 50% of our night as being wakefulness. So, these are the people who often tell you, "oh gosh, you know, for the last six weeks I have not been able to sleep, or I can only sleep an hour or two." But when you look at them, they don't look particularly impaired. And that's a problem, we often refer to it as paradoxical insomnia. It's just not the problem that often they think they have.

Aside: So with paradoxical insomnia, you're like, "Yo I am up all night thinking about my probs, doc." But it turns out you're asleep, but just in light sleep that you think is wakefulness. It's a small percentage of insomnia patients, but it does happen. Insomnia itself is something that plagues a lot of people, most of whom don't fully understand it.

Alie: When people come to you, are they usually having trouble sleeping? Is it mostly insomnia that you have to deal with? Like, what's the big thing that brings people to you?

Dr W: I think you were about to say it, it's really 50/50. People who walk through our door, it's one of two things. Insomnia or "I can't sleep" is a huge problem. And the flip side is the individual who sleeps too much. They're nodding off at work and getting in trouble. They can't stay awake during their college classes. They nodded off during an Aerosmith concert. I mean, name the situation; I promise we've heard it. I mean, I just told you I fell asleep during the birth of my first daughter! You know, intercourse. *[chuckling]* During your own wedding. Like, there's some really some interesting things that people fall asleep doing!

Aside: There are entire Reddit threads devoted to this topic if you need some tales about drowsy pilots, people waking up in Halloween coffins and bathtubs. Your ol' Uncle Alie has fallen asleep in her car in the driveway after pulling in, on multiple occasions. I've fallen asleep on the bathroom floor with a toothbrush in my hand. Somehow, I have fallen asleep face-first in the laundry pile more than once. I once snoozed at a gothic industrial club while Skinny Puppy was blasting. *[clip of a metal song by Skinny Puppy with aggressive riffing and screaming]* All while sober.

Now, the Patron Saint of Podcasts, editor Steven Ray Morris, texted me while I was writing this, to tell me that he fell asleep standing up once. At Disneyland. As an employee! Which is the most Steven-Ray-Morris story I have ever heard.

It's all cute and fun until you get the bill; sleep deprivation bumps up the risk of us screwing up and it has an economic wallop of... are you ready for this? Over \$50 billion yearly in the United States! Just from sleepy, sleepy whoopsie-daisies! As for car accidents: it's estimated that 6,000 people could die annually because of drowsy driving. So, staying on your couch when you're not up to party is literally saving lives. Because trust me, even a Skinny Puppy soundtrack might not be enough to keep you alert. *[clip from same Skinny Puppy metal song, with the lyrics, "all good people are asleep and dreaming..."]*

Dr W: So, those are the sort of the flipsides: either too much sleep, or the perception of not enough sleep are the two main things that people are coming to see us about.

Alie: And when did our sleep start really getting screwed up? Has it been in the last century, since we've had lights, since we've had jobs in factories? Like, when did things start getting dysregulated? Because everyone always hears that study of, like, "farmers used to wake up in the middle of the night for three hours..." How are we supposed to be sleeping?

Dr W: That's a great question. I think our sleep has always been screwed up. I think the farmer that you're describing, yeah, I mean, he's got so much on his plate: tuberculosis everywhere and crop blight, and you know, and money's bad... So I think that they just never really *thought* about their sleep. I think that as we've moved forward, two things have happened. One, we've put a lot of barriers in front of our sleep, including podcasts that you're like, "Gosh, I should stop now, but I just wanna listen to one more episode of this awesome podcast Alie's put together and THEN I'll go to bed!" You know?

Aside: *[as if over loudspeakers in the distance]* Thanks, but y'all, get that sleep! PodDad's orders.

Dr W: Now we have much more technology at our fingertips. I mean, if I could have communicated with my girlfriend in middle school, on a computer, while we were both in bed, AND I could have watched the movie *Star Wars* anytime I wanted to, I would not be talking to you today. It just would be too much for me. So, I think that people are trying to deal with a lot more distraction. And then also, the 24-hour culture really gets in the way of us prioritizing our sleep. I think a lot of people want to do the right thing, they're just incapable of doing it because of all these barriers in front of us.

Aside: There was a study published, just last year, that tracked the sleep of 94 people in Bolivia and Tanzania, who were living hunter-gatherer lifestyles. They wanted to get a sense of pre-industrialization sleep habits and it turned out: their average sleep was only 6.4 hours a night, but they were all in good health. So, they went to sleep about 3 hours after sunset, and then they got up before dawn. They slept pretty well through the night. As for

insomnia: incredibly rare. So much so, that they didn't even have a word for it in any of their languages.

So, how can this change your life? The researchers think the sleep patterns have less to do with sunlight, and more to do with temperature, which is tightly controlled in our houses; it does not match outdoor temperatures, by design. One article I read recommended sleeping in a room that was 60-73°F, which could help you get more restorative sleep, it's more natural! Another reason to bundle up, turn the heater down a skosh, maybe keep a window open. As a person who sleeps like shit and turns hotel room thermostats up to 80°F, I feel personally called out. I feel attacked... by myself.

Alie: I feel like this is still such a basic question, but, what is the big difference in brainwaves (or whatever) when we're awake, talking, functioning, and, like, dodging things coming at our heads, and the difference between that and when we were stone-cold out? And why does that sometimes happen in the literally the blink of an eye?

Dr W: Sure. So, it can happen in the blink of an eye, generally because you've developed a drive for sleep. I always compare sleep and hunger. If somebody says, "I'm hungry" and I offer them, "here, I've got a sandwich I don't want, do you want it?" and they're like, "ehhh, I don't want your sandwich." Then it would be hard to argue that they're that hungry. Yet, if you're looking, and notice somebody looking in a trash can for something to eat, then they must be VERY driven to eat.

Sleep is kind of like that. We can really enhance our drive to sleep, and one of the things I always tell people is that sleep always wins. I mean, if you push yourself hard enough, and get yourself sleepy enough, it's not something that you really have a lot of control over. And you're right, it can happen in the blink of an eye when you're driving down the road, which is why a lot of people come to our clinic after there's been some sort of car accident. "I was driving back from the concert. I felt okay, and the next thing I knew I was on the median, or I was in the oncoming lane of traffic."

Sleep happens. We're not in danger of not sleeping. When you look at sleep in terms of the wavelengths like you were talking about, what's interesting is that when you look at somebody's brain activity when they're awake, it looks very different from somebody who's in deep sleep. In deep sleep, you can see the 'consciousness' part of your brain taking a backseat to the more primitive parts of the brain (like we share with an earthworm). So we have these big, slow waves, which is why some people call deep sleep 'slow wave sleep'. Consciousness is really suspended. Your brain is really taking care of much more primitive aspects of itself. But when you look at REM sleep, it's almost impossible to discern the brain activity of somebody dreaming versus the brain activity of somebody who's awake. Which is why it's really interesting, when people say 'REM sleep or deep sleep.' They could not be more different.

In fact, one of the only ways you can tell that somebody is dreaming, if you're just looking at their brain, is to look at their muscle tone, because when we dream, we're paralyzed. So it's obvious from looking at a videotape, "oh, she's dreaming, and *she's* awake." That's pretty obvious. But to purely look at the brain's activity, it's very difficult to discern. Not to mention, there's eye movements: these very unusual, bold eye movements that happen when we're dreaming that we don't see when we're awake. But really, that muscle tone is the biggest way we differentiate somebody, electrographically, as to whether they're sleeping or awake, which is fascinating!

When you dream you're taking the test naked, and it was a test you didn't know you were going to have, and your friends are like, "we're going to take our test!" and you're enrolled in the class... "Oh my God I didn't even know I was..." This is my recurring dream, you know, you're sitting there taking a test or whatever, or you're being chased by wolves, or whatever you like to dream about, you actually can't move when those things are happening. Nor can we really regulate our body temperature, which is kind of interesting too.

Alie: Why can't we move? And what is sleep paralysis?

Dr W: Sleep paralysis has to do with that. So technically, all of us are experiencing a "sleep paralysis" when we dream. What's happening is, as we dream, our brain is sending this signal down our spine that paralyzes voluntary muscles, which is really interesting.

Alie: Oh my god!

Dr W: Yep. So, you were talking about creepy sleep studies a minute ago. I love that, I use the word creepy all the time. Such a good word.

Aside: A bemused glance from your beloved. Fine. But as an extended occupation, it's really only fitting for stalker/vampire heartthrobs or someone in a lab coat with a clipboard. [*clip from Twilight, Edward Cullen saying: "I like watching you sleep; it's kind of fascinating to me."* Then clip from the Radiohead song, Creep: "*But I'm a creep...*"]

Dr W: The studies they used in the past to discern dreaming were that [creepy]. You'd come in, fall asleep and we will walk around while you sleep and look at you. And if we see your eyes moving quickly underneath your eyelids... And you can find a friend, say, "close your eyes, move your eyeballs back and forth," you can see them moving under their eyelids. At that point they would wake somebody up and say, "what's going on?" And the person would wake up and say, "oh my God, I was taking the test naked!" or whatever their thing was. So, that's how they determined that, oh wow, it looks like when these eyes are moving, people are dreaming. But they realized very quickly that every other muscle, pretty much, was not. Except for a tiny little muscle in the ear, there's a tiny little muscle in the voice box, our diaphragms work so we can breathe. And then our sphincters work, so we don't have much to clean up the next day. [*Alie laughing in the background*] But outside of that, everything voluntary is completely shut down.

Sleep paralysis, what you're referring to, is when people experience this; they experience a recovery of consciousness before that paralysis has a chance to go away. What happens is, you go to bed, and usually it's happening during stressful times in your life. And when you wake up you hear the alarm clock going off, *[short clip of the annoying C-3PO alarm]* but you're powerless to move, to turn it off. It can often feel like something is on your chest, like, sitting on you. It can be a terrifying experience. It usually only lasts about 30 seconds, a minute maybe, and then it passes. But for a lot of people who have these fluctuating lifestyles and difficult schedules, they can feel it a lot. It is a classic sign of narcolepsy. If you get it a lot and you're excessively sleepy, it could be a sign of that. And interestingly, predominantly, like, in the Southern African-American community, they often talk about something called the Witch riding you, which is awesome!

Alie: Oooh! I was gonna say! What if it's an invisible witch? But I didn't even know that was a thing!

Dr W: If you look at antiquity, one of the cool things about sleep is it's this awesome intersection between science and mythology. If you look at sleep there was this idea of the witch riding you. They would think that a witch was literally sitting on your chest when you slept at night, riding you.

Aside: I looked into this, and nearly every culture has a name for this nocturnal perpetrator of sleep paralysis. In Scandinavian culture, it's a mare, or a damned woman; in Fiji it's a demon; in Thailand it's a ghost; in Britain it's an old hag; in Eastern Asian it's a little breath-stealing mouse. Spain blames it on a cat, but officially, the Wikipedia for this is just titled casually "Night Hag," which honestly sounds like the kind of down-to-earth, self-aware lady who'd be fun to drink margs with and go to the disco.

As an Italian from Northern California, I'd never heard of this very common Southern United States colloquialism about a witch riding your back, but I did do a little further research. According to one 2005 study, recurrent sleep paralysis was reported by 23% of African-American volunteers in this study, but only 6% of Caucasian volunteers, and it can be linked to panic disorder. What causes panic disorder? The study states that significantly more early life stressors were reported by African Americans than Caucasians. Higher levels of psychosocial stressors, including racism and acculturation, may contribute to the higher rates of sleep paralysis experienced by African Americans. Just another reminder that privilege is sneaky, and scientists are wonderful for turning over rocks and looking at this stuff because the solutions might not be right under our literal noses.

Dr W: A couple of people have told me that the way that you would keep the witch away is to keep a knife, a fork, and a spoon under your pillow, which is so cool. I love that kind of stuff. But even like incubus and succubus, when you read about these demons that would visit people during the night, there are feelings of paralysis, or there's some really great Renaissance paintings of these demons sitting on top of people's chest. There's one called The Nightmare. And that was the thought; that this thing was sitting on you, which is why you

felt that weight. But it was actually the paralysis of the muscles in between your ribs, making your rib cage less easy to expand when you breathe, so it felt like weight on you, which is really interesting.

Alie: Has that ever happened to you?

Dr W: I don't know. I don't think so. If it did, it never really inspired any kind of fear. I've certainly woken up and felt kind of incapacitated, but I don't know that I've ever had sleep paralysis.

Alie: Yeah. It happened to me once and it was horrifying. It was like, "Oh, I'm in a hellscape."

Dr W: When did it happen?

Alie: Oddly, I was on vacation, but I was on vacation with a boyfriend I broke up with shortly thereafter. So maybe it was stress. But, yeah...

Dr W: Maybe he was on your chest, in a weird way! Oh God!

Alie: *[laughs]* He was a ghost boyfriend. Ha... No, but I remember just being like, "oh, this the thing that people talk about." It was just is so crazy because you feel like you're dead, but alive. You feel like a ghost, it's so weird.

Dr W: Absolutely. When we talk about sleep, one thing that's fun to think about is sleep is not a light switch. We're not awake and then the light switch goes off, and now we're asleep, like it's a state: on/off. It's really... Sleep is a mechanism in our brain, but then vigilance or wakefulness is too. So it's really two switches. When you're awake and we're sitting here talking, our wake switch is turned on, our sleep switch is turned off. When we sleep, vice versa. Now, sleep paralysis is the wake and the sleep switch being turned on at the same time.

Alie: Oh my god! Are these switches kind of like, instead of binary switches, they're more like levers that kind of go up and down in a continuum?

Dr W: Yes, absolutely, absolutely. And there are affecting each other. So as the sleep switch gets turned on, and we start to accumulate chemicals like adenosine, that is feeding back to make the other switch... I don't know if you've ever been to an indoor water park with a massive bucket in the middle of it. It's constantly getting filled with water *[running water filling up]* and every seven minutes it just dumps it on everybody. *[water goes splashhhh, and children cheering]* That's kind of like sleep and wakefulness. When we're awake and talking, we're accumulating chemicals that are making that sleep bucket want to tip over more and more, which is why we are a lot sleepier at 11:00 PM, than maybe at 11:00 AM.

Alie: What happens in sleep that is kind of like a janitorial system? Like, I read something that with Alzheimer's and other brain diseases that your brain kind of rinses off plaques perhaps? I don't know. What kind of things are we cleaning? And I'm also asking you this as

a way to get myself to sleep more, to scare myself, because I know I've got like a grimy-ass brain, and I'm like, how can I clean this thing? *[laughs]*

Dr W: *[chuckles]* That's great. So much to unpack there. *[Gilly from SNL: "sorry"]* So yes, when I was in medical school, back in the late nineties, I remember the lecture on the lymphatic system, which is the cleaning/janitorial system of our body. It's getting rid of the waste products, kind of flushing it out. And I remember our lecturer saying, "but interestingly, the brain doesn't have one." And then we went onto the next topic.

I remember sitting there thinking, wait a minute, the most important organ of our body does not have this janitorial system? But it turns out that he, and science, was wrong. This fantastic researcher in Maryland, she discovered it. I'm blanking on her name right now. Nedergaard I believe was her name.

Aside: Danish neuroscientist Dr. Maiken Nedergaard, in 2013, for anyone who wants to get at tattoo of a new science hero.

Dr W: She discovered it! She just said it's hard to find because of the way we would prepare cadavers, you wouldn't see it. She not only discovered it, she named it the glymphatic system and realized very quickly that not only is it pumping out waste products, but it's 10 times more active when we sleep at night than when we're awake. Scientists are really good about knowing stuff, we just don't know why. We've always known that people who didn't sleep particularly well, often lent themselves to developing things like dementia and Alzheimer's disease. Now we've got this really interesting theory that if you are the shift worker, or you're staying up late playing video games at night, kind of abusing yourself, you're not allowing your body to engage this waste removal system effectively.

So the question becomes, what waste product are we removing? We are removing a product called beta amyloid, which is exactly what you said, the constituent of plaque in Alzheimer's disease. So, if you have a busy schedule, you don't value sleep... and it's interesting because I'm getting the sense from you, reading about you, and learning more about you, is that you... You can look at people on a scale, of the horrible insomnia patient, can't sleep, tries like crazy, desperate for sleep, dreads going to bed at night. And then you've got you, the Alie, the neurosurgeon, the person who's like, "you know, if I get two hours sleep, I'm pretty good." And we want you to be in the middle. We want you to find, as you start getting into your 30s and 40s, that middle ground of, "just because I can do it, probably doesn't mean I should."

Aside: One major thing you can do to ease insomnia, you ready for this? Stop being afraid of it. Dr. Winter says that the main cause of insomnia is anxiety and fear, (see the Fearology episode with Mary Poffenroth for a one-two punch on dealing with that, she's incredible.) Also, on the same token, if you think you can get away with 4 hours of sleep, eeehh, go ahead and try getting more. Let your brain's clean-up crew get to work.

Alie: Exactly what other things are we cleaning out, other than the plaques? How does that affect our memory, and our motor coordination, and our ability to think quickly by having a cleaner brain?

Dr W: Yeah, all those things you mentioned are true. You can look at the science in one of two ways; you look at the science of either deprived or restricted sleep, or you can look at, sort of, newer science where you force people to sleep longer, or even just rest longer. But even within sleep medicine... my specialty is sleep and performance, so I work with a lot of professional sports teams. Not that I really care that much about athletes. (I mean I care about them, I care about everybody, but I'm not a rabid athletic fan.) But what I like about athletes, when you study them and you improve their sleep, we can immediately measure how well they're doing. So, I've never seen the Alie baseball card, you know, how's she doing? Oh, 2014 was a good year for her, she batted this, she ran this, she scored this many runs. You know, we're all doing things that require performance, but with athletes we just tend to measure it more.

So when you actually get an individual to restrict their sleep... we don't do a lot of sleep deprivation experiments anymore because they're kind of difficult, and inhumane, and frankly, somewhat dangerous. But, even if you just restrict sleep, those things, to me, are much more meaningful. I think most people believe that if you stay up all night, you don't work that well the next day. But what if you got four or five hours of sleep for several days in a row?

Aside: I use a Fitbit, and this was actually me all last week: I averaged 4 hours a night for an entire week. I was so foggy that I confused my itinerary and missed my first flight in 10 years. Then I cried in an airport bathroom out of frustration at myself, like a big weepy cranky baby. Does lack of sleep make me a weak person though? Well, physically, yes.

Dr W: It's been shown that your bench press drops by 20-30 lbs, we make three times more attention errors. We have a much more impaired ability to read the emotions and cues of others. They do these experiments where you would hear, a person would say something like, *[in a positive, light-hearted voice:]* "that's a great idea" or *[sarcastic, lower voiced:]* "that's a great idea."

Aside: *[sarcastically:]* Wow. This info is really helpful.

Dr W: Our ability to read cues, to emotionally attach to other people, becomes very impaired when we don't sleep. Now the flip side is, what if you do sleep? What if you do spend more time in bed? What if you're forced to spend 10 hours in bed no matter what, sleeping or resting? And it shows that people run faster, they swim faster, they react to things quicker, their accuracy improves. They're happier, they have better ideas. It's amazing. They even lose weight. So the idea that difficulties in sleep is not affecting some part of your body is probably not true.

Alie: Do you think that depression or anxiety are related to a lack of sleep? I know that depression and anxiety are problems that a lot of people face. It seems like more and more people are on antidepressants, anti-anxiety medications and also our sleep is kinda crappy.

Aside: Sidenote: asking for... myself.

Alie: Is there any correlation with that, or does one cause the other?

Dr W: I think it works both ways, and most people who are struggling with depression, mood disturbance, anxiety will tell you things like, "oh, if I could just sleep, I would feel better." And now you set up this very vicious cycle of; you're depressed, you're anxious, you're not sleeping well, and that's going to feed back into making the present anxiety worse, then you really don't sleep well. So there is a downward spiral that can be set up there too.

But I also think that the relationship works oppositely. I think that individuals who are depressed, and who have difficulty with mood disturbance, their disorder is creating a lot of sleep disturbances as well as the sleep disturbances helping to facilitate the disorder. It's very unusual to find somebody who has significant insomnia who doesn't have some degree of anxiety. Insomnia theory would tell you that step one in terms of developing insomnia is you have a predisposition to it. You're Type A, you've got a lot on your plate. And you know, Type A is a good thing; I want my surgeon who's going to take the tumor out of my brain to be very Type A. I don't want them to be like, "oh well, you know, we'll get to it when we get to it, you know, I'm going to follow the Grateful Dead this summer and, you know, hacky sack, flip flop, Jack Johnson." I don't want that person. *[Jack Johnson song, guitar and piano with gentle male vocals: "who needs sleep when we've got love?"]*

I want, you know, the really hyper-focused, Type A, attention-to-detail person managing my finances, doing my surgeries, whatnot. So that Type A tendency makes the world go 'round, these successful people have it. But when they start to apply that Type A to the insomnia, it becomes a real problem. With individuals who are struggling with mood disturbance, I think it's important to understand and have an open mind to it working in both ways. Some people will say, "I don't have depression, Dr. Winter, I'm not anxious. It's just my sleep is really messed up." And they may be right, but I think it's also okay to sort of open yourself up to the idea that maybe this is also playing a causative role in it too. There's a huge connection between those two things.

Aside: So, lack of sleep can make you anxious and depressed. According to one study, skimping on sleep excites your amygdala and insular cortex. These are the parts of the brain that fire up your "fight or flight" response. But anxiety and depression can also cause insomnia. The primary cause of blinking awake in bed, according to Dr. Winter, is anxiety. There are secondary causes, like pain that doesn't allow you to fall asleep, and those have to be addressed as a pain issue rather than a sleep issue. But primarily, insomnia is an anxiety issue.

My personal issue with sleep (if we're gonna get confessional) is called sleep avoidance, or sleep procrastination. This is when you are tired and need to sleep but you keep delaying it - watching movies, scrolling, working, reading. There are a few causes of this and one might be workaholicism and not being able to admit that the day is done (ahem), or it may be loneliness and scrolling helps you feel connected to others (also I do that). Or even a busy day tending to a lot of people can you leave you needing alone time, and staying up well past what is prudent is the only way to get it. Hypnos is like "yo, this is why I hang out in a cave in Hades. No one bugs me." So what makes better sleep habits? The CDC (Centre for Disease Control, who considers "not sleeping enough" as kind of a disease) has some hot tips:

- Be consistent. Go to bed at the same time each night, including on the weekends if you can
- Make sure your bedroom is quiet, dark, relaxing, and at a comfortable temperature (we've learned that colder is better - who knew?)
- Remove TVs, computers, and smartphones, from the bedroom. Throw them into the simmering caldera of a volcano, if you have one.
- Avoid large meals, caffeine, and alcohol before bedtime

We all kinda know that we're supposed to do those things. I'm trying to shift the way I'm thinking about sleep, to thinking of it as a Free Thing you can do to make your brain sharper, and your skin glowier, and your future less addled with disease. If sleep hygiene were a thing you could buy and not do, we would all be so pumped for it! We would Amazon Prime the shit out of it. But really, it's just a behavior, so we have to see value in the behavior.

Alie: How much does sleep hygiene affect how much you actually sleep? Like when you have to prescribe sleep hygiene, what do you tell people to do?

Dr W: Yeah, what I would say about sleep hygiene is this: the media focuses a lot of attention on sleep hygiene because it's a digestible little bite-size nugget. Hey, having trouble sleeping? Make sure your room is this temperature, and here's a study that shows that. Great. Moving onto the next topic or whatever. So, sleep hygiene is great, but I would say that in terms of its ability to solve a problem; 20%. I would say, of the people out there who are struggling with their sleep, that 20% of people could make their problem much better, or solve it, if they did something related to sleep hygiene.

And what I mean by that, is also the idea that it's sort of like knee pain. If you're a runner; my knee's starting to hurt. So what are you going to do? You'll take some Ibuprofen, maybe you'll buy a brace at CVS. You'll ice it, you'll take a couple days off from running. If you're doing all those things and still hearing this clicking sound and having this excruciating pain in your knee, eventually you're going to say, "I don't know that this is within my ability to solve." You go see a specialist, they do an MRI, you've got a big piece of cartilage sticking into your joint.

To me, that's sort of like sleep hygiene. We have this message out there that every one of your sleep problems is solvable if you just get the right mattress, and the right pajamas, and the right noise machine, and earplugs in. Those are all fine, I just think that for the other 80 % percent of people, it's very anxiety-provoking that you've invested in a \$5,000 mattress, you've got Tom Brady's special pajamas that he wears, and my God, he's a quarterback married to a model, so it's got to work! [*a man talking about Tom Brady's pajama advertisement: "without this sleepwear I don't feel like I would have been able to achieve the things I have done."*]

You know, you got all this stuff going on and it's not working. I think that creates a lot of anxiety, sort of like, where "I'm hopeless, nothing works. I've read 20 different books." Which is why I didn't put a lot of sleep hygiene in my book just because I think we all know these things now. It's kind of getting to the point of common knowledge; "oh, what, having the TV on really loud all night long, that's not good? Okay!" If you're surprised by that, where have you been?

So anyway, I think sleep hygiene's important, we want to set the stage for good sleep. We want to have positive thoughts about sleep. Like, sleeps great! We shouldn't be dreading it or fearing it. I think it's even strange to be kind of neutral about sleep. I mean, be neutral about brushing your teeth, but sleep, oh, it's the best thing in the world! You get in bed, and whatnot... I think that we need to cultivate that attitude, but understand that it has its limitations.

Alie: How dark and quiet should your room be, though?

Dr W: Again, I think that if you're struggling with your sleep; really dark and really quiet. People ask about noise machines or things like that, but we're always going to sleep better in a quiet environment. Our brains pay attention to sound. If somebody says, well, I really like listening to a podcast when I go to bed at night, that's fine, but maybe you could set it so that after 15 minutes it turns itself off.

Dark rooms are really important. My parents redid their basement when I was growing up. We had this unfinished basement, they finished it themselves and kind of did it... outside the law, I think, so the bedroom down there has nooooo way to get out. It's surrounded by earth on two sides and there's a door, and there's zero window. It is incredibly dark, incredibly quiet, and incredibly cool. I remember going there when I would go home from college breaks and I would fall asleep in there and waking up at noon, you know, and being like, "what time is it?" And they're like, "where have you been?" So even the smallest little bit of light coming in through a door or underneath a blind can really impair our sleep.

Aside: Sidenote: we'll get aaallll into blue light and how it affects sleep in next week's Part 2. Also, stick around after the credits of this episode and I'll tell you an only-a-little-bit gross secret about my eye mask. Anyway, sleeping with the lights on: very confusing to your brain.

Dr W: So if you're a shift worker, especially when you're sleeping a lot during the day, you want that room to be so dark that you cannot see your hand in front of your face. And quiet. And if you can't do that, then earplugs and a mask over your eyes is probably just as good.

Alie: And in your book, you mentioned it's okay to not sleep in the same room as a spouse or a partner.

Dr W: It is. I mean, I'm a doctor who practices in Virginia, so I consider that the South, and you've got to be very careful about the way you speak to people about it. They always give you that look like, "You tryin' to steal my wife?" and I'm like, "nooo!" I think sleeping with somebody is fantastic. I DO find it sort of strange that we have evolved to do that. Like, I don't necessarily feel the urge to do other things, like, "let's sit in the same chair, honey, and eat from the same plate!" You know, it's okay to be like, "you sit over there and eat your thing. I'll eat over here." There are a lot of things we do separately. Oh, you do it over there, I'll do my thing over here. Even our bathrooms have two different sinks sometimes. So, I do think it's funny that we've evolved to create this thing that we need to sleep in the same bed. And it maybe it was evolutionary, because houses were small, you were conserving heat or things of that nature.

But I do think that you can love somebody intensely, and not be in the same bed with them. Or, what I always tell people, something that's a little bit more palatable for some couples is, let's pick Thursday; Thursday will be the day we watch *Handmaid's Tale*, but then we sleep separately so we can consider what that means in terms of our society, independent of one another, and over breakfast we'll talk about the episode and how we feel about it. *[clip from The Handmaid's Tale, repeated high-pitched piano notes, and a woman's voice, somberly saying: "I was asleep before. That's how we let it happen."]* So that way, there's no guilt. It's like, "oh, it's Thursday night, we're going to sleep separately." And it's kind of fun to get back together on Friday night. That kind of thing.

When I was on call as a doctor, I would always sleep in the basement in our guest bedroom - that had a window by the way. And I know my wife was secretly thrilled when I would not be there. She could stretch out, somebody's not there moaning, with pagers going off and whatnot. So, I think it's okay. I mean, if somebody says, "Look, I really like sleeping with my partner, I don't want to sleep away from him or her," that's perfectly fine. But I also think we are capable of loving somebody and not be in the same mattress. I think we can do that.

Alie: You may have just saved some marriages right there! *[laughs]*

Dr W: Yeah! We've got a sleep-cation *[ph. like vacation]*. I think my wife came with that word. It's kind of exotic, like, "ooh, I wonder what they're up to tonight!" And I always tell people, you know, you can get in bed, and read, and maybe fool around, *[retro sexy music with saxophone and a groovy bassline]* and then when it's time to sleep, you kind of do the thing, like "well, I'm gonna leave now." It doesn't mean you don't love them or want to be with them. My wife hates me being anywhere near her at night, and for some reason I kind of gravitate over to

her side of the bed and she's like, "get away!" I don't think it means she doesn't love me; I think that people just need to sleep and do what's right for their sleep. And not necessarily have some guy breathing and hanging over all the time. It's probably a good thing.

Aside: And if you do this, sidenote: you're not alone. I read one study that said almost 14% of couples who live together sleep apart, mostly because of snoring. I read one tip that said sleeping on your back can cause snoring, and you can wear a t-shirt with a pocket backwards and put a tennis ball in the pocket to train you not to sleep in shavasana (corpse pose). If it works, or if you have Wimbledon nightmares, please let me know. [*echoey tennis hits, then an announcer with a British accent: "Thirty."*]

Alie: Now, what about naps? Good or bad?

Dr W: I think a nap is good if you're an efficient sleeper. What I mean by that is, if you're somebody who gets in bed, falls asleep in a time that's pleasing to you, you sleep relatively well, and then you still feel like you need sleep on top of that, I think a nap is a great thing. You know, if you can build it into your day at a designated time and have a little place where you can do it, that's kind of special, I think that's great.

I think it's a bad idea when somebody says, "Well, I went to bed last night. I was really upset about a decision on *The Voice*. I can't believe they sent her home because she's so much better than that guy who sang *Dock of the Bay*, for God's sakes. He got through singing *Dock of the Bay*; I don't believe it. And she completely reworked that Christina..." anyway, I'm digressing. So you're really upset about that thing, and you go to bed, and it takes you three hours to fall asleep. You were up all night because you couldn't believe the decision, and then you take a nap the next day because you couldn't sleep last night. Now, you had the opportunity to sleep, but for whatever reason your brain decided it didn't want to. I think that's a dangerous path to go down.

You see that a lot with retired people, with no kids in the house anymore. I love old people. They can get up at 3 o'clock in the morning if they want to, they can go to bed at 6 o'clock after *MacNeil/Lehrer* if they want to. They can do whatever the hell they want to. They've earned it, for God's sakes. But the problem is when they have no constraints on their sleep. If they have a bad night and they just sleep in or take a massive four-hour nap, right? At 5 o'clock in the afternoon, and now it's 11 o'clock, they want to go to bed, they can't. And now they're frustrated, and so the cycle begins.

So, I think napping is great. Try to keep it relatively short, 20, 25, 30 minutes, closer to the beginning of the day so we're adding onto last night not subtracting from the upcoming night. And, I think naps are great, that's such a wonderful thing – to sleep at a time when you're not supposed to!

And I think it's also interesting to pay attention to how you fall asleep when you nap. Meaning, I've got a lot of people who, it takes them four hours to fall asleep at night and they feel completely dependent on sleeping pills. But they'll say things like, "I come home from

church, I'm so exhausted, and I take a nap." And I always ask them, "Well, what pill do you take to take your nap after church?" And they look at you like, "oh, I don't take a pill then." Well, why do you think you're able to fall asleep after church, but you're not able to fall asleep at 11 o'clock when you want to go to bed? And it's always interesting the answers they give you, because we think of a nap as being this sort of extra credit. Teacher gives you some problems, and the last two problems on the test are extra credit. "Well, I've got some time, I'll do it. No pressure." And usually you get those right, because it's like if you get them, great. If you don't, it's not that big a deal. It's extra credit. Naps are sort of like our sleep extra credit, you know, it's bonus sleep. But boy, you know, the final exam is our sleep at night. We got to sleep NOW. We want to kind of get out of that place. So that's not a good place.

Alie: So, the anxiety of sleeping, doesn't let you sleep?

Dr W: Doesn't let you sleep. So we don't want to nap to facilitate the process.

Aside: To recap: naps are fine! But not if they mess up your bedtime. Do it earlier or save that sleepiness for sweet, sweet night slumber. If sleep is an issue for you or someone in your life, maybe take a nerdy approach first and gather some data.

Alie: What is the best way to track it? Because knowledge of your sleep will probably motivate you to get better sleep. Are Fitbit trackers good? Should you wear it like a headband with electronics on it? Should you just try to keep a journal next to your bed? What's the best way to figure out if you're getting enough?

Dr W: All of those things are good. I think that personally, the best way to figure out if you're getting enough sleep is to look up, either in my book or online, something called the Epworth Sleepiness Scale.

Aside: I was hoping that this quick test was named for like a... *[trumpets fanfare in the background, Alie announces in a fake British accent:]* Lord Epworth, the Duke of Naps, who fell asleep playing croquet. But it was actually coined by an Australian, Dr. Murray Johns for the hospital he works at. Okay, little bit of a snoozefest on that backstory. Anyway, you can take it at EpworthSleepinessScale.com. I scored an 11: Mild Excessive Daytime Sleepiness. Dr. Winter explains what this scale is:

Dr W: It is a series of scenarios that you might find yourself in, and the question is, how likely would you fall asleep if you were in that situation. How likely would it be for you to fall asleep reading a book, watching television, passenger in the car for an hour? If you're answering the question: all the time, always fall asleep, can't read because I'd fall asleep as soon as I start reading, I really can't sit down in the evening or I'll fall asleep, that's probably a good indication that you're not getting enough sleep, or there's something wrong with it.

So, I think all of those modalities that you mentioned, sleep diaries, Fitbit tracker, I'm wearing one that's made by Nokia, which I think is outstanding because it uses movement

and some heart rate variability. All those things are great. You just need to understand what they're built to do and what they're not built to do. But they're a great way.

All of these things do such a good job of keeping us honest about our sleep. I mean, I would go around and tell people I get seven hours of sleep at night; go to bed around 11 o'clock, get up around six, which is such a lie. When I wore several trackers on my arm for a month to see which ones were good and not so good, and then I did a sleep study of myself on the last night, wearing all of them to see how they compared to the actual sleep study. The thing I learned the most about that process was, what a liar I was about my own sleep! Not even knowing that I'm lying!

I'm not deceiving people intentionally, it's just that yes, ideally I would like to go to bed at 11 and get up at 6, but my son swims so he's got to get driven to the pool early or, Stephen Colbert looks really funny so I'm watching some of his monologue, and by the time you get the dog put away, and I get some water, and turn the lights out for my wife who's fallen asleep on the couch, check on the kids, Oh God, check one more email and you see what's going on here, it's closer to midnight or even later sometimes. So, I think those things do a very nice job of keeping us honest about how much sleep we are really getting. I think that can be a very valuable first step in terms of solving a problem.

I do think that there's a lot of questions you can... do you sleep well at home versus at your girlfriend's place? Do you sleep better after a bunch of beers because, you feel like you do versus when you don't drink? I think, posing a question to something like a Fitbit can be really interesting. I'm really on an exercise kick, let me look at my sleep looks now, versus a few weeks ago before I started. Oh wow, it looks a lot more efficient, or I seem to have more deep sleep, or I fall asleep a lot faster. Generally, they work best when you're comparing data to itself, like your own data. Pre-this guy I'm dating, post-this guy I'm dating. Pre-this supplement, post-this supplement. That's where it tends to work its best, I think.

Alie: In general, if someone's saying, "I'm having trouble sleeping, I'm having trouble falling asleep, I'm having trouble getting the right amount of sleep," is there one basic piece of advice that you're like, "Start here and see if that helps"?

Dr W: Yeah, it's interesting. I think if somebody says to me, "I'm having trouble sleeping," they've already sort of moved past the biggest barrier, which is the person who comes to me and says, "I can't sleep."

Aside: Dr. Winter says that a lot of times, we're getting a little more sleep than we think we are. Because if you literally did not sleep... [*deep, distorted voice:*] you would not be alive. Wait, what's the record?

Dr W: The world record is something like 11 days, and even that was a sham. The investigator said, we *couldn't* keep him awake. He kept having these little micro sleeps, even when he was standing on his feet.

Aside: So, provided that we're not seeking the world's attention by not sleeping, how much should we sleep?

Dr W: A lot of people are seeking 10 hours of sleep a night, but they're only capable of getting 6 hours and 45 minutes. So that difference of 3 hours and 15 minutes is insomnia. It's also important to make sure that there aren't things that are happening within your body that are impairing your ability to sleep as well. That can be something from insomnia, to restless leg syndrome, to sleep apnea. There's a lot of things that happen at night that can impair our ability to sleep.

Alie: How necessary is a sleep study, usually?

Dr W: Not. I mean, I really work hard to keep people out of the sleep center. As doctors, we learn most of the diagnosing and treatment of problems has to do with the clinical interview. So that's why we spent a lot of time talking to our patients because we need to understand what the problem is. The sleep study is often confirmatory, like, I already think this is what's going on, so we'll do sleep study to confirm it. Or, sadly, in 2018, a lot of times the study is done because that's the only way you can get insurance to pay for something. They won't take the expert's word for it, they want proof that this person has narcolepsy. They want proof that this person has restless leg syndrome, even though it's clear from their story, that's exactly what's going on.

So, not everybody who has a sleep problem needs a sleep study, and of the people who need sleep studies, many of them can be done in your own home with these little simple devices. So don't let that be a stopper in terms of getting help. But, when they're necessary, they can be incredibly helpful.

Aside: So, sleep studies can be a great ally in terms of convincing doctors that you do, indeed, have a serious issue. They also can be a little like Mr. Snuffleupagus, and if insomnia is caused by anxiety in your life, taking a break and sleeping in a hotel room-like environment can be just the vacation you need from your usual mental anguish. (Even if you have a bouquet of wires taped to your face.) If you want to start small, you can jot down the hours you sleep, of course, or try a sleep tracker. I bought a Fitbit at Bed Bath and Beyond with one of those 20% off coupons that my neighbor left near the mailboxes for a week, and it's been a nice gaze into the underworld of my sleep issues.

Tune in next week for Part 2, which features more remedies to your sleep issues. Patrons wrote in with over 200 questions, and we got to as many as we could: covering sleeping pills, supplements, genetic factors in sleep, blue light, making good habits stick, alcohol to get you drowsy, sleepwalking, sleep talking, best positions for snoozing, and of course: my mom, Nancy Ward's magic cure for insomnia that I use all the time when I've had too much caffeine or it's 7pm but I have to go to sleep to get up for the airport. All that is next week, make sure to come back. The extra hour or so for Part 2 could add years back onto your life.

Meanwhile, Dr. Chris Winter is [@sportsleepdoc](#) on Twitter and his book is *The Sleep Solution: Why Your Sleep is Broken and How to Fix it*.

Follow *Ologies* @ologies on [Twitter](#) and [Instagram](#), I'm @alieward on [Twitter](#) and [Instagram](#) too. I'm also the host of *Did I Mention Invention?* every Saturday morning on the CW. It just premiered last week so I'm pretty squealy about it, and I thought I would let you know.

You can get a comfy *Ologies* t-shirt to sleep in at [OlogiesMerch.com](#). Thank you Shannon Feltus and Boni Dutch for so many great designs that are up. You can join the [Ologies Podcast Facebook group](#), which is just a haven for benevolent and curious nerds on Facebook. I love each and every one of you in there! Thank you Erin Talbert and Hannah Lipow for adminning.

Thank you to editor Steven Ray Morris for losing sleep piecing this all together each week. He's also responsible for all the Easter Eggs at the end of the show. He surprises me each week. It's just delightful! He hosts the podcasts *See Jurassic Right* about dinos and *The Purrrcast* about cats, and they are also great. Nick Thorburn of the band Islands wrote and performed the theme music.

And now at the end of each episode I tell you a secret, and this is part life-hack and part ew. Sleep masks always annoy me. They fall off, the Velcro gets stuck in my buffalo hair, and so a few years ago I started using a sock. Take a knee-high sock. (Mine have all been worn on my feet before, I just don't care. I washed them.) Anyway, take a knee high and pin it in a big loop like a snake eating it's butt. Put a safety-pin in it and then pop that thing on your head, and it stays all night. It is weird if you begin dating someone and you're like, "Goodnight. I'm putting this old sock on my face now."

So if you're crafty you could probably artfully sew it together. And if you don't have knee-socks, invest in a pair and wear them on your face. Bonus, if you lose one, you have a spare and they're very machine washable. If you do this, please take a photo for me and tag it #OlogiesSockFace. I will promise to post one also.

Okay, go get some sleep. You have earned it. Berbye.

Transcribed by Rika Eringa, your Australian Chem Eng friend who simultaneously studied and partied harder than you in college, and you're not sure if/when she slept.

Some links which may be of use to you:

[*How to Make That Cheddar While Drooling*](#)

[*Let C3P0 Annoy You into Consciousness*](#)

[*Brain boner while in dream state*](#)

[*Property Hunks*](#)

[*REM sleep is your fren' sleep*](#)

You're either REM or ...you're not

This is your brain on tired

Drowsy Redditors tell all

This brain do-dad makes you sleep

When you're not sleeping but actually you're sleeping. Just poorly.

Drowsiness: is expensive

Hunter-Gatherer-Sleeper

CDC is like, can you not drive tired please?

The Night Hag just wants to party

Maiken Nedergard

Don't buy Tom Brady's pajamas. Just sleep in a colder room.

Lord Epworth, the Baron of Naps

Nice looking Nokia watch

CDC is all: sleep like this though?

For comments and enquiries on this or other transcripts, please contact OlogiteEmily@gmail.com