

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOTIF FOODWORDS, INC.,
Petitioner,

v.

IMPOSSIBLE FOODS, INC.,
Patent Owner

IPR2023-00206
Patent 9,943,096 B2

Record of Oral Hearing
Held: April 3, 2024

BEFORE: DONNA M. PRAISS, CHRISTOPHER M. KAISER, and
JEFFREY W. ABRAHAM, Administrative Patent Judges.

IPR2023-00206
Patent 9,943,096 B2

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P R O C E E D I N G S

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JUDGE PRAISS: Good afternoon. Today we will hear arguments in IPR2023-00206 involving patent number 9,943,096. I'm Judge Praiss, and with me on the panel today are Judges Kaiser and Abraham. So, let's start with appearances, beginning with Petitioner.

MR. PAUNOVICH: Good afternoon, Your Honors. My name is Joe Paunovich on behalf of Petitioner Motif Foodworks. Along with me today are my co-colleagues, Jim Glass and Raz Messerian. Raz will be arguing on behalf of Petitioner today.

I do want to remind the panel that he is a LEAP practitioner. And if there's nothing else for me throughout this, I may just be on mute and off video.

JUDGE PRAISS: Okay. Thank you and welcome.

MR. PAUNOVICH: Thank you.

JUDGE PRAISS: Patent Owner.

MR. ROSATO: Good afternoon, Your Honor. Mike Rosato on behalf of Patent Owner Impossible Foods. I should have with me Tasha Thomas, Wendy Devine, and Matthew Reed.

JUDGE PRAISS: Thank you. So first, we have at our disposal the full record, including your demonstrative exhibits, which were received. For clarity of the record and so that we can follow your argument, we ask you to identify what page of your demonstratives or exhibits you're talking about, as you argue. And then also please state your name before speaking and mute your microphone when not speaking. That will help the court reporter

1 and everyone else attending this hearing. And we note at the outset that
2 Patent Owner has filed objections to several of Petitioner's exhibits. Patent
3 Owner's objections will be taken into consideration.

4 And we know the demonstratives here are to guide argument and
5 are not coming in as evidence. And we will not be considering new
6 arguments. If counsel wants to use some of the allotted time to address
7 evidentiary objections, you are free to do so.

8 There's also a motion to exclude a number of the Petitioner's
9 exhibits on the basis that they were either not cited in the Petitioner reply or
10 that were improperly relied upon as evidence of a person having ordinary
11 skill in the art's understanding at the time of the invention. That motion has
12 been fully briefed at this point, and we're not going to rule on the motion to
13 exclude at this time, but we'll take it under advisement. But again, it's your
14 choice if you want to use your allotted time at this hearing to address the
15 motion to exclude.

16 So, consistent with our hearing order, each party has 60 minutes to
17 present their arguments, but as Petitioner knows, Petitioner has an additional
18 15 minutes, if needed, to present arguments because attorney Messerian will
19 be participating in the Board's Legal Experience and Advancement Program,
20 or LEAP.

21 So, Petitioner, you'll proceed first and let us know if you would
22 like to reserve any of your time for rebuttal.

23 JUDGE KAISER: Counsel, you're muted.

24 MR. MESSERIAN: Thank you for that. Yes, sorry. Raz
25 Messerian for Petitioner Motif Foodworks. I'd like to reserve 25 minutes of
26 my time for rebuttal.

1 JUDGE PRAISS: Okay. You can begin whenever you are ready.

2 MR. MESSERIAN: Great. All right. Let's please drop down to
3 slide number 3. And if it's okay with Your Honors, I would like to share my
4 screen. I'll also be sure to identify what slide number I'm referring to for the
5 record as well. But I think that might help follow along with my arguments.
6 Just a second. All right. Referring to slide number 3, I just wanted to give a
7 preview of what I hope to cover today.

8 First, I want to touch on the '096 patent and also Claim 1. And
9 then I want to discuss Grounds 2A and 4A. These were the grounds that the
10 parties had focused their briefing on for their reply brief and their sur-reply
11 brief, and if there's a little bit of time, I also want to touch very quickly on
12 Dependent Claim 3 as well.

13 With respect to Ground 2A, this is the ground where we modified
14 Giacino's, the primary reference Giacino based on Brown's contribution to
15 blood hemoglobin. And I'll discuss how Giacino and Brown disclose each
16 of the claim limitations and then why there is a motivation to combine and a
17 reasonable expectation of success. And then I will address some of Patent
18 Owner's arguments and why they all fail.

19 Turning to slide 5, the '096 patent is directed to flavor
20 compositions that are added to foods to modulate their flavor or change their
21 aroma. And in particular the foods at issue are meat substitutes according to
22 the '096 patent as one example of the food that can be -- whose aroma could
23 be changed based on the compositions that are added to it. And in
24 particular, in terms of the aroma that's added or modulated, these
25 compositions may add a meaty aroma, or they might add volatile compounds
26 that are associated with a meaty aroma.

1 And turning to slide 6, we see here Claim 1. I intend to focus my
2 discussion today on Claim 1. And to the extent there are distinctions
3 between this and, for example, Claim 10, I'll be sure to point those out as we
4 go. But with respect to Claim 1, this is directed to a food flavor additive
5 composition. And this includes three ingredients. It has an isolated heme-
6 containing protein. It contains one or more sulfur compounds that are
7 selected from this list of 10 sulfur compounds, or sorry, sugar compounds. I
8 meant to say sugar. So it includes one or more sugar compounds that are
9 selected in this lists of ten sugar compounds.

10 And it also includes one or more sulfur compounds that are
11 selected from this list of four sulfur compounds. Now, in addition, this
12 composition has a couple of features. The first is that it doesn't contain
13 animal products. And also, when it's cooked, it produces at least two
14 volatiles having a meat-associated aroma. And I'll refer to this last
15 limitation as the two volatile limitation.

16 Now, what's important to note here is, during prosecution,
17 applicant had argued to the PTO that there was an unexpected benefit,
18 unexpected results, according to testing evidence that it submitted, that
19 having heme proteins, specifically like hemoglobin to its compositions, had
20 improved of the meaty aroma had generated additional volatile compounds
21 having a meatier aroma or associated with a meaty aroma. And that's
22 relevant, and I bring that up because, as we'll see, one of the prior art
23 references at issue in Ground 2A, the Brown reference, discloses that same
24 inventive concept. But we will discuss that in more detail in a little bit.

25 Now, turning to Ground 2A, slide 8, Giacino is a patent that dates
26 back to 1970, and this discloses meat-flavored compositions that can be

1 added to foods to impart meaty aromas like beef, pork, poultry. And just
2 like the '096 patent, Giacino is a reaction-based product laboring
3 composition. And what that means in the art is that its ingredients will
4 undergo reactions when heated to produce the desired aroma.

5
6 Turning to slide 9, Brown is Impossible's own patent publication
7 and it's prior art to the '096 patent. Patent Owner does not -- is not disputing
8 anymore, or at least hasn't put forward any evidence why Brown is not prior
9 art in its Patent Owner response or sur-reply. And so, Brown stands as prior
10 art, and notably, Brown discloses that adding leghemoglobin to a
11 composition will contribute favorably to its aroma and impart additional or
12 impart volatile compounds that are associated with a cooked meat aroma. In
13 fact, it even calls out two expressly, 2-octanone and 2-methyl furan among,
14 quote, many other identified, unidentified compounds.

15 Turning to slide 10, this is a unique case, Your Honors. Patent
16 Owner in the face of this critical disclosure from Brown that adding
17 leghemoglobin to compositions would improve meaty aromas, argued to the
18 Patent Office, or told the Patent Office, told a Board, I should say, that in
19 March of last year in its preliminary response that Brown would not qualify
20 as prior art because the '096 patent was entitled to claim the benefit of its
21 priority date. And based on this representation, the parties engaged in
22 extensive briefing to address their motion to see jurisdiction for them to file
23 a certificate of correction to correct that alleged mistake with respect to the
24 priority claim.

25 And during this briefing, just a few weeks later in paper 9, Patent
26 Owner doubled down, again, stating that Brown would not be prior art if its

1 certificate of correction were to be granted. Now, these statements by Patent
2 Owner last year, these are implied admissions that Brown provides Section
3 112 support for the challenged claims. And in providing Section 112
4 support for those challenged claims, it's true it has to -- it's necessarily true
5 that Brown, at least Patent Owner believed, discloses every challenge, every
6 limitation of those challenged claims.

7 Now, fast forward a few months later, in September of last year,
8 their certificate of correction has been dismissed and Brown stands as prior
9 art, and Patent Owner is taking the position, talking out of the other side of
10 its mouth, that Brown's muscle replicas and its meat substitutes are so
11 different from food flavor additive compositions like the one that's claimed,
12 or the ones that are disclosed in Giacino, a skilled artisan wouldn't be
13 motivated to follow its teachings and add leghemoglobin.

14 In fact, the words Patent Owner uses is that they're completely
15 different. And so, at a minimum, Your Honors, this admission, this implied
16 admission from last year should at least be given some weight to discredit
17 their opinions today that these compositions are different and there wouldn't
18 be a motivation or a reasonable expectation of success in adding
19 leghemoglobin to a food-flavoring composition, based on the fact that
20 Brown directs its teachings of leghemoglobin from muscle replicas.

21 Now, I'd like to go back to slide 6 for a second and just walk
22 through these limitations really quickly because many of them are not
23 disputed. There is no dispute that Giacino teaches a food flavor additive
24 composition. There's also no dispute that Brown teaches an isolated heme-
25 containing protein in the form of isolated leghemoglobin. There's also no
26 dispute that Giacino teaches limitations b and c, the sugar and sulfur

1 compound limitations. Giacino teaches that its compositions can include a
2 monosaccharide, and specifically calls out ribose, but monosaccharides
3 generally would also include glucose and many of the other ones listed here.

4 Also calls out sulfur compounds as being part of its composition,
5 it's including thiamine and cysteine. And it is also not disputed that both
6 Giacino and Brown, their ingredients are not -- or their compositions do not
7 contain animal products. The only limitation that Patent Owner is disputing
8 is the two volatile limitations. And so, I'll turn to that now.

9 So, turning to slide 16, Giacino teaches that its compositions will
10 develop a meaty flavor. Specifically, it teaches that its compositions when
11 heated undergo a, quote, reaction that generates and develops a meaty flavor.
12 And turning slide 17, Your Honors, there's no dispute between the parties,
13 that Giacino's reference to a meaty flavor means a meaty aroma. Their
14 expert, Dr. Qian, expressly agreed to this, not only generally that flavor and
15 aroma are often used interchangeably, but also in the specific context of
16 Giacino's disclosure with respect to its compositions having a meaty flavor.
17 And their expert went one step further, too.

18 Turning to slide 18, their expert, Dr. Qian, admitted that Giacino's
19 disclosure that its compositions have a meaty flavor also means that they
20 generate, or at least not generate but there's the presence of at least 10
21 volatile compounds that are associated with the meaty aroma. So not just
22 two, but not at these two but at least 10. And so, this is an admission from
23 their expert that Giacino's compositions, which have a meaty flavor and
24 hence a meaty aroma, also provide at least 10 volatile compounds, at least
25 two volatile components having a meat associated aroma.

26 Turing to slide 19, Your Honors, our experts, both Dr. Tarté and

1 Dr. McGorin, have pointed it out that it's not surprising that Dr. -- that it is
2 not surprising the Giacino's compositions produce this flavor -- this meaty
3 aroma and produce scores of volatile compounds. Not just two, but scores
4 of meat-associated volatile compounds just by virtue of the fact that they
5 contain well-known flavor precursors like thymine, cysteine,
6 monosaccharide.

7 In other words, Giacino tells you that when you heat its
8 compositions, it produces a meaty aroma. And the fact that it contains well-
9 known flavor precursors like thiamine, cysteine and ribose just reiterates that
10 this would be the expectation. And though the art, the literature even tells
11 you, gives you lists of hundreds of volatile compounds that are typically
12 generated when you react these well-known precursors. And what's shown
13 in this slide is just one example of the reactions between cysteine and ribose
14 specifically.

15 Now, turning to slide 20, not only does Giacino provide for at least
16 two volatile compounds, but Brown does too. Brown expressly tells you
17 that when you add leghemoglobin to compositions, it contributes favorably
18 to meaty aromas, but it also tells you expressly that two 2-octanone, 2-
19 methyl furan, and many other unidentified compounds are produced in the
20 presence of leghemoglobin versus none.

21 Now let's talk a little bit about motivation to combine and reasons
22 why a POSITA would have an expectation of success. Turning to slide 22,
23 Giacino discloses that its goal is to produce meaty flavorings that replicate
24 the true flavor of meat. The prior art, according to Giacino, had failed to do
25 that. And Giacino also tells you that you are free to add materials and
26 ingredients to its compositions to build upon its basic flavor. Based on these

1 disclosures, our expert has opined that one of ordinary skill in the art would
2 understand that Giacino opens the door for improvements to its
3 compositions to build upon its basic flavor.

4 And Brown does just that. If we turn to slide 23, Brown tells a
5 skilled artisan that heme iron and myoglobin is responsible for catalyzing
6 reactions that generate the characteristic flavor and fragrance components of
7 cooked meat. And that it's not just limited to myoglobin, that the
8 leghemoglobin, is another heme protein that does the same thing. And so,
9 based on this understanding, turning to slide 24, Brown tells a skilled artisan
10 that when you add leghemoglobin, as I mentioned before, to compositions
11 such as muscle replicas that contain pea flours, sunflower oil, and glucose,
12 that there's a favorable contribution to that meaty aroma that specifically
13 volatiles are generated that have a cooked meat aroma, and as I've
14 mentioned before it calls out a couple by name.

15 And so, turning to slide 25, based on these disclosures in both
16 Giacino and Brown, our expert has opined that one of ordinary skill in the
17 art would have been motivated to add leghemoglobin to Giacino's
18 compositions, to enhance those compositions as a meaty flavor, and achieve
19 that enhanced volatile profile that's touted by Brown.

20 Turning to slide 26, Dr. Tarté has also opined and provided a
21 couple different reasons of an expectation of success, a reasonable
22 expectation of success. The first is just simply that nothing more than
23 ordinary skill in the art would be needed to isolate that leghemoglobin as
24 Brown teaches in detail, and then mix it into Giacino's compositions before
25 heating. This is undisputed. Patent Owner never responded to this
26 reasonable expectation of success, and so this stands rebutted. Apart from

1 this, Dr. Tarté also opined that another basis for reasonable expectation of
2 success are the similarities between Brown's compositions and Giacino's
3 compositions. And Patent Owner does dispute that, as I mentioned earlier in
4 this discussion, but I will address that shortly as well, and point out they're
5 actually very similar.

6 Now I'll address several of Patent Owner's arguments against
7 motivation to combine. The first set of arguments are based on this theory
8 that we are supposed to be held to an inherency standard. And so, I'm going
9 to refer to these arguments as the inherency-based arguments. There are
10 three of them, and I'll address the first two together, turning to slide 29,
11 because they're related, as you'll see in a second. The first inherency-based
12 argument that Patent Owner presents is that environmental conditions that
13 are known to play a part in the reactions that generate aroma compounds,
14 such as pH, moisture levels, particle size, there's a variety of them,
15 concentration of ingredients, that all of these play a part and may have an
16 impact on whether aroma compounds are generated.

17 And related to this argument, turning to slide 34, is that our
18 Petition wasn't particular enough, didn't identify all of the environmental
19 conditions, the pH, the moisture levels, the specific ingredients, the
20 concentrations of those ingredients. Why? Because, purportedly, because
21 we have this inherency standard to satisfy that we purportedly need to be
22 able to show that the combination of Brown and Giacino will necessarily
23 produce two or more volatile compounds, having a meat-associated aroma or
24 a meaty aroma at large, that they need to test those compositions. And so,
25 having not identified all of those environmental conditions, they argue that
26 they can't test it and they cannot confirm with certainty that that would be

1 the result.

2 Turning to slide 31, these arguments are legally and factually
3 incorrect. Legally, the Federal Circuit has pointed out time and time again
4 that for an obviousness ground like ours, that the standard of proof or the
5 burden of the proof is to show a reasonable expectation of success. Absolute
6 guaranteed success is not required. And in particular, in the case I've got
7 shown here, Pfizer v. Apotex is instructive. And in Pfizer, the claimed
8 composition was directed to a pharmaceutical compound, a pharmaceutical
9 drug used to treat hypertension.

10 And the active ingredient in that drug was not at issue. That would
11 have been known to treat hypotension well before this particular patent.
12 This particular patent, though, in Pfizer, was directed to specific salt form of
13 that active ingredient. The besylate salt of that active ingredient. And
14 Patent Owner argued that if this is unique, this novel, it's patentable because
15 it has certain advantages that has stability and solubility advantages.

16 The patent challenger, the accused infringer, showed that it was
17 well-known in the prior art that the besylate salt form of other drugs also
18 have those same benefits. And so, it would have been obvious to create the
19 besylate salt form of this particular drug. And Patent Owner's argument
20 was, well, that hasn't been done before. No one's made the besylate salt
21 form of this drug.

22 You don't know its certainty that it's going to have these favorable
23 benefits or these properties to it. And the Federal Circuit rejected that line of
24 reasoning and said that just because there is some degree of unpredictability
25 doesn't negate obviousness. Otherwise, you'd run into this situation where
26 every single salt form of that active ingredient would have to be

1 independently tested to verify that it has those properties, and that can't be
2 the standard. That's not reasonable expectation of success.

3 JUDGE ABRAHAM: Counselor, can I ask a question about this
4 line of argument? In the Pfizer cases, those additional benefits that the court
5 referred to, were those claim limitations? Because here it seems like the
6 dispute is over the claim limitation of the two aroma-producing features.
7 Those are claim limitations. Not, and it seems, like, in Pfizer, where the
8 benefits were just secondary benefits that weren't part of a claim itself. Is
9 that an accurate characterization?

10 MR. MESSERIAN: In the claim itself, the claim was directed to
11 the besylate salt form, and the claim itself didn't claim the benefits. It didn't
12 say solubility. That's right.

13 JUDGE ABRAHAM: So, here, though, we're talking about actual
14 claim limitations, and it seems like Patent Owner's argument isn't necessarily
15 that, you know, the art is unpredictable, so, you know, you wouldn't have a
16 reasonable expectation of success. They're saying that whether or not these
17 limitations are present is not known. You have to test to show whether these
18 limitations are actually present. That seems a little different from the
19 analysis you described in Pfizer. So, can you address those differences a
20 little bit?

21 MR. MESSERIAN: Sure. Regardless of the specific situation
22 with Pfizer, I think it's also important to note that with respect to Giacino
23 and Brown, you have these express disclosures of that limitation. Well, at
24 least in Brown you have an express disclosure of the two volatile
25 compounds that are associated with a cooked meat aroma. With respect
26 Giacino, you have a disclosure of meaty aroma, and it's undisputed between

1 the parties that when you have that meaty aroma, you necessarily do have
2 volatile compounds that have a meat-associated aroma. And so, when you
3 have those express disclosures and you had a motivation to combine these
4 two different teachings with each other, there's a reasonable expectation of
5 success and that the claimed combination will have -- will satisfy the
6 invention claimed, which is the two volatile limitation.

7 JUDGE ABRAHAM: Thank you.

8 MR. MESSERIAN: Turning to slide 35, I want to just reiterate
9 another thing with respect to their argument in terms of particularity. The
10 claims themselves, while they require that the claimed -- the composition
11 produce two or more volatiles that have a meat-associated aroma, they don't
12 require any of the environmental conditions, the pH, the particle size, or
13 concentration of ingredients that Patent Owner is demanding from us. And
14 so, at least in that respect, the claim is broad and that there's no restrictions
15 with respect to those environmental conditions.

16 In fact, this claim was so broad that of the 10 different sugars you
17 could select from, the four different sulfurs you can choose from, this leads
18 to tens of thousands of potential compositions that are covered by this broad
19 claim. And so, you're going to hear Patent Owner today say that Dr. Tarté,
20 our expert, during his deposition didn't commit to one specific composition
21 in Giacino's teachings, which, by the way, I'll demonstrate, is actually not
22 true either. His declaration does identify specific compositions, but the
23 claim itself allows for many different combinations and many potential
24 selections from a list of sulfurs and sugars.

25 And so, to the extent, Dr. Tarté, we have been relying on general
26 teachings in Giacino, which are the same, which are here's a list of sulfurs

1 you can choose from. It's very similar in that. And so, this demand of
2 particularity in terms of commit to a single one and because you haven't in
3 your deposition, it's unfounded with respect to the scope of the claim as
4 well.

5 Now, I just mentioned that Dr. Tarté did identify specific
6 compositions. Turning to slide 37, in the Petition and also his declaration as
7 a well, there is a composition here, it's just one example from Giacino that's
8 identified, which contains thymine, taurine, vegetable protein, hydrolysate,
9 cysteine and a monosaccharide, such as ribose. On page 37 of the Petition,
10 he adds and we add vegetable plant proteins, such as albumins and
11 globulins.

12 And beyond those specific compositions, we also identify
13 Giacino's more general teachings, which are that you can have a preferred
14 composition that includes thiamine, taurine, cysteine, vegetable hydrolysate,
15 identify specific concentrations of those, or a range of concentrations that
16 you could choose from. And we'll also point to Giacino's teachings in terms
17 of ranges for cooking times and cooking temperatures. And so, our Petition,
18 Dr. Tarté's declaration, they all have sufficient particularity to support our
19 obviousness ground.

20 Now, turning to slide 39, and Patent Owner's third inherency
21 argument is this question that Dr. Tarté deferred to Dr. McGorin on, which
22 is, was the only possible outcome of adding leghemoglobin to the
23 composition a positive one. And with respect to that question, as I
24 mentioned, Dr. Tarté referred to -- or deferred to Dr. McGorin on that
25 question because Dr. Tarté, his position is that based on Giacino's expressed
26 teaching of a meaty flavor, meaty aroma, and hence the presence of meaty

1 volatiles, and Brown's disclosure, express disclosure of the presence of
2 meat-associated volatiles.

3 But there would have been a motivation to combine and a
4 reasonable expectation of success. And so, he -- his position never didn't
5 address, or I should say, the motivation to add leghemoglobin and the
6 reasonable expectation of success, those were his positions. And so, with
7 respect to, is there any possibility, you know, in the realm of potential, you
8 know, maybe you can add a swimming pool of leghemoglobin to a
9 composition. Those are the nature of questions that he would defer to a
10 flavor chemist on, which is Dr. McGorin.

11 And so, our position is that there is nothing inappropriate about
12 that. And Patent Owner had the opportunity to depose Dr. McGorin on two
13 different occasions about that statement, if that was important to them,
14 whether the only possible outcome was, and they never asked Dr. McGorin
15 with respect to that.

16 Let's see, turning to slide -- let's turn to slide 47. I'll address
17 another one of Patent Owner's arguments, and this is the one I touched on at
18 the start, which is that Giacino's and Brown's compositions are allegedly
19 completely different from one another. This isn't true. So, turning to slide
20 49, what I've shown here on the left is a representation, the cylinder of
21 potential ingredients that one of the compositions that Brown teaches in
22 paragraph 364, its ingredients and Giacino's composition here on the right,
23 and how there is significant overlap between the two.

24 So Brown, its composition may include, for instance, glucose,
25 sunflower oil, and plant proteins by way of pea flour that's in that
26 composition. And very similar to that, as we see here on the right, Giacino's

1 compositions, they include thiamine and taurine, but they also include, or
2 can include, excuse me, a monosaccharide. And a monosaccharide can be
3 glucose, can be ribose, and the one we identify in our Petition specifically is
4 ribose.

5 And so, you have that similarity there in terms of monosaccharides
6 between Brown and Giacino. Giacino also teaches that oil can be included
7 in its compositions. It's optional, or you can use water, but nevertheless, oil
8 is a possibility. And for certain of our claims, like Claims 8, 17, 21, we rely
9 on Giacino's oil-based compositions, and so there's a similarity there
10 between the sunflower oil that's disclosed in Brown. Giacino also tells you
11 that its composition can include proteinaceous material. That's what it refers
12 to in its specification, proteinaceous material.

13 And that would include, for example, a few different things. Plant
14 proteins are one of them. This is albumins or globulins, as we point to, in
15 our Petition, page 37, that are sourced from plants, again, similar to the plant
16 proteins that you'd find in Brown. Or it can include, and/or it could include
17 vegetable protein hydrolysate and other free amino acids such as cysteine.
18 And so, their position that, turning back to slide 48, they don't share a single
19 common ingredient, purportedly, and that they're completely different. Just
20 looking at this, one of ordinary skill in the art would conclude the opposite.
21 There are similarities between these compositions, and that does lend to a
22 reasonable expectation of success.

23 Now, turning to slide 50, related to this argument that these
24 compositions are very different from one another, Patent Owner's expert, Dr.
25 Qian, also argues that Giacino's compositions are concentrated. And
26 Brown's muscle replica is not concentrated. And the point here is that,

1 allegedly, when you're adding leghemoglobin to a muscle replica and
2 undergoing a reaction in this unconcentrated environment, that's distinctly
3 different than in Giacino where you have this concentrated environment of
4 taurine, thiamine, and other ingredients, and you are undergoing a reaction
5 there.

6 But, turning to slide 51, this actually isn't true. Giacino tells you
7 that its premixed compositions can be added to a food and then heat reacted.
8 And so, when you're adding it to food, and by the way, one instance or one
9 example of such a food that Giacino expressly calls out are synthetic meat
10 fibers. Well, synthetic meat fibers are essentially muscle replicas, it's a
11 muscle replica. And so, Giacino tells you, you can take its premixed
12 compositions, fit to the muscle replica, and then in that, according to Patent
13 Owner's terminology, this unconcentrated environment reacted there in the
14 same way you would do in Brown. And this distinction that they try to raise
15 between concentrated and unconcentrated also fails.

16 Now, turning to slide 58, I'd like to address their lipid oxidation
17 arguments. This was actually a mainstay of their briefing, is this concept --
18 is this idea that a skilled artisan would not add leghemoglobin to Giacino's
19 compositions out of a fear of lipid oxidation. And this is wrong for a
20 number of reasons. First, turning to slide 59, Brown itself tells you that its
21 compositions include oil. Paragraph 364, that muscle replica, it has
22 sunflower oil, paragraph 412, a ground beef patty analog, you know, which
23 also contains leghemoglobin. This contains canola oil. And so, despite
24 containing this oil, Brown tells you that there is a favorable contribution to
25 meaty aroma.

26 Volatiles having a meat -- or being a cooked meat that are

1 associated to a cooked-meat aroma are generated. So, this right here would
2 dispel any concerns a skilled artisan would have, that adding leghemoglobin
3 when there is oil present would cause bad things to lump in. That's simply
4 not true. And Patent Owner's response to this is to say, turning to slide 60,
5 their response is that Giacino's food flavoring compositions are just, they're
6 different because they are food flavoring added to compositions. That these
7 typically, but not always, typically you're going to put them on a shelf
8 allegedly somewhere and store them for a long period of time, and this
9 makes them more susceptible to lipid oxidation over time.

10 But there's a number of problems with this argument. The first is
11 the claim doesn't require long-term storage. And further, Giacino doesn't
12 tell us that its compositions have to be stored long term.

13 There's no dispute, Your Honor, that Giacino's compositions can
14 be consumed right after they're made. And further, there's just no legal
15 requirement that our composition has to be the commercially superior
16 composition or have been the most desirable. And so, for all these reasons,
17 the way they try to distinguish Giacino in terms of lipid oxidation fails for
18 that reason as well.

19 Turning to slide 61, they -- and related to this shelf-life
20 argument, this long-term storage argument, they never address Dr.
21 McGorin's additional point, which is that if this is really a concern, a skilled
22 artisan would have added preservatives, antioxidants, and that would have
23 addressed any concern. This is unrebutted, and there's no response to this
24 argument. Slide 62. And most notably, Giacino's compositions don't require
25 oil. You could use water or oil. Now for Claims 8, 17, and 21, we do rely
26 on Giacino's oil containing compositions. But for the other claims, we don't

1 necessarily rely on them. We don't rely on them. Sorry, just the fact that it
2 can possibly include oil, does it mean that it actually has to or does?

3 Now, turning to slide 63, Patent Owner, in its Patent Owner
4 response highlights two statements from Dr. McGorin. One from his
5 opening declaration and another from a declaration submitted in claim
6 construction in District Court and says that those statements demonstrate
7 that a skilled artisan would have believed that adding leghemoglobin would
8 have led to undesirable flavors and aromas.

9 But this is not true. And I just want to highlight here at the outset
10 that in its sur-reply, Patent Owner identified a couple of additional
11 paragraphs and raised new arguments concerning those. First, those need to
12 be ignored. There are new arguments. We didn't get a chance to respond to
13 those alleged statements. But to the extent Your Honors would like to hear
14 why they're distinguishable, we would be happy to address those as well.
15 But for now, I just want to focus on the two that were included in the Patent
16 Owner response. The first is Paragraph 69 of Exhibit 2020, which is Dr.
17 McGorin's declaration in support of claim construction in the District Court.

18 Here, Dr. McGorin is unmistakably discussing the specification of
19 the asserted Impossible Patent. This is the '306 patent, and as I've
20 underlined here, is talking about what the patents teach with respect to
21 intrinsic evidence related to the sulfur compound limitation that was in this
22 patent claim. He was not opining on what a skilled artisan would generally
23 understand in the art, and he certainly wasn't opining that leghemoglobin or
24 other heme-containing proteins, when added to foods, would lead to
25 undesirable effects.

26 In particular here, he's talking about how the '306 patent was

1 talking about how plant proteins and enzymes can cause undesirable planty
2 aromas, and he referred to specific passages in this '306 patent. And when
3 you look at those passages, you see as we turn the slide 65, they don't refer
4 to leg hemoglobin. In fact, that wouldn't make sense if the '306 patent was
5 telling you that leghemoglobin or hem-containing proteins led to undesirable
6 aromas, because their whole point is the actual opposite. But putting that
7 aside, it's about lipoxygenase, which is a plant enzyme and how this leads to
8 undesirable aromas.

9 Again, point being, that's a mischaracterization. Dr. McGorin
10 never said that adding like hemoglobin or heme-containing proteins leads to
11 an undesirable effect, or that's what a skilled artisan would generally
12 understand. Similar issue with this statement here, paragraph 164 in his
13 opening declaration, Dr. McGorin is talking about the '306 patent. The '306
14 patent tells you that mixed meat tissue replicas, which are meat replicas that
15 have muscle, fat, connective tissue, all of them together in that same meat
16 replica that this leads to non-beef-like aromas like nutty green, peanut butter,
17 you name it. Again, not a representation that a person of ordinary skill in the
18 art would understand that adding the leghemoglobin to compositions would
19 lead to an undesirable aroma.

20 All right. Let's talk about Ground 4. Ground 4 is based on the
21 same primary reference, Giacino. Here, we're modifying Giacino instead of
22 adding leghemoglobin from Brown, we're adding leghemoglobin from
23 Proulx. And we present two distinctly separate motivations to doing so in
24 our Petition. One is based on Proulx's teaching that adding leghemoglobin
25 to foods enhances or fortifies those foods with heme-iron. And then the
26 second, independent motivation to adding leghemoglobin to Giacino is

1 based on the teachings of Conrad and how adding the hemoglobin fraction
2 of blood or heme proteins more generally, as our expert opines, would also
3 lead to an expectation of an enhanced meaty aroma based on Conrad's
4 teachings.

5 Turning to slide 69, with respect to Proulx, Proulx tells us that iron
6 deficiency is a problem that affects billions of people and that fortifying
7 foods as a very effective way addressing that issue. And in particular,
8 Proulx teaches that when you add leghemoglobin to foods, it not only
9 imparts iron generally, but imparts heme iron. And heme iron is known to
10 have a greater bioavailability. And, in particular, Proulx's disclosure is
11 that they found that the heme iron that's added to foods is very similar in
12 terms of bioavailability, is that in which you would find in meat.

13 Turning to slide 70, Giacino, as our experts have pointed out,
14 Giacino's compositions lack a significant source of iron. For example,
15 thiamine, cysteine, monosaccharides, while these might be excellent
16 precursors to generate meaty flavors, they're a core source of iron, and in
17 particular, certainly heme iron. And also, that's very significant here is that
18 Giacino tells you that its compositions, as I noted earlier, can be added to
19 these synthetic meat fibers. In other words, they can be added to meat
20 substitutes or muscle replicas.

21 And so, the skilled artisan, based on this teaching in Giacino,
22 would recognize that not only would these muscle replicas, these synthetic
23 meat fibers benefit from Giacino's meaty flavor contribution, but they're
24 uniquely situated to also benefit, from a replication of the nutritional profile
25 of meat as well. In particular, the known high content of iron in, for
26 example, beef, the heme iron content. And so, there's this benefit in terms of

1 both flavor and nutrition that could come around based on a composition
2 like Giacino's that can provide both.

3 And so, based these teachings of both Giacino and Proulx, our
4 expert opines that there would be a motivation to add leghemoglobin as
5 taught by Proulx into Giacino's compositions to fortify them with heme iron,
6 and that doing so would mimic the nutritional profile of conventionally
7 sourced beef and it would encourage consumers that are consuming that
8 meat substitute or that muscle replica that's been enhanced by Giacino's
9 flavoring composition which is now fortified with heme iron to now better
10 replicate that nutritional profile as well.

11 Now, I touched on this just moments ago, but I just want to
12 reiterate that our Petition was very clear in that the additional motivation
13 that's provided by Conrad, this -- the benefit of leghemoglobin providing a
14 flavor benefit, a meaty flavor benefit as well, is a separate independent
15 reason. And we still wholeheartedly agree with that basis, but if the Board
16 were to not be persuaded, that would be a motivation to add leghemoglobin
17 based on Conrad's teachings, well, it's actually not vital to the ground. It's
18 just a separate second basis for adding Proulx's leghemoglobin to Giacino's
19 compositions. And as I've highlighted here, you know, we've used the terms
20 and/or in bold italic. This is original, additional, and separate reason. And
21 so, there was never this position taken in the Petition that both were essential
22 to the ground, that you had to have both motivations in order to render the
23 claims obvious.

24 Now, what's Patent Owner's response to the Proulx basis, Proulx's
25 motivation? Their response is just simply in their Patent Owner response I
26 should say. Their response to this motivation based on Proulx's teachings

1 was that Giacino doesn't tell you that its flavor and compositions are meant
2 to provide nutrition and that flavor additives are meant to provide -- or are
3 meant to impart flavor, not nutrition.

4 Ends up, full stop. But this is both legally and factually defective.
5 Legally, there's no requirement that really any reference actually expressly
6 disclose the motivation to combine, certainly not both references in the two
7 reference combination. But in our case, Proulx certainly discloses that
8 motivation to combine, and it tells you when you add leghemoglobin to
9 foods, it imparts or fortifies those compositions with heme iron, which can
10 address iron deficiency. And Giacino, as I just mentioned earlier as well,
11 also opens the door, and provides motivation for this type of modification,
12 because it tells you that its compositions would be added to meat replicas or
13 meat fibers. And so, there would be that additional benefit if you could
14 replicate the nutritional profile of meat as well.

15 Now, factually, their argument is defective because all they rely on
16 for this sort of blunt position that flavor additives only impart flavor, they
17 don't add nutrition, is this Manley reference. But Manley actually doesn't
18 really support their position. First, they cite to this disclosure here in
19 Manley that tells you that flavor is, its significant function is flavor and not
20 nutrition. It doesn't say its only function is going to be nutrition, and it can't
21 have other functions.

22 And this is -- their argument is undermined by Manley because
23 later on in Manley, Manley tells you that flavor additives can actually make
24 a significant nutritional contribution to the final food, and it even tells you
25 what form you can fill out and how you can send it to the proprietary mix
26 committee, which I guess is this branch of a governmental office to indicate

1 that significant nutritional contribution. So again, the point here is just to
2 point out that flavor additives aren't limited to just flavor. They can provide
3 flavor, yes, but they can also provide nutritional benefits as well. And this --

4 JUDGE PRAISS: Counsel, you have about a minute and a half.

5 MR. MESSERIAN: Okay. Thank you for that.

6 Their argument is also undermined in a couple of ways, additional
7 ways as well. Turning to slide 77, Patent Owner tells the FDA several years
8 ago that its flavoring composition also has a, quote, nutritive value, and
9 specifically the nutritive value here is the same. It's the source of iron, heme
10 iron, and remarkably, they cite to the same Proulx reference we rely on to
11 show that adding that composition with leghemoglobin would provide
12 flavoring, yes, but it also provides this nutritive benefit. So, for them to take
13 the position now, as they did in their Patent Owner response and say,
14 flavoring additives like Giacino flavor, that's it. They're not meant to
15 provide nutrition. That's what a flavoring additive is all about. That's not
16 the position they took several years ago.

17 Turning to slide 78, our expert, Dr. McGorin, pointed out that
18 flavoring compositions, very well-known flavoring compositions. One
19 example is shown here in this slide, nutritional yeast provides a distinct
20 umami flavor, but it's also known to provide nutritional benefits because it is
21 rich in B vitamins.

22 JUDGE PRAISS: Counsel, I just want to let you know, you could
23 continue as long as you like. It'll just eat into your 25 minutes you reserved.

24 MR. MESSERIAN: Thank you, Your Honor. Yes, I'm going to
25 use up a little bit of that time. I am almost done here.

26 In their sur-reply, Patent Owner changes gears and no longer

1 appears to be taking the position that a food flavor additive composition
2 cannot provide nutrition like they said in their Patent Owner response. And
3 instead, their argument is now shifting to this idea that when you're going to
4 add an ingredient to a flavoring composition, that flavoring ingredient, that
5 ingredient has to also provide flavor to that flavor composition.

6 This is attorney argument their expert hasn't opined on that aspect
7 of their -- hasn't opined on the argument. And frankly, they fail to give a
8 reason for why that has to be true. Why can't Giacino's composition provide
9 both when there's a need for it to provide both? And as shown here in slide
10 81, they describe flavoring compositions and how they can provide flavor,
11 and as an added bonus, provide nutrition. Well, that's what our proposed
12 modification to Giacino would be doing. It would provide meaty flavor, and
13 it would a nutritional benefit as well.

14 Really quickly, just want to touch on Dependent Claim 3.
15 Dependent Claim 3 requires that the heme-containing protein have a
16 sequence identity of at least 80 percent to those peptides that are shown in
17 sequence ID numbers 1 through 26. Number 4 is leghemoglobin from
18 glycine max. Glycine max is a soy plant, and so both Brown and Proulx
19 satisfy Dependent Claim 3 because their heme-containing protein is
20 leghemoglobin from soy plants.

21 And so, unless there are questions from the Board, I will reserve
22 the rest of my time for rebuttal.

23 JUDGE PRAISS: Thank you, counsel. You have 23 minutes
24 remaining for the rebuttal. Are there any questions from the panel before we
25 move over? No. Thank you. All right. Counsel, you may begin. Would
26 you like to reserve any of your time for sur-rebuttals?

1 MR. ROSATO: Yes, Your Honor. Fifteen minutes, please.

2 JUDGE PRAISS: Okay.

3 MR. ROSATO: Just give me a moment. I'm also going to do a
4 screen share for the demonstrative exhibits. Okay. Okay. Good afternoon
5 and thank you, Your Honors. And may it please the Board, Mike Rosato, on
6 behalf of the Patent Owner, Impossible Foods. I am going start by turning to
7 slide 4 of our demonstrative exhibits. And I'll note at the outset, one of the
8 real problems with Petitioner's approach here is this approach where so
9 many arguments and positions have sort of been thrown at the wall, and
10 Petitioner is taking that sort of District Court approach of, you know, throw
11 everything at the wall and try to sort it out at end of the case at oral
12 argument.

13 And they do an admirable job trying to do that. The problem is in
14 IPR, when a moving party bears the burden of proof, we need to see a
15 coherent argument that's consistent and supported by a preponderance of the
16 evidence. And we don't disregard, obviously, evidence that doesn't suit
17 Petitioner. We must consider it as we move through the case. And that is
18 one of key problems here with all of their grounds. They want to sort of
19 ignore a lot of bad evidence and inconsistencies throughout their witness
20 testimony, their arguments that have been advanced. I sort of skip over it all
21 and just focus on a reassembly of some arguments at the end of the case
22 here. That obviously doesn't work. I'll go through a more comprehensive
23 review of the evidence and what occurred in this case, and we'll see that at
24 the end of the day each of the grounds of challenge ultimately are doomed
25 by, you know, insufficiencies and often by Petitioner's own evidence.

26 That starts with Ground 1. It's the anticipation ground we didn't

1 hear much about that. That is ultimately undermined by Petitioner's own
2 argument at District Court on claim construction, which was successful at
3 District Court, constructions were adopted that effectively eliminate the
4 challenge in Ground 1.

5 As we move to the obviousness challenges, Grounds 2 through 4,
6 one of the key deficiencies here that we didn't hear a whole lot about is
7 Petitioner seems to take this approach where they essentially -- the classic
8 hindsight approach, where they're using the claims as a roadmap to go find
9 elements of the claims independently scattered throughout the prior art. But
10 what ultimately is missing here, and we see this looking through the
11 evidence, is the critical requirement that if a Petitioner is proposing
12 obviousness based on a combination of different prior art elements, they
13 need a logical and substantiated reason why a person of ordinary skill in the
14 art would have combined those prior elements in the way they're proposing
15 to reach the claims. And that's ultimately what's missing for every single
16 one of their obviousness grounds.

17 I'll also note that for Grounds 1 and 3, I'll cover them briefly. I
18 don't believe Petitioner is still pursuing those grounds. There is no rebuttal
19 to either Ground 1 or 3 in their reply materials. So, the arguments in the
20 Patent Owner response on those ground is unaddressed and un rebutted.

21 We'll turn to slide 5 and start briefly with the Ground 1, which is
22 anticipation in view of Brown. As I indicated, this ground should now be
23 foreclosed by the claim constructions that were argued at District Court, and
24 subsequently adopted by the District Court. If applied here, which they
25 should be, and there's no disagreement between the parties that the Board
26 and District Court claim constructions should be consistent. Applying the

1 District Court's constructions here really eliminates Ground 1. I'll walk
2 through this briefly, turning to slide 7. The argument in the Petition
3 materials, I will focus on this sulfur compound limitation that was discussed
4 earlier. Petitioner argued that the term should be interpreted broadly.

5 They argued this in their Petition materials, broadly to include
6 whole proteins, including the pea protein or pea flour of Brown that was
7 mapped to Claim 1. And that was the full extent of their argument. At
8 District Court Petitioner argued the complete opposite, as we see, turning to
9 slide 7. Sorry, Your Honor, I think I previously said slide 7, the previous
10 slide was 6, I'm now turning the slide 7. So, at District Court, Petitioner
11 specifically argued that the same sulfur compound limitation is not satisfied
12 by a whole protein, like pea flour. The District Court agreed with that,
13 adopted a construction, and specifically noted in adopting that construction
14 that the sulfur compound limitations of the claims are not -- they must be
15 satisfied by a compound that is present separately from a protein. Adopting
16 this construction eliminates Ground 1 from consideration, and there doesn't
17 appear to be any dispute about that.

18 Turning to slide 11, we see the full extent of Petitioner's argument
19 in reply. It's half of a sentence covering both Grounds 1 and 3, where they
20 just say they're going to rely on their arguments in the Petition, which, of
21 course, were rebutted in the Patent Owner response. So, I don't think
22 Grounds 1 and 3 are still alive. Perhaps Petitioner will have a different
23 impression, but that's Ground 1.

24 Turn to slide 12, and we can turn to the obviousness grounds,
25 starting with Ground 2, which is obviousness in view of Giacino and Brown.
26 Looking at slide 13, and I'll start by reiterating a few basic principles of

1 obviousness law that are very familiar to everyone here. And that is, as I
2 alluded to earlier, obviousness is not demonstrated simply by identifying
3 claim elements found separately in different pieces of prior art, there must be
4 a motivation, it cannot be driven by improper hindsight, it must be
5 substantiated with logic and evidence, and that's ultimately what's missing
6 here in the context of an IPR.

7 Of course, this is Petitioner's burden. Petitioner must satisfy this
8 burden with materials in the Petition materials itself. This is not something
9 that evolves over time and can be changed and modified, advanced,
10 abandoned, changed, which is pretty much what we see here. At the end of
11 the day, for Ground 2, at least, there was an articulated rationale. We
12 explored that rationale during trial, and that rationale ultimately fell apart on
13 Petitioner.

14 And we'll turn to slide 14 and get into Ground 2. As we heard
15 earlier, the ground combines the Giacino reference with components isolated
16 or selected from the Brown reference, specifically, Petitioner proposes
17 taking the compositions of Giacino, then taking ingredients from the Brown
18 reference and adding them to this different composition. And specifically,
19 they're pulling the leghemoglobin or heme-containing protein from the
20 Brown reference. The ultimate question here, which is never sufficiently
21 answered is, why would a person of ordinary skill in the art do this?

22 Now, as we turn to slide 15, as I indicated, there is a stated
23 rationale in the Petition materials. It's one that ultimately fell apart on
24 Petitioner. Their stated rationale for doing this was an improvement
25 argument. They argued that Giacino's objective or its goal was to provide a
26 true flavor of meat, and they argued that modifying the Giacino composition

1 to add leghemoglobin to it would further that objective. It would further the
2 goal of providing a true flavor of meat, and that it would only further
3 contribute to the meaty aroma volatiles that are generated in the Giacino
4 reference. That's the stated reason for the modification, so they did that part
5 of what they're required to do. But as we expect during the course of the
6 trial phase, the arguments advanced by the Petitioner and the evidence they
7 cite is explored through cross-examination with rebuttal expert testimony to
8 see if it holds water, and here it didn't.

9 I'm turning to slide 16 now, and I'll start with the testimony of
10 Petitioner's primary expert, Dr. Tarté. This -- Dr. Tarté is the expert, is the
11 testimony that was cited as evidence for this proffered rationale. And during
12 cross-examination, he was posed with basic cross-examination type
13 questions, such as, Dr. Tarté, you said this in your declaration, what's the
14 basis of this statement? These are not trick questions or got you questions.
15 These are basic questions that arise during the course of cross -examination,
16 asking an expert to clarify the basis of his testimony.

17 He was asked to do that, specifically regarding this comment that
18 there would be an improvement or benefit to Giacino's composition in
19 adding this additional ingredient. And his answer to that, as much as
20 Petitioner wants to sugarcoat the response here, we can't do that. He was
21 asked specifically about this. What's the basis and why do you think adding
22 this ingredient would improve the aroma and flavor of the Giacino
23 composition? And his argument, excuse me, his answer, as we see here is
24 consistent with the types of answers we got repeatedly from him. He was
25 asked these questions. His response was, I don't know.

26 It's outside my area of expertise. I don't have a good answer to

1 that. And I'm going to defer to Dr. McGorin, which was Petitioner's other
2 expert. And on this issue, this is an important issue. We asked specifically,
3 do you think leghemoglobin really helps or could it adversely impact the
4 flavor and aroma profile? And he said, I don't know one way or the other. I
5 don't know if it would help. I don't know if it would hurt. I really have no
6 idea. Go talk to Dr. McGorin. Let me see for this as we -- enough on other
7 topics.

8 JUDGE KAISER: I'm sorry, I just wanted to --

9 MR. ROSATO: Sorry, I thought I heard somebody speak.

10 JUDGE KAISER: On that last slide. What is it that's missing
11 here? It seems to me like Dr. Tarté says in his declaration, adding
12 leghemoglobin to Giacino further contributes to the meaty aroma and
13 volatiles produced. And he cites as evidence of that, which you don't have
14 on the slide here, but further down that paragraph, he cites some earlier
15 paragraphs in his declaration that themselves cite to Dr. McGorin's
16 testimony.

17 So, he's relying on what McGorin used the sort of, I guess, flavor
18 chemistry expert, I guess maybe it's the best way to characterize him, what
19 he said. I'm not sure what's wrong with that. And then at deposition saying,
20 well, I am relying on somebody to tell me what the chemistry is, all I can tell
21 you is that if the chemistry is as he says it is, that means a person of ordinary
22 skill in this art would be willing to do it or be motivated to it. What's wrong
23 with that?

24 MR. ROSATO: In theory, there's nothing wrong with one expert
25 deferring to another expert, particularly where you have topics of mixed
26 expertise. The problem here is, and we'll get to this, Dr. McGorin never

1 addressed this topic. So, he never addressed it in his IPR declaration. So,
2 you've got Dr. Tarté saying, I have no idea. I know I said it, but I have no
3 idea, I don't know if it would help or hurt, go talk to Dr. McGorin. When
4 we look at Dr. McGorin's IPR declaration, he didn't address this topic.

5 Now, at least not directly, he never addressed the combinations of
6 prior art references that were asserted in the Petition materials. So, if we're
7 trying to get answers from Petitioner's witnesses, why would you combine
8 these two references as you're proposing? They don't have a witness, at least
9 at the Petition level, that can answer those questions. That includes Dr.
10 McGorin because he didn't address it. As we move through Dr. McGorin's
11 testimony, there's, you know, the more circumstantial type testimony where
12 he's talking about reactions generally and so forth. We'll get into that.
13 There's nothing helpful there for Petitioner.

14 It all uniformly counsels against the argument that they're making,
15 and I do want to walk through that, Your Honor. But for completeness here,
16 and hold that thought for all of this stuff, I'll go through a couple points just
17 to illustrate sort of the deficiencies at the Petition level. But we see this also,
18 I'm on slide 17 now, but we see this with Dr. Tarté's testimony about the
19 reaction chemistry. So, he's saying in his declaration that each of Brown and
20 Giacino elicit the same catalyzation reaction. And this is one of the core
21 theories in the Petition materials. It's the Maillard reaction in chemistry.

22 So, he says this in direct testimony. The references are eliciting
23 the same catalyzation reaction. And if you modify Giacino with these
24 additional ingredients, you'll also get the same catalyzation reaction. Okay.
25 We understand the theory. Now, what's the basis of that? We asked him
26 about that. He had no idea what reaction chemistry is involved. And he,

1 again, deferred us to Dr. McGorin. Again, Dr. McGorin never addressed
2 this combination or this point, so we're left searching for answers on this as
3 well.

4 And then we turn to slide 18, and what we see is these types of
5 answers weren't coming just to technical questions that relate to some
6 different area of expertise. This included basic factual questions, and, you
7 know, Petitioner sort of glossed over this, like it's no big deal, but it is a big
8 deal when the Patent Owner is asking, what composition are you applying to
9 the clan? What composition from Giacino are you modifying?

10 Help us understand what we're responding to here so we can do
11 that with, you know, in a meaningful way and have a meaningful
12 opportunity to respond to this. And his response is, I don't know. I didn't
13 envision anything in particular. And, you know, again, more of these
14 answers about trying to get out with a professed lack of expertise. Now,
15 there's a couple reasons why this matters. Beyond the obvious, that we need
16 to understand what their case is, there are technical reasons this matters, too.
17 As we see when we talk to Dr. McGorin, and we talked to a Patent Owner's
18 expert, Dr. Qian, it turns out that the particular ingredients in a food matrix
19 matter critically to the resulting aroma profile and flavor. So, we need to
20 know what those ingredients are in order to assess the validity of their
21 argument. And we asked Dr. Tarté about that as well, well, you know, do
22 the particular ingredients matter? And his answer to that was, I don't know,
23 go talk to Dr. McGorin.

24 But let's turn to without further ado, we can look at what Dr.
25 McGorin had to say. And as I indicated, Your Honor, Petitioner did submit
26 an IPR declaration from Dr. McGorin, but he didn't address the

1 combination of Giacino and Brown. It's all very general type commentary.
2 And even Dr. McGorin didn't address any of the prior combinations. So,
3 we'll pause there. That's obviously important if we're considering the
4 Petitioner's burden and whether that's satisfied at the Petition stage, and it's
5 not, particularly for motivation.

6 So, we see for, at least for the motivation issue, we see Petitioner
7 making an argument citing to the testimony of Dr. Tarté, and then we're told
8 during cross-examination, he doesn't know the answer to that, go talk to this
9 other individual who also never addressed it at that stage. So, you're really,
10 you know, it's not unreasonable to say that's all the Board needs to know
11 quite frankly in order to rule in Petitioner's favor, excuse me, in Patent
12 Owner's favor. Patent Owner has the burden of proof they didn't satisfy at
13 the Petition stage.

14 As we, you know, continue to move through the materials, what
15 we see, if we're evaluating the preponderance of the evidence here, the
16 preponderance of evidence weighs heavily in favor of Patent Owner, and
17 weighs heavily against the arguments that are being advanced here. And
18 that includes, that evidence includes the testimony of Dr. McGorin. So, we
19 can turn to that, and just, you know, for stating, just for clarifying the record
20 purposes here, when we're talking about the testimony of Dr. McGorin,
21 we've got several sources of testimony from Dr. McGorin. We have the
22 IPR declaration, which I indicated. There's also a declaration that Dr.
23 McGorin submitted or was submitted in the District Court that was
24 submitted here as Exhibit 2020. And there's also the cross-examination
25 testimony of Dr. McGorin that occurred following the submission of his
26 reply declaration at the reply stage.

1 And what we see from this testimony is multiple pertinent points
2 and key points of testimony that repeatedly surfaced from his testimony that
3 undermine the Petitioner's argument here. One, he's describing aroma
4 profile as complicated and difficult to predict from the list of ingredients.
5 He's repeatedly saying that the particular ingredients that are in a food
6 matrix composition matter critically to the resulting flavor and aroma
7 profile. And it's not just the identity of the ingredients themselves, it is the
8 concentrations and proportions of them, other parameters like temperature,
9 reaction time, pH, moisture content, and the like.

10 So, you know, there are all these critical parameters as described
11 by Dr. McGorin, and it all impacts and matters for this outcome we're
12 talking about, which is the aroma or volatiles. And, you know, another key
13 point, because there's so much discussion in the Petition materials about this
14 particular chemical reaction, the Maillard reaction. That was discussed as
15 well, and we asked Dr. McGorin about that, and he testified both in his
16 cross-examination and makes comments about this in his direct testimony as
17 well that this is not just a matter of saying whether or not a Maillard reaction
18 occurred. In other words, just because you have a Maillard reaction doesn't
19 mean you have an aroma of meat, just the opposite.

20 I mean, you can have a rubbery aroma. You can have baked bread.
21 And Dr. McGorin confirmed that. It's not just a matter of saying whether it
22 is a Maillard reaction. And he confirmed that it's not even just matter the
23 ingredients themselves. Even if you have the right ingredients, if the
24 concentrations and combinations are out of whack as he described, you don't
25 get a meaty aroma. So --

26 JUDGE PRAISS: Counsel?

1 MR. ROSATO: Yes.

2 JUDGE PRAISS: Could I interrupt at just that moment?

3 MR. ROSATO: Of course.

4 JUDGE PRAISS: I understand there can be a number of variables,
5 and that's what's addressed in Dr. McGorin's transcript there, but is there
6 testimony and evidence on a leghemoglobin specifically contributing
7 favorably to the aroma of meat, which is the statement in paragraph 364 of
8 the Brown reference.

9 MR. ROSATO: Are you asking about Dr. McGorin specifically?

10 JUDGE PRAISS: Right. The evidence here. Do you have any
11 testimony specific to leghemoglobin? You mentioned what the compound
12 is, is being one of these variables. And we have Brown stating for that
13 particular ingredient, it does contribute favorably to the aroma of meat. So,
14 what do we have in terms of the evidence on whether that contributes or not
15 to meat? Thank you.

16 MR. ROSATO: Yes, I understand your questions are
17 countervailing evidence, and the answer is yes, and multiple sources of that.
18 The evidence uniformly indicates that the expectation at the time was that
19 heme-containing proteins like leghemoglobin and including leghemoglobin
20 would have been expected to negatively impact the flavor and aroma profile.
21 That's the expectation at the time from the state of the art and the evidence
22 supports that. And that includes Dr. McGorin's testimony. I'm on slide 21
23 here. And we'll look through -- I'll start with Dr. McGorin's testimony and I
24 will give you a more comprehensive identification from the record.

25 But starting with Dr. McGorin, there's a citation here at slide 21,
26 paragraph 164 of his declaration where he's talking about the combination

1 Maillard reactants, and heme-containing proteins with plant proteins and
2 other compounds could potentially lead to non-beef-like volatile profile. So,
3 he's citing -- discussing that here. I'll turn to slide 23. There are a couple
4 excerpts from this testimony where he's talking about heme-containing
5 proteins, including leghemoglobin, negatively affecting aroma and profile.

6 And he describes, you know, at the top of the slide here, he is
7 talking about heme-containing proteins promoting lipid oxidation,
8 undesirable flavors. And later, as shown here on the slide, paragraph 71,
9 he's talking about heme-containing proteins contributing to rancid and stale
10 flavors, and so on and so forth. There's several sources of his input on that.
11 I promised to give you a more comprehensive list. I would also, Your
12 Honor, respectfully direct you to Dr. Qian's declaration. That's Exhibit
13 2030. He talks specifically about this topic at paragraphs 76 through 80, as
14 well as paragraph 40.

15 He's citing multiple prior references, including the Proulx thesis,
16 which was submitted as Exhibit 2003, discussing the expected negative
17 impact of leghemoglobin on flavor. There's citation to several other
18 references. Calkins, Exhibit 1028, Pearson, Exhibit 1048, and those
19 references are too discussing the expected negative impact of heme-
20 containing proteins on flavor.

21 JUDGE ABRAHAM: Counsel, can I interrupt you for a second?
22 You keep saying that there is an expectation that leghemoglobin would lead
23 to undesirable flavors, but what I'm reading here is that they can lead to
24 undesirable flavors, not necessarily that one would expect them to under
25 every situation. And so, is it your position that regardless of the conditions,
26 a person of ordinary skill in the art would expect the use of leghemoglobin

1 to result in unfavorable flavoring or aromas?

2 MR. ROSATO: I certainly didn't say that or go that far. But if
3 we're conducting an obviousness inquiry, particularly in terms of a
4 Petitioner's, the moving party's stated reason for this. And two points of
5 consideration emerge. One is, what is their stated reason and does that hold
6 true? And their state of reason, as we indicated earlier, was that this addition
7 of leghemoglobin into this different composition of Giacino would only
8 further help things.

9 We've got evidence, including the testimony of their own witness,
10 saying there's a lot of expectation that this type of ingredient can negatively
11 impact. And there are reasons for that explained in those references. So, I'm
12 not saying uniformly, no matter what happens, I would never go that far.
13 But, you know, looking at Petitioner's stated motivation, it just doesn't hold
14 up under the evidence. The other thing is from two points of consideration,
15 as we all know an obviousness analysis requires ascertaining scope content
16 differences, but also collectively looking at the literature, not just picking out
17 one reference in terms of Brown but looking at the combination and where
18 the art was -- what the general perspective was in the art at the time.

19 So, the general perspective was there was a lot of concern about
20 adding heme-containing proteins and with specific recognition of the
21 production of off flavors and undesirable outcomes.

22 JUDGE ABRAHAM: Okay. Just one follow-up question, then. Is
23 the problem here with Petitioner's motivation the language that he says it
24 would only further contribute, such that you're taking the term only to mean
25 there's only one direction that it could go when you add the leghemoglobin,
26 that the only result from adding leghemoglobin would be to further

1 contribute to the aroma? And you're saying, well, that's not true because it
2 can also lead to negative outcomes. So, the problem with their motivation to
3 combine, is it just that term that it's only, quote, unquote, in their
4 motivation -- in the statement?

5 MR. ROSATO: I understand your question. Our contention with
6 it isn't just a matter of semantics, that they chose the word only. It's that if
7 we can even put aside the word only, their argument clearly was, add this
8 ingredient for purposes of improvement. There's no indication, at least in
9 Dr. Tarté's testimony, that he took into consideration both potential for
10 positive and potential for negative, and he told us that. He didn't know
11 whether it would be bad. He didn't know whether it would be good. He just
12 didn't know one way or the other.

13 And that's the real concern there, is you have a witness just saying,
14 oh, add this because it would help. And we're pressing on the basis of that,
15 asking the witness, did you consider positives? Did you considered
16 negatives? Did you really look at the full picture on this when you rendered
17 this opinion? And the answer was no. He didn't weigh the pluses and
18 minuses and come to this reasoned conclusion. He just said it without a
19 basis for saying it. And that's the real concern, so.

20 JUDGE ABRAHAM: Thank you.

21 MR. ROSATO: Yeah, I appreciate that question.

22 JUDGE KAISER: Mr. Rosato? Can I ask you one more question
23 before you move on there? Could you just briefly explain kind of the
24 situation around the deposition of Dr. McGorin? I know -- I think you said
25 earlier that you deposed him after he submitted his reply declaration. And
26 there was some lap over his original deposition being canceled or something

1 along those lines. If you wouldn't mind just sort of explaining what
2 happened there, I'm just curious.

3 MR. ROSATO: Sure. Well, the key questions, we're entitled to
4 cross-examination of a witness that's limited to the scope of their direct
5 testimony. So, one of the key issues here is, what's the basis behind these
6 prior art combinations? That was only addressed by Dr. Tarté. So, when
7 he's saying he'll go defer to Dr. McGorin, we have two witnesses, neither of
8 which have meaningfully addressed the prior art combination. So, I would
9 say we would observe the limited scope of cross-examination, and given
10 that, we were not permitted to ask Dr. McGorin about the combinations of
11 references, which he didn't address in the first place. He did address them
12 subsequently at the reply stage, and we did talk to him at that point.

13 JUDGE KAISER: I guess my question is, why not depose Dr.
14 McGorin early on about what he did testify about, which is the food
15 chemistry, and pin him down on this question of, look, you say here that
16 sometimes it's beneficial to add leghemoglobin in terms of advancing meaty
17 aroma, and sometimes it's not beneficial, and make sure that that's really
18 what he meant as opposed to some other conclusion that maybe Petitioner
19 would have us draw from that declaration.

20 MR. ROSATO: Right. So, Petitioner has this argument like we
21 have an obligation to go conduct discovery on its behalf. Obviously, we
22 don't have that obligation. But looking at Dr. McGorin's testimony, he
23 doesn't actually say -- he doesn't advocate for the benefits of adding
24 leghemoglobin. He only criticizes them in his direct testimony. So --

25 JUDGE KAISER: Okay. Thank you.

26 MR. ROSATO: I mean everything he said in his direct -- I would

1 go as far to say this. There's nothing in his direct testimony that supports
2 Petitioner's argument. As we go through that testimony, he's talking about
3 the complexity, you know, the multiple parameters, the importance of
4 different ingredients and how that affects things, criticizing heme-containing
5 proteins. It uniformly undermines their argument. So --

6 JUDGE ABRAHAM: Counsel, looking at your slide 23 right here,
7 the first box in paragraph 16 of his declaration, it says "Although heme-
8 proteins can promote lipid oxidation and undesirable flavors in meat and
9 other products **over time**, lipid oxidation contributes to a desirable meaty
10 aroma upon initial cooking." Doesn't that support Petitioner's position?

11 MR. ROSATO: I don't think so for many reasons, you know, and
12 we'll get to this when we get the reply stage, but they try to change their
13 argument to navigate around this by saying, oh, wait a second, you initially
14 might have, you know, these bad effects take a little bit of time to happen.
15 So, forget about our initial argument about heating Giacino's premix, we're
16 going to change that and only cook it later. So, there is a -- they try to
17 navigate around this, but, you know, if -- to my earlier point, you know,
18 bona fide obviousness analysis requires grappling with, you know, benefits
19 and detriment. So, if they didn't do that, which they didn't, it's hard to say
20 they met their burden of proof, and we can't get that by just taking one snip
21 and saying, I sort of conceded that there might be some initial benefits, but
22 he was really focusing on the negative consequences that follow that, so.

23 There's another -- one more point. I'm happy to talk on this topic
24 as long as the Board wants to, but there was one other section I want to make
25 sure didn't escape the Board's attention, because it really is -- it's testimony
26 of Dr. McGorin, and it's really on point for what they're arguing here. So,

1 he has this whole section in his IPR declaration that starts at page 86. It's
2 titled, increasing volatile levels does not equate to increasing beef-like
3 aroma. And in this section, he goes through and talks about the addition of
4 leghemoglobin, and that even if it might raise, bump up some of the
5 volatiles, he discusses how that doesn't necessarily contribute beneficially to
6 a meaty aroma or taste. And he goes through and talks about this. I
7 absolutely encourage the Board to review that because it's quite pertinent
8 and something Petitioner doesn't really want to talk about here.

9 It's at paragraph 167 here as shown, but in the next paragraph and
10 the paragraphs that follow like paragraph 168, he goes on to discuss this
11 notion that, you know, even if you bump up some of the volatiles, the profile
12 still can be bad when adding leghemoglobin. And he says that in paragraph
13 168, merely increasing the amounts of certain compounds would not
14 necessarily increase the desired aroma and could in fact effect it adversely.
15 So, when we line that up next to their, you know, this argument on Brown,
16 they're looking at Brown's experiment at paragraph 364, where Brown
17 observed that two volatiles were elevated. And they're saying, well, yeah,
18 that's really beneficial. Go do that in Giacino, and the result will be an
19 improvement. You have Dr. McGorin addressing that type of situation
20 where he's saying even if you had leghemoglobin, and even you bump up a
21 couple volatiles, it doesn't translate necessarily to an improvement, you may
22 get a negative effect. So, this is consistent with sort of the theme we've been
23 talking about here.

24 I want to, if I may, transition to some of the arguments in reply
25 because it highlights several of the points that were made in Patent Owner
26 response. And one is this issue of trying to get our arms around, you know,

1 the compositions they were proposing and what exactly their theory is. But
2 this sort of shift materialized at the reply stage that reflects on that point.
3 And that is, first, Dr. McGorin submitted his reply declaration, but he didn't
4 dispute anything that I've gone through in terms of, you know, the
5 complexities and his testimony about complexity, unpredictability, potential
6 negative consequences, and so on and so forth. He didn't dispute any of that.
7 Their solution to try to navigate around that was to propose excluding lipids
8 from the composition.

9 So they never said anything in the Petition about excluding lipids,
10 and they specifically talk about including lipids in Giacino's composition,
11 when confronted with Dr. McGorin's own testimony, as well as the
12 testimony of our expert with literature to back it up, about potential negative
13 consequences of adding heme-containing proteins, their argument is, well,
14 that's certainly true if lipids are present, so let's just get rid of the lipids. A
15 new argument should be treated as such, but it does illustrate the hindsight-
16 driven approach that's going on here.

17 That wasn't the only modification. We touched on one earlier in
18 response to one of the questions. And that is this idea of sort of changing the
19 order of operations around here in their -- as originally proposed. In their
20 Petition, they talked specifically about heating the premix, and in reply, in
21 order to try to sidestep some of the acknowledged potential downsides, they
22 said, okay, well, that happens when you heat and particularly in combination
23 with lipids, so let's get rid of the lipids. Let's also get rid the heating now.
24 Let's combine this stuff together, let's mix up Giacino's pre-mix, modify it
25 with Brown, but hold off on the heating. Let's wait to add it to the food, then
26 cook it all up.

1 And then, you know, once we do that, we have successfully
2 navigated around the potential side effects. All new argument. It should be
3 treated as such. But I also want to highlight that these -- two things about it.
4 One, this is what I was talking about when I began in saying we see these
5 different arguments being sort of thrown against the wall and then
6 selectively pulled back to sort them out later when they sort of see fit. But
7 also, inconsistencies with that too. They argued in reply, no oil. I heard
8 them argue today. Well, there's a similarity because Brown has oil and
9 Giacino can include oil.

10 So, I'm, you know, we're still left asking like, are we including oil
11 on this composition we're mapping in the claims or not? But you see these
12 types of things consistently in terms of inconsistencies in their argument.
13 But also, this proposal to, you know. sort of change and modify exacerbates
14 another problem that's existed with their case, and that is the Petition
15 materials never really grappled with the differences between the two
16 compositions. They're not only different in term of type of composition,
17 they're different in terms of content.

18 And the experts have testified that the particular ingredients matter
19 critically to the aroma profile, but it's not something that we see Petitioner
20 grappling with, certainly not in the Petition materials. Different types of
21 compounds. What I mean by that is Giacino has these flavor enhancer
22 compositions. Brown is looking at food products. So, there are different
23 types of compositions and of course the ingredients differ and it remains true
24 that there is not a single overlapping ingredient between the two
25 compositions.

26 And it's something -- or I'll skip to slide 29. This is something that

1 is only exacerbated, these differences between in the two different
2 compositions in an art where the ingredients matter critically, the difference
3 is only exacerbated by this new argument we see showing up in reply about
4 removing the oil from the composition. As Petitioner's counsel indicated,
5 Brown's composition only has four ingredients, pea flour, sunflower oil,
6 glucose, and leghemoglobin. Now they're removing the oil from Giacino, so
7 there's even -- there was never ever any overlap. There's ever even less now.

8 The other point to make on this, similarities or actually no
9 similarities issue is one of the new arguments in reply, they come back and
10 argue that there's a similarity because both compositions have a reducing
11 sugar. They argue that Brown has glucose, Giacino can optionally include
12 riboses or both reducing sugars, so voila, there is the similarity between the
13 compositions.

14 I do want to point to, you know, some earlier testimony, I'll turn to
15 slide 31, earlier testimony from Dr. McGorin where he's attacking the
16 priority chain here and arguing that there's actually a critical difference
17 between glucose and ribose. They have different chemical structures. One's
18 a five-carbon sugar in ribose. Glucose is a six-carbon sugar. And that
19 matters according to Dr. McGorin at the Petition stage because that
20 chemical difference critically affects the reaction chemistry and the resulting
21 aroma profile. So, we're left at end of the day here with two -- they are two
22 completely different compositions, and there's no way to really gloss over
23 that. And the one alleged similarity that they can point to is actually
24 identified as a critical difference by their expert in his IPR declaration.

25 JUDGE PRAISS: Counsel, you're about to go into your reserve
26 time, just letting you know.

1 MR. ROSATO: Great. Thank you, Your Honor. I'll probably
2 take another five minutes if the Board doesn't mind.

3 So, I'll talk briefly about Ground 3 as I indicated. I don't believe
4 Petitioner is still pursuing this ground, but Ground 3, just like all the
5 obviousness grounds, lacks a logical reason why a person of ordinary skill
6 would have combined these three references, Giacino, Conrad and Crane as
7 proposed.

8 I'll just as very briefly because the -- turning slide 33, the
9 deficiencies on this ground were recognized at the institution decision, and
10 the record has not changed in any way that would benefit Petitioner. In fact,
11 it's gotten worse. But briefly, the combination propose Petitioner starts with
12 Giacino. They turn to this Conrad reference which is discussing adding a
13 blood fraction to their wheat-based filler product for purposes of color and
14 flavor enhancement of that wheat-based product. And then they're arguing
15 that you would add, I guess, add the blood to Giacino, but then turn to
16 Crane, which discusses recombinant heme-proteins and replace the added
17 blood with heme. This argument never made any sense. Our expert
18 addressed it, pointed out the problems with the Crane reference being a
19 different field and not reasonably pertinent to the issues addressed in the
20 challenged patent. Regardless of that, there is no logical reason behind
21 Petitioner's combination of these three references.

22 And then I'll just turn briefly to slide 36, and again point out that
23 there's no rebuttal in the reply materials to the arguments on Ground 3.

24 I will turn to slide 37 and talk about Ground 4 briefly. Ground 4 is
25 similar to Ground 3. The difference here is they're replacing the Crane
26 reference of Ground 3 with the Proulx reference in Ground 4, but as we see

1 turning to slide 38, the argument is, in the Petition materials at least, is
2 largely the same, and it's another instance where the Board correctly
3 expressed skepticism about the logic behind this combination at the
4 institution stage. But the argument, again, like Ground 3, starts with Giacino
5 and then looks to Crane's use of a blood fraction for flavor and color,
6 enhancement of a wheat product, looks to Proulx's discussion of including
7 leghemoglobin in tortillas for nutritional fortification, and then leaves to this
8 conclusion that one would have added leghemoglobin to Giacino's
9 composition.

10 There are a number of problems with this. I'll turn to slide 39 that
11 were identified by our expert. At the end of the day, this has never been a
12 logical argument. It's not supported by or consistent with the references
13 they're citing. The Giacino reference is a flavor composition, specifically
14 that is the objective of the -- of that reference, as Petitioner themselves has
15 argued. It doesn't make logical sense why one would jump to nutritional
16 fortification for an ingredient that we submitted as I directed the Board to
17 various points of evidence. But another Proulx reference talks about the
18 negative impacts of leghemoglobin to flavor. So, one wouldn't turn to start
19 with a flavor composition, disregard flavor to jump to nutritional
20 fortification.

21 And turning to slide 30, I obviously point out that one of the things
22 Petitioner tried to do at reply is get rid of the Conrad reference. We can't do
23 that. Petitioner can reformulate their prior combinations at the reply stage.
24 And then even if we're to consider this fortification only argument that they
25 advance in reply, it's not consistent as I indicated with references
26 themselves, or the additional evidence they submit in reply.

1 That includes, I'm looking at slide 41 here, they submit several
2 references talking about nutritional fortification. None of these references
3 disregard flavor considerations. In fact, they all actually talk about flavor.
4 So, this sort of zeros back in on one of the key questions that's never
5 answered or sufficiently addressed in their combination here is why would a
6 person disregard the flavor impact in modifying a flavor composition of
7 Giacino? A person of ordinary skill would not do that and ultimately this
8 ground fails as well.

9 And with that I'll save my remaining time.

10 JUDGE PRAISS: Thank you counsel. When you are ready for
11 your rebuttal you may begin.

12 MR. MESSERIAN: Thank you, Your Honor. Let me share my
13 screen as well. Just one minute.

14 JUDGE PRAISS: And you have 23 minutes remaining.

15 MR. MESSERIAN: Thank you, Your Honor.

16 JUDGE KAISER: Mr. Messerian, before you get going, I wonder
17 if you would begin by addressing the status of Grounds 1 and 3 and whether
18 they've been, as Patent Owner suggests, abandoned or they're still live but
19 the record hasn't been supplemented since the institution decisions or
20 something else.

21 MR. MESSERIAN: Right. Right, Your Honor. That's exactly
22 what I intended to do first. With respect to Grounds 1 and 3, Patent Owners
23 allege that we've conceded these grounds. We have not conceded Grounds 1
24 and 3. They're very much alive.

25 With respect to Ground 1 specifically, despite the claim
26 construction order from the District Court, that states that plant proteins do

1 not satisfy the sulfur compound limitation, and instead you need free sulfurs
2 that are added to a composition to satisfy that limitation. Patent Owner, in
3 District Court till today, maintains that whole proteins satisfy a sulfur-
4 compound limitation. And if the Board would find it helpful, we're happy to
5 submit those infringement, those most recent infringement contentions,
6 proving that fact.

7 And so that characterization, that whole proteins, in terms of as far
8 as Patent Owner is concerned, still satisfy that limitation, which is what
9 we've mapped the sulfur compound limitation to in Ground 1, which is the
10 pea proteins, or the plant proteins in pea flour, still in our minds keeps that
11 ground alive and well. So, it's not true that we've conceded that. And if
12 there's any other point, Your Honor, with respect to those grounds, I'd be
13 happy to address them. One other point with regard to Ground 1, besides
14 the claim construction issue, we, you know, we obviously do we dispute
15 their other representations. We didn't respond to them. We don't feel it's
16 necessary, you know, as we argued in our Petition. If you look at the
17 teachings of Brown, it is in the breadth of what a food flavor additive
18 composition is, for instance, that it is basically any composition that when
19 you add it to another like a food, it will modulate its flavor that a muscle
20 replica would satisfy that. And so that still stands as well.

21 I'd like to now address some of the other arguments that Patent
22 Owner raised with respect to Grounds 2 and 4 unless there's anything further
23 with respect the Grounds 1 and 3.

24 JUDGE ABRAHAM: Counsel, I have a question about Ground 1.
25 I believe I heard counsel for Patent Owner say, and you can correct me if I'm
26 wrong, I ask somebody please do correct me, if I'm wrong, that both parties

1 would agree that the Board should adopt the District Court's claim
2 construction in this IPR. Would you agree with that?

3 MR. MESSERIAN: I would agree that the Board should adopt the
4 District Court construction. Now with that said, it's a confusing situation,
5 Your Honor, when Patent Owner is saying that as well, yet in the same
6 breath, they're saying whole proteins still nevertheless satisfy that sulfur
7 compound limitation in District Court. And so, to the extent that that's still
8 true, despite the District Court's construction, as they see it, then pea
9 proteins or plant proteins and pea flour would still satisfy that claim.

10 JUDGE ABRAHAM: I want to make sure I understand what
11 you're saying. So, even if we adopt the District Court's construction in this
12 case, you're saying that Ground 1 is still viable under Petitioner's evidence?

13 MR. MESSERIAN: It's only viable under Petitioner's arguments,
14 that's right. Because, not Petitioner, Patent Owner's interpretation of that
15 claimed construction. In other words, if despite that District Court
16 construction, as Patent Owner is still maintaining in District Court, that
17 sulfur compounds can be satisfied by whole proteins, then Ground 1 would
18 still be alive and well. Now, if the Board finds that the District Court
19 construction, which is the reasonable interpretation of it, Your Honor, is the
20 way Petitioner sees it, it only allows that sulfur compound limitation to be
21 satisfied by free added sulfur compounds, then Ground 1 is moot. But only
22 under that scenario, if that makes sense, Your Honor.

23 JUDGE ABRAHAM: I think I understand. Thank you.

24 JUDGE KAISER: And I apologize, Mr. Messerian, I'm taking out
25 a little bit of my frustration for previous cases where we've gotten similar
26 arguments on you and that's not entirely fair, but I'll ask you the question

1 anyway. We occasionally get this sort of situation where Petitioner says,
2 well, we don't really want to tell you what the claim term means, but Patent
3 Owner says in the District Court it means X, and you should evaluate the
4 case on that basis. Given that there is a duty of candor and good faith to
5 meet, and given that claim construction is a matter of law that we're
6 supposed to independently try to get right regardless of what the parties
7 argue, what do you think the correct construction in Ground 1 is? Is it the
8 District Court's construction as you would interpret it? Is it the District
9 Court's construction as Patent Owner interprets it? What's the right one?

10 MR. MESSERIAN: Your Honor, the correct construction of that
11 term is what we as Petitioners have advocated in District Court all along,
12 which is that the sulfur compound limitations are satisfied only by free
13 added sulfur compounds, and that whole proteins cannot satisfy them. And
14 so, in our Petition, we are putting forward Patent Owner's interpretation of
15 that term, and that's the basis for that ground.

16 So, if there's nothing further on Ground 1 and 3, let me address one
17 of their -- several of their arguments with respect to Grounds 2 and 4. So,
18 the first point that Patent Owner argued, and I think it's very important to
19 clear up, is that Dr. Tarté's basis for motivation to combine, the Petitioner's
20 basis for a motivation to combine is not that the only possible outcome of
21 adding leghemoglobin to Giacino would have been possible.

22 As I show here in slide 25, the basis for Dr. Tarté to have a
23 motivation to combine these references is Brown's teachings that when you
24 add leghemoglobin into a composition, it contributes favorably to meaty
25 aroma, and it also generates additional volatiles that have been known in the
26 art to be associated with the cooked meat aroma. And that there would be a

1 reasonable expectation of success in achieving those features that are touted
2 by Brown. So, you will not find in Dr. Tarté's declaration a statement where
3 he says a person of ordinary skill in the art would only be motivated to add
4 leghemoglobin if they thought 100 percent certainty that adding
5 leghemoglobin would achieve Brown's goals.

6 That was not the motivation to combine. And they are
7 mischaracterizing it that way so that they can then say, well, we asked them
8 during his deposition, is that the only possible outcome? And when you say,
9 you don't know, and you defer to Dr. McGorin, then you no longer have a
10 basis for your motivation to combine. That wasn't the motivation to
11 combine. And that's really the loophole here that their argument is hinged
12 on.

13 JUDGE KAISER: What do you do, Mr. Messerian, with Dr.
14 McGorin's testimony that the degree to which you get increased meaty
15 flavor in aroma is dependent to a large degree on the particular compositions
16 that you start with? In other words, what components are present and in
17 what amounts? And Brown might very well be completely serious and
18 absolutely true that its meaty flavor and aroma is enhanced by adding
19 leghemoglobin, whether that might not translate to Giacino's particular
20 composition, your beginning composition.

21 MR. MESSERIAN: Right. So, the response to that, Your Honor,
22 is that first and foremost Giacino already gives you this starting point where
23 its compositions have ingredients and have concentrations and have all the
24 environmental conditions that are set for it to produce that meaty aroma.
25 And you're adding to it leghemoglobin, which based on Brown's teachings
26 contributes favorably to meaty aroma. That's your starting point. You're

1 already starting at a point where your composition has a meaty aroma, and
2 now you are improving upon that meaty aroma.

3 And as Dr. McGorin has opined and testified, yes, there are
4 environmental conditions at play, pH, moisture level. These things all do
5 affect the generation of aromas. There's no dispute about that. But when
6 you're starting with Giacino's teachings, and you have Brown's teachings
7 that help guide you in terms of how much leghemoglobin to add, what
8 heating temperatures and times that both references disclose. That a person
9 of ordinary skill in the art, and it's shown here, this is one paragraph of a few
10 in his declaration that go to this point.

11 To the extent that there's any modifications that might be needed in
12 terms of tweaking a pH or moisture level or things of that sort, or the amount
13 of leghemoglobin, a skilled artisan would have had that in their repertoire.
14 They would be able to do that not just based on their own knowledge as a
15 flavor chemist, but also because of express teachings from Giacino and
16 Brown in terms of concentration ranges and heating temperatures and things
17 of that sort.

18 Now, another argument that Patent Owner raised is that Dr. Tarté,
19 when asked about specific reaction pathway that's being used in Brown
20 deferred to Dr. McGorin. This relates, at least the way Patent Owner
21 pitched it, was that this relates to his testimony in his declaration that a
22 skilled artisan based on Giacino and Brown's teachings would have
23 expected -- had a reasonable expectation that a similar catalyzation, and you
24 can see that in paragraph 196 of his declaration, he says a similar
25 catalyzation would be -- would reasonably be expected when you add
26 leghemoglobin to Giacino's compositions.

1 Dr. Tarté doesn't opine on reaction pathways or what specific
2 reaction is in Brown and whether that same reaction, that chemical reaction
3 is also going to happen in Giacino. His point is to say that the catalyzation
4 of this effect, that meaty flavor is added upon and that volatiles are
5 generated, but that's what would be the expectation or you'd have a
6 reasonable expectation of achieving that. And so, it's natural for him during
7 his deposition when asked, well, what is that reaction that is taking place in
8 Brown? He refers to Dr. McGorin on that, and I think that is very fair for to
9 him to do that, and there's nothing improper about doing that.

10 Now, there was also this discussion about McGorin -- there was
11 this also discussion about McGorin's statements on environmental
12 conditions, and specifically his statements regarding lipid oxidation and his
13 comments with respect to certain literature and the art. I think that's slide 23
14 and slide 20, slide 23. Let's start that. Slide 23 of Patent Owners
15 demonstratives. I believe maybe it was, Your Honor, or Judge Abraham, I
16 forget which of you three it was, but you astutely pointed out that Dr.
17 McGorin is pointing out that there is lipid oxidation. It's possible.

18 There's a potential for it under certain situations, which involves
19 time and also involves, as the literature teaches, heat causing that heme-
20 protein to rupture and to release its heme-iron, and then over time, over the
21 course of a couple of days, you might have this lipid oxidation effect. In the
22 short term, the literature tells you that lipid oxidation is a good thing. It
23 actually leads to desirable aromas. And certainly, what you're not going to
24 see in any one of the many different statements that Patent Owner put on the
25 Board here from Dr. McGorin is that McGorin allegedly has testified that
26 adding leghemoglobin to compositions will lead to undesirable effects. You

1 will not see that in any of those statements. They relate generally to
2 environmental conditions, no dispute. They relate generally to how lipid
3 oxidation works, as I just described, again, not relevant.

4 The two statements that I covered earlier from Paragraph 69 of
5 Exhibit 2020 already pointed out that that's a discussion of what the '306
6 patent tells a skilled artisan for purposes of intrinsic evidence and
7 interpreting the sulfur compound limitation. No disclosure there or
8 admission, a purported admission that fatty leghemoglobin leads to
9 undesirable effects.

10 With respect to slide 24, this is the slide of Patent Owner where he
11 identifies a couple statements and he -- and Patent Owner states, we don't
12 want to talk about those, those particular statements. I think one off the top
13 of my head was paragraph 199 of his opening declaration, and the other was
14 possibly 167 of this opening declaration. Well, we didn't talk them because
15 we didn't have a chance to. Those were raised for the first time in sur-reply.
16 Had they been raised in the Patent Owner response, we would have certainly
17 addressed them, and I can address them now.

18 Paragraph 167, Dr. McGorin is pointing out that this experimental
19 evidence that applicant submitted during prosecution of the asserted patent
20 has stated that there would be a beneficial impact because certain volatile
21 compounds have increased in level. That is distinguishable from Brown.
22 Brown tells you that adding leghemoglobin to a composition contributes
23 favorably to aroma. So that right there sort of nips that in the bud, and it
24 also tells you that it's volatile compounds like 2-octanone and 2-methyl
25 furan, and some of the other unidentified ones, it says they were produced
26 exclusively or more abundantly, but also identifies that they are produced,

1 exclusively.

2 And so, when those are associated with the cooked meat of aroma,
3 and you have those present where you otherwise would not, that's still a very
4 different teaching, if that is what Patent Owner's implication was supposed
5 to be for that paragraph. But again, the critical point there is, Brown tells
6 you there's a contribution, an immediate beneficial contribution from
7 leghemoglobin.

8 With respect to the paragraph 199 there, that statement relates to,
9 again this experimental evidence that they put forward, and the experimental
10 evidence was that there was three ingredients in an aqueous solution, and
11 their position, applicant's position was that this proves that the claimed meat
12 replica has that same beneficial result, this improvement in aroma. And Dr.
13 Tarté -- Dr. McGorrin's point was, that when you're going from this isolated
14 sort of the three elements, i.e., aqueous solution, and you're trying to tie
15 those results and say that they prove unexpected results for a meat replica,
16 that's not entirely true.

17 That doesn't align here for two reasons. First, this is an
18 obviousness case. We're not presenting testing evidence to prove that there
19 is a nexus with a claimed invention that is different. And second, it's going
20 the wrong way. In this case, Brown is about a muscle replica. It's about
21 this, let's say, a complete food if you will. And in some embodiments,
22 Giacino is the same thing. It is a meat substitute. It has a muscle replica to
23 which its flavoring composition is added and can be heated. And so, in that
24 context, the environments are very similar. And so, you don't have the same
25 uncertainty as you would from an isolated, aqueous solution, testing results
26 related to that, and trying to draw conclusions based on that with the

1 complex meat replica that was claimed.

2 Another argument that Patent Owner raised that I'd like to respond
3 to, and please let me I know when I have five minutes left, I'd like to just
4 knock out a few of these quickly. The lipid oxidation --

5 JUDGE PRAISS: You have about that amount of time left.

6 MR. MESSERIAN: Okay, great. So let me hit a couple of this
7 that are top of list here for me. So, the premixed argument. So apparently,
8 they -- Patent Owner alleges that our argument that in Giacino, the
9 composition that you can have Giacino's compositions added to foods and
10 then heated is a new argument. But this isn't true for a couple reasons. First
11 of all, it responds to Dr. Qian's point that a concentrate, that Giacino's
12 compositions are all concentrated and Brown's are not. And that's the
13 difference between the two.

14 Dr McGorin responded to that by pointing out, no, actually not
15 true, Giacino tells you that you can have unconcentrated environments
16 where reactions are happening too, so it's responsive to that. Also in our
17 Petition, and with respect to Claim 23, and Dr. Tarté's declaration with
18 respect to Claim 23, we cite to the same passages in Giacino, and point out
19 the same point, which is that you could take Giacino's compositions, add
20 them to foods, and then heat react them. So, it is not a new argument on that
21 basis as well.

22 And one other point circling back, Your Honors, to this idea that
23 Dr. McGorin's statements at large discredit our positions. Something that's
24 really missing here, and I think we kind of broached this during his
25 discussion, during Patent Owner's discussion. They never questioned Dr.
26 McGorin on these statements. They canceled his first deposition the night

1 before it was scheduled for what appeared to be strategic reasons. I don't
2 know, but it was scheduled, it had been on the books for weeks. They had
3 canceled it the night before.

4 The second deposition, we were on record for 39 minutes. Thirty-
5 nine minutes where they asked him if he was a lawyer, whether he knew
6 about patent laws, and they asked him about ribose and glucose. And there
7 might have been a couple other things there that I'm forgetting off the top of
8 my head. But they did not question him about the bulk of his statements or
9 his opinions in his reply declaration, or his opening declaration for that
10 matter regarding lipid oxidation, regarding these alleged distinctions or these
11 allegedly admissions that he's made about how leghemoglobin will lead to
12 undesirable aromas. They never questioned them on that. They stuck their
13 heads in the sand about what a skilled artisan would understand about the
14 art. And so, you know, our position is that's not a fair reading of his
15 opinions on that basis as well.

16 And the last point I want to raise is ribose versus glucose, that
17 there's a distinction between them. Dr. McGorin pointed out that, yes,
18 they're structurally different, and that ribose is more reactive than glucose,
19 but that hurts their position. Giacino is the one with ribose in it. Brown was
20 the ones with glucose in it. So, if you have a meaty aroma developing in
21 Brown with the glucose present, and Giacino has a ribose, that's also a
22 reducing sugar, known in the art to be a flavor precursor. If anything, it's
23 going to contribute and support a reasonable expectation of success and
24 motivation to combine, not hurt you on that front.

25 JUDGE PRAISS: Counsel, your time is just about up. Almost up.

26 MR. MESSERIAN: Okay. One last point, Ground 4. Patent

1 Owner mentions that why would a person of ordinary skill in the art
2 disregard flavor when adding components of a flavoring composition?
3 There is no evidence in the record that suggests that adding leghemoglobin
4 would have led a skilled artisan to believe that would have affected
5 Giacino's composition negatively in terms of flavor. These concerns of lipid
6 oxidation, which is the only one they raise for Ground 4, we've already
7 debunked for various reasons as we cite to in our briefing, and you would
8 have that additional fortification benefit, as we mentioned.

9 And with that, I'll pass it on to Patent Owner.

10 JUDGE PRAISS: Thank you counsel. Patent Owner, when you're
11 ready, you have about just under 10 minutes left for your sur-rebuttal.

12 MR. ROSATO: Great. Thank you, Your Honor. I won't need 10
13 minutes. I'll start by briefly addressing the new attorney argument that was
14 just advanced about ribose somehow being better than glucose, and therefore
15 you would expect it to have even more meaty aroma. That's not -- it's
16 attorney argument. It's not supported in the record. It's a nice try to attempt
17 to resolve an inconsistency, but it's not the only inconsistency either. And as
18 I indicated earlier in the discussion, it is not Patent Owner's burden to go sort
19 through these various conflicting testimonies and go track down their
20 witnesses and say, hey, you're undermining your client's case.

21 Do you want to change your testimony or something? That's not
22 our obligation. And Dr. McGorin had the opportunity to do that. He
23 submitted a reply declaration, and he's not disputing the points that we made
24 in the Patent Owner response in terms of, you know, the story not being so
25 simple that you would expect adding this ingredient is a straightforward
26 matter of improving the meaty composition. He didn't dispute any of that.

1 They try to change the formulations and process to navigate around that and
2 then try to retreat back to general comments about how persons of ordinary
3 skill could conduct essentially an obvious to try trial and error process, to
4 vary all the parameters, to eventually arrive at a benefit that's never been
5 sufficient to establish obviousness, and it's not sufficient here.

6 Regarding stated motivation, I will direct attention to Dr. Tarté's
7 testimony. This is where he addresses motivation. It's paragraphs 170 to
8 176. This issue does not come down to this sort of extreme characterization
9 that we've heard that it is an only proposition. The issue is whether the
10 motivation they advanced is substantiated and supported by the
11 preponderance of evidence. Their argument, as is reflected in those
12 provisions of Dr. Tarté's testimony, is an improvement argument. He talks
13 repeatedly about the meaty flavor of Giacino and improving or enhancing
14 that meaty flavor. That's an argument that just wasn't substantiated. At the
15 end of the day, this comes down essentially to a could argument, essentially
16 it's possible to add leghemoglobin, vary a bunch of parameters.

17 And if one does that, you might get a benefit out of this. That's not
18 sufficient either. And what we won't find in the record is any of their
19 witnesses saying that they believe that adding leghemoglobin to Brown's --
20 excuse me, to Giacino's composition would benefit the flavor. They don't
21 actually go on to say that specifically. The closest you will find are
22 arguments about how it might be a result, and that's not good enough for
23 obviousness. Even in Dr. McGorin's reply declaration, he dances this, but I
24 would direct attention to paragraph 50 of his reply declaration, or even
25 acknowledges that leghemoglobin could interfere with the reaction.

26 So, he does grapple with that. The idea that it's not so

1 straightforward. You might get a benefit. But even if leghemoglobin
2 interferes with the reaction in a negative way, he has one conclusory
3 sentence that a person of ordinary skill in the art could adjust things to
4 accommodate for that. So that's really essentially their argument. And it's
5 not sufficient to establish obviousness.

6 One final thing I'll note is with regard to these compositions. You
7 know, we still have -- I still struggle to understand what exactly what the
8 composition is they're advancing. Even in their demonstratives, they are
9 going back and responding to this particular composition issue by pointing
10 to things in their specification that conflict with the arguments that they
11 made in reply to get around this. And I'll direct attention to -- excuse me,
12 the demonstrative exhibit of Petitioner at slide 38. They're pointing to
13 specific compositions they say were identified.

14 One is Example 1 in Giacino, the other is the Example 6. I will
15 note that the composition they're pointing to in Example 1 has listed as the
16 first and primary ingredient, fat. So, they're trying to navigate around the
17 lipid oxidation problem by saying get rid of lipids. This illustrates some of
18 the issues with which we've been grappling with in this case. Both examples
19 of 1 and 6, by the way, heat the premix for hours and then store it for long
20 periods of time. So, this argument about avoiding heating is not consistent
21 with the materials they relied on in their Petition materials.

22 Absent any further questions, I don't have any additional
23 commentary, so I'll submit.

24 JUDGE ABRAHAM: I just have one question I'd like to sort of
25 clarify where we are on Ground 1. We heard from Petitioner's counsel that
26 they believe the District Court's construction is correct. And then under

1 their interpretation of that construction, Ground 1 would be moot. But under
2 Patent Owner's interpretation of the District Court's construction, Ground 1
3 would not be moot. Could you respond to that and help us understand where
4 we are with Ground 1? Whether -- what your position is with regard to the
5 District Court's claim construction and how we should apply it and how it
6 applies to Ground 1?

7 MR. ROSATO: Yeah, I'll try to keep it simple. It doesn't have to
8 be complicated. The District Court adopted a construction. That
9 construction should be applied here. Their comments that they're
10 inconsistent arguments, it's not true. The District Court's construction
11 should be applied in this case.

12 JUDGE ABRAHAM: Thank you.

13 JUDGE PRAISS: Follow up on that. Why is the District Court's
14 construction current?

15 MR. ROSATO: Well, first of all, it's grounded in the specification.
16 This is one of the things we explored with Dr. Tarté when we asked him
17 about the broad construction that was advanced. In the Petition materials,
18 we asked him if he -- it doesn't say anything about the specification at that
19 provision of his declaration. We asked him if that construction was
20 something he deemed consistent with the specifications, and he answered
21 that he hadn't considered the specification in adopting that. It was based on
22 a representation; his opinion was based on a representation by counsel as to
23 what Patent Owner was allegedly arguing. That's his basis. He was asked to
24 just adopt something counsel told him to adopt. The District Court's
25 construction is, you know, I would say is reflective or at least grounded in
26 the specification, like a proper claim construction is supposed to be done.

1 JUDGE PRAISS: Thank you, counsel. I have no further
2 questions. Does the panel? Seeing none, I want to thank everyone for the
3 helpful presentations today. And this matter is now submitted to the panel
4 for determination and preparation of the final written decision. We are now
5 adjourned.

6 (Whereupon, the above-entitled matter went off the record at 3:23
7 p.m.)

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