

Getting Curious with Jonathan Van Ness & Professor Selina Wang

JVN [00:00:00] Welcome to Getting Curious. I'm Jonathan Van Ness and every week I sit down for a gorgeous conversation with a brilliant expert to learn all about, all about something that makes me curious. On today's episode, I'm joined by Professor Selina Wang, where I ask her: How did olive oil become the complex, stunning, multidimensional creature that they are today? Welcome to Getting Curious, this is Jonathan Van Ness, I am so excited for this week's topic. The IT is olive oil. The WHO is Dr. Selina Wang, who is an associate professor at UC Davis in the Department of Food Science and Technology. Between 2011 and 2022, Dr. Wang was the research director of the UC Davis Olive Center. Welcome. How are you, Dr. Wang?

SELINA WANG [00:00:53] I'm good. Thank you so much for having me. My students are so excited, so thank you for helping me to increase my coolness factor.

JVN [00:01:03] Oh my gosh, honey, I can tell from even just this Zoom with your cool glasses, your coolness factor was already soaring and with your scholarship, it, like, qualifies that point by, like, 50 fold. Look at me using, like, research terms. Qualifying. OK, but wait. Hard-hitting journalistic question number one: What is olive oil?

SELINA WANG [00:01:27] It's a great question, and it's a really confusing thing for the consumers, right? I cannot tell you how many times I've gone to the grocery store, standing in front of the aisle of oil, and I see people just stand there and look at all the options. And it's very confusing. There's extra virgin olive oil, there's pure olive oil, there is extra light olive oil. And this is just the olive oil category, right? There's other edible oil categories. But In the US, mostly consumers are interested in extra virgin olive oil, which is technically fruit juice coming out of the olive fruit.

JVN [00:02:11] What?!

SELINA WANG [00:02:12] Yeah, so if you think about making orange juice, you take oranges, you squeeze it, and the juice comes out. It's basically the same way to make extra virgin olive oil. You take fresh olives. You basically crush them and then press them, and then the oil will come out. And that's olive oil. There's no heat added, no chemical added during this process. That is extra virgin olive oil. And that is different from pure olive oil you buy at the store, that is refined. That is also different from that extra light olive oil you buy, which is also refined. And some consumers will confuse extra light olive oil with lower calorie oil. But in reality, they're all

the same. It's just the processing is different. Yeah, so have you ever tasted olive oil? Now I'm interviewing you.

JVN [00:03:08] No, please, no, turn the tables. Yes. And the thing is, I really like it, and I, don't be sad at me. But I, I, I, I hate olives. I'll say it. OK, I hate 'em. I, I hate the taste, it repulses me to my last fiber of my being. If, if a chopped-up olive even touches my shit, I can't, like, get it, like, if it's chopped up in my pasta. Oh my god, or in my pizza. Like, Oh my god, I get so upset. I don't really. But I just, green ones, brown ones, black ones, pimento, whatever. There is no olive I like yet with olive oil. Give it to me. I'm going to dip my bread and I'm going to pour it all over. I love it on a salad. I love olive oil. I hate an olive.

SELINA WANG [00:03:58] Do you know why that might be?

JVN [00:04:00] I think it's, like, the mushy, icky texture of them, because maybe I do like the taste of olives since I like the olive oil. It's just like that, it's, like, the ball, and it's, like, filled with something. And it's, like, squishy. And I just don't fucking like it at all. And I've tried, I try every few years and every time. I'm devastated that I tried it again.

SELINA WANG [00:04:22] I've talked to several people like you. And there could be another reason other than texture is that when you make olive oil, you should start with fresh olives, so, like, fresh fruit. And when you eat olives, the olives you eat, they're often fermented. So they have a very different flavor profile compared to olive oil.

JVN [00:04:46] So I might like fresh olives, is what you're saying?

SELINA WANG [00:04:49] You will not, because it's very, very bitter. So no one, no one likes fresh olives. So that's why they need to get fermented and then during the fermentation process the bitterness is removed and then that's why we can eat them.

JVN [00:05:08] Oh, it's replaced with the taste of shit. They take the bitterness out and then they put the shit in there and then, but then when it becomes an oil, it's delicious?!

SELINA WANG [00:05:16] Well, so if you just taste the oil by itself, I wish we could do a sensory experiment together. But if you taste, if you just don't pair your oil with food, if you just take, present the oil into a little cup and you drink it.

JVN [00:05:34] Would I not like it?

SELINA WANG [00:05:36] It's worth a try, but I will tell you the three things you should be looking for. Pour some oil into a cup and cover up the top, and then trap the volatiles in there, and then put your nose in there, and then smell it. You should smell some grassiness and fruitiness if it's a fresh olive oil. And when you take a sip, when you drink it, when you swallow, you should feel a burning in the back of your throat. That's from a chemical compound called oleocanthal that has a similar health property as ibuprofen, so it can act as a painkiller. And then you should also feel some bitterness in your mouth, kind of like a leafy green kind of bitterness or green tea or chocolate. And this bitterness, they are the natural antioxidant and phenolics that are really, really great for you, and then you can taste them. So three different things to look for: fruitiness, bitterness, and pungency. And bitterness and pungency can be a little bit of acquired taste, right? So for example, when we start drinking coffee, rarely we go straight to black coffee.

JVN [00:06:51] But I did. So why don't I like olives? Yeah, my mom had a Kinsey. She had a, and I'm drinking coffee right now. My mom had like a canteen, a black iced coffee when I was, like, two, I was literally a toddler. And she said, and I was, like, "Can I try it?" And she said, "You don't like it." And then she said she turned around and I and I turned around, I got it, and I and then I was like, chugging it. I, since I do like bitter and I want to like and looking at your face. It's so devastating to tell you that I don't like all this because I love it. But I love olive oil. But I want to, because you, obviously you must, like, you, like, an olive oil, huh.

SELINA WANG [00:07:25] I do, but I really, I don't judge people.

JVN [00:07:29] So that must be how people think when their hair doesn't look good. They're, like, "Oh my God, I was so scared that my hair didn't look cute," and you're like, "I don't care. It's."

SELINA WANG [00:07:35] Exactly, exactly.

JVN [00:07:38] So then what's your favorite kind of olive? Because there's green and black, right?

SELINA WANG [00:07:42] Yeah, they have different fermentation process. I do like the green ones. I, I like the ones that have some more flavor. So where not all the bitterness and the fruitiness are removed from fermentation or are lost.

JVN [00:087:59] I have eighteen questions, really quick! I have to ask you, what, what, why are they different! How do you get a green one? So all green and black olives started being, like, olives off a bush, but then they went through a different process, so they turned different colors? And is olive oil ever made from black olives and green olives, or is it all green olives?

SELINA WANG [00:08:17] So depending on who you are talking to, if you want to make olive oils that are really high in antioxidants and the phenolics, you need to start with greenish olives. If they are black, if they are basically dark purple, the olives go from green to greenish, purple, purple and to really deep purple. That's, that's the same for all cultivars. But if you make olive oil from really purple fruit, it's going to have less antioxidants, less phenolics, but the oil yield will be higher. You can make more oil out of those fruit.

JVN [00:09:04] Is that because they're bigger and, like, more adult? The light purplish and darker purple. And when they're more green, they're, like, not as big yet? So there's just not as much oil in there?

SELINA WANG [00:09:13] Yeah. So the oil accumulation, when, when the olives are still attached to the trees, they, they, they will keep growing as the olives become more matured, and then the color goes from green to dark. So, so that, that, that's that's important, right? Depending on the, the producer, if your goal is to make really high phenolic oil, then you want to harvest earlier. If your goal is to make as much oil as you want and care less about the, the phenolics, then you can harvest later in the season.

JVN [00:10:51] Interest! OK, and then is the, so does the process of making the oil from them different itself or it's just different because of the age of the olives?

SELINA WANG [00:10:05] Yes, so. So if you ask a farmer, what, what's the most important thing to make a really good quality extra virgin olive oil, they would say it's the fruit. And if you ask a processor, what is the most important thing to make high quality extra virgin olive oil, they would say it's the processing. And I would tell you it's both the fruit and the processing. To make really high quality extra virgin olive oil, you need to start with good fruit, which requires a lot of care from the farming side, though you also need to process it in a way that will maximize health benefits and quality. And that includes getting the fruit to the mill where the fruit will be processed as fast as you can, and you also don't want the fruit to get too warm. Otherwise, the fruit will start fermenting and start tasting like olives, which you don't want because we may have some people who like olive oil, but they don't want their olive oil to taste or smell like olives.

JVN [00:11:10] Same, yes!

SELINA WANG [00:11:12] And then you, you, there are things that you can control during processing to, to maximize the antioxidants that will be in the final product.

JVN [00:11:24] So extra virgin olive oil is just, like, squeezing the olives, and that's what comes out. And then they just, like, strain out the chunks. And that's what extra virgin olive oil is? And then, true or false? Does refined mean to heat? What does, like, refined mean?

SELINA WANG [00:11:42] There are multiple steps during refining. Heating is certainly a part of it. And also remove some bad smell, taste in the oil. That's why refined oil tend to have basically no smell and no taste. And also the color is lighter. So if you look at pure olive oil or other types of refined oil, they tend to be kind of yellowish but almost pale clear compared to a really fresh extra virgin olive oil that has a nice green hue. And that color is removed during refining as well. So, so that's, that's what refining does.

JVN [00:12:25] So refining means that we're heating. We're putting it through several processes, but extra-virgin means that that didn't happen, like, no refining. But if it's pure olive oil or, like, the light kind, then that means a refining process did happen.

SELINA WANG [00:12:41] Yes.

JVN [00:12:42] What other times does a refining process-, is it anything other than extra virgin, because I guess the virgin, without an extra. So what's that?

SELINA WANG [00:12:51] That's a great question! So virgin is not refined. Just like extra virgin that is not refined, but the quality of virgin is slightly lower than that of extra virgin, so it doesn't get "extra" because the quality is not as good.

JVN [00:13:16] Do we see these classifications across, like, all oils? Like, is there extra virgin coconut oil or is it only, like, an olive oil universe thing?

SELINA WANG [00:13:25] Only olive oil is extra like that!

JVN [00:13:28] What's it's, like, smoke point and what is a smoke point? And why should we care?

SELINA WANG [00:13:35] I think we care a little too much about smoke point. I think it became a really popular thing to talk about because when we watch TV and the chefs on TV will talk about smoke point and then the oil they will choose to accommodate a smoke point of each oil. But in reality, there's a lot more to the oil you should choose other than smoke point, for cooking. So, for example, extra virgin olive oil actually has a decent smoke point between 360 to 410 Fahrenheit, which is perfectly fine for normal cooking or baking or even frying. But, but it actually has a lot to do more than smoke point, and that is oil stability. And extra virgin olive oil is more stable compared to some other refined olive oil because of the natural antioxidants that are in the oil.

JVN [00:14:34] Does that mean that I'm getting all those gorgeous health benefits up until 410?

SELINA WANG [00:14:39] Yes, but temperature is just one thing. The length of cooking time is another. So you don't want to be cooking for a long period of time, either seeking out there to preserve all the phenolics that are in the oil.

JVN [00:14:58] Or just, like, sprinkle some olive oil on top at the end.

SELINA WANG [00:15:02] You can do both!

JVN [00:15:04] But, like, what if I'm baking something at 450? Does that just mean it's going to be a little smokier in there?

SELINA WANG [00:15:09] It won't get smoky, I don't think, if you're baking in the oven, but some of the health-promoting compounds like antioxidants or phenolics may, they will start breaking down. So you just want to get all the health benefits of an extra virgin olive oil.

JVN [00:15:34] That makes sense. Tell me about those health benefits!

SELINA WANG [00:15:38] Yeah. So they are these natural class of compounds. They're called phenols or phenolics. They are antioxidants and they're anti-inflammatory, and they are associated with anti-cancer and other health benefits.

JVN [00:16:00] So how does it compare to say, like, an avocado oil, a coconut oil and, like, a, like, a fish oil?

SELINA WANG [00:16:11] Yeah. So I think the key difference comes down to that extra virgin olive oil is not refined. There is also unrefined avocado oil but on the market right now in the US, there's mostly refined avocado oil, which has a similar fatty acid profile as olive oil but it doesn't have all the natural antioxidants because they're lost during refining. Coconut oil has a very different fatty acid profile compared to olive oil and avocado oil. Another thing that make olive oil healthy is the fatty acid profile I mentioned. It's high in oleic acid, which is in monounsaturated fat that's associated with cardiovascular disease prevention. And that is also high in, say, avocado oil. So you can also get similar health benefit from avocado oil and then that compared to oil like soybean oil that is high in polyunsaturated fats, such as linoleic acid. And there's more and more research that shows oxidized linoleic acid found in soybean, for example, can lead to neurodegenerative diseases, so that related to aging. But soybean oil is everywhere, is the most consumed oil in the country, and is found in most packaged foods, and it's also widely used in fast food restaurants because it's more affordable, and it's widely available. But we are now realizing that there could be some potential health risks that are associated with oxidized linoleic acid.

JVN [00:18:13] Uh, no! Oh, so organic! Does it, if it's organic pure olive oil, do you really care? Because it was already, like, heated up anyway? So it does, they probably cooked out any cute stuff from the organic process anyway. Or are you, like; what's the tea with organic stuff?

SELINA WANG [00:18:36] Yeah, I have never seen organic pure olive oils. I think if a producer will through to the trouble for all their organic certification, which is a lot, they will probably opt for making extra virgin olive oil so they will make organic extra virgin olive oil. But then that means your farming practice needs to meet the requirements and also your processing needs to meet that requirement. And a lot of farmers, all, of course, olive farmers. They don't have a processing facility, so they need to bring their olives to a processing facility that might be processing both organic and conventional olives. So there's less control on that as well. So I think there's a lot more organic-grown olives out there than you can buy, said an organic certified bottle of extra virgin olive oil. Because that process takes a lot of paperwork and a lot of cost.

JVN [00:19:49] So some of it probably is, like, that grade. It just doesn't have the certification because they haven't had time or whatever.

SELINA WANG [00:19:54] Right, right.

JVN [00:19:55] That's cool! So if you were, like, Tinder dating oils and you were just, like, "Mmm, olive oil is like that one that everybody wants," and you would swipe right on olive oil or do we swipe right? You would just accept, you would, whatever the accepting way of swiping is. Is there anyone else who you're as down for as olive oil or is, like, olive oil kind of your main squeeze, in your research? I know you know more about other ones besides olive oil, but is there any other that are, like, equally as cool or beneficial?

SELINA WANG [00:20:30] Yeah, I am interested in avocado oil, that I've been studying, but also maybe something like walnut oil or almond oil, something that may have a really good aroma, but they may not be very stable. They may not be as stable as olive oil, so they may not be as friendly of a cooking oil as olive oil. But I'm also interested in seeing if there's anything we can do to help the oil to have a really good flavor and also really good stability for cooking. And then if we can make it in a more environmentally-friendly way. I think if we can have an oil that's with good flavor, healthy for us, and healthy for the environment, then that would be great.

JVN [00:21:26] I just had pistachio milk for the first time, and it was so good. I wonder if pistachios have, because you said, like, are you, like, is pistachio, like, oil cool you like? Is that got some pheno-? Pheno-? I want to say phenobarbital, but I know that's not what it's called!

SELINA WANG [00:21:44] You know, some people said polyphenol phenols.

JVN [00:21:49] Polyphenols, yes.

SELINA WANG [00:21:50] Yeah, yeah. So yes, for pistachios. But the oil content is not super high. So you're going to need a lot of pistachios to make pistachio oil. And I don't know if the market is quite there yet because people may just prefer to eat pistachios.

JVN [00:22:09] 100%. I just didn't know there was any, like, cool, like, back to olive oil! We're much more obsessed with olive oil!

SELINA WANG [00:22:16] Earlier you asked, "Why do we, why do we love olive oil, why are we obsessed with olive oil?" So one is health benefit, but the other is also the taste and the smell, right? Because if you just go buy a bottle of canola oil, no hate for the canola oil, but if you smell and taste it, it doesn't have a lot of smell or taste.

JVN [00:22:39] OK, but this one time when I was admittedly blackout, it was 2:00 in the morning and I had gone to bed after having too much to drink. Then I woke up and I, like, slept-walked drunk to the kitchen. It was like I was like twenty two and I had bought this apple pie from the grocery store. And so I got out of that fridge, not really realizing, I took a bite out of it with my hand. I grabbed it with my hand. Then I opened what I must have felt was water, but it was really vegetable oil. And I took like the biggest swigs of it, then walked back to my bed and what woke me up was the crazy taste and, like, intense pain in my stomach. And so I woke up and I was just, like, I was, like, "Oh my God, what is this crazy taste, like, I don't even know what I've done." And then I went to the bathroom. I got sick for an hour, like, the sickest I've ever been in my life. And I went back to bed. And then it wasn't until the next morning when I saw the apple pie and the open vegetable oil on the kitchen counter that I realized what had happened. So it actually tastes like shit was the moral of the story. Vegetable oil, anyway. It tasted horrific. Or it must have been expired or something. I don't know what the deal was.

SELINA WANG [00:23:48] Yeah, it was probably old, which means it's oxidized, and an oil that it's oxidized will give you this, like, greasy mouthfeel and very stale. It's very, it's unpleasant.

JVN [00:24:03] Especially if you have, like, chugs of it, like, in your sleep, like many, many big, big guzzles. It was traumatizing. But anyway, back to the questions, I had to share that story. How long have we been obsessed with olive oil, just, like, the longest?

SELINA WANG [00:24:19] Yeah, so I think Italians and Greeks have been obsessed for a long time. In terms of where we are in California, in the US, the production has really accelerated in the last decade or so. Now when you go to the supermarket, you can buy California-produced olive oil versus before that was, it wasn't really that much of an option. So I think being able to purchase US-grown and -produced olive oil probably, I don't know, helped with our obsession a little bit?

JVN [00:25:01] Hmm. I feel, like, I've read, like, news articles before that, where it was, like, "Those, like, cool, like, anthropophs or whatever, like full of what was probably olive oil was discovered in, like, an unearthed, like, Pompeii, thingy." Like, an amphora full of olive oil, so it's like, I guess we've just the reason why the olive oil universe is so intricate as because it's been around for a minute?

SELINA WANG [00:25:22] Yeah, it really has.

JVN [00:25:25] And then another sidebar, when did you get so obsessed with olive oil? Because how does one become, like, a scholar of, like, food science and olive oil?

SELINA WANG [00:25:36] Yeah, so I actually went to graduate school for my Ph.D., interested in pharmaceutical and drug design. And as I was about to finish, I realized that instead of focusing on drug development and trying to find cures for diseases, I wanted to focus more on food and the potential health benefits that we can get from our food. So I essentially restarted, and moved over to a different department on the same campus. And started working on olive oil, and now my research program has extended to avocado oil, walnuts, almonds, pistachios, tomatoes, or other things that they're really fun to work with.

JVN [00:26:30] You are minding your own business, going to doctorate school, learning about, like, pharmaceuticals, like, all these compounds, and then you, like, follow your, your intuition, your like, you made this other purpose-led decision, which is so cool. And then you go in and you switch and you switch to, like, food science and food research, which I just think is so cool and kudos to you for making that change and in being so close and just going back and be, like, "I'm going to follow this passion." I think that is so cool and thank you for sharing that part of your story. So, with olive oil, because when we go back to that scenario of being in the grocery store and you're looking at all these things, obviously capitalism, greed, hate it! What is this oil fraud? Because is there oil fraud? Or, like, you gave an example earlier of, like, the fierce oil fraud, where it's like positive oil fraud, where like you might be getting some, it doesn't say organic, but maybe it was, it just went through a machine that had, like, non-organic wine. So it's still kind of cute, but it doesn't have the certification. So that's kind of, like, "shitty for the growers, cute for the consumers" oil fraud. But what's the one where they're like? Can you ever catch like some faux ass, fake ass, fuckin' refined ass olive oil? But you know, and but they're saying it's extra virgin. And is there a litmus test that we can use to catch somebody in a lie?

SELINA WANG [00:27:57] So in the case of olive oil, and this study, I need to say that it was done 10 years ago, so it's very likely the market has improved. But we did, collected some oils from the food service industry. So oil used in restaurants, school cafeterias and such, and a bottle of "pure" olive oil that was neon green, by the way, and then we learned earlier that pure olive oil doesn't really have a lot of color due to refining processes that removes the colors. And when we analyzed it, it was 70 percent canola oil mixed in with some artificial chlorophyll. So the producer of this oil knowingly adulterated this oil but also knew, "Hey, you know, I think the olive oil has a little bit of a green coloring. So just let me add some artificial coloring to it." So he not only adulterated it, he added something that shouldn't be there.

And more recently, my lab has been looking at avocado oil and we have also found some fraud in the avocado oil industry. And there was a case where it was a bottle of extra virgin avocado oil. So no, it should not be refined. And we found it at a local health food store, and it was 100 percent soybean oil.

JVN [00:29:38] Ahh!!

SELINA WANG [00:29:41] So in these cases, we, we I basically, I went out like a typical customer would and collect these samples, and we brought them back today to the lab and analyzed them, and they have to go through a battery of different tests for us to say, Oh, this with confidence. So a consumer really wouldn't be able to do this at home. So a consumer would rely on standards and regulations. However for olive oil, many of the standards are not enforced. And for avocado oil, there are not well established standards yet because it's a newer oil for our country anyway, so it hasn't been studied extensively.

JVN [00:30:34] So who is reg-, is that, like, the USDA, like, who regulates or who creates these, like, standards?

SELINA WANG [00:30:40] So there are international agencies that work on these standards United Nation of food and agriculture organizations. And for olive oil, there's International Olive Council. They make standards. However, they really do not enforce them. The only enforceable standard right now in the country is actually in the state of California, where the California growers and processors got together, and they agreed that they would impose a mandatory standard to themselves, to anyone who makes more than five thousand gallons a year. So they need to follow a stricter standard. So they need them, but they ensure that their oil, it's extra virgin. And that is a promise that California olive oil producers are holding themselves accountable. But that only applies to California producers. It does not apply to any imported oils or other oils.

JVN [00:31:49] So in your opinion, well, it's not even your opinion, your research, you feel, because I'm not even trying to play devil's advocate, because honey, I am too tired to play devil's advocate, but I will say this. I can hear, like, rabid Republicans in my psyche because I grew up around so many of them, being, like, "Well, I don't give a fuck if it's, like, why should I care?" But it's really important to know what is in your, because there are there. Really, there is more. Well, I guess I'm telling myself this but let me ask you: what are just to really get into the reasons why it is so important to know what extra virgin olive oil is versus virgin and versus,

like, a pure? Because what is that extra added level of benefit? Or is it better to just know because we should know what we're buying, regardless of the benefits?

SELINA WANG [00:32:44] Yes, that's the real motivation behind my work, right? It's, I feel the responsibility to protect consumers, but also protect owner-producers. There are three million people whose livelihoods are depending on the olives they grow, they sell, and the olive oil they make and they sell. And because of the adulteration, it has really made it impossible to know what a fair price should be. And, and I think that is that is a, that's that's a real problem. Right. And and and that's why I do this work. And then I do this work so that consumers can know, and they can demand that they want to have more transparency in our food system, in our food products. So my lab works on develop— helping to develop standards and then so we can so we can move forward and have less fraud. And, and I think all this is an easy target because the demand is so high and the production is unstable due to climate change and also just various reasons. So when the production can now meet the demand and it's also a high value product is really the perfect storm for food fraud.

JVN [00:34:27] Hmm yes! You mentioned earlier about, like, climate change and how in California, like, in, like, the last decade or so, we started to grow more olives here in the U.S.. How is climate change affecting the production of olive, the availability of olive oil, are the olive producers in other countries, like, "Fuck off California, we had like a really good thing going and now like, y'all are just all up in our supply and demand thing," like, what's that whole story about?

SELINA WANG [00:35:03] Yeah. So olive trees are alternate bearing, meaning that they tend to produce a lot in one year and then the following year will be a smaller crop and it alternates. And the farmers are experienced with this, and there are things that they can do every year to accommodate this alternate bearing, and what they're not used to is the swinging weather pattern that we've been having. And now things are really unpredictable for, for farming, and it's not just for olive growers, it's for all the farmers. And in California, we also have to worry about the drought and we also have to worry about wildfires. And so that is, that is a significant concern for a lot of farmers and. I think what we're going to start seeing is that olives may start thriving in some places that we didn't grow olives before. And perhaps the countries and the places where all this has been traditionally grown, they may need to make some changes because that's what the nature is, is telling us. But I think globally we're all experiencing some difficulties, and that's part of the cause for this unstable production that we're experiencing for olive oil.

JVN [00:36:45] I imagine this is a very, very, can be a very profitable industry, especially if we get into something where there's, like, scarcity due to climate change, scarcity due to the supply. And then you were saying earlier that part of your work is driven by wanting to not only help consumers, but also help people who are honest, you said honest growers? [CROSSTALK] Honest producers! Yes. Queen, yes. I love that word. So, yeah, honest producers. So how do we help the people that are producing it, how do we make it more fair and equitable? And where are the places where you think they're going to start thriving?

SELINA WANG [00:37:26] Those are all great questions, I think, I think, so if I could go back for one step, if we're looking at olive fruit, oil is only about 20 percent of what's in an olive. Meaning we're not actually using that 80 percent of the fruit when we are making olive oil. So I think one way to be more sustainable in the production, but also for the industry to bring in more profit, is really finding valuable use for this 80 percent of material that is not in olive oil. And that's an area of research my lab has been working on for the last decade. And because you can imagine we, we've been talking about phenolics, right? Phenolics in the oil. But there's so much phenolics in this 80-percent of byproduct, because there's a lot of phenolics that are not oil-soluble. So they're not in the oil, they're in this byproduct. And we've been working on extract out all these important compounds in the byproduct and try to use them in different places such as cosmetics industry. And you may have seen, there's some cosmetic product that has olive oil or olive-derived ingredients. And also, can we use it in other food additives? Also, we use it for animal feed.

JVN [00:39:05] Oh, yeah! They probably really like olives. I bet our chickens would love olives! And our dogs.

SELINA WANG [00:39:11] Yeah, yeah. And, and there is anti-tumor properties related in these byproducts. So that could be a really great thing for pet food as well. And so we are also interested in the possibility of using olive pumice as feed for cattle as a way to reduce their greenhouse gas emission.

JVN [00:39:40] Oh my God, because giving them, like, a rich antioxidant diet would, like, help them like far less methane and poop less methane from light than, like, grass and whatever else they eat? And corn?

SELINA WANG [00:39:51] That's it! Can we help with their gut health so that they will fart less and burp less? That's, that's the goal and at UC Davis, we have cows on campus that will be feeding them for these studies.

JVN [00:40:06] What about, like, olive byproduct plastic? Could you make it, like, a blanket or, like, a fierce, like, dry it out and make, like, olive leather?

SELINA WANG [00:40:18] You could, but we have to consider the energy input when we think about it. [CROSSTALK] I know, I love the idea, but a lot of times when we talk about these byproduct usages, we end up putting more energy into it.

JVN [00:40:34] And so I'm not going to get to have olive-based pleather pants, is what you're saying?

SELINA WANG [00:40:39] If you can do it without using much energy, maybe!

JVN [00:40:43] I'm tired just saying the sentence, so I feel like I don't. So, so that's so interesting, that, so it's really figuring out, like, what to do with this other 80 percent of the plant. And that's and that's something: what's next for your research is that a lot of where the research is going into or is there, like, what other, like, what other things are you, like, watching out for as a stunning, like, food science and technology doctor?

SELINA WANG [00:41:12] I think sustainability is really important, and we talk about making use of byproducts. And also, I would like to encourage consumers to think more about packaging as well. Right. So there's these bag-and-box box wine, and I would love to see more bag-and-box olive oil. And I would really love if the consumers would give it a chance because bag-and-box is actually a great way to protect oil from getting oxidized. And it's also more environmentally friendly compared to glass. But because the consumers have been so accustomed to certain type of packaging, it may take a while. But I would love for all of us to think more about sustainable packaging as well. And as far as for my lab, we, the mission for my lab is really simple, not easy, but it's working together with the food and agriculture sector to ensure that we have good food quality, food authenticity, and sustainability. And for me personally, I would love to continue to work together with a diverse group of scientists in a more equitable, just, and inclusive learning environment.

JVN [00:42:40] Mmm! To that end, what does more thoughtful production and consumption of olive oil look like?

SELINA WANG [00:42:47] I think the farmers need to have more tools where we can pay more attention to soil health. And then it comes to processors to be more environmentally conscious

about what to do with the byproducts and packaging. And for the consumers to, to be more aware of the products that they're purchasing, it takes a lot of work and effort and time and money to make high quality extra virgin olive oil. So it's really impossible to purchase a 500ml bottle with \$10 because that really does not correlate with the cost that will go into the production. But at the same time, I realize not everyone has the resources to buy really expensive extra virgin olive oil. And this is what I do when I go into the grocery store. I look for harvest date or bottling date. You want to buy an oil that is as fresh as possible. The oil starts to degrade after it's made. It's never going to get better.

So do not buy a bottle of olive oil and then save it for a special occasion. The oil is just going to degrade, and if it doesn't have a harvest day or a bottling date, they look for "best before" date. And you want to have the best before date that is at least a year out. And once you purchase the oil, bring it to your house, you want to store it in a cool, dark place. Because the oil has three enemies, they are: oxygen, and light, and heat, so you want to keep the oil away from these factors, so you want it to stay in a cool and dark place. And once the bottle is open, then you need to use up the oil as fast as you can, maybe in a matter of a month or two. So, for a lot of us, we buy a nice bottle of oil, we want to save it. But in reality, the antioxidants, the phenolics, they start degrading over time. So if we wanted to really get in all of the health benefits in the oil, we need to eat it up.

JVN [00:45:25] What else! is there any other thing where it's like, "put that shit down, do not buy it?"

SELINA WANG [00:45:30] I probably wouldn't buy oil that doesn't have a best before date. That's a little bit of a red flag. If you're a really caring producer, you would want to protect your customers as well as yourself. I think as a consumer, it's, it can be really confusing to, to shop around in the store. So what I would do is to learn the, the smell of freshness. So like earlier we talked about you few, you go home, you, you buy, you have your bottle of olive oil, you pour it into a little cup, and you smell. It should smell like freshness: green, fruity smell. And it should not smell rancid or stale or, very greasy. Or feeling so you should not smell like that and then you can, you can decide what you like. When you go to the store now, some extra virgin olive oil, you can buy robust or mild or medium. There are different terms. There's a lot of prefixes that are attached to these bottles of oil, and you can learn what you like.

JVN [00:46:51] Is robust, like, from a more purply olive? So it's, like, older. So it, like, really tastes like olive-y? What makes it robust?

SELINA WANG [00:46:56] Oh, the opposite! Yeah. So the robust is made from the green, the greener fruit. So they tend to be more bitter and more pungent. So meaning, like, the flavor's more robust. And if it's mild, that means it's, it's usually a later harvest, not super late, but the later harvest. So the flavor is more mild. That has likely lower in antioxidants, but that could be a better oil, say, for baking, right? Because you may not want something that's very bitter and very pungent in your olive oil brownies. So, so you can, you can learn the flavor of the oil and then choose your cooking with it.

JVN [00:47:45] So if someone's been listening to this, like, episode of Getting Curious and they're, like, "Oh my fucking God, I want to be a food scientist. Just like Selena Wang!" You are a woman in science and that is so important to have women in science. And I think another part of your story that I think is really interesting is that you were so close to having your Ph.D. done in a, like, three blocks away field, like, it still was about researching compounds, but, like, a really different kind like that's like thinking you wanted to go to do. I was going to make a comparison with, like, nails and hair, but there's no comparison because our school's, like, not nearly as long as ours. So what's your advice to people who maybe think that they want to make a career shift or they want to get into science and or just like the casual fan of, like, food science and technology?

SELINA WANG [00:48:39] Yeah, that's a big question. I think getting curious is a first step. I think being curious about everything that's around us. And ask as many questions as possible. That's a first step. And not just about the food that we eat, but also about ourselves. So what kind of things do we like to do and then explore. That's what I tell my students: they have the time to, to explore. They're young. We're young. So we, we, we should take our time to, to explore it and learn and relearn sometimes what I realized when I went to graduate school for my Ph.D., I saw exactly that's what I was going to do on that. I also went in with a mindset that for sure, I was going to be working in industry. When people asked, "What did you want to do with your Ph.D.?" My answer was, "Anything but academia." And that turned out to be where I am now and I love it. So it's, it's really a lot of it is to rethink and relearn and stay open and have a lot of kind of open-hearted conversations with other people and ourselves.

JVN [00:50:10] That was really impactful and probably will be where we end, I feel really complete. I am so grateful for your time and for sharing your expertise with us and your scholarship. I also want to interview you again and have you back. You were just amazing. This has been so fun. But is there anything that we missed or that you want to make sure that we have in the episode? Or sometimes I do a yogi recess where at the end, you just let the guest say anything that they want to say or that we maybe missed. But I'm feeling really complete

and I'm feeling just amazing about this episode, but if there's anything that you want to add, this is your gorgeous moment.

SELINA WANG [00:50:47] So one thing that's because of this format that I'm sad I'm not able to show you is an actual olive oil making process. And I would love it if you come to northern California and we can, we can meet again and then pick olives and make it into oil, taste the oil, and analyze the oil. We'll do it all together.

JVN [00:51:16] Ah! Your lips to God's ears that we get a season two somewhere and I very much hope that we do and I would love to meet you in real life and pick olives. I have never heard of a more fun idea in my literal life.

SELINA WANG [00:51:28] I would love that, our students would love that!

JVN [00:51:31] Dr. Selina Wang, thank you so much for your time and for your energy. We appreciate you so much for coming on Getting Curious.

SELINA WANG [00:51:36] Thank you so much for having me.

JVN [00:51:41] You've been listening to Getting Curious with me, Jonathan Van Ness. My guest this week was Professor Selina Wang. You'll find links to her work in the episode description of whatever you're listening to the show on. Our theme music is "Freak" by Quiñ - thanks so much to her for letting us use it. If you enjoyed our show, introduce a friend and please show them how to subscribe. Follow us on Instagram & Twitter @CuriousWithJVN. We keep up on our past guests, things that we're looking out for, things that are coming up, it's a very fun place, we love @CuriouswithJVN. Our socials are run and curated by Middle Seat Digital. Our editor is Andrew Carson. Getting Curious is produced by me, Erica Getto, and Zahra Crim.