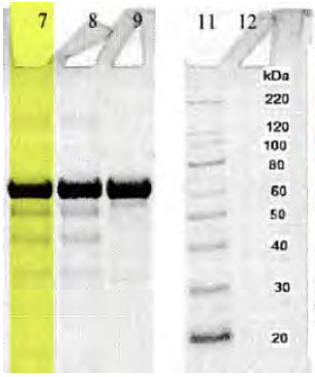
(DeFilippi) at 1253:14-1254:4.).

With respect to the May 2021 SGS results shown at JX-0129.0007, Dr. Wilken explained that a "Main band" for a given sample in Table 4 corresponds with the percentage of monomeric rHSA present in the sample (based on the "band volume") at the molecular weight (kDa) listed. (Tr. (Wilken) at 374:9-376:4.). She testified that any species (rows) falling above the "Main band" correspond with the percentage of high molecular weight ("HMW") impurities present in the sample at the molecular weights (kDa) listed, and that any species (rows) falling below the "Main band" correspond with the percentage of low molecular weight ("LMW") impurities present in the sample at the molecular weights (kDa) listed. (*Id.*).

Cellastim. The results from the May 2021 SGS testing show that Cellastim has less than 2% aggregated albumin. As set forth below in the annotated screenshot from JX-0129.0007, Cellastim has a main band at 68 kDa, i.e., the weight of an rHSA monomer. (Tr. (Wilken) at 375:14-376:4.). Dr. Wilken testified that in view of the weight of the main band (68 kDa), she would expect an albumin dimer—the simplest form of an aggregate—to appear at 136 kDa (68 x 2). (*Id.*). The closest band to 136 kDa that SGS quantified was a high molecular weight impurity band of 134 kDa. (Tr. (Wilken) at 376:5-8.). If only the 134 kDa band is counted as dimeric rHSA (i.e., aggregated albumin), as Dr. Wilken did, the sample of Cellastim has only 1.29% aggregated albumin. (*Id.*). Dr. Wilken also testified that even if both the band at 134 kDa and the band at 128 kDa are included as "aggregated albumin, the sample of Cellastim only has 1.83% aggregated albumin. (*Id.* at 378:7-12.). Dr. DeFilippi agreed. (Tr. (DeFilippi) at 1275:19-1276:19.).

Figure 14: May 2021 SGS Test Results for Cellastim



Sample	Band	Molecular weight kDa	Band volume	% band	% purity
Cellastim S Lane 7 VEN00326	HMW impurities	134	702864	1.29	86
		128	298793	0.54	
		106	213094	0.39	
	Main band	68	47134589	86.21	
	LMW impurities	59	2282714	4.18	
		57	1493716	2.73	
		46	1873232	3.43	
		33	678065	1.24	
	Sum		54675067	100.00	

(JX-0129.0007 (annotated, copied from CBr. at 74).).

However, Dr. Wilken testified it would be inappropriate to count the impurities measured at 128 and 106 kDa in the Cellastim sample as aggregated albumin in view of the adopted construction for "recombinant mammalian albumin" and its necessary implications on the scope of "aggregated albumin." (Tr. (Wilken) at 376:9-378:6.). Specifically, Dr. Wilken explained that the impurities measured at 128 and 106 kDa would comprise fragmented proteins that would necessarily fail to qualify as recombinant mammalian albumin fragments that "retain the biological or therapeutic activity of native mammalian albumin" because of the number of amino acids such fragmented proteins would be missing in view of the expected weight of an rHSA dimer (136 kDa) and the resulting loss in function. (*Id.* at 377:11-378:6.).

For example, the band at 106 kDa would consist of, at best, a 68 kDa monomer and a 38 kDa fragmented protein (the sum of which is 106 kDa), or two fragmented proteins of 53 kDa (same). Dr. Wilken testified and the evidence shows that because albumin has about 585 amino acids (*see, e.g.*, CX-0898.0002), in both scenarios described above, the fragmented proteins would lack a significant number of amino acids compared with native rHSA (roughly 130 amino acids less for the 53 kDa fragmented protein ((68 – 53) / 68) and multiplied by 585), and roughly

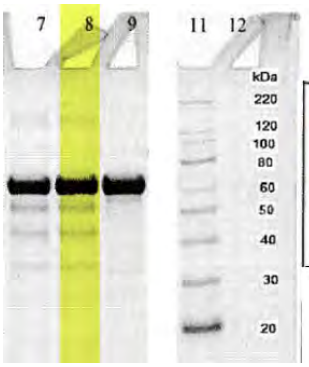
258 amino acids less for the 38 kDa fragmented protein ((68 – 38) / 68) and multiplied by 585), and thus would necessarily lose a significant portion of their structure and function. (Tr. (Wilken) at 377:23-378:6.). As Dr. Wilken explained, such fragmented proteins are not "recombinant mammalian albumin" and thus cannot form "aggregated albumin" as claimed. (*Id.*). Dr. Wilken provided similar testimony with respect to the band at 128 kDa. (*Id.* at 377:11-22.).

To count all HMW bands as "aggregated albumin," as Dr. DeFilippi did, ignores the construction of "recombinant mammalian albumin" and the fact the claimed compositions must serve as cell culture medium supplements or complete media compositions.

Thus, the May 2021 SGS testing shows Cellastim has less than 2% aggregated albumin.

Exbumin. The results from the May 2021 SGS testing also show that Exbumin has less than 2% aggregated albumin. As set forth below in the annotated screenshot from JX-0129.0007-8, Exbumin has a main band at 69 kDa, i.e., the weight of an rHSA monomer. Dr. Wilken testified that in view of the weight of the main band (69 kDa), she would expect an albumin dimer to appear at 138 kDa (69 x 2). The closest band to 138 kDa that SGS quantified was a high molecular weight impurity band of 133 kDa. (Tr. (Wilken) at 378:16-23.). If only the 133 kDa band is counted as dimeric rHSA (i.e., aggregated albumin), as Dr. Wilken did, the sample of Exbumin has only 1.13% aggregated albumin. (*Id.* at 378:16-23.). Dr. DeFilippi agreed that even if the bands at 133 kDa and 128 kDa are included as "aggregated albumin, the sample of Exbumin only has 1.74% aggregated albumin. (Tr. (DeFilippi) at 1276:20-1277:9.).

Figure 15: SGS May 2021 Test Results for Exbumin



Exbumin Lane 8 VEN00327	HMW impurities	133	626203	1.13	87
		~~128~~	~~335656~~	~~0.61~~	
		~~107~~	~~304187~~	~~0.55~~	
	Main band	69	47782826	86.56	
	LMW impurities	59	1835211	3.32	
		57	1540666	2.79	
		46	1948401	3.53	
		33	827989	1.50	
	Sum		55201333	100.00	

(JX-0129.0007-8 (annotated, copied from CBr. at 76).).

Similar to her opinion with respect to the data for Cellastim, Dr. Wilken testified that it would be inappropriate to count the impurities measured at 128 and 107 kDa in the Exbumin sample as aggregated albumin in view of the adopted construction for "recombinant mammalian albumin" and its necessary implications on the scope of "aggregated albumin." (Tr. (Wilken) at 378:24-379:7.). Dr. Wilken testified the impurities measured at 128 and 107 kDa, would comprise fragmented proteins that would necessarily fail to qualify as recombinant mammalian albumin fragments that "retain the biological or therapeutic activity of native mammalian albumin" because of the number of amino acids such fragmented proteins would be missing in view of the expected weight of an rHSA dimer (138 kDa) and the resulting loss in function. (*Id.*).

For example, the band at 107 kDa would consist of, at best, a 69 kDa monomer and a 38 kDa fragmented protein (the sum of which is 107 kDa), or two fragmented proteins of 53.5 kDa (same). Dr. Wilken testified and the evidence shows that because albumin has about 585 amino acids (*see, e.g.*, CX-0898.0002), in both scenarios described above, the fragmented proteins would lack a significant number of amino acids compared with native rHSA (roughly 131 amino

acids less for the 53 kDa fragmented protein ((69 – 53.5) / 68) and multiplied by 585), and roughly 262 amino acids less for the 38 kDa fragmented protein ((69 – 38) / 68) and multiplied by 585), and thus would necessarily lose a significant portion of their structure and function. (Tr. (Wilken) at 377:13-378:6, 378:24-379:7.). Such fragmented proteins are not "recombinant mammalian albumin" and thus cannot form "aggregated albumin" as claimed. (*Id.*). Dr. Wilken provided similar testimony with respect to the band at 128 kDa. (*Id.*).

Thus, the May 2021 SGS testing shows Exbumin has less than 2% aggregated albumin.

ii. Healthgen's Testing Shows Cellastim and Exbumin Have Less Than 2% aggregated albumin

Healthgen also tested two samples each of Cellastim and Exbumin under reducing and nonreducing SDS-PAGE. (Tr. (Wilken) at 379:18-380:11; RX-0310, RX-0311.). As shown in the annotated image from RX-0311, below, even under Healthgen's interpretation of the scope of "aggregated albumin" (i.e., adding up all HMW bands that appear above the main, monomeric rHSA band), both samples of Cellastim tested by reducing SDS-PAGE had below 2 percent aggregated albumin (1.5% and 1.0%, respectively), while one sample of Exbumin had below 2 percent aggregated albumin (1.4% with the other exactly at 2%). Dr. DeFilippi agreed. (Tr. (DeFilippi) at 1252:10-16 ("Q. So the two Exbumin samples, example [sic] 1 was right at 2 percent, and sample 2 was at 1.4 percent of aggregated albumin, correct? A. By this technique, correct. Q. And for Cellastim, both samples were below 2 percent, correct? A. By this technique, correct."); *see also id.* at 1254:7-17.).

Figure 16: Healthgen Test Results for Cellastim and Exbumin Under Reducing Conditions

REDUCING GEL

Cellastim S (2 µg), reduced, sample 1		
Band No.	Molecular Weight (kDa)	Band %
1	147.7	1.3
2	102.3	0.2
3	60.1	87.9
4	52.0	5.7
5	42.5	4.9

Cellastim S (2 µg), reduced, sample 2		
Band No.	Molecular Weight (kDa)	Band %
1	153.4	0.8
2	103.4	0.2
3	60.6	88.6
4	52.2	6.0
5	42.6	4.3

REDUCING GEL

Exbumin (2 µg), reduced, sample 1		
Band No.	Molecular Weight (kDa)	Band %
1	149.6	1.2
2	102.4	0.8
3	60.2	87.7
4	52.1	6.5
5	42.5	3.7

Exbumin (2 µg), reduced, sample 2		
Band No.	Molecular Weight (kDa)	Band %
1	155.5	1.1
2	103.4	0.3
3	60.9	89.1
4	52.6	5.2
5	42.9	4.3

(RX-0311.0002-3.).

Since this ID finds that reducing SDS-PAGE is an appropriate technique to measure aggregated albumin (*see* Section IV.F, *supra*), Dr. DeFilippi's testimony confirms that Cellastim and Exbumin have less than 2% aggregated albumin and therefore satisfy the technical prong of domestic industry. Moreover, using the correct scope of "aggregated albumin" and applying it to Healthgen's reducing SDS-PAGE data, the results show that both samples of Cellastim and both samples of Exbumin had less than 2% aggregated albumin. (Tr. (Wilken) at 382:1-384:17; *see also id.* at 384:18-386:21.).

For example, under reducing SDS-PAGE, Exbumin sample 2 has a main band at 60.9 kDa, i.e., the weight of an rHSA monomer. Dr. Wilken testified that in view of the weight of the main band (60.9 kDa), one would expect an albumin dimer to appear at 121.8 kDa. (*Id.* at 385:24-386:5.). Since there is no band near 121.8 kDa, Dr. Wilken selected the closest impurity to the value of the expected dimer at 121.8 kDa that was least twice the weight of the main band. (*Id.* at 385:24-386:5; CDX-0001C.0034-35.). If only the 155.5 kDa band is counted as dimeric

rHSA (i.e., aggregated albumin), which Dr. Wilken did, the sample of Exbumin has only 1.1% aggregated albumin.

As with the SGS data described above, Dr. Wilken testified that it would be inappropriate to count all HMW impurities measured in Exbumin sample 2 as aggregated albumin in view of the adopted construction for "recombinant mammalian albumin" and its necessary implications on the scope of "aggregated albumin." (Tr. (Wilken) at 385:24-386:13, 377:23-378:6385:24-386:13.).

For example, the band at 103.4 kDa would consist of, at best, a 60.9 kDa monomer and a 42.5 kDa fragmented protein (the sum of which is 103.4 kDa), or two fragmented proteins of 51.7 kDa (same). Dr. Wilken testified and the evidence demonstrates that because albumin has about 585 amino acids (*see, e.g.*, CX-0898.0002), in both scenarios described above, the fragmented proteins would lack a significant number of amino acids compared with native rHSA (roughly 88 amino acids less for the 51.7 kDa fragmented protein ((60.9 – 51.7) / 68) and multiplied by 585), and roughly 176 amino acids less for the 42.5 kDa fragmented protein ((60.9 – 42.5) / 60.9) and multiplied by 585), and thus would necessarily lose a significant portion of their structure and function. (Tr. (Wilken) at 377:23-378:6.). As Dr. Wilken testified, such fragmented proteins are not "recombinant mammalian albumin" and thus cannot form "aggregated albumin" as claimed. (*Id.*). Dr. Wilken conducted a similar exercise with other samples tested under reducing SDS-PAGE by Healthgen, and confirmed they have less than 2% aggregated albumin as measured by reducing SDS-PAGE. (*Id.*). at 384:3-17; 385:24-386:13.).

Using a similar analysis, Dr. Wilken concluded that both samples of Cellastim tested under nonreducing SDS-PAGE conditions have than 2% aggregated albumin. (*Id.* at 382:1-384:17.). For example, under nonreducing conditions, as shown in the annotated image of RX-

0311.0002-3 below, the main band for Cellastim sample 1 runs at about 52.5 kDa and thus the anticipated dimer would be around 105 kDa.

Figure 17: Healthgen Test Results for Cellastim and Exbumin Under Non-Reducing Conditions

NON-REDUCING GEL

Cellastim S (2 µg), non-reduced, sample 1		
Band No.	Molecular Weight (kDa)	Band %
1	118.2	2.3
2	109.3	1.9
3	52.5	83.9
4	44.4	6.5
5	34.6	5.2

Cellastim S (2 µg), non-reduced, sample 2		
Band No.	Molecular Weight (kDa)	Band %
1	124.0	2.2
2	114.0	1.1
3	52.7	87.1
4	44.1	6.0
5	34.4	3.6

NON-REDUCING GEL

Exbumin (2 µg), non-reduced, sample 1		
Band No.	Molecular Weight (kDa)	Band %
1	117.4	3.4
2	107.8	3.0
3	52.4	82.2
4	44.4	5.8
5	34.6	5.6

Exbumin (2 µg), non-reduced, sample 2		
Band No.	Molecular Weight (kDa)	Band %
1	121.4	2.6
2	112.4	1.4
3	52.6	86.5
4	43.9	6.6
5	34.4	3.5

(RX-0311.0002-3 (annotated, copied from CBr. at 81.).

The nonreducing SDS-PAGE data for Cellastim sample 1 indicates there are two HMW impurity bands at about 118.2 and 109.3 kDa. (Tr. (Wilken) at 382:25-384:2.). Dr. Wilken explained that if the 109.3 kDa is the dimeric band of albumin, which she selected because it is the band that is closest to the value of the expected dimer at 105 kDa that is at least twice the weight of the main band, then the Cellastim sample 1 has 1.9 percent aggregated albumin as tested by nonreducing SDS-PAGE. (*Id.* at 382:25-383:15.). Dr. Wilken testified that the 118.2 kDa band "doesn't appear to represent formation of aggregates of the albumin monomer" and thus does not fall under the proper scope of "aggregated albumin" in view of the adopted construction for "recombinant mammalian albumin." (*Id.*). Dr. Wilken conducted a similar exercise with Cellastim sample 2 and Exbumin sample 2, and confirmed they have less than 2% aggregated albumin as measured by reducing SDS-PAGE. (*Id.* at 384:3-17; 385:24-386:13.).

For the foregoing reasons, Ventria has proven by a preponderance of evidence that the DI Products meet this limitation of claim 1 of the ’951 patent.

3. OptiPEAK HEK293t, OptiPEAK T Lymphocyte, OptiVERO, and ITSE™ + A

Dr. DeFilippi conceded that if Cellastim satisfies the technical prong of domestic industry, Ventria products OptiPEAK HEK293t, OptiPEAK T Lymphocyte, OptiVERO, and ITSE™ + A would also satisfy the technical prong of domestic industry. (Tr. (DeFilippi) at 1244:15-18 (“Q. And if Cellastim meets the aggregated albumin limitation, then OptiVERO, OptiPEAK, and ITSE + A Ventria products also are domestic industry products, right? A. I think one could conclude that.”).).

As Mr. Deeter and Dr. Wilken confirmed, each of these complete media products [redacted]. (Tr. (Deeter) at 148:4-12, 192:3-10; Tr. (Wilken) at 368:2-15.). Thus, they practice the asserted claims for the same reasons set forth above for Cellastim. (Tr. (Wilken) at 368:16-369:1.).

X. INVALIDITY

A. Legal Standards

1. Anticipation

A determination that a patent is invalid as being anticipated under 35 U.S.C. § 102 requires a finding, based upon clear and convincing evidence, that each and every limitation is found either expressly or inherently in a single prior art reference. *See Celeritas Techs. Inc. v. Rockwell Int’l Corp*., 150 F.3d 1354, 1361 (Fed. Cir. 1998). Anticipation is a question of fact, including whether a limitation, or element, is inherent in the prior art. *In re Gleave*, 560 F.3d 1331, 1334-35 (Fed. Cir. 2009). The limitations must be arranged or combined the same way as in the claimed invention, although an identity of terminology is not required. *Id.* at 1334 (“the

reference need not satisfy an *ipsissimis verbis* test"); MPEP § 2131.

In addition, the prior art reference's disclosure must enable one of ordinary skill in the art to practice the claimed invention "without undue experimentation." *Gleave*, 560 F.3d at 1334-35. A prior art reference that allegedly anticipates the claims of a patent is presumed enabled; however, a patentee may present evidence of nonenablement to overcome this presumption. *Impax Labs., Inc. v. Aventis Pharmaceuticals Inc.*, 468 F.3d 1366, 1382 (Fed. Cir. 2006). "[W]hether a prior art reference is enabling is a question of law based upon underlying factual findings." *Gleave*, 560 F.3d at 1335.

2. Obviousness

Under 35 U.S.C. § 103(a), a patent is valid unless "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made" to a person having ordinary skill in the art. 35 U.S.C. § 103(a). The ultimate question of obviousness is a question of law, but "it is well understood that there are factual issues underlying the ultimate obviousness decision." *Richardson-Vicks*, 122 F.3d 1476, 1479 (Fed. Cir. 1997) (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966)).

After claim construction, "[t]he second step in an obviousness inquiry is to determine whether the claimed invention would have been obvious as a legal matter, based on underlying factual inquiries including: (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) secondary considerations of non-obviousness." *Smiths Indus. Med. Sys., Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1354 (Fed. Cir. 1999) (citing *Graham*, 383 U.S. at 17). The existence of secondary considerations of non-obviousness does not control the obviousness determination; a

court must consider "the totality of the evidence" before reaching a decision on obviousness. *Richardson-Vicks*, 122 F.3d at 1483.

The Supreme Court clarified the obviousness inquiry in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 389 (2007). The Supreme Court said:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* and *Anderson's-Black Rock* are illustrative–a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.
>
> Following these principles may be more difficult in other cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit.
>
> * * *
>
> The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

KSR, 550 U.S. at 417-19.

The Federal Circuit has since held that when a patent challenger contends that a patent is invalid for obviousness based on a combination of several prior art references, "the burden falls

on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007) (citations omitted).

> The TSM[27] test, flexibly applied, merely assures that the obviousness test proceeds on the basis of evidence--teachings, suggestions (a tellingly broad term), or motivations (an equally broad term)--that arise before the time of invention as the statute requires. As *KSR* requires, those teachings, suggestions, or motivations need not always be written references but may be found within the knowledge and creativity of ordinarily skilled artisans.

Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc., 520 F.3d 1358, 1365 (Fed. Cir. 2008).

B. The Scope and Content of the Prior Art

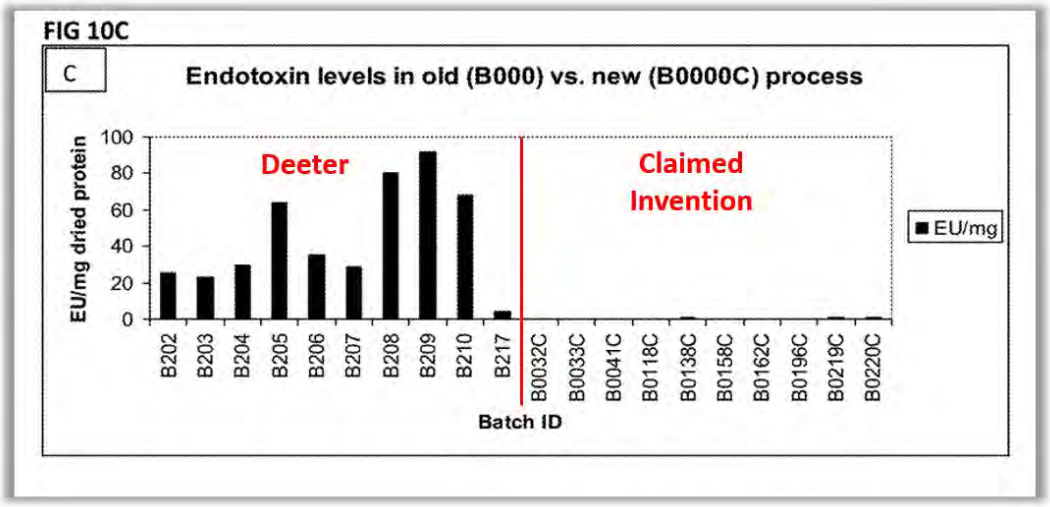
Both Van Urk and Berezenko relate to albumin produced by recombinant ***yeast***, and not albumin produced by a recombinant ***plant***, as claimed in the '951 patent. In contrast, Deeter relates to Ventria's own first-generation rice-derived rHSA products (aka "old Cellastim"), a reference and product that was expressly cited during prosecution of the '951 patent, and which lacks key elements of the claimed invention, as recognized by the examiner. (Tr. (Wilken) at 1032:17-1034:23, 1062:9-1063:19; JX-0002.0053, 0661, 0664, 0686, 0704, 0705, 0726-28.).

Deeter was cited multiple times during prosecution of the '951 patent as allegedly rendering the claimed albumin compositions obvious. (Tr. (Wilken) at 1062:14-20.) The applicant overcame the rejections by demonstrating unequivocally through ***data and evidence*** that the claimed recombinant albumin compositions were patentable over the recombinant

[27] TSM is an acronym that stands for teaching, suggestion, motivation.

albumin compositions disclosed in Deeter because of the claimed recombinant albumin compositions' unique structural and functional characteristics as compared with that reference. (JX-0002.0661, 0664, 0704-05; Tr. (Wilken) at 1062:21-1063:19.). The same distinctions are also reflected in the '951 patent. (*See* JX-0001 at Example 6, Fig.10C, Tables E3-E4.). That is, the '951 patent, as filed, contained a significant amount of comparative data distinguishing the rHSA claimed in the '951 patent from the rHSA disclosed in Deeter. For example, the endotoxin levels for the majority of the old Cellastim (Deeter) products that were tested had levels ranging from 23.1 EU/mg up to 91.8 EU/mg (average of 45.0 EU/mg), whereas those of the claimed invention were consistently less than 1 EU/mg, as shown in the annotated version of '951 patent Figure 10C below.

Figure 18: Figure 10C of the '951 Patent



(JX-0001 at Fig. 10C (annotated, copied from CRBr. at 25).).

Cell viability was also seen to decrease dose-dependently when using the old Cellastim (Deeter) in cell culture. (*Id.* at Tables E3, E4.). As applicant's declarant explained, through the invention of the '951 patent, Ventria was able to achieve the claimed albumin compositions with

consistent endotoxin levels for every batch tested below 1 EU/mg, and which avoided the dose-dependent negative impact on cell viability of Deeter. (JX-0002.0709-13.). As a result, the examiner withdrew its objections based on Deeter, noting that the data demonstrates "the compositions of Deeter et. al. are incapable of achieving the claimed less than 1 EU of endotoxin/mg of albumin and that the levels of endotoxins in the cell culture medium were not appreciated at the time of Deeter's invention." (JX-0002.0726-27; *see also* Tr. (Wilken) at 1070:12-24.).

Healthgen asserted Huang against claims 12 and 13 only. As Dr. Wilken explained, the Huang reference does not provide additional information with respect to Healthgen's allegations beyond that which is already disclosed in Deeter. (Tr. (Wilken) at 1073:12-15.). Huang merely discusses methods of improving the upstream process of producing rHSA in a rice cell culture that is secreted into the media, i.e., improving production, and not on achieving any composition capable of encompassing the claims of the '951 patent. (*Id.* at 1073:16-22; JX-0028.). As with Deeter and Berezenko (and the substance of Van Urk), the Huang reference was before the examiner during prosecution. (JX-0001.0003.).

C. The Prior Art References Do Not Anticipate the Asserted Claims of the '951 Patent

1. Claim 1

a) Healthgen Failed to Demonstrate that Each Claim Element Is Present in Either Van Urk or Berezenko

As an initial matter, Healthgen failed to demonstrate that each of the claim limitations is present in either Van Urk or Berezenko. For example, Healthgen asserted that both Van Urk and Berezenko disclose a cell culture media supplement comprising a recombinant mammalian albumin that is produced in a transgenic plant. (RBr. at 7-9, 18-19.). However, Dr. Wilken

explained that "neither the Van Urk nor Berezenko [references] . . . disclose any proteins produced in a transgenic plant, specifically recombinant mammalian albumin in a transgenic plant, certainly not a recombinant human serum albumin in a transgenic plant, certainly not in transgenic grain or transgenic rice." (Tr. (Wilken) at 1066:12-18.). Dr. DeFilippi acknowledged that the "Van Urk reference, like Berezenko, is directed to a human serum albumin product derived from yeast." (Tr. (deFilippi) at 951:20-23.).

Berezenko does not disclose any recombinant mammalian albumin produced in a transgenic plant ***at all***, for use in a cell culture media or otherwise. The only Berezenko quotation Healthgen cited as support for its alleged disclosure of the plant limitation is the following: "Many expression systems are known, including . . . plant cells." (RBr. at 19; JX-0027 at 3:39-43.). However, as Ventria pointed out, this quote does not say that such expression systems can be used for recombinant mammalian proteins, nor does it say that any such proteins can be used to create a cell culture media supplement. (CRBr. at 5.). It simply discloses the statement that expression systems in plants were known.[28]

Likewise, Healthgen failed to show that Van Urk discloses a cell culture media supplement or complete media composition comprising a recombinant mammalian albumin that is produced in a transgenic plant. Van Urk's disclosure with respect to cell culture is purely aspirational, stating that it "***may*** be fulfil [sic] various roles" and "***may*** be used." (JX-0030.0025 (emphases added).). Van Urk does not contain any disclosure, plant-related or otherwise, of any such albumin actually being used as a cell culture media supplement. (*See generally*, JX-0030.).

Healthgen has also asserted that both references disclose a recombinant mammalian

[28] The word "plant" only appears in one other portion of Berezenko, in the context of a manufacturing facility (i.e., manufacturing plant), not "plant," the organism. (JX-0027 at 31:35-40.).

albumin for use in a cell culture comprising less than 1 EU of endotoxin/mg of albumin. (RBr. at 7-9. 11-14, 18-19, 21-22.). Critically, Healthgen failed to demonstrate the recited endotoxin level in either reference. For example, endotoxin is mentioned in only two (2) passages of Van Urk. One passage is in the Examples, which merely indicates a "solution of drug product" was assayed for endotoxin levels. (JX-0030.0074.). Van Urk does not indicate what this "solution of drug product" is ("drug product" is only mentioned in this one passage without an antecedent basis), or provide details concerning the "solution of drug product's" composition, how it was made, or how it was purified. (*Id.*). The second mention is similarly deficient. Healthgen asserted that Van Urk discloses the albumin as being "'essentially free' of endotoxin." (RBr. at 12.). As Ventria noted, the quote is incomplete and misleading. Rather than stating that the disclosed product is specifically free of endotoxin, Van Urk instead states that the albumin is characterized as being essentially free of any number of optional characteristics, including the word "or" directly prior to the word "endotoxin," denoting these characteristics are not necessarily present. The full quotation is as follows:

Figure 19: Quotation from Van Urk

The albumin is also characterised by extremely low levels of, or by being essentially free of, aluminium, lactate, citrate, metals, non-albumin human proteins, such as immunoglobulins, pre-kallikrein activator, transferrin, α_1-acid glycoprotein, haemoglobin and blood clotting factors, prokaryotic proteins, fragments of albumin, albumin aggregates or polymers, or endotoxin, bilirubin, haem, yeast proteins, animal proteins and viruses. By essentially free is meant below detectable levels.

(JX-0030.0023 (annotated, copied from CRBr. at 6).).

There is no disclosure here of recombinant mammalian albumin for use in a cell culture that actually contains such levels of endotoxin. Moreover, the quoted section specifically relates to "fungal cell[s]," and not transgenic plants. (*Id.*).

The disclosures of Van Urk also do not show data that demonstrate that the yeast compositions are endotoxin-free, much less that it has less than 1 EU of endotoxin/mg of albumin. (*Id.*). Nor is there any evidence that the disclosure of "no detectable endotoxin" is with respect to a specific type of ***yeast***-derived rHSA. The statement was made with respect to an unknown product, as part of a list of potential characteristics, many of which are merely aspirational, as Dr. Wilken explained. (Tr. (Wilken) at 1067:23-1068:8.). Similarly, endotoxin is mentioned only twice in Berezenko, both in the context of non-descript, aspirational statements of potential characteristics, noting there can be "extremely low levels of, or . . . being essentially free of" a laundry list of possible substances, of which endotoxin is only one (JX-0027 at 1:42-48), and "[t]he medium for rHA production [in yeast-derived Example 1] ***can be*** ultrafiltered (10,000 Mol. Wt. cut-off) to remove endotoxins." (*Id.* at 7:15-20 (emphasis added); Tr. (Wilken) at 1068:22–1069:4.). Berezenko does not show any data associated with its claim that the yeast compositions are endotoxin-free, much less that it has less than 1 EU of endotoxin/mg of albumin. (*See generally*, JX-0027.). Thus, Berezenko fails to disclose any formulations that actually have less than 1 EU endotoxin/mg of albumin. (*Id.*).

Healthgen also failed to demonstrate that Van Urk discloses recombinant albumin comprising less than 2% aggregated albumin, yeast-derived or otherwise. Dr. DeFilippi based his opinion on a single sentence from Van Urk that concerns the monomer content of the yeast-derived rHSA as tested by reducing SDS-PAGE, a test which he otherwise has asserted is inappropriate for quantification of aggregate or monomer albumin content. (CBr. at 31-33.). During the Hearing, Dr. DeFilippi contradicted himself, asserting that the analysis in Van Urk was not based on reducing SDS-PAGE. However, during cross-examination, he acknowledged that given his position on infringement, his invalidity opinion is a "bit of a stretch." (Tr.

(DeFilippi) at 959:22-963:25.). Dr. DeFilippi's inconsistent assertion that "Van Urk did not purport to quantify the level of aggregated albumin using Reducing SDS-PAGE" has been given little, if any, weight. Thus, Healthgen failed to present any evidence regarding the monomer content disclosed in Van Urk. (RBr. at 15; *see also* CBr. at 31-33.).

For the foregoing reasons, Healthgen failed to prove by clear and convincing evidence that claim 1 is anticipated by Van Urk or Berezenko.

b) Healthgen Failed to Demonstrate Each Claim Limitation Is Present in the Combination Claimed in the '951 Patent, or that a Person of Ordinary Skill in the Art Would at Once Envisage Such a Combination

Healthgen's anticipation argument fails for the separate reason that Healthgen failed to demonstrate that each limitation is present in either Van Urk or Berezenko in the combination claimed in the '951 patent, or that one of ordinary skill would at once envisage such a combination. *See Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d 1376, 1381 (Fed. Cir. 2015). It is not enough for Healthgen to argue that the expression of recombinant proteins in plants was allegedly disclosed, and that certain disclosed yeast-derived products allegedly had less than 1 EU of endotoxin and less than 2% aggregates. To meet its burden, Healthgen must demonstrate, by clear and convincing evidence, that Van Urk and Berezenko specifically disclose a cell culture media supplement comprising a recombinant mammalian albumin that is produced in a transgenic plant, and which itself having been produced in a transgenic plant also contains less than 1EU endotoxin/mg albumin and less than 2% aggregated albumin. Healthgen failed to do so because each of the alleged statements with respect to aggregates and endotoxin from Van Urk and Berezenko relate to yeast-derived rHSA, not plant-derived rHSA, and a person of ordinary skill would recognize the inapplicability of yeast-related disclosures to plant-

derived proteins.

For example, literature published before and after the invention date, the prosecution history of the ’951 patent, statements by Healthgen inventors with respect to their own rice-produced rHSA, the knowledge of a person of ordinary skill at the time of the invention, the disclosure and data set forth in the ’951 patent, and the testimony of Dr. Wilken all establish that “recombinant mammalian albumin” “produced in a transgenic plant” confers the claimed albumin compositions with markedly different structural properties when compared with recombinant mammalian albumin produced in non-plant host cells, including animals and yeast (such as those of Van Urk and Berezenko). (*See* Section X.C.1(c)-(d), *infra*; Tr. (Wilken) at 1047:21-23.).

One of ordinary skill would understand that the teachings of Van Urk or Berezenko with respect to endotoxin or albumin levels (to the extent there are any) would be specific to yeast-derived recombinant albumin and, therefore, inapplicable to plant-derived recombinant albumin. (*See* Section X.C.1(c), *infra*.). Thus, that Van Urk and Berezenko mention the word “plant” does not change the fact that neither contains teachings or disclosure of the specific combination of claim elements present in claim 1 of the ’951 patent.

c) A Person of Ordinary Skill in the Art Would Understand Disclosures Specific to Yeast-Derived rHSA Would Not Read on Plant-Derived rHSA

As Dr. Wilken explained, plants and yeast are from entirely different kingdoms, and have significant structural and functional differences. (Tr. (Wilken) at 1022:21–1023:14.). Whereas plants are multicellular organisms and are autotrophs, meaning they harness energy from the sun, yeast are unicellular heterotrophs. (*Id.* at 1023:15-25.). These differences greatly alter their physiology, and in turn present a “different profile of impurities,” which necessarily alters the

methods used to purify the recombinant protein away from such impurities. (*Id.* at 1025:9-12.). Even within the same host organism, extraction methods and downstream processing steps such as purification methods vary greatly based on where the recombinant protein is expressed. (*Id.* at 1025:13-20, 1029:2-15.). For example, some methods of generating recombinant proteins, such as that of the DI products practicing the '951 patent, utilize a seed-based expression system, whereby the recombinant protein is expressed within the plant seed, but not in the other parts of the plant such as the leaves or roots. (*Id.* at 1028:14-20, 1029:16-20.). Other plant-based expression systems accumulate the recombinant protein elsewhere, such as the leaves. (*Id.* at 1029:2-6.). As Dr. Wilken explained, "if you express something within a seed, that's going to be -- it would look differently than if you express it within a leaf. That's because we have different impurities and we need to address those impurities differently." (*Id.* at 1025:13-20.). Thus, even within the same host organism, the choice of expression system can greatly alter the required downstream processing steps, such as the particular techniques required for purification. (*Id.* at 1025:13-20, 1029:2-15.).

Dr. Wilken explained that yeast-derived recombinant proteins such as those of Van Urk and Berezenko are grown in an extracellular bio-reactor based system, rather than extracted from the tissue of a plant grown in a field. (*Id.* at 1026:1-1027:5, 1029:21-1030:3.). She testified that in such bio-reactor systems, the recombinant protein is grown in a cell culture in a lab, in media which contains the nutrients required for those cells to grow, with the recombinant protein being secreted directly into the media. (*Id.* at 1026:1-9, 1026:22-1027:13.). As the cell culture grows, it consumes some of those nutrients, resulting in depleted media. Dr. Wilken explained that this means the media (containing the recombinant protein) has depleted a certain amount of the nutrients but will also contain waste products. (*Id.* at 1029:19-1030:19.). This results in a "very

different" impurity profile than would be associated with plant-based recombinant proteins. (*Id.*). Furthermore, Dr Wilken explained that bio-reactor expression systems are accomplished under conditions in which the laboratory workers can sterilize the media prior to inoculating the culture, which allows for control over the process and any potential contaminants that may be introduced. (*Id.* at 1026:10-17.). In contrast, as Dr. Wilken explained, seed-based proteins derived from plants are grown in a field, where they are exposed to bacteria and therefore, endotoxins. (*Id.* at 331:23–332:15.). Consequently, the process of growing yeast-based recombinant proteins in a lab will "certainly" result in a different background of impurities than expected from a rice-seed based expression system. (*Id.* at 1030:14-19.).

Furthermore, Dr. Wilken testified that due to albumin's numerous fatty acid binding sites, there are a wide variety of fatty acids with differing characteristics that can bind to these sites on the albumin, with the type of fatty acid differing based on the production system, e.g., rice or yeast.

> Q. What kind of fatty acids do we find bound to albumin?
>
> A. Those would be based on the production system.
>
> Q. What do you mean they are based on the production system?
>
> A. Those fatty acids are coming from whatever, for example, yeast or potentially rice. Those -- that is where the fatty acids are introduced into the HSA.
>
> Q. Do you expect, as one of skill in the art, to have different molecules, different substances, bound to those fatty acid binding sites dependent on which host the recombinant human serum albumin was produced in?
>
> A. Absolutely. There's a wide variety of various fatty acids and fatty acid structure. It's a general term that has certain characteristics, but that how many – how long the carbon chain is and the particular either saturated or unsaturated, the bonds present, would depend on what organism is producing those fatty acids.

(*Id.* at 1037:10-1038:2.).

She explained that these fatty acids have been demonstrated to co-purify, i.e., remain with the albumin when extracted from the host, leaving a fingerprint on the final product composition and impacting the overall function and performance of the product. (*Id.* at 1038:3-17.).

Dr. Wilken also explained that the difference between yeast-based rHSA systems such as those of Van Urk and Berezenko, and plant-based systems such as that of the '951 patent, directly affects the real-world extraction and purification techniques required to prepare properly functioning albumin products, and to separate the recombinant proteins from those varying impurities. (*Id.* at 1042:4-22; CX-0901-0003.). For example, Dr. Wilken testified that yeast-based and rice-based recombinant albumin have been shown to have different isoelectric points, which is a factor that is "very important" to a skilled artisan because it can affect the interactions between the "product and any impurity present in the extract," as well as impact "charge-based separation" techniques. (Tr. (Wilken) at 1042:4- 22.). She stated that the isoelectric point is the pH for which a protein carries a net zero charge. (*Id.* at 1043:1-7.). Dr. Wilken clarified that if the pH rises above the isoelectric point, the protein will carry a negative charge, and if below the isoelectric point, it will carry a positive charge. (*Id.*). She also explained that purification techniques, including the chromatography methods Healthgen asserted would be employed to remove endotoxin, utilize ***electric charge to accomplish the separation***, and as a result, the laboratory worker needs to select the proper pH to provide the charge needed to purify or extract the protein from the various impurities. (*Id.* at 1043:8-17; RBr. at 36 ("purification processes described in Van Urk and Berezenko, e.g., DEAE-Sepharose chromatography, which ***separates endotoxins from recombinant albumin by the difference in their charges***") (emphasis added).).

Given the foregoing, the recovery and purification of recombinant proteins and the

identification of extraction conditions remains the subject of intense experimentation that is typically done on a case-by-case basis because it depends on the particular expression system being used as well as the requirements and intended applications of the recombinant protein. (CX-1051; JX-0139.). As of the priority date for the ’951 patent, and thereafter, the industry recognized significant advancements were needed with respect to downstream processing for plant-based recombinant systems. (CX-0901.0013; Tr. (Wilken) at 1058:19-1060:1.). Notably, in 2018, Healthgen’s President, Daichang Yang, authored a book chapter discussing the challenges associated with developing downstream processing techniques (e.g., purification) for the recovery of rHSA. (JX-0023.0004; Tr. (Wilken) at 1057:3–1058:1.). As Dr. Wilken explained, there is no “one-size-fits-all approach’ for developing downstream processes (e.g., purification methods) for recombinant proteins. (Tr. (Wilken) at 1056:6-1057:2; *see also* JX-0139.). There are multiple production platforms, expression strategies and extraction and purification processes which result in differing outcomes depending on the methods used. (CX-0901; CX-0896.). Thus, a person of ordinary skill would have understood that plant and yeast-derived rHSA are not interchangeable, and that any given finding or technique used with yeast would not inform or read upon plants. (Tr. (Wilken) at 1071:1-24.).

d) The Substance of Both References Was Already Considered by the PTO

The claims of the ’951 patent have already survived a challenge based on the same assertion Healthgen made: that they are anticipated by prior art disclosures which are specific to yeast-derived rHSA.

For example, the patent examiner initially rejected certain claims as anticipated by the Berezenko reference. (JX-0002.0562; Tr. (Wilken) at 1060:22-1062:6.). In overcoming this and

other rejections, the applicant argued that "those skilled in the art would immediately recognize that the recombinant albumin produced in a transgenic plant will be different from a naturally occurring mammalian albumin" for numerous reasons, and that this difference is "exemplified by the data" disclosed in the application. (JX-0002.0662.). The applicant also explained that the Berezenko reference relates to the yeast-derived Novozymes CellPrime product for which comparative data was disclosed. (*Id.* at 0663-64.). Such data showed the difference between the claimed plant-derived rHSA and Berezenko's yeast-derived rHSA, including data that Ventria's plant-derived rHSA is five-times more active in promoting cell viability than the yeast-derived HSA. (JX-0001.0021; JX-0002.0663-64; Tr. (Wilken) at 1047:24-1049:15, 1061:10–1062:6.). In recognition of the difference between the two (2) systems, the examiner withdrew the rejection, and acknowledged that the specification and data contained therein demonstrated the "mammalian albumin produced in a transgenic plant has differential effects on the cultured cells in comparison to other expression systems," and that the products of the patent are "distinct" from those of the prior art. (JX-0002.0686, 0687; JX-0002.0661; JX-0002.0727-28.). Thus, the evidence shows the PTO was well-aware of and had expressly considered yeast-derived rHSA systems, including that of Berezenko.

Healthgen asserted that Van Urk was not considered by the PTO. However, Healthgen did not dispute that the substance from Van Urk upon which Healthgen relied was also contained in Berezenko. First, the disclosed technology in Van Urk is from the same applicant (Delta Biotechnology Limited) and research group whose work in yeast-derived albumin (Berezenko) was the basis for the examiner's initial anticipation rejection. (Tr. (DeFilippi) at 929:23-930:12; JX-0027.0001; JX-0030.0001.). Second, as Dr. Wilken explained, the content of both references is consistent with one another. (Tr. (Wilken) at 1065:15-1066:9.). Moreover, Dr. DeFilippi

acknowledged that the portions of Van Urk upon which he relied for his opinions on anticipation are "very similar" to those of Berezenko. (Tr. (DeFilippi) at 951:24–952:2, 956:6-9.

e) Neither Reference Enables the Production of the Claimed Product

To be anticipatory, a reference must not only disclose each element as arranged and combined in the claim, but must also enable the asserted claim, such that a person of ordinary skill in the art "can practice the subject matter based on the reference, without undue experimentation." *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1082 (Fed. Cir. 2008) (citations omitted). As Dr. Wilken explained, neither Van Urk nor Berezenko accomplish this because there are no details or guidance in either disclosure that would put one of ordinary skill in possession of the claimed albumin compositions without burdening them with undue experimentation. (Tr. (Wilken) at 1066:22-1067:4.).

Van Urk only mentions the term "plant" five (5) times in passing throughout its 103-page disclosure, while Berezenko only mentions the term "plant" in passing, each time in the context of general, laundry-list statements alleging the teachings are applicable to any type of organism—plant, bacteria, animal, etc.—without accompanying data, instructions, evidence, disclosure, or experiments demonstrating how such non-yeast organisms can be genetically modified to express rHSA, and that said rHSA could successfully be produced, extracted, and purified therefrom. (*Id.* at 1067:6-22, 1068:10-20; JX-0030 at 16:13-19; JX-0027 at 31:27-41, 3:39-46.). The only working examples in each reference involve rHSA derived from yeast. (JX-0030 at 15:5-9; JX-0027 at 1:11-17, 2:13, 5:10-32:67; Tr. (Wilken) at 1067:12-22, 1068:13-16.). None of the examples describes the transfection, growth, production, extraction, or purification of rHSA from any other organism, including other types of yeast. (*See generally*, JX-0030; JX-

0027.).

Moreover, both references disclose numerous permutations without any guidance as to which of the possibilities for transfection, production, extraction, and purification would result in the claimed plant-derived compositions. (JX-0027 at 11-12, 12:65-13:7, 16:63-17:4, 18:55-66; JX-0030 at 5:1-11, 6:8-17, 7:14-27.). As Dr. Wilken explained, there is no "one-size-fits-all approach" for developing downstream processes for recombinant proteins. (Tr. (Wilken) at 1056:6-1057:2.). Even years after the priority date for the '951 patent, there remained a significant amount of experimental design required to properly express and purify recombinant proteins, with such designs typically being done on a case-by-case basis. (*See* Section X.C.1; *see generally* Tr. (Deeter) at 151:22-154:23.).

2. Claim 11

Claim 11, which depends from claim 1, further limits the claimed recombinant mammalian albumin to rHSA. (JX-0001 at cl. 11.). As discussed above in Section X.C.1, neither Van Urk nor Berezenko disclose the claimed recombinant mammalian albumin, and therefore also do not disclose rHSA.

Accordingly, Healthgen failed to prove by clear and convincing evidence that claim 11 of the '951 patent is anticipated by Van Urk or Berezenko.

3. Claims 12 and 13

Claim 12 recites: The composition of claim 1, wherein said transgenic plant is a transgenic grain. (JX-0001 at cl. 12.). Claim 13 further limits said transgenic grain to transgenic rice. (*Id.* at cl. 13.). Healthgen is no longer asserting that Berezenko anticipates claims 12 or 13, or that Van Urk anticipates claim 13. (Tr. (DeFilippi) at 933:12-22, 951:14-19.). Healthgen's sole argument with respect to the alleged anticipation of these dependent claims is that Van Urk

anticipates claim 12. As discussed above in Section X.C.1, Van Urk does not disclose a recombinant, plant-produced protein, much less the claimed plant-produced recombinant mammalian albumin compositions. For the same reasons, Van Urk does not disclose a recombinant mammalian albumin produced in a transgenic grain, which is a specific type of plant.

Notably, the term "grain" is not mentioned even once in Van Urk. (*See generally*, JX-0030.). As Dr. Wilken explained, Van Urk fails to "disclose any proteins produced in a transgenic plant . . . [and] certainly not in transgenic grain." (Tr. (Wilken) at 1066:12-18.). Healthgen argued that Van Urk meets the transgenic grain limitation because it contains the word "corn (maize)." (RBr. at 17.). Importantly, Healthgen's argument directly contradicts Dr. DeFilippi's admission that Van Urk does not disclose a process for obtaining rHSA from said corn.

> Q. But Van Urk has no -- explains no process specifically for expressing the product from the corn, does it?
>
> A. From the point of view of genetics and expression, he does not specifically describe the genetics -- the way to get the gene into corn. I believe that is correct.

For the reasons discussed above, Healthgen failed to prove by clear and convincing evidence that claims 12 and 13 of the '951 patent are anticipated by Van Urk.

D. The Prior Art References Do Not Render Obvious the Asserted Claims of the '951 Patent

1. A Person of Ordinary Skill in the Art Would Not Be Motivated to Combine Deeter with Van Urk or Berezenko

To prove obviousness based on a combination of references, Healthgen must explain why a person of skill in the art would have been motivated to combine specific references and reasonably expect success in achieving the claimed invention. *Personal Web Techs. LLC v.*

Apple, Inc., 848 F.3d 987, 993 (Fed. Cir. 2017). For the following reasons, Healthgen failed meet its burden.

As discussed above in Section X.B, although Deeter is directed to old Cellastim, a plant-derived HSA product, Van Urk and Berezenko concern the purification of yeast-derived HSA. Given the vast differences between plant-derived and yeast-derived products, a POSA would not look to the disclosures of Van Urk or Berezenko, which call out purification steps specific to particular yeast-derived impurities. (Tr. (Wilken) at 1071:8-13; Section X.C.1(c).).

For example, both Van Urk and Berezenko confirm that their purification steps are tailored specifically to yeast and removing yeast contaminants/impurities. Van Urk states that the steps in its purification process are designed to "give increased yeast antigen clearance" (JX-0030.0001), and then describes how multiple steps in its purification process "removes yeast antigens." (*Id.* at 0056.). Similarly, Berezenko states that "rHA is concentrated and purified with respect to at least yeast antigens," and proceeds to make similar statements regarding the purpose of its affinity, anion exchange, and gel permeation chromatography steps. (JX-0027.0013.).

Dr. Wilken explained that in contrast with terrestrial systems (e.g., plants grown in a field), the yeast-specific proteins of Van Urk and Berezenko are grown in a bio-reactor and secreted directly into the media, which alters the profile contaminants introduced through the process. (Tr. (Wilken) at 1026:1-17, 1029:19-20.). Accordingly, it "would not be suitable to apply one particular system to the other" given the "need to discriminate between the properties of the impurities and the recombinant protein." (*Id.* at 1071:8-19.).

Healthgen failed to demonstrate why a person of ordinary skill in the art would have been motivated to modify the "entirely plant-based" compositions of Deeter with any alleged

purification techniques disclosed in Van Urk and Berezenko for yeast-derived rHSA. Dr. DeFilippi testified that he could not recall having seen any peer-reviewed literature discussing the use of a purification system designed for one transgenic species for a different transgenic species. (Tr. (DeFilippi) at 950:20-25.). As explained above in Section X.C.1(c), given the stark differences between recombinant proteins produced in a transgenic plant from yeast-derived proteins, one of ordinary skill would not look to disclosures focused solely on yeast-produced proteins in an attempt to modify the plant-specific disclosure of Deeter.

2. Deeter in View of Van Urk or Berezenko

a) Claim 1

Deeter does not disclose a recombinant mammalian albumin produced in a transgenic plant which has less than 1 EU endotoxin/mg albumin, nor do Van Urk or Berezenko. (*See* Section X.C.1, *supra*.). As Dr. DeFilippi acknowledged, before 2009, there was no rHSA produced in transgenic rice that was free from endotoxin or had less than 1EU of endotoxin per milligram of albumin, including the product of Deeter. (Tr. (DeFilippi) at 980:7-12.).

Healthgen argued that both Van Urk and Berezenko describe purification processes that achieved less than 1EU of endotoxin/mg of HSA, and that a person of ordinary skill would expect that further purifying the rHSA of Deeter would result in rHSA containing less than 1 EU endotoxin/mg albumin. (RBr. at 40-43.). This is incorrect. As discussed above, endotoxin is only mentioned in a single passage of Van Urk, which merely indicates a "solution of drug product" was assayed for endotoxin while Berezenko merely indicates the medium for rHA production "***can be***" filtered to remove endotoxins. (*See* Section X.C.1, *supra*.). Neither reference describes any yeast-derived rHSA (much less plant-derived) being free of or having any particular level of endotoxins, or which of the limitless sets of yeast-specific purification

permutations would allegedly result in rHSA with the level of endotoxins claimed in the ’951 patent. (*Id.*). Neither reference provides data associated with a claim that either composition may allegedly be free of or have low levels of endotoxin. (*Id.*).

Dr. Wilken explained that plant-derived and yeast-derived HSA will have different impurity profiles, which will alter their isoelectric points and, in turn, will fundamentally alter the purification process and ability to separate albumin from such impurities based on electric charge. (*See* Section X.C.1(c) *supra*; Tr. (Wilken) at 1042:4–1043:17.). This includes the separation of endotoxin from albumin, which Healthgen acknowledged is accomplished “by the differences in their charges.” (RBr. at 36.). Thus, one of ordinary skill would not expect that the processes of Van Urk or Berezenko would be applicable to the removal or endotoxin from the plant-derived proteins of Deeter, much less to the claimed limit of 1 EU/mg albumin. (Tr. (Wilken) at 1069:9-1070:3.).

Healthgen contended that the isoelectric point is irrelevant because “Ventria’s own cited document shows that” certain albumin has consistent isoelectric values. (RBr. at 40 n.9.). However, Healthgen did not cite to any Ventria documents in support. Instead, Healthgen cited to one of its own internal documents that does not relate to a comparison of yeast-derived and plant-derived HSA, but rather the isoelectric point of Healthgen’s infringing plant-based OsrHSA and certain plasma-derived HSA. (JX-0009C.0028 (“Results show that OsrHSA and pHSA have…”).).

Moreover, Healthgen failed to provide any evidence that purification of the product of Deeter with any alleged process of Van Urk or Berezenko would result in the claimed composition. Healthgen asserted, based solely on Dr. DeFilippi’s testimony and without any documentary support, that a process which removed endotoxin from albumin would be expected

to work regardless of whether the albumin was produced in rice or yeast.[29] (RBr. at 40.). Healthgen's failure to provide documentary support for this position is informative, particularly given the fact that Dr. DeFilippi admitted he "do[es] not" have "experience producing or purifying recombinant proteins in plants." (Tr. (DeFilippi) at 920:19-21.).

Deeter also does not disclose a recombinant mammalian albumin produced in a transgenic plant having less than 2% aggregated albumin (and Healthgen has not asserted otherwise), nor do either Van Urk or Berezenko. (Tr. (Wilken) at 1072:17-1073:2; RBr. at 24-44.). There is no disclosure of data or results confirming "there may be up to 1% dimeric albumin," much less disclosure or examples in Van Urk that tie the allegedly low aggregated albumin levels of its yeast products to a plant-produced recombinant mammalian albumin. (JX-0030; Section X.C.1, *supra*.). There also is no disclosure in Berezenko of a plant composition possessing the less than 2% aggregated albumin. (Section X.C.1, *supra*.).

Healthgen's assertion that "Deeter's recombinant albumin, as purified by method [sic] disclosed in Van Urk or Berezenko, would remain a 'cell culture media supplement'" is also incorrect. (RBr. at 38.). Healthgen does not cite to anything in support of its assertion that the result of this combination would "remain" a cell culture media supplement. (*Id.*). As discussed above, a person of ordinary skill in the art would not expect the teachings with respect to yeast-derived rHSA to be applicable to plant-derived rHSA. (*See* Section X.C.1(c), X.D.1; Tr. (Wilken) at 1056:6-1057:2.). Healthgen failed to offer any evidence as to what steps or

[29] Healthgen asserted that the Matejtschuk reference demonstrates Van Urk or Berezenko combined with Deeter would result in a plant-derived recombinant protein with less than 1 EU endotoxin/mg albumin. (RBr. at 27 (citing RX-0024.0006).). According to Healthgen, Matejtschuk utilized the same "DEAE-Sepharose" chromatography purification technique of Van Urk and Berezenko, to "'consistently lower[]' endotoxin concentrations in albumin" derived from ***plasma***. (RBr. at 27, 42-43; RX-0024.0002, 0006.). However, as Ventria noted, Healthgen did not raise this argument in its Pre-Hearing Brief. (CRBr. at 34 n.8.). Thus, this argument has been waived under Ground Rule 7.2.

conditions one of ordinary skill would alter, employ, remove, and/or add from Deeter in view of Van Urk or Berezenko to arrive at any composition achieving less than 2% aggregated albumin, much less, one that would remain a cell culture media supplement. (*See* Section X.C.1(e), *supra*.). In sum, Healthgen failed to demonstrate that the already purified product of Deeter, subsequently purified by the methods of Van Urk or Berezenko, could be used as a cell culture media supplement, or would contain less than 2% aggregated albumin, particularly given the fact that both references indicate the steps in their processes were designed for the removal of "yeast antigens." (*Id.*; JX-0030.0045-46; JX-0027.0013.).

For these reasons, Healthgen failed to prove by clear and convincing evidence that claim 1 would have been obvious over Deeter in view of Van Urk or Berezenko.

b) Claim 11

Claim 11 depends from claim 1, and further requires the composition of claim 1, wherein said albumin is recombinant human serum albumin. As discussed above, neither combination discloses the claimed recombinant mammalian albumin, and therefore also cannot disclose the claimed recombinant human serum albumin. (*See* Section X.D.1(a), *supra*.).

For these reasons, Healthgen failed to prove by clear and convincing evidence that claim 11 would have been obvious over Deeter in view of Van Urk or Berezenko.

3. Deeter and/or Huang in View of Van Urk or Berezenko

a) Claims 12 and 13

Claims 12 depends from claim 1, and further limits said transgenic plant to a transgenic grain. Claim 13 further limits said transgenic grain to a transgenic rice. As discussed above, no combination of Van Urk and/or Berezenko with Deeter discloses the claimed plant-produced recombinant mammalian albumin compositions. (*See* Section X.D.1(a), *supra*.). Thus, they also

fail to disclose a recombinant mammalian albumin produced in a transgenic grain, much less a transgenic rice.

Healthgen argued claims 12 and 13 are obvious when the combination of Van Urk or Berezenko with Deeter is further combined with Huang. (RBr. at 28-33.). However, the Huang reference does not add anything beyond the already deficient disclosures of Van Urk, Berezenko, and Deeter, and therefore fails to render claims 12 and 13 obvious for the same reasons previously discussed. (Tr. (Wilken) at 1073:12-15; JX-0028.). Rather, Huang merely discusses methods of improving the upstream process of producing rHSA in a rice cell culture that is secreted into the media, i.e., improving production, not on purifying or achieving any composition of said rHSA capable of encompassing the claims of the '951 patent. (Tr. (Wilken) at 1073:16-22; JX-0028.). As with Deeter and Berezenko (and the substance of Van Urk), the Huang reference was in front of the Examiner during prosecution of the '951 patent, and the examiner was not persuaded its disclosure rendered any claim obvious. (JX-0001.0003.).

For these reasons, Healthgen failed to prove by clear and convincing evidence that claims 12 and 13 would have been obvious over Deeter and/or Huang in view of Van Urk or Berezenko.

4. Secondary Considerations

Because this determination finds that the '951 patent is not obvious, secondary considerations need not be examined.

XI. ECONOMIC PRONG OF THE DOMESTIC INDUSTRY REQUIREMENT

A. Legal Standard

The Commission may only find a violation of Section 337 "if an industry in the United States relating to the articles protected by the patent . . . exists or is in the process of being established." 19 U.S.C. § 1337(a)(2) (emphases added). Typically, a complainant must show

that a domestic industry existed at the time the complaint was filed. *See Motiva LLC v. Int'l Trade Comm'n*, 716 F.3d 596, 601 n.6 (Fed. Cir. 2013).

The domestic industry requirement consists of a "technical prong" and an "economic prong." *See, e.g., Certain Elec. Devices, Including Wireless Commc'n Devices, Portable Music & Data Processing Devices, & Tablet Computs.*, Inv. No. 337-TA-794, Order No. 88, 2012 WL 2484219, at *3 (June 6, 2012); *Certain Unified Commc'ns Sys., Prods. Used with Such Sys., and Components Thereof*, Inv. No. 337-TA-598, Order No. 9 at 2 (Sept. 5, 2007) ("*Communications Systems*"). A complainant satisfies the "technical prong" of the domestic industry requirement when it proves that its activities relate to an article "protected by the patent." *See Communications Systems*, Order No. 9 at 2. A complainant satisfies the "economic prong" of the domestic industry requirement when it demonstrates that the economic activities set forth in subsections (A), (B), and/or (C) of Section 337(a)(3) have taken place or are taking place with respect to the protected articles. *See id.*

Subsection 337(a)(3) states that:

> (3) For purposes of paragraph (2), and industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned –
>
> (A) significant investment in plant and equipment;
> (B) significant employment of labor, or capital; or
> (C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3).

Because the criteria are listed in the disjunctive, satisfaction of any one of them will be sufficient to meet the economic prong of the domestic industry requirement. *Certain Integrated Circuits, Chipsets and Prods. Containing Same*, Inv. No. 337-TA-428, Order No. 10, Initial

Determination (May 4, 2000) ("*Integrated Circuits*") (unreviewed). Establishment of the "economic prong" is not dependent on any "minimum monetary expenditure" and there is no need for a complainant "to define the industry itself in absolute mathematical terms." *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 25-26 (May 16, 2008) ("*Stringed Instruments*"). However, a complainant must substantiate the nature and the significance of its activities with respect to the articles protected by the patent at issue. *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 30 (Feb. 17, 2011) ("*Imaging Devices*").

The Commission has interpreted Sections 337(a)(3)(A) and (B) to concern "investments in plant and equipment and labor and capital with respect to the ***articles*** protected by the patent." *Certain Ground Fault Circuit Interrupters and Prods. Containing Same*, Inv. No. 337-TA-739, 2012 WL 2394435, at *50, Comm'n Op. at 78 (June 8, 2012) ("*Circuit Interrupters*") (emphasis in original) (quoting 19 U.S.C. §§ 1337(a)(3)(A), (B)).

When a complainant proceeds under Section 337(a)(3)(C), it is not sufficient for the "substantial investment" under subsection (C) to merely relate to articles protected by the asserted patents. Rather, "the complainant must establish that there is a nexus between the claimed investment and asserted patent regardless of whether the domestic- industry showing is based on licensing, engineering, research and development." *Certain Integrated Circuit Chips & Prods. Containing*, Inv. No. 337-TA-845, Final Initial Determination, 2013 WL 3463385, at *14 (June 7, 2013).

In addition, the Commission has definitively stated that investments in plant and equipment or labor and capital that relate to engineering and research and development ("R&D") (that are expressly identified under subsection (C)), are properly considered under subsections

(A) and (B):

> The statutory text of section 337 does not limit sections 337(a)(3)(A) and (B) to investments related to manufacturing or any other type of industry. It only requires that the domestic investments in plant and equipment, and employment of labor or capital be "with respect to the articles protected by the patent." 19 U.S.C. § 1337(a)(3). Moreover, even though subsection (C) expressly identifies "engineering" and "research and development" as exemplary investments in the "exploitation" of the patent, that language does not unambiguously narrow subsections (A) and (B) to exclude those same types of investments.

Certain Solid State Storage Drives, Stacked Elecs. Components, and Prods. Containing Same, Inv. No. 337-TA-1097, Comm'n Op. at 8 (June 29, 2018) ("*Storage Drives*"); *see also, e.g.*, *Certain Marine Sonar Imaging Devices, Including Downscan and Sidescan Devices, Prods. Containing the Same, and Components Thereof*, Inv. No. 337-TA-921, Comm'n Op. at 57-64 (Jan. 6, 2016) ("*Sonar Imaging Devices*").

There is no mathematical threshold test or a "rigid formula" for determining whether a domestic industry exists. *Certain Male Prophylactic Devices, Inc.*, Inv. No. 337-TA-292, Comm'n Op. at 39, USITC Pub. 2390 (June 1991) ("*Male Prophylactic Devices*"). However, to determine whether investments are "significant" or "substantial," the actual amounts of a complainant's investments or a quantitative analysis must be performed. *Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879, 883-84 (Fed. Cir. 2015). Even after *Lelo*, which requires some quantification of a complainant's investments, there is still no bright line as to a threshold amount that might satisfy an economic industry requirement.

It is the complainant's burden to show by a preponderance of evidence that each prong of the domestic industry requirement is satisfied. *Certain Prods. Containing Interactive Program Guide and Parental Control Tech.*, Inv. No. 337-TA-845, Final Initial Determination, 2013 WL 3463385, at *14 (June 7, 2013.). Moreover, the Commission makes its determination by "an

examination of the facts in each investigation, the article of commerce, and the realities of the marketplace." *Male Prophylactic Devices*, Comm'n Op. at 39 (quoting *Certain Double Sided-Floppy Disk Drives and Components Thereof*, Inv. No. 337-TA-215, Comm'n Op. at 17, USITC Pub. 1859 (May 1986)). "Commission precedent permits complainants to present evidence of their U.S. investments using methods and approaches that are appropriate to the facts of a particular investigation; such methods and approaches may include a comparison between complainant's domestic investments to the complainant's foreign investments to inform the contextual analysis for determining whether the claimed domestic investments are significant or substantial." *Certain Movable Barrier Operator Sys. and Components Thereof*, Inv. No. 337-TA-1118, Comm'n Op. at 23 (Jan. 12, 2021) (internal citations omitted).

In addition, as the Commission explained, it has looked to several different "contextual indicators" to determine if a complainant's investments and expenditures are sufficient to constitute a domestic industry. *See Certain Bone Cements, Components Thereof and Prods. Containing the Same*, Inv. No. 337-TA-1153, Comm'n Op. at 26 (Jan. 25, 2021). The Commission stated:

> For instance, one methodological approach the Commission has used in both pre- and post-1988 investigations is "comparing complainant's domestic expenditures to its foreign expenditures." Another approach, among others, is to consider "the value added to the article in the United States by the domestic activities." Indeed, Commission decisions have accepted a "value-added" analysis to assess whether an industry in the United States exists. Moreover, the Federal Circuit in *Schaper* compared the investments in the United States with "the total production process of [the domestic industry products]," and found that there was not "significant value added" to the products in the United States. In sum, as discussed above, the Commission's determination as to the existence of a domestic industry must be assessed according to a highly fact-specific assessment of the "nature and significance" of the complainant's domestic activities.

Id. at 26-27 (internal citations omitted).

B. Economic Prong Overview

On August 13, 2021, Ventria filed a corrected motion for summary determination ("MSD") that it satisfies the economic prong of the domestic industry ("DI") requirement under 19 U.S.C. §§ 1337(a)(3)(A), (B), and (C) through its domestic investments in plant and equipment, labor and capital, and research and development ("R&D") relating to the DI Products. (Motion Docket No. 1238-009 (Aug. 13, 2021); MSD at 1; *see also* CBr. at 82-84.). On August 25, 2021, Healthgen filed an opposition ("MSD Opposition") to Ventria's MSD. (Doc. ID No. 750292 (Aug. 25, 2021).). On September 3, 2021, Ventria filed a motion for leave to file a reply in support of its MSD. (Motion Docket No. 1238-010 (Sept. 3, 2021).). On September 10, 2021, Healthgen filed an opposition to Ventria's motion for leave. (Doc. ID No. 751442 (Sept. 10, 2021).). On September 30, 2021, Ventria's motion for leave (1238-010) was granted. (Order No. 21 at 7 (Sept. 30, 2021)).

For the reasons discussed below, Ventria has met its burden to show that its investments satisfy the economic prong of the DI requirement under 19 U.S.C. § 1337(a)(3)(A), (B), and (C).

C. Ventria's Sales-Based Allocation Method is Reasonable

Ventria contended that in the ordinary course of business, it does not allocate expenditures to particular products. (CBr. at 84.). Ventria therefore uses a sales-based allocation method to provide a quantitative approximation of investments attributable to the DI Products. (*Id.*; Tr. (LaMotta)[30] at 668:20-671:16.). Such a sales-based allocation method has been accepted as a reasonable methodology by the Commission. *See, e.g.*, *Certain Mobile Device*

[30] Mr. Ryan LaMotta is Ventria's expert witness on domestic industry, remedy, and bond. (Tr. (LaMotta) at 647:15-24.). He has a BBA and MBA from Baylor University, is a Director of ASQ Consulting Group, and has experience in accounting and financial analysis. (*Id.* at 645:24-647:18.).

Holders and Components Thereof, Inv. No. 337-TA-1028, Comm'n Op. at 18-19 (Mar. 22, 2018); *Certain Robotic Vacuum Cleaning Devices and Components Thereof Such as Spare Parts*, Inv. No. 337-TA-1057, Order No. 39 at 17 (Feb. 13, 2018), *aff'd by* Comm'n Op. (Aug. 1, 2018). In addition, Healthgen's expert, Mr. Reed,[31] agreed that it was a reasonable allocation methodology. (*See* Tr. (Reed) at 1314:8-1315:2).

As shown in Table 1 below, sales of Ventria's DI Products as a percentage of its total sales ranged between about [redacted] from 2015-2020.

Table 1: DI Product Sales as a Percentage of Total Sales

[redacted]

(*See* CBr. at 84-85; CX-0975C.).

D. Ventria Has Satisfied the Economic Prong of the Domestic Industry Requirement Under Subsections 337(a)(3)(A), (B), and (C)

Ventria asserted that it has invested a total of [redacted] relating to its six DI Products. (*See* Tr. (LaMotta) at 666:16-667:6.). As an initial matter, rather than addressing whether Ventria's claimed investments in the six DI Products meet the economic prong of the DI requirement, Healthgen instead argued that Ventria erred "by including investments in products that do not practice any claim of the '951 patent." (*See* RRBr. at 64-65.). Specifically, Healthgen's argument that Ventria does not satisfy the economic prong of the DI requirement is

[31] Mr. Brett Reed is Healthgen's expert witness on domestic industry and remedy. (*See* Tr. (Reed) at 1303:2-4.). He has a bachelor's degree from the University of California at Irvine, a master's degree from UCLA, and is a director at Competition Economics, LLC, an economic consulting firm, working primarily on intellectual property matters and commercial damages. (*Id.* at 1303:18-1307:21.).

limited to challenging Ventria's investments in one DI Product – Optibumin®. (*See id*. at 64-74 ("Under a proper economic prong analysis, Ventria may only claim investments in Optibumin and not in the five other, non-practicing products."); Tr. (Reed) at 1340:7-12.). Thus, pursuant to Ground Rules 7.2 and/or 10.1, Healthgen has waived any arguments that Ventria's investments in all six DI Products are not significant or substantial.[32]

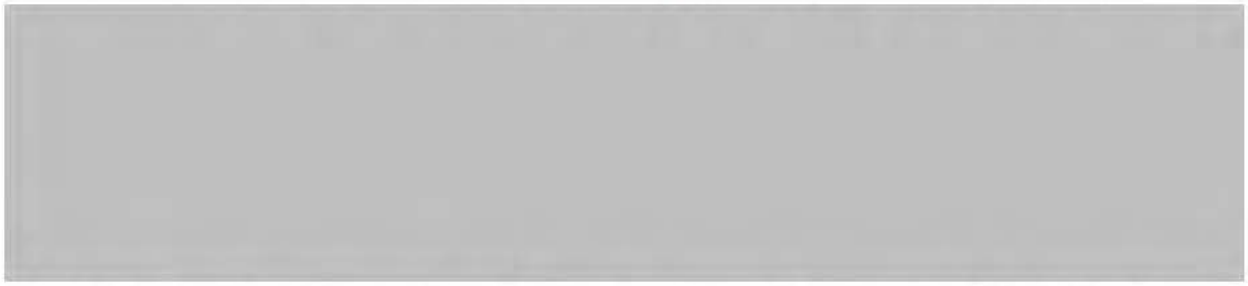
From 2015-2020, Ventria has invested [redacted] in plant and equipment relating to the six DI Products. (*See* Tr. (LaMotta) at 666:16-667:2.). Ventria incurred a total of [redacted] in plant and equipment expenditures attributable to all products that included the cost of [redacted], approximately [redacted] of farmland in [redacted] where Ventria plants, cultivates, and harvests the proprietary rice from which the recombinant proteins are expressed, equipment used to test and manufacture the DI Products, equipment used for R&D, and agricultural machinery such as tractors, combines, planters, trucks, and irrigation needed to plant, cultivate, and harvest the rice from which the DI Products are produced. (*See* Tr. (LaMotta) at 674:1-675:15; CDX-0002C at 25; CX-0776C; CX-0786C; CX-0794C; CX-0797C; CX-0867C; Tr. (Deeter) at 184:3-5; 185:3-5; 187:7-8; 193:2-10; 194:3-197:15; CDX-0005C at 15; Tr. (Curl)[33] at 622:10-625:3; CX-0825C; CX-0828C; CX-0830C; CX-0831C; CX-0832C; CX-0833C.).

As shown in Table 2 below, applying Ventria's sales-based allocation results in [redacted] of those investments attributable to the DI Products.

[32] This waiver does not affect Healthgen's arguments with respect to the technical prong of the domestic industry requirement.

[33] Mr. Marcus Hofer-Curl, a fact witness for Ventria, is the Director of Product Applications at Ventria and has worked there about three and a half years. (Tr. (Curl) at 579:25-580:9.).

Table 2: Investments in Plant and Equipment Allocated to DI Products



(*See* CBr. at 86; CDX-0002C at 25; CX-0776C; CX-0786C; CX-0794C; CX-0797C; CX-0867C.).

From 2015-2020, Ventria also invested in labor relating to the six DI Products. (*See* Tr. (LaMotta) at 666:16-667:4, 678:10-679:17.). During that time period, Ventria incurred a total of in labor costs. (*See* CX-0766C; CDX-0002C at 31.). Ventria has a diverse employee base engaged in R&D, laboratory work, rice breeding, farming, and manufacturing the rHSA products, which is entirely located in the United States. (*See* Tr. (Deeter) at 197:24-198:1, 198:13-16; Tr. (LaMotta) at 679:23-680:19, 681:14-15.). Ventria's path of growth in the United States is demonstrated by the fact that it has grown from around employees 20 years ago, to employees in 2015, and employees in 2020. (*See* Tr. (Deeter) at 197:17-23; Tr. (LaMotta) at 679:23-680:3.). In addition, almost all of Ventria's employees work with the rHSA technology that supports the DI Products.[34] (*See* Tr. (Deeter) at 198:2-5.). For example, employees at the Kansas facility (*See id.* at 180:10-181:5.). Employees at the Kansas facility also (*See id.* at 181:6-19.).

[34] Moreover, Ventria has outsourced many tasks that may not necessarily qualify toward a domestic industry. (*See* Tr. (Deeter) at 198:4-16). Ventria therefore asserted that "costs for any non-cognizable work are not included in Ventria's claimed labor costs." (CBr. at 86-87.).

As shown in Table 3 below, applying Ventria's sales-based allocation results in [redacted] of its labor investments attributable to the DI Products.

Table 3: Investments in Labor and Capital Allocated to DI Products

[redacted]

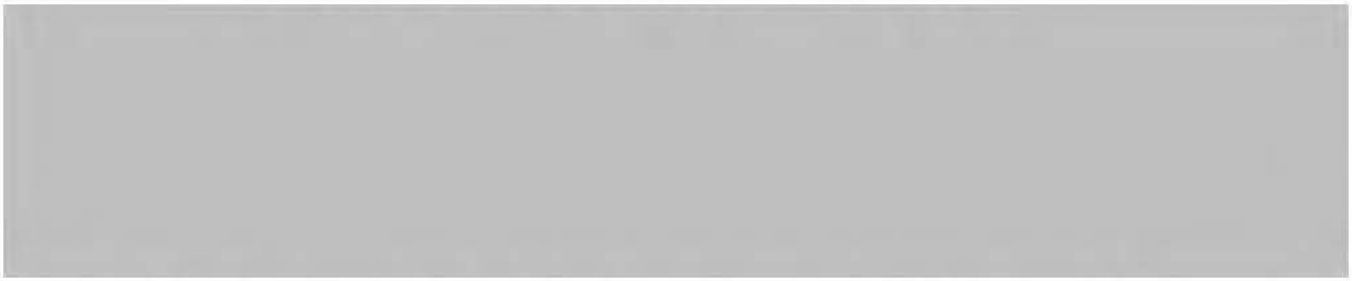
(*See* CBr. at 87; CDX-0002C at 31; CX-0766C.).

From 2015-2020, Ventria also invested [redacted] in research and development relating to the six DI Products.[35] (*See* Tr. (LaMotta) at 666:23-667:6, 683:5-8; CDX-0002C at 36.). Ventria tracks its R&D expenditures on its financial statements under the [redacted] line item, which includes raw materials used in R&D initiatives as well as costs associated with R&D personnel. (*See* CBr. at 87; JX-0101C; CX-0691C; CX-0688C; CX-0689C; CX-0687C.). From 2015-2020, Ventria incurred a total of [redacted] in R&D expenditures. (*See* Tr. (LaMotta) at 683:17-22; JX-0101C; CX-0691C; CX-0688C; CX-0689C; CX-0687C.).

As shown in Table 4 below, applying Ventria's sales-based allocation results in [redacted] of these R&D investments attributable to the DI Products.

[35] Nothing precludes consideration of R&D investments that predate issuance of the Asserted Patent. (*See Certain Video Game Sys. and Controllers*, Inv. No. 337-TA-743, Comm'n Op. at 6-8 (Apr. 14, 2011)).

Table 4: Investments in R&D Allocated to DI Products



(*See* CBr. at 87; CDX-0002C at 36; JX-0101C; CX-0691C; CX-0688C; CX-0689C; CX-0687C.).

In addition, the nexus requirement under subsection (C) is satisfied because the relevant R&D expenditures were all incurred in the United States and are attributable to the DI Products, which embody the inventions of the '951 patent. As discussed, *supra*, in Section IX.B, the DI Products practice claim 1 of the '951 patent. Thus, the nexus requirement is satisfied because Ventria's investments are in R&D activities that directly go toward developing DI Products that practice a claim of the Asserted Patent. *See Certain Gas Spring Nailer Prods. and Components Thereof*, Inv. No. 337-TA-1082, Comm'n Opinion at 80 (Apr. 28, 2020) ("The requisite nexus between Kyocera's exploitation activities and the '718 patent is met here because the activities here go toward developing DI products that embody and practice the asserted claims."); *Certain High-Density Fiber Optic Equipment and Components Thereof*, Inv. No. 337-TA-1194, Comm'n Opinion at 71 (Aug. 23, 2021) ("There is also no dispute that the asserted patents relate to the fundamental technology embedded in the DI products.").

Moreover, Ventria's investments are significant and substantial. Notably, all of its investments and activities occurred within the United States. (*See* Tr. (Deeter) at 181:3-5, 181:17-19, 184:3-5, 185:3-7, 187:7-8, 193:5-10, 194:3-197:15; Tr. (Curl) at 599:25-600:20; Tr. (LaMotta) at 657:16-660:7, 666:16-667:9, 681:10-15.). This weighs heavily in favor of a finding

that Ventria's investments are significant and substantial. For example, in *Certain Carburetors and Products Containing Such Carburetors*, the Commission found that the complainant failed to provide evidence substantiating the nature and significance of its domestic activities with respect to the domestic industry products. *See Certain Carburetors and Products Containing Such Carburetors* Inv. No. 337–TA–1123, Comm'n Opinion at 18-19 (Oct. 28, 2019) ("The Commission has also assessed the relative domestic contribution to the protected article by comparing complainant's product-related domestic activities to its product-related foreign activities.").

In contrast, all of Ventria's investments in its DI Products occurred in the U.S. and thus, the significance and substantiality of its domestic expenditures is apparent when viewed in comparison to its nonexistent foreign expenditures. *See id.*; *see also Certain Wearable Monitoring Devices, Sys., and Components Thereof*, Inv. No. 337-TA-1190, Order No. 34 at 30-31, (Oct. 1, 2020), *aff'd in relevant part by* Comm'n Op. at 39 (May 5, 2021). Specifically, because all of Ventria's investments in the DI Products were made in the United States, all the value for the DI Products is derived from U.S. activities and investments. (*See* Tr. (LaMotta) at 700:21-23.). *Certain Bone Cements, Components Thereof and Prods. Containing the Same*, Inv. No. 337-TA-1153, Comm'n Op. at 26-27 (Jan. 25, 2021) (internal citations omitted). In other words, the DI Products would not exist without the domestic investments described above.

In addition, Ventria's domestic investments are significant and substantial in comparison to its revenues from the DI Products. For example, the evidence shows that for the time period 2015-2020, Ventria earned [redacted] in sales from the DI Products. (*See* CX-0768C.). As discussed above, for that same time period, Ventria incurred [redacted] in expenditures under subsection (A), [redacted] in expenditures under subsection (B), and [redacted] in expenditures

under subsection (C). Therefore, Ventria's investments under subsections (A), (B), and (C) amount to about , respectively, of its revenue from the DI Products. This further demonstrates the significance and substantiality of these investments. In addition, by comparison to other biotech companies, Ventria demonstrates that its investments are significant and substantial. For example, Mr. LaMotta explained that two (2) companies – Repligen and Biolife Solutions – incurred R&D expenditures from 2015-2020 that accounted for about 7% and 13% of their revenue, respectively, whereas Ventria's R&D expenditures were of its DI Product revenues in some years for that same time period.[36] (*See* Tr. (LaMotta) at 688:3-689:15.). While this is not a direct comparison to a competitor in the same market, it nonetheless provides context for the significance and substantiality of Ventria's investments.

Accordingly, Ventria's investments satisfy the economic prong under subsections (A), (B), and (C).

E. Ventria Has Satisfied the Economic Prong of the Domestic Industry Requirement Even if Investments Only in Optibumin® are Considered

As discussed, *supra* in Section IX.B, all six DI Products – Cellastim® S, Exbumin®, Optibumin®, OptiPEAK®, OptiVERO®, and ITSE™+A – practice claim 1 of the '951 patent. Thus, as determined above, Ventria's investments in all six DI Products qualify toward a domestic industry. However, while Healthgen maintained that five of the DI Products do not

[36] Ventria is not asserting that these companies are direct competitors for the sake of comparison. Rather, Mr. LaMotta chose to analyze Repligen and Biolife because they are publicly-traded companies and thus, he had access to their publicly-available data. (*See* Tr. (LaMotta) at 688:16-19). In addition, he talked to Mr. Deeter to identify Repligen and Biolife as two companies that were in the biotech space and were classified similar to Ventria to make sure he "had an appropriate match-up." (*Id*. at 688:21-25). Thus, even though they were not competitors, they are biotech companies and thus, it is at least informative what their R&D investments were as a percentage of their revenues. (*Id*. at 689:1-15).

practice the ’951 patent, it conceded that Optibumin® does practice the ’951 patent. (*See* RRBr. at 65; CBr. at 93.). Thus, as an alternative, this initial determination finds that Ventria’s domestic investments in Optibumin® alone also satisfy the economic prong of the domestic industry requirement.

As previously mentioned, Ventria does not allocate expenditures on a product-by-product basis. Thus, using the above-described sales-based allocation method, Ventria invested [redacted] in plant and equipment costs under subsection (A), [redacted] in labor costs under subsection (B), and [redacted] in R&D costs under subsection (C)[37] attributable to Optibumin®. (*See* CDX-0002C at 25, 31, 36; CX-0975C; CX-0776C; CX- 0786C; CX-0794C; CX-0797C; CX-0867C; CX-0766C; JX-0101C; CX-0691C; CX-0688C; CX-0689C; CX-0687C). Healthgen does not dispute the amount of these investments. (*See* RRBr. at 67; RDX-0003C at 8; RX-0304C; Tr. (Reed) at 1316:23-1318:12.).

Yet again, these investments, when considered in context, are significant and substantial. As mentioned above, it is notable that 100% of Ventria’s investments in Optibumin® occur in the United States. (*See* Tr. (Deeter) at 181:3-5, 181:17-19, 184:3-5, 185:3-7, 187:7-8, 193:5-10, 194:3-197:15; Tr. (Curl) at 599:25-600:20; Tr. (LaMotta) at 657:16-660:7, 666:16-667:9, 681:10-15, 694:21-25.). Again, this weighs heavily in favor of finding that Ventria’s

[37] Ventria contended that “[b]ecause these R&D expenditures were made in Optibumin, a product that indisputably embodies the patented invention, the R&D expenditures satisfy the nexus requirement.” (CBr. at 94 n.9.). As previously discussed, the nexus requirement under subsection (C) is satisfied because the relevant R&D expenditures were all incurred in the United States and are attributable to Optibumin®, which embodies the inventions of the ’951 patent. As discussed, *supra*, in Section IX.B, the Optibumin® practices claim 1 of the ’951 patent. Thus, the nexus requirement is satisfied because Ventria’s investments are in R&D activities that directly go toward developing Optibumin® that practices a claim of the Asserted Patent. In addition, as previously noted, Healthgen conceded that Optibumin® practices the ’951 patent. (*See* RRBr. at 65.).

investments are significant and substantial. Similar to the analysis above, because all of Ventria's investments in Optibumin® occur in the United States, Optibumin® derives all of its value from activities occurring in the United States. (*See* Tr. (Reed) at 1342:15-1343:5.).

In addition, these investments are significant and substantial when viewed in comparison to Ventria's revenues from Optibumin®. Ventria had no sales of Optibumin® before 2018, but from 2018-2020, Ventria's sales of Optibumin® amounted to . (CX-0768C.). Thus, Ventria's allocated investments in Optibumin® were of its sales under subsection (A), of its sales under subsection (B), and of its sales under subsection (C). These proportions further demonstrate the significance and substantiality of the investments.[38]

However, Healthgen took issue with Ventria's argument about Optibumin®, arguing that the Optibumin® sales were actually meager, which makes those investments, as a percentage of sales, seem more significant than they actually are. (*See* RRBr. at 68-69.). For example, Healthgen argued that "Ventria's sales of Optibumin comprise only of Ventria's total sales from 2018 (when sales of Optibumin began) through the December 2020 filing of the complaint." (*Id*. at 66 (citing Tr. (Reed) at 1323:19-1324:18; RDX-0003C at 6; CX-0975C; CDX-0002C at 20).). But the evidence reflects that Optibumin® is . For example, Mr. Curl explained that . (*See* Tr. (Curl) at 602:10-

[38] And again, Ventria's investments are significant and substantial in comparison to similar companies. As previously discussed, Mr. LaMotta explained that Repligen and Biolife Solutions incurred R&D expenditures from 2015-2020 that accounted for about 7% and 13% of their revenue, respectively, whereas Ventria's allocated R&D expenditures for Optibumin® were of its Optibumin® sales. (Tr. (LaMotta) at 688:3-689:15).

603-14 [redacted]; *see also* Tr. (Deeter) at 189:16-22 [redacted].). Mr. LaMotta confirmed this by explaining that [redacted] (Tr. (LaMotta) at 670:18-671:13, 692:8-693:17; *see also* Tr. (Reed) at 1345:6-1346:7 (agreeing that it is not uncommon [redacted]).). Thus, it is not surprising that Optibumin® [redacted].

In addition, the sales-based approach, as applied to Optibumin®, also undervalues Ventria's investments because it does not account for any investments prior to 2018. Yet the evidence is that Ventria [redacted] (*See* CX-0463C at 2.). [redacted]

[redacted]

(*Id*. at 4 [redacted].).

Similarly, a [redacted]

(*See* CX-0464C at 5). [redacted] (*See* Tr. (Curl) at 595:10-24.). Moreover, [redacted] (*See* CX-0655C at 7.). Thus, the sales-based methodology, as applied to Optibumin®, is a somewhat conservative estimate of Ventria's investments.

Accordingly, even if investments only in Optibumin® are considered, Ventria's investments satisfy the economic prong under subsections (A), (B), and (C).

XII. RECOMMENDATION ON REMEDY AND BOND

In the event of a finding of violation of Section 337, Ventria has requested that the Commission issue a general exclusion order ("GEO") and cease and desist orders ("CDOs").

(CPBr. at 141; CBr. at 101.). Ventria has requested that the Commission impose a bond of at least 100%. (CPBr. at 145; CBr. at 105.).

This decision recommends: (1) Limited Exclusion Orders with a certification provision; (2) Cease and Desist Orders; and (3) that a 100% bond of the entered value be imposed during the Presidential Review Period.

A. Legal Standard

Pursuant to Commission Rule 210.42, an ALJ must issue a recommended determination on: (i) an appropriate remedy if the Commission finds a violation of Section 337, and (ii) an amount, if any, of the bond to be posted. 19 C.F.R. § 210.42(a)(1)(ii). When a Section 337 violation has been found, as here, "the Commission has the authority to enter an exclusion order, a cease and desist order, or both." *Certain Flash Memory Circuits and Prods. Containing the Same*, Inv. No. 337-TA-382, Comm'n Opinion on the Issues Under Review and on Remedy, the Public Interest and Bonding, at 26 (June 9, 1997). The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337 proceeding. *Viscofan, S.A. v. U.S. Int 'I Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986).

When a violation of Section 337 is found, the Commission may issue either a limited exclusion order ("LEO"), directed against products manufactured by or on behalf of named parties found in violation, or a GEO, directed against all infringing products. *See* 19 U.S.C. § 1337(d).

Additionally, a CDO is appropriate where the evidence demonstrates the presence of commercially significant inventory in the United States. 19 U.S.C. § 1337(f); *see also Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, Comm'n Opinion, USITC Pub. No. 2391, 1991 WL 790061 at *30-32 (June 1991).

Infringing articles may enter upon the payment of a bond during the sixty-day Presidential Review Period. 19 U.S.C. § 1337(j)(3). The bond is to be set at a level sufficient to "offset any competitive advantage resulting from the unfair method of competition or unfair act enjoyed by persons benefiting from the importation." *Certain Dynamic Random Access Memories, Components Thereof and Prods. Containing Same*, Inv. No. 337- TA-242, Comm'n Opinion, 1987 WL 450856 at 37 (Sept. 21, 1987).

B. A General Exclusion Order Is Not Warranted

Pursuant to Section 337(d)(2), the Commission may issue a GEO that applies to all infringing products, regardless of source, instead of an LEO directed only to persons determined to be in violation of Section 337, when:

> (A) a general exclusion from entry of articles is necessary to prevent circumvention of an exclusion order limited to products of named persons; or
>
> (B) there is a pattern of violation of this section and it is difficult to identify the source of infringing products.

19 U.S.C. § 1337(d)(2); *accord* 19 C.F.R. § 210.50(c).

The Commission may issue a GEO when either one of the statutory provisions, Section 337(d)(2)(A) or (B), is met. *See Certain Cigarettes & Packaging Thereof*, Inv. No. 337-TA-643, Comm'n Op. at 24 (Oct. 1, 2009). Under either statutory provision, the Commission may consider the activities of third parties, active and defaulting respondents, and respondents that have been terminated. *See Certain Ink Cartridges & Components Thereof*, Inv. No. 337-TA-946, Comm'n Op., at 5-6 (June 29, 2016); *Certain Coaxial Cable Connectors & Components Thereof*, Inv. No. 337-TA-650, Comm'n Op. at 59 (Apr. 14, 2010) ("*Coaxial Cable Connectors*"). "Because of its considerable impact on international trade, potentially extending beyond the parties and articles involved in the investigation, more than just the interests of the

parties is involved. Therefore, the Commission exercises caution in issuing general exclusion orders...." *See Coaxial Cable Connectors* at 56 (quoting *Certain Agricultural Tractors Under 50 Power Takeoff Horsepower*, Inv. No. 337-TA-380, Comm'n. Op. at 21 (Mar. 12, 1997)).

1. A GEO Is Not Warranted Under 19 U.S.C. § 1337(d)(2)(A)

Under Section 337(d)(2)(A), the Commission considers "(1) whether conditions are ripe for circumvention, and (2) the appearance of circumvention." *Certain Lighting Control Devices Including Dimmer Switches & Parts Thereof (IV)*, Inv. No. 337-TA-776, Comm'n Op., 2012 WL 13171646 at *7 (Nov. 8, 2012). In determining whether conditions are "ripe" for circumvention, the Commission has considered factors such as (1) significant and increasing demand for the infringing products; (2) widespread U.S. marketing and distribution networks with multiple intermediaries; (3) a large number of non-respondent foreign manufacturers and/or distributors; (4) frequent name changes for foreign manufacturers and/or distributers; (5) a low barrier to enter the U.S. market through high profit margins and low retail costs in the United States for foreign infringing products, indicative of low foreign manufacturing costs; (6) large online marketplaces have emerged which provide both foreign manufacturers and domestic retails a dedicated, flexible way to sell to consumers; (7) it is difficult to identify the sources of infringing products because of the ability to package infringing products in unmarked, generic packaging; (8) manufacturers can easily evade a limited exclusion order by establishing shell offshore distribution companies with unclear ties to the original manufacturer; and (9) previous attempts to address infringement have been unsuccessful. *Id.* at *13; *Certain Inkjet Ink Supplies & Components Thereof*, Inv. No. 337-TA-730, Comm'n Op. at 4-5 (Feb. 24, 2012); *Certain Water Filters and Components Thereof*, Inv. No. 337-TA-1126, Initial Determination at 66 (Aug. 7, 2019).

As an initial matter, there appears to be little, if any, evidence in the record of actual circumvention. (SBr. at 10.). The evidence indicates that some U.S. distributors of the Accused Products change the labels on the products to obscure both the manufacturer (i.e., Healthgen) and the country of origin (i.e., China). (RX-0009 (Shore Dep. Tr.)[39] at 30:22-31:21, 67:7-25; CX-0080C; SBr. at 10-11.). As Staff noted, this re-labeling appears to occur post-importation, and thus is not evidence of actual circumvention of an exclusion order. (SBr. at 11.).

With respect to whether conditions are ripe for circumvention, the evidence indicates that Ventria and Healthgen are the only manufacturers of the products within the scope of the Investigation. (*See* Tr. (Deeter) at 276:22-277:9 (confirming that Healthgen and Ventria are the only manufacturers of rice-derived rHSA products); Tr. (Curl) at 639:2-10 ("I believe I've seen Orybio in the past as a potential manufacturer, but today, you know, based on my research, Wuhan Healthgen, Oryzogen, is the only rice-derived recombinant human serum albumin manufacturer other than Ventria Bioscience"); Tr. (LaMotta) at 769:25-770:7 ("I'm only aware of Ventria and Healthgen that manufacture a rice-derived rHSA at all").). This evidence strongly suggests that an LEO that covers Healthgen will be sufficient to exclude infringing goods from the U.S. In other words, there is only a single foreign manufacturer, Healthgen, which demonstrates that conditions are not ripe for circumvention.

Similarly, there was no evidence of a widespread U.S. marketing and distribution network with multiple intermediaries. Rather, the evidence indicates that the Accused Products are generally sold for importation into the U.S. by Healthgen and imported into the U.S. by its U.S. distributors. Specifically, the evidence showed that other than for two customers,

[39] At the time of his deposition on February 25, 2021, Mr. Warren Shore was the founder, President, and CEO of United States Biological ("US Bio"). (RX-0009 (Shore Dep. Tr.) at 12:4-13:7.).

Healthgen ships its products [redacted] (*See* CX-1080C (Cao Depo. Tr.) at 49:18-50:9, 53:3-16.). For the other two customers, eEnzyme and ScienCell, the products are [redacted] (*Id.* at 54:10-55:1.). In either case, the chain of distribution into the U.S. appears relatively clear, which suggests that it would be difficult for Healthgen to circumvent an LEO.

Moreover, there appears to be little evidence of an increase in demand for the Accused Products steep enough to suggest that a GEO is necessary. Healthgen's sales data shows that Healthgen had approximately [redacted] total for 2017-2021, and on the order of [redacted]. (CX-0019C; CX-0033C.). The data does not show any rapid increase in demand for Healthgen's Accused Products.

Additionally, there do not appear to be low barriers to entry into the market. The evidence, as discussed below, is to the contrary. Neither do the infringing products appear to be extremely profitable. The Complainant's expert, Mr. LaMotta, testified that if Ventria sold its products at the same price that Healthgen sold its products, Ventria would incur a loss because of the large investment necessary to develop rice-derived rHSA products.[40] (Tr. (LaMotta) at 773:4-20.). Mr. LaMotta also testified that developing rice-derived rHSA products requires a long lead time and substantial investments in time, employees, equipment, and land. (*Id.* at 773:21-774:1.). This evidence demonstrates that the barriers to entry into this market are quite

[40] Mr. LaMotta confirmed that Healthgen did not produce profitability information for the Accused Products, so his opinions were based on his review of Ventria's revenues and cost structure. (Tr. (LaMotta), at 772:24-773:3.).

high. This is also consistent with the fact that there are only two (2) sources of the products within the scope of this Investigation: if the barriers were lower, it would be reasonable to expect that more than two companies would be making and selling the products (i.e., more than just Ventria and Healthgen). Thus, the evidence weighs against finding that conditions are ripe for circumvention.

Furthermore, the evidence does not show that it will be difficult for CBP to identify infringing goods. Healthgen's corporate witness, Ms. Cao, testified that it is standard practice for Healthgen to [redacted]. (*See* CX-1080C (Cao Depo. Tr.) at 186:14-187:7; JX-0034C.). [redacted]

(JX-0034C.0009 (annotated, copied from SBr. at 14); *see also* JX-0033C-JX-0038C; CX-0008C; RX-0009 (Shore Dep. Tr.) at 47:12-20 (testifying that Accused Products shipped to US Bio identified the source of the product as Healthgen on the label), 66:12-16 (same).).

As shown on the label in Figure 20, the [redacted] (*Id.*). Hearing testimony confirmed that the brand name "OsrHSA" is unique to Healthgen, which further identifies that the source of the goods in the package are from Healthgen. (Tr. (Deeter) at 279:18-280:1 (testifying that Healthgen is the only company that sells rice-derived rHSA products branded as OsrHSA); Tr. (Curl) at 639:2-10 (same); Tr. (LaMotta) at 769:25-770:7 (same).). Thus, the evidence does not show that conditions are ripe for circumvention.

2. A GEO Is Not Warranted Under 19 U.S.C. § 1337(d)(2)(B)

The evidence adduced in this Investigation does not show a pattern of violation or difficulty in identifying the source of Accused Products for the following reasons.

First, there is only a single source of the Accused Products: Healthgen. (*See* Tr. (Deeter) at 276:22-277:9 (confirming that Healthgen and Ventria are the only manufacturers of rice-derived rHSA products); Tr. (Curl) at 639:2-10 ("I believe I've seen Orybio in the past as a potential manufacturer, but today, you know, based on my research, Wuhan Healthgen, Oryzogen, is the only rice-derived recombinant human serum albumin manufacturer other than Ventria Bioscience"); Tr. (LaMotta) at 769:25-770:7 ("I'm only aware of Ventria and Healthgen that manufacture a rice-derived rHSA at all").). The evidence indicates that ***all*** the companies identified as buying or importing the Accused Products are buying and importing those products from Healthgen.

The Commission has previously explained that there is no pattern of violation to support a GEO where the "Respondents accounted for all of the infringing imported products" and the

"Complainants have failed to identify a single act of importation that is unrelated to one of the Respondents." *Certain Self-Cleaning Litter Boxes and Components Thereof*, Inv. No. 337-TA-625, Comm'n Op., at 56 (Apr. 28, 2009) ("Certain Self-Cleaning Litter Boxes"). Here, like *Certain Self-Cleaning Litter Boxes*, every act of importation (but one)[41] is related to one of the Respondents, i.e., Healthgen.

Moreover, Ventria has proven a violation by substantial, probative, and reliable evidence for a single Respondent: Healthgen. In similar circumstances, the Commission has declined to issue a GEO. *See Certain Ground Fault Circuit Interrupters & Products Containing Same*, Inv. No. 337-TA-615, Comm'n Op. at 26 (Mar. 26, 2009) ("[W]e do not regard infringement by four respondents to establish a 'pattern of violation' of the type to be sufficient to justify the imposition of a general exclusion order when a limited exclusion order is available instead."). In *Certain Self-Anchoring Beverage Containers*, Inv. No. 337-TA-1092, Comm'n Op. (Jul. 25, 2019), the Commission found a pattern of violation where only a single respondent was found in violation and the ID identified numerous infringing products available online from non-respondents. *Id.* at 16. However, unlike the present Investigation, in *Self-Anchoring Beverage Containers*, the ID found that the infringing products available online reflected numerous "sources" of infringing goods, i.e., there was no indication that the infringing products all came from a single source, as is the case here. *See Certain Self-Anchoring Beverage Containers*, Inv. No. 337-TA-1092, Initial Det. at 26 (Sep. 7, 2018).

Second, according to the evidence presented, it is not difficult to identify the source of

[41] Ventria presented evidence demonstrating that foreign non-party [redacted] imported or sold for importation a limited amount of the Accused Products to U.S. non-party [redacted]. (CBr. at 102; CX-0217C; CX-1080C (Cao Dep. Tr.) at 23:16-24:9.). However, even in that instance, the ultimate source of the Accused Products was Healthgen. (Tr. (LaMotta) at 772:16-23.).

the Accused Products because there is only one (1) source of the Accused Products: Healthgen. *Certain Cast Steel Railway Wheels, Certain Processes for Manufacturing or Relating to Same and Certain Products Containing Same*, Inv. No. 337-TA-655, Recommended Det. on Remedy and Bonding at 6, n.4 (Mar. 9, 2010), *adopted in relevant part on review* (noting that complainant had not attempted to show that there would difficulty identifying the source of infringing goods, and explaining that "one would not expect it to be difficult to identify the source of a finished product such as a railway wheel in view of the relatively small number of manufacturers that complainant has referred to in the record"). That is also why Ventria's assertion that "even Ventria's customers occasionally struggle[] to distinguish between Ventria and Healthgen" does not support their argument with respect to identification of the source. (CBr. at 104.). The only sources for the products at issue are Ventria and Healthgen, and Ventria manufactures its products in the U.S. (Tr. (LaMotta) at 657:6-658:9 (testifying that all Ventria's operations are in the U.S., including manufacturing).). Thus, any imported rice-derived rHSA products logically must be coming from Healthgen.

Moreover, the evidence demonstrates that the Accused Products are shipped in packages that identify Healthgen, if not by company name, then at least by brand name, i.e., OsrHSA. (*See* JX-0033C-JX-0038C; CX-0008C (shipping labels and invoices); RX-0009 (Shore Dep. Tr.) at 47:12-20 (testifying that Accused Products shipped to US Bio identified the source of the product as Healthgen on the label), 66:12-16 (same).). The same evidence also reflects that the source of infringing goods is identifiable. *See Certain Self-Cleaning Litter Boxes* at 56-57 (explaining that "the 'source' of the infringing products" was not difficult to identify because it was "undisputed that all of the[] imported products are the Respondents'" and "each Respondent is clearly identified on its products and the products' packaging"). Accordingly, the evidence

does not show that it would be difficult to identify the source of infringing goods.

C. Limited Exclusion Orders Are Warranted

As explained above in Section XII.B, the record evidence does not support the issuance of a GEO. However, since this decision finds a violation based on infringement of the '951 patent by Healthgen, the issuance of a LEO against Healthgen is warranted. *See* 19 U.S.C. § 1337(d) ("If the Commission determines, as a result of an investigation under this section, that there is a violation of this section, it shall direct that the articles concerned, imported by any person violating the provision of this section, be excluded from entry into the United States…").

Additionally, a LEO against each of the Defaulting Respondents is warranted. *See* 19 U.S.C. § 1337(g)(1) (where a respondent is found in default and the complainant seeks relief only against that party, "the Commission shall presume the facts alleged in the complaint to be true and shall, upon request, issue an exclusion from entry or a cease and desist order, or both, limited to that person …"); *Laerdal Med. Corp. v. Int'l Trade Comm'n*, 910 F.3d 1207, 1215 (Fed. Cir. 2018) ("After the respondents were found in default, the Commission was required to issue relief upon [complainant]'s request, unless precluded by public interest concerns").

This decision also recommends including a certification provision. The Commission now generally includes a certification provision in every exclusion order because it is something that "CBP typically requests." *Certain Road Construction Machines & Components Thereof*, Inv. No. 337-TA-1088, Comm'n Op., 2019 WL 6003332, at *27 (July 15, 2019); *Certain Composite Aerogel Insulation Materials and Methods for Manufacturing the Same*, Inv. No. 337-1003, Comm'n Op., at 62 (Feb. 22, 2018) (explaining that "the Commission's standard practice for the past several years [is] to include certification provisions in exclusion orders to aid CBP"). The Commission's typical certification provision gives CBP discretion to require "persons seeking to

import covered articles that are potentially subject to [the] Order" to "certify that they are familiar with the terms of [the] Order, that they have made appropriate inquiry, and thereupon state that, to the best of their knowledge and belief, the products being imported are not excluded from entry" under the order. *See e.g.*, *Certain High-Density Fiber Optic Equipment and Components Thereof*, Inv. No. 337-TA-1194, General Exclusion Order, at 3-4 (Aug. 3, 2021).

With respect to the false designation of origin claims, Ventria maintained those claims only against the Defaulting Respondents and not against Healthgen. (*See* CBr. at 6 n. 2.). Thus, it is recommended that a LEO on the false designation of origin claims should issue only against the Defaulting Respondents. *See* 19 U.S.C. § 1337(g)(1); 19 C.F.R. § 210.16(c)(1).

D. Cease and Desist Orders Are Not Warranted

The record evidence does not support issuance of a CDO with respect to Healthgen. Specifically, the evidence indicates that Healthgen does not hold commercially significant inventories in the United States and has no significant domestic operations. Ventria's expert, Mr. LaMotta,[42] testified that he was not aware of any Healthgen employees or facilities in the U.S., or any domestic operations beyond selling the products into the U.S. (Tr. (LaMotta), at 767:25-768:11.). Healthgen's expert, Mr. Reed,[43] confirmed that Healthgen has [redacted]. (Tr. (Reed), at 1327:3-8.). Moreover, as Ms. Cao, Healthgen's

[42] When he testified on November 8, 2021, Mr. Ryan LaMotta was a Director of ASQ Consulting Group. (CPSt. at Ex. B.). Ventria identified Mr. LaMotta as an expert to testify about "the economic and financial analysis of Ventria's domestic industry, as well as remedy and bonding." (*Id.* at 4.).

[43] When he testified on November 10, 2021, Mr. Brett Reed was the co-founder and Director of Competition Economics LLC. (RPSt. at Ex. B.). Healthgen identified Mr. Reed as an expert to testify about "Ventria's failure to satisfy the domestic industry requirement, the lack of harm to Ventria's domestic industry based on the alleged Lanham Act violation, the appropriate remedy in this investigation, [and] the appropriate amount of bond to be posted during the presidential review period." (*Id.* at 2.).

corporate representative, corroborated, Healthgen ships most of its products [redacted] which demonstrates that Healthgen does not need to maintain inventory in the U.S. [redacted] (CX-1080C (Cao Depo. Tr.) at 49:18-50:9, 53:3-16.).

With regard to the Defaulting Respondents, as Staff noted, CDOs are appropriate with respect to the '951 patent claims and the false designation of origin claims. (SBr. at 33.). Each of the Defaulting Respondents is a domestic entity,[44] and thus is presumed to hold inventory in the United States. *See, e.g.*, *Certain Stainless Steel Prods., Certain Processes for Mfg. or Relating to Same, and Certain Prods. Containing Same*, Inv. No. 337-TA-933, Comm'n Op., 2016 WL 8809133, at *22 (June 9, 2016) ("In investigations in which a domestic respondent is found in default, the Commission presumes the presence of commercially significant inventories in the United States to warrant a cease and desist order.").

E. Bond During the Presidential Review Period Is Warranted

Ventria requested a recommendation that the Commission impose a bond during the Presidential Review Period of 100%. (CPBr. at 145; CBr. at 105.). For the reasons discussed below, the value of the bond entered during the Presidential review period should be set at 100%.

The Commission frequently sets the bond based on the difference in sales prices between the patented domestic product and the infringing product. *See, e.g.*, *Certain Microsphere Adhesives, Process for Making Same, and Prods. Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, USITC Pub. No. 3949, Comm'n Opinion at 24 (Jan. 1996). In other instances where a direct comparison between a patentee's product and the

[44] *See* Section II.B.3 (regarding the Defaulting Parties).

accused product is not possible, the Commission has set the bond at a reasonable royalty rate. *See, e.g.*, *Certain Integrated Circuit Telecommunication Chips and Prods. Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm. Opinion at 41-43 (Aug. 3, 1993). Commission precedent allows for a 100 percent bond when it is not practical or possible to set the bond based on price differential. *Certain Voltage Regulators, Components Thereof and Prods. Containing Same*, Inv. No. 337-TA-564, Comm'n Opinion at 79 (Public Version Oct. 19, 2007). The purpose of the bond is to protect the complainant from any injury. 19 U.S.C. § 1337(j)(3); 19 C.F.R. §§ 210.42(a)(1)(ii), 210.50(a)(3).

Complainants bear the burden of establishing the need for a bond, including the amount of bond. *See, e.g.*, *Certain Rubber Antidegradants, Components Thereof & Prods. Containing Same*, USITC Pub. No. 3975, Inv. No. 337-TA-533, Comm'n Opinion at 40 (April 2008); *Certain Coenzyme Q10 Products and Methods of Making Same*, Inv. No. 337-TA-790, Initial and Recommended Determination (Sept. 27, 2012) (recommending Commission not impose a bond because complainant failed in its burden to demonstrate the appropriate bond amount); *Certain Mobile Telephones and Wireless Communication Devices Featuring Digital Cameras, and Components Thereof*, Inv. No. 337-TA-703, Recommended Determination (Jan. 24, 2011) (recommending no bond because complainant did not meet its burden in providing evidence on the necessity of a bond); *Certain Liquid Crystal Display Devices and Prods. Containing the Same*, Inv. No. 337- TA-631, Comm'n Opinion at 27-28 (July 14, 2009) (setting zero bond because complainant "simply claimed that it was impossible to conduct a price differential analysis" and "should not benefit from a lack of any effort to identify" relevant pricing information, particularly that which is in its possession).

Healthgen asserted that if a violation is found, the amount of the bond should be zero.

(RRBr. at 79-83.). Specifically, Healthgen argued that "if Ventria's domestic industry is limited only to Optibumin and/or only Healthgen's clinical grade product is found to infringe," then Ventria failed to present evidence comparing the prices of only the "clinical grade (liquid) products." (*Id.* at 80-81.). Healthgen also argued that the price differential analysis performed by its expert Mr. Brent Reed supports only a bond amount between [redacted] (*Id.* at 81-81.). Healthgen's arguments are mistaken for the following two (2) reasons. First, there is evidence in the record of the price difference between the liquid forms of the Accused Product and the DI Products, respectively, and that evidence supports a bond amount of at least 100%. Second, Mr. Reed's price differential analysis is flawed and unreliable and is given little to no weight.

With regard to the first reason, Ms. Cao's deposition testimony confirms that [redacted]. (CX-1080C (Cao Dep. Tr.) at 83:1-14 (identifying [redacted]).) Ventria presented evidence that the liquid form of Healthgen's products is packaged in a 50 ml bottle with a 20% concentration. (CX-0050.0002 (Healthgen webpage describing the liquid formulation of the Accused Products).). Healthgen's sales data also reflect sales in [redacted]. (CX-0019C / CPX-0019C (summary of Healthgen sales from 2017-2020); CX-1080C (Cao Dep. Tr.) at 99:8-100:12, 102:1-5, 14-16 (testifying that [redacted]). According to Mr. Reed's price analysis, the price per gram for the sales [redacted]. (RX-0300C.).

Additionally, Ventria proffered evidence that the sales price of Ventria's liquid-form DI

Product (i.e., Optibumin) is approximately [redacted]. (CX-0888C.0011-12.). As Staff noted, a comparison of the respective price per gram of the liquid forms of the Accused Product and the DI Product shows that the DI Products are between [redacted], which suggests that a bond amount between approximately [redacted] would be appropriate. (SRBr. at 4.).

With respect to the second reason, Mr. Reed's price differential analysis has been given little, if any, weight. Healthgen and Mr. Reed do not dispute the accuracy of the Complainant's or Mr. LaMotta's calculations regarding the bond. Rather, they criticize Mr. LaMotta's analysis as being skewed for including Healthgen's sales to [redacted]. (*See* RRBr. at 81-82; Tr. (Reed) at 1328:8-1329:9, 1332:2-11; RX-0300C (Mr. Reed's summary of Healthgen's U.S. sales data).). Mr. Reed testified that it is inappropriate to include [redacted] in the price differential analysis because [redacted] (Tr. (Reed) at 1328:18-1329:9.). By excluding sales to [redacted], Mr. Reed identified a price differential of [redacted] (*See id.* at 1330:17-1332:1; RDX-0003C.0014.). Based on Mr. Reed's analysis, Healthgen concluded that "an appropriate bond rate during presidential review of any remedial orders issued by the Commission is, at best, [redacted][.]" (RRBr. at 82.).

As Staff noted, Mr. Reed's analysis is unreliable and his opinion that Healthgen's sales to [redacted] should be excluded from a price differential analysis is mistaken. (SRBr. at 5.). That [redacted]

[redacted]. Mr. Reed confirmed that if the price for the lowest-cost DI Products [redacted] is compared to the average sale price given to [redacted], the Accused Products are almost [redacted] less expensive than the DI Products. (Tr. (Reed) at 1357:25-1358:9.). Mr. Reed also confirmed that he was not aware of any evidence that [redacted] purchases from Healthgen would change during the Presidential review period. (Tr. (Reed), at 1352:12-18.). This indicates that a bond of only [redacted] would clearly not "protect the complainant from any injury" because any sales from Healthgen to [redacted] would be undercutting the price of the DI Products by a substantial amount. 19 U.S.C. § 1337(j)(3); *see also* 19 C.F.R. §210.50(a)(3). Thus, because Mr. Reed's exclusion of the Respondent's sales to [redacted] from his price differential analysis leads to a flawed and unreliable conclusion regarding the bone amount, his opinion has been given little, if any, weight.

XIII. WAIVER OR WITHDRAWAL OF RESPONDENT'S DEFENSES

Healthgen did not raise in its Pre-Hearing Brief or offer any evidence during the Hearing to support its Fourth and Fifth Affirmative Defenses of Unenforceability Based on Equitable Doctrines and Relief Not in the Public Interest, respectively. (Resp. at 33-34.).

Consequently, it is a finding of this decision that Healthgen has withdrawn, waived and/or abandoned its Fourth and Fifth Affirmative Defenses consistent with Ground Rules 7.2 and 10.1. *Kinik Co. v. Int'l Trade Comm'n*, 362 F.3d 1359, 1367 (Fed. Cir. 2004).

XIV. CONCLUSIONS OF FACT OR LAW: THIS INITIAL DETERMINATION FINDS A SECTION 337 VIOLATION BASED UPON INFRINGEMENT OF U.S. PATENT NO. 10,618,951

1. Ventria has satisfied jurisdiction and standing requirements.

2. Importation has been satisfied.

3. Claims 1 and 11-13 of U.S. Patent No. 10,618,951 are valid and have been found to be practiced by the Accused Products.

4. At least one of Ventria's DI Products practices one or more claims of U.S. Patent No. 10,618,951.

5. Ventria's domestic R&D activities with respect to its DI Products have been found to satisfy the economic prong of the domestic industry requirement under 19 U.S.C. § 337(a)(3)(A), (B), and (C).

6. Healthgen has violated Section 337 of the Tariff Act of 1930, as amended, by importing into the United States, selling for importation, or selling within the United States after importation certain plant-derived recombinant human serum albumins that infringe claims 1 and 11-13 of U.S. Patent No. 10,618,951.

7. Each of the Defaulting Respondents has violated Section 337 of the Tariff Act of 1930, as amended, by importing into the United States, selling for importation, or selling within the United States after importation certain plant-derived recombinant human serum albumins that infringe claims 1 and 11-13 of U.S. Patent No. 10,618,951.

8. Each of the Defaulting Respondents has violated the Lanham Act under 15 U.S.C. § 1125 by advertising, promoting and/or selling imported plant-derived rHSA without identifying the foreign country of origin of such products. Violations of the Lanham Act, 15 U.S.C. §§ 1051 et seq., are actionable under Section 337.

9. Limited Exclusion Orders against Healthgen and the Defaulting Parties, Cease and Desist Orders against the Defaulting Parties, and a 100% Bond during the Presidential Review Period are recommended.

The lack of discussion of any matter raised by the Parties, or any portion of the record, does not indicate that it has not been considered. Rather, any such matter(s) or portion(s) of the record has/have been determined to be irrelevant, immaterial or meritless. Arguments made on briefs, which were otherwise unsupported by record evidence or legal precedent, have been accorded no weight.

XV. CONCLUSION AND ORDER

This Initial Determination on Violation of Section 337 of the Tariff Act of 1930 is certified to the Commission. All orders and documents, filed with the Secretary, including the exhibit lists enumerating the exhibits received into evidence in this Investigation, that are part of the record, as defined in 19 C.F.R. § 210.38(a), are not certified, since they are already in the Commission's possession in accordance with Commission Rules. *See* 19 C.F.R. § 210.38(a). In accordance with 19 C.F.R. § 210.39(c), all material found to be confidential under 19 C.F.R. § 210.5 is to be given *in camera* treatment.

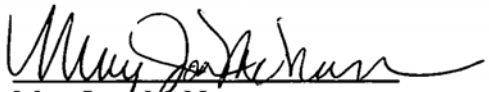
After the Parties have provided proposed redactions of confidential business information ("CBI") that have been evaluated and accepted, the Secretary shall serve a public version of this ID upon all parties of record. The Secretary shall serve a confidential version upon counsel who are signatories to the Protective Order (Order No. 1) issued in this Investigation.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless a party files a petition for review pursuant to 19 C.F.R. § 210.43(a) or the Commission, pursuant to 19 C.F.R. § 210.44, orders on its own motion a review of the Initial Determination or certain issues therein.

Within fourteen (14) business days of the date of this document, the Parties shall jointly submit to the Office of the Administrative Law Judges through McNamara337@usitc.gov a statement whether they seek to have any confidential portion of this document. That is the courtesy copy pursuant to Ground Rule 1.3.2. Any party seeking redactions to the public version must submit to this office through McNamara337@usitc.gov a copy of a proposed public version of this document pursuant to Ground Rule 1.10 with colored highlighting clearly indicating any portion asserted to contain confidential business information. The Parties' submission shall also

include an index identifying the pages of this document where proposed redactions are located. The Parties' submission concerning the public version of this document need not be filed with the Commission Secretary.

SO ORDERED.



MaryJoan McNamara
Administrative Law Judge