

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALBAUGH, LLC,
Petitioner

v.

BASF SE,
Patent Owner

Case No. PGR2026-00026
Patent No. 12,305,206

PATENT OWNER'S PRELIMINARY RESPONSE

Table of Contents

I.	INTRODUCTION.....	1
II.	FACTUAL BACKGROUND AND PROSECUTION HISTORY	3
A.	Racemic Glufosinate.....	3
B.	Synthesis, Formulation, and Testing of L-Glufosinate.....	3
C.	Overview of '206 Patent	9
D.	Effective Filing Date: March 2, 2016.	12
E.	Prior Art in the Petition was Already Considered During Prosecution.....	13
III.	LEVEL OF ORDINARY SKILL IN THE ART.	15
A.	Petitioner's Definition of Ordinary Skill in the Art is Erroneous.	15
B.	Petitioner Has Not Established that its Expert Has Experience or Skill in the Relevant Art.	16
IV.	CLAIM CONSTRUCTION	19
V.	PETITIONER'S GROUNDS FAIL BECAUSE THE PETITION DOES NOT ESTABLISH THAT ANY CHALLENGED CLAIM IS MORE LIKELY THAN NOT TO BE UNPATENTABLE.....	19
A.	Ground 1: Petitioner Fails to Show that Claim 1 is Anticipated by Long.	20
1.	Overview of Long.....	20
2.	Long Fails to Disclose at Least One Claim Element in the '206 Patent.	25
3.	Petitioner Improperly Attempts to Fill the Gaps in Long with Other References.	31
B.	Ground 2: Petitioner Fails to Show that Claims 1–6 are Obvious Over Long.	34

C.	Ground 3: Petitioner Fails to Show that Claims 1–6 are Obvious in View of the “L-Glufosinate Synthesis References.”	37
1.	Petitioner’s Catch-All Ground Fails to Identify the Basis for the Challenge with Particularity.	38
2.	The L-Glufosinate Synthesis References Do Not Fill the Gaps in Long.....	42
3.	Record Evidence of Unexpected Results Establishes Patentability over Long and the Six L-Glufosinate Synthesis References.....	44
VI.	NO MATERIAL ERROR.....	53
VII.	PETITIONER’S EXPERT DECLARATION IS IMPROPER SUBSTITUTION FOR DISCLOSURES IN THE PRIOR ART.	55
VIII.	CONCLUSION	59

Table of Exhibits

No.	Description
2001	Prosecution history of U.S. Patent 12,305,206, U.S. Patent Application No. 18/435,340
2002	U.S. Patent No. 6,051,408 (“Bartsch”)
2003	U.S. Patent No. U.S. 10,888,095 (“Bhoge”)
2004	Memorandum from Coke Morgan Stewart to All PTAB Judges, Interim Process for PTAB Workload Management (Mar. 26, 2025)
2005	Declaration of Matt Malone
2006	U.S. Patent No. 9,834,802
2007	<i>BASF Acquires Glu-L Technology from AgriMetis</i> , News Release, BASF (Sept. 14, 2020)
2008	Liberty® ULTRA EPA Label
2009	<i>What type of Products Does Albaugh Offer?</i> , FAQs, Albaugh, https://www.albaugh.com/us/who-is-albaugh/about-us/faqs (last visited Apr. 10, 2026)
2010	Surmise 5, Albaugh, https://www.albaugh.com/us/agriculture/crop-protection/herbicides/listings/surmise--5 (last visited Apr. 10, 2026)
2011	Surmise Pro, Albaugh Specialty Products, https://www.albaugh.com/us/specialty-products/turf-ornamental/herbicides/listings/surmise-pro (last visited Apr. 10, 2026)
2012	Liberty® Safety Data Sheet
2013	Finale® XL T&O EPA Label

No.	Description
2014	Adam Mossoff, <i>The Patent System: America's Innovation Engine</i> , The Heritage Foundation (Jan. 23, 2025)
2015	CEO of Albaugh Group visits Nutrichem, Nutrichem (Feb. 24, 2015)
2016	<i>Why Did Albaugh Acquire Rotam?</i> , FAQs, Albaugh, https://www.albaugh.com/us/who-is-albaugh/about-us/faqs (last visited Apr. 10, 2026)
2017	<i>Albaugh Closes on the Acquisition of Rotam</i> , Albaugh, https://www.albaugh.com/pl/en/news/news-detail/2024/10/30/albaugh-closes-on-the-acquisition-of-rotam (last visited Apr. 10, 2026)
2018	<i>Albaugh to Acquire Rotam AgroSciences</i> , AgriBusiness Global (Dec. 21, 2021)
2019	FAQs for Interim Processes for PTAB Workload Management (“FAQs”)
2020	Memorandum from Coke Morgan Stewart to Members of the Patent Trial and Appeal Board, Enforcement and Non-Waiver Of 37 C.F.R. § 42.104(B)(4) and Permissible Uses of General Knowledge in Inter Partes Reviews (July 31, 2025)
2021	Trial Practice Guide, USPTO (Nov. 2019)
2022	Meet the Global Executive Committee, Albaugh, https://www.albaugh.com/who-is-albaugh/about/global-executive-committee (last visited Apr. 10, 2026)
2023	Excerpt from Ex. 2022
2024	<i>About Huapont Life Sciences Co Ltd</i> , Reuters, https://reuters.com/markets/companies/002004.SZ (last visited Apr. 10, 2026)
2025	Albaugh, LCC's Corporate Disclosure Statement, <i>FMC Corp. v. Albaugh, LCC</i> , No. 4:24-cv-00055-SHL-HCA (S.D. Iowa May 23, 2024)

No.	Description
2026	<i>China-Based Firm Acquires 20% Stake in Albaugh</i> , AgriMarketing (Aug. 11, 2014)
2027	About Us, Albaugh, https://www.albaugh.com/ar/en/who-is-albaugh/about-us (last visited Apr. 10, 2026)
2028	Nutraceutical Company Limited, 2024 Annual Report
2029	Declaration of Ingo Meiners under 37 C.F.R. § 1.132 in U.S. Patent App. 16/633,482.
2030	International Publication No. WO 2019/020283
2031	Declaration of David A. Hunt, Ph. D.
2032	<i>Curriculum Vitae</i> of David A. Hunt, Ph. D.
2033	Declaration of Ingo Meiners

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.207, Patent Owner BASF SE (“BASF” or “Patent Owner”) submits this Preliminary Response to the Petition for Post Grant Review (“Petition”) filed by Petitioner Albaugh, LLC (“Albaugh” or “Petitioner”). Petitioner challenges the validity of claims 1–6 of U.S. Patent No. 12,305,206 (“the ’206 Patent”). Institution should be denied because Petitioner fails to establish that any of the challenged claims are more likely than not unpatentable.

The challenged claims are directed to herbicidal formulations that include both L-glufosinate and D-glufosinate, wherein the formulation has greater than about 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate in the formulation. The prior art does not teach the recited novel formulations, which have shown unexpected results in greenhouse trials as evidenced during prosecution.

In Grounds 1 and 2, Petitioner contends that claim 1 is anticipated by Long and claims 1–6 would have been obvious in view of Long. Pet. at 36. In Ground 3, Petitioner contends that claims 1–6 would have been obvious in view of Long and “one or more of” six different references that Petitioner terms “the L-Glufosinate Synthesis References.” Pet. at 36.

Petitioner’s challenges premised on Long alone (Grounds 1–2) fail because Long does not disclose a formulation comprising about 90% L-glufosinate compared

to the sum of the D-glufosinate and the L-glufosinate present in the formulation. To the contrary, Long discloses only a racemic mixture. Petitioner has not identified any teaching in Long of a formulation that includes both D- and L-glufosinate wherein the formulation has greater than 90% L-glufosinate compared to the sum of D- and L-glufosinate.

Petitioner's challenge based on "one or more of" the six different L-Glufosinate Synthesis References (Ground 3) also fails. First, as a threshold matter, this ground comprises 63 unique combinations of references, none of which are set forth with the required particularity. Furthermore, even if considered collectively, none of the references resolve the gaps in Long's teachings. In addition, record evidence of unexpected results that was before the Examiner during prosecution establishes patentability over Long and the six L-Glufosinate Synthesis References.

The Examiner correctly allowed the claims over Long and did not commit any material error during prosecution. The Petition impermissibly depends on its expert declaration to substitute for lack of disclosure in the prior art and fails to establish that any claim challenged in the Petition is more likely than not unpatentable. 35 U.S.C. § 324(a). For the forgoing reasons, Patent Owner respectfully submits that the Board should deny institution.

II. FACTUAL BACKGROUND AND PROSECUTION HISTORY

A. Racemic Glufosinate

Glufosinate is a non-selective, foliarly-applied herbicide that has been in use for decades. Ex. 1001, 1:43–45. Glufosinate is “considered to be one of the safest herbicides from a toxicological or environmental standpoint.” *Id.* Glufosinate exists naturally as a racemic mixture of two enantiomers, L-glufosinate and D-glufosinate. *Id.*, 1:46–48; Ex. 2005, ¶ 7. It is known that the L-isomer is much more active than the D-isomer for herbicidal uses. Ex. 1001, 1:48–52; Ex. 2005, ¶ 7.

Before Patent Owner’s novel invention, glufosinate was formulated as a racemic mixture in which half of the glufosinate was the inactive D-enantiomer. Efforts to produce L-glufosinate at high purity and commercial scale proved challenging. *Id.*, 1:53–57; Ex. 1006 at 5; Ex. 1008, 1:21–66; Ex. 1009, ¶¶ [0004]–[0011]; Ex. 1011, 1:22–2:35. Cost effective methods to synthesize L-glufosinate were unavailable, and formulations containing an enantiomeric excess of L-glufosinate did not exist. Ex. 1001, 1:53–57.

B. Synthesis, Formulation, and Testing of L-Glufosinate

Patent Owner developed new cost-effective methods for the production of L-glufosinate. Ex. 1001, 1:57–58. Patent Owner’s process for making L-glufosinate is described in the ’206 Patent and comprises two steps, starting with a racemic mixture of L- and D-glufosinate. *See* Ex. 1001, 4:60–13:62. The first step is the oxidative deamination of D-glufosinate to an intermediate, PPO (2-oxo-4-

(hydroxy(methyl)phosphinoyl)butyric acid), with a D-amino acid oxidase enzyme. Ex. 1001, 1:62–2:4. The second step is the specific amination of PPO to L-glufosinate by a transaminase enzyme using an amine group from one or more amine donors. Ex. 1001, 1:65–2:6.

Patent Owner also developed new formulations comprising the reaction products from its novel process. Ex. 1001, 13:65–67. Patent Owner's new formulations comprise both L-glufosinate and D-glufosinate, wherein the formulation includes greater than about 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate. Ex. 1001, 2:67–3:2, 14:6–19. The formulation further comprises one or more additional components selected from the group consisting of sodium alkyl ether sulfate, 1-methoxy-2-propanol, dipropylene glycol, and alkyl polysaccharide, with water as the balance of the formulation. Ex. 1001, 15:9–14, 15:37–16:28.

Patent Owner's new formulation showed unexpected results in testing. Glufosinate is often used in conjunction with crops that are resistant to glufosinate. *Id.*, 21:6–13. In addition to the technical challenges for synthesizing L-glufosinate, it was thought that increasing the proportion of the active L-isomer in a formulation would increase not only desirable herbicidal activity to weeds but also undesirable phytotoxicity (unwanted damage) to crops. Ex. 2031, ¶ 60.

Whenever an herbicide is applied it can affect both the target (e.g., weeds) and also the desired vegetation (e.g., crops). Ex. 2031, ¶ 60. Although glufosinate formulations are used on glufosinate tolerant crops, there still may be residual damage to the glufosinate tolerant crop (i.e., phytotoxicity) caused by the application of the herbicide. Ex. 2031, ¶¶ 60–61. As a result, there was a long-standing expectation that increasing the effective concentration of L-glufosinate (the active enantiomer) would cause a corresponding increase in *both* weed control and unintended crop damage. Ex. 2029,¹ ¶ [0005]; Ex. 2031, ¶¶ 60–61.

For example, by using around double the amount of L-glufosinate, one of ordinary skill in the art would expect more herbicidal activity on both the weeds and the glufosinate tolerant plants compared to the use of the same amount of a racemic formulation, which contains half L-glufosinate and half D-glufosinate. Ex. 2031, ¶ 60.

Testing showed that formulations using over 90% L-glufosinate resulted in increased herbicidal activity relative to racemic formulations. But, formulations containing over 90% L-glufosinate surprisingly did *not* result in increased herbicidal activity against glufosinate tolerant crops. Ex. 2029, ¶ [0006]. Rather, the opposite occurred: formulations with over 90% L-glufosinate and correspondingly lower

¹ Ex. 2029 was submitted during prosecution of Patent Owner's U.S. Patent Application No. 16/633,482, titled Use of Herbicidal Compositions Based on L-Glufosinate in Tolerant Field Crops.

amounts of D-glufosinate unexpectedly showed **lower** levels of phytotoxicity against glufosinate tolerant crops compared to applications involving similar molar applications of formulations comprising racemic glufosinate. Ex. 2029, ¶ [0006]

Accordingly, Patent Owner's testing demonstrated that certain L-glufosinate formulations could provide enhanced weed control while reducing phytotoxicity to crops compared to racemic glufosinate use. Ex. 2029, ¶¶ [0010]–[0011]. This surprising result was pronounced and clear:

[0009] Table 2B of the application shows the surprising reduction of phytotoxicity caused to glufosinate tolerant field crops in comparison to the same molar amount of racemic glufosinate-ammonium:

TABLE 2B								
Ratings of herbicidal activity in field trials against the above-mentioned glufosinate tolerant field crop species GLXMA, GOSHI and ZEAMX after a single post-emergence treatment with products P1 and PX in an amount of 600 g/ha of L-glufosinate-ammonium and 600 g/ha of racemic glufosinate-ammonium, respectively								
Field crop (BBCH stage)	Product							
	P1: 600 g/ha of L-glufosinate-ammonium				PX: 600 g/ha of racemic glufosinate-ammonium			
	DAA 7	DAA 15	DAA 28	MAX	DAA 7	DAA 15	DAA 28	MAX
GLXMA (12)	3%	0%	0%	3%	8%	5%	5%	8%
GOSHI (11)	0%	0%	0%	0%	10%	7%	5%	10%
ZEAMX (13)	8%	5%	5%	8%	13%	8%	6%	13%

Ex. 2029, ¶ [0009]. Instead of seeing approximately double the phytotoxicity damage as would be expected (e.g., about 16%, which would be double the 8% damage of racemic glufosinate on the glufosinate tolerant soybean crop GLXMA

(12)) when using about 600 g/ha L-glufosinate, the glufosinate tolerant crop showed a reduced phytotoxicity of only 3% when using about 600 g/ha L-glufosinate.

Additional testing confirmed this surprising finding when testing the racemate (600 g/ha glufosinate ammonium) and a comparable amount of L-glufosinate (300 g/ha L-glufosinate ammonium):

[0005] The results of the phytotoxicity experiment are summarized in table 2e below. Surprisingly, all LGA treatments are causing less phytotoxicity than respective GA treatments applied at the same molecular weight. There is some difference in sensitivity to glufosinate between the two soybean varieties but the difference in crop response from LGA as compared to GA is visible in both varieties and at all three application rates 300, 600 and 1200 g/ha. This was not expected.

Table 2e: Ratings of herbicidal activity (phytotoxicity) in an greenhouse experiment against the above mentioned glufosinate tolerant soybeans (GLXMA) after a single post-emergence treatments with racemate glufosinate-ammonium (GA) and L-glufosinate-ammonium (LGA) rated 7 DAA.

Field crop	LGA 300 g/ha	GA 300 g/ha	LGA 600 g/ha	GA 600 g/ha	LGA 1200 g/ha	GA 1200 g/ha
GLXMA (CZ1660)	0	5	10	15	10	40
GLXMA (CZ3519)	5	10	10	35	15	70
average	2.5	7.5	10	25	12.5	55

Ex. 2001 at 213 (annotated). As shown in the results above, 300 g/ha of LGA² had significantly less damage on field crops relative to a comparable amount of L-glufosinate in a racemic glufosinate ammonium mixture. *Id.* The application of 300 g/ha of LGA resulted in phytotoxicity ratings of 0 on CZ1660 and 5 on CZ3519

² LGA used in testing comprised 98% by weight L-glufosinate. Ex. 2033, ¶ 7. Accordingly, when comparing the amount of L-glufosinate in LGA and GA, the amount of L-glufosinate in LGA is slightly less than is in double the amount of racemic GA (e.g., 300 g/ha LGA has slightly less L-glufosinate than 600 g/ha GA).

glufosinate tolerant soybeans, whereas the application of 600 g/ha of GA³ resulted in phytotoxicity ratings of 15 on CZ1660 and 35 on CZ3519 glufosinate tolerant soybeans. *Id.*

[0005] The results of the phytotoxicity experiment are summarized in table 2e below. Surprisingly, all LGA treatments are causing less phytotoxicity than respective GA treatments applied at the same molecular weight. There is some difference in sensitivity to glufosinate between the two soybean varieties but the difference in crop response from LGA as compared to GA is visible in both varieties and at all three application rates 300, 600 and 1200 g/ha. This was not expected.

Table 2e: Ratings of herbicidal activity (phytotoxicity) in an greenhouse experiment against the above mentioned glufosinate tolerant soybeans (GLXMA) after a single post-emergence treatments with racemate glufosinate-ammonium (GA) and L-glufosinate-ammonium (LGA) rated 7 DAA.

Field crop	LGA 300 g/ha	GA 300 g/ha	LGA 600 g/ha	GA 600 g/ha	LGA 1200 g/ha	GA 1200 g/ha
GLXMA (CZ1660)	0	5	10	15	10	40
GLXMA (CZ3519)	5	10	10	35	15	70
average	2.5	7.5	10	25	12.5	55

Ex. 2001 at 213 (annotated). The same surprising effect is shown by LGA 600 g/ha when compared to approximately the same amount of L-glufosinate in GA 1200 g/ha.⁴ *Id.* Application of 600 g/ha of LGA resulted in phytotoxicity ratings of 10 on both CZ1660 crops and CZ3519 crops, whereas application of 1200 g/ha of GA had phytotoxicity ratings of 40 on CZ1660 crops and 70 on CZ3519 crops. *Id.* This was a significant and surprising difference in phytotoxic effects. *Id.*; Ex. 2031, ¶ 62.

³ Glufosinate ammonium (GA) 600 g/ha comprises 50% D-glufosinate and 50% L-glufosinate, and therefore would include about 300 g/ha L-glufosinate in the GA.

⁴ Glufosinate ammonium (GA) 1200 g/ha comprises 50% D-glufosinate and 50% L-glufosinate, and therefore would include about 600 g/ha L-glufosinate in the GA.

Because the L-enantiomer was known to be the active isomer of racemic glufosinate, a person of ordinary skill in the art would have expected that increasing its concentration in formulations would exacerbate crop damage. Ex. 2031, ¶ 63. Patent Owner’s synthesis and testing of L-glufosinate formulations surprisingly showed the opposite result in which formulations comprising over 90% L-glufosinate showed significantly lower phytotoxicity as compared with formulations of racemic glufosinate that comprise the same or greater amounts of the L-enantiomer. Ex. 2031, ¶ 63–68.

C. Overview of ’206 Patent

The ’206 Patent claims these new and nonobvious L-glufosinate formulations with “greater than about 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation.” Ex. 1001, claim 1, 2:66–3:2; 23:65–67. The claims thus require the presence of *both* L- and D-glufosinate and provide a high enantiomeric excess of L-glufosinate. Ex. 1001, 2:66–3:2, 24:6–9, 24:17–19. The claimed formulations may be used for selectively controlling weeds in a field, which could include crops that are resistant to glufosinate, and advantageously display less phytotoxicity towards glufosinate tolerant crops. Ex. 1001, 21:6–11.

The surprising efficacy of the claimed L-glufosinate formulation supports the USPTO’s decision to grant the ’206 Patent and is consistent with the goals of the

patent system: rewarding innovation for the benefit of society. *Geospatial Tech. Assocs., LLC v. United States*, 164 Fed. Cl. 267, 271 (2023) (“The aim of the U.S. patent system is to encourage innovation”); *Sanofi-Synthelabo v. Apotex, Inc.*, 470 F.3d 1368, 1383 (Fed. Cir. 2006) (“We have long acknowledged the importance of the patent system in encouraging innovation. Indeed, the ‘encouragement of investment-based risk is the fundamental purpose of the patent grant, and is based directly on the right to exclude.’” (quoting *Patlex Corp. v. Mossinghoff*, 758 F.2d 594, 599 (Fed. Cir. 1985))).

A key advance of the '206 Patent, and its family, was recognizing that L-glufosinate could be formulated with particular amounts of L-glufosinate, D-glufosinate, and adjuvants, with improved phytotoxicity in glufosinate-resistant crops. Ex. 1001, 13:66–14:48; Ex. 2001 at 213. The compositions disclosed “are useful for application to a field of crop plants to the prevention or control of weeds.” Ex. 1001, 14:49–51. In the '206 Patent, Patent Owner claimed specific embodiments of those disclosed in the application. Ex. 1001, 12:14–22, 22:48–52.

Of the challenged claims, claim 1 is independent. Claim 1 recites a formulation comprising particular amounts of L-glufosinate, D-glufosinate, and additional components as follows:

1[pre]: A formulation comprising:

1[a]: L-glufosinate ammonium in an amount from 10-30% by weight of the formulation and D-glufosinate, wherein the formulation has greater than about 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation;

1[b]: one or more additional components selected from the group consisting of:

sodium alkyl ether sulfate in an amount from 10-40% by weight of the formulation;

1-methoxy-2-propanol in an amount from 0.5-2% by weight of the formulation;

dipropylene glycol in an amount from 4-18% by weight of the formulation;

alkyl polysaccharide in an amount from 4-20% by weight of the formulation; and

1[c]: water as the balance of the formulation.

Ex. 1001, claim 1.

Claims 2–6 depend from claim 1 and recite more specific amounts of the components of the formulation. *Id.*, claims 2–6.

D. Effective Filing Date: March 2, 2016.

Patent Owner filed the application that issued as the '206 Patent on February 7, 2024. Ex. 2001 at 2. The application appropriately claims priority to provisional applications No. 62/302,421, filed March 2, 2016; No. 62/336,989, filed May 16, 2016; and No. 62/413,240, filed October 26, 2016, and incorporates the provisional applications by reference in their entirety. *Id.* at 3. The application was filed as a continuation of U.S. Patent No. 11,913,048 (“the '048 Patent”), U.S. Patent No. 11,905,538 (“the '538 Patent”), U.S. Patent No. 11,560,577 (“the '577 Patent”), U.S. Patent No. 10,781,465 (“the '465 Patent”), U.S. Patent No. 10,260,078 (“the '078 Patent”), and U.S. Patent No. 9,834,802 (“the '802 Patent”), and incorporated those applications by reference in their entirety. *Id.*

Petitioner argues that the '206 Patent had a “break in continuity” and thus is “not entitled to the benefit of any of the 2016 filing dates for Patent Owner’s three provisional applications.” Pet. at 20, 59. Petitioner is incorrect.

The '206 Patent properly claims the benefit of the March 2, 2016 filing date of the earliest filed provisional pursuant to 35 U.S.C. § 119(e). Section 119(e) does not have a co-pendency requirement. Instead, it provides that an applicant may claim priority to a provisional application *regardless of whether the provisional application is abandoned*. See Nov. 29, 1999, Public Law 106-113, sec. 1000(a)(9), 113 Stat. 1501A-564, -588-589 (S. 1948 sec. 4801) (eliminating copendency

requirement by striking language requiring that “the provisional application was pending on the filing date of the application for patent under section 111(a) or section 363 of this title.”). All statutory requirements of section 119(e) are satisfied, and the effective filing date is March 2, 2016.

Petitioner’s priority analysis relies on 35 U.S.C. § 120, which governs priority to earlier *non-provisional* applications, rather than 35 U.S.C. § 119(e), which governs priority to *provisional* applications. The copendency requirement of section 120 does not apply here. Petitioner’s priority analysis is therefore erroneous, as is Petitioner’s obviousness analysis conducted as of an incorrect priority date.

E. Prior Art in the Petition was Already Considered During Prosecution.

During prosecution of the ’206 Patent, the Examiner already considered key references relied on in the Petition, including U.S. Patent No. 8,445,406 (“Long”) (Ex. 1005), U.S. Patent No. 5,767,309 to Knorr (“Knorr”) (Ex. 1011), and non-patent literature “Enantioselective synthesis of L-phosphinothricin from L-methionine and L-glutamic acid via L-vinylglycine” (“Zeiss”) (Ex. 1007), among others. *Id.* at 259–62; *see also* Ex. 1001, Cover; Ex. 2001 at 288.

During the prosecution of the ’206 Patent, the Examiner rejected claims as anticipated by Long and as obvious over Long in view of secondary references. Ex. 2001 at 288–92. The Examiner based his rejections on Long’s purported disclosure of a “stable concentrated herbicidal composition” comprising “L-enantiomer

glufosinate.” Ex. 2001 at 288–89. Patent Owner overcame this rejection, explaining that “Long discloses that the glufosinate used in the aqueous herbicidal formulations is racemic glufosinate,” and the L-glufosinate composition in the amended claim is not racemic glufosinate. Ex. 2001 at 317–18. Patent Owner further amended its claim to recite the presence of *both* L-glufosinate and D-glufosinate in the formulation and to specify the relative amounts of each as follows:

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A formulation comprising:
L-glufosinate ammonium in an amount from 10-30% by weight of the formulation and
D-glufosinate, wherein the formulation has greater than about 90% L-glufosinate compared
to the sum of the D-glufosinate and the L-glufosinate present in the formulation;
one or more additional components selected from the group consisting of:
sodium alkyl ether sulfate in an amount from 10-40% by weight of the
formulation;
1-methoxy-2-propanol in an amount from 0.5-2% by weight of the formulation;
dipropylene glycol in an amount from 4-18% by weight of the formulation;
alkyl polysaccharide in an amount from 4-20% by weight of the formulation;
and
water as the balance of the formulation.

Ex. 2001 at 315.

This amendment further distinguished the claim from both Long’s teaching of racemic glufosinate and the examiner’s erroneous reading of Long as teaching pure L-glufosinate. Ex. 2031, ¶ 37. The Examiner agreed with Patent Owner’s claim amendments and persuasive arguments and issued a Notice of Allowance. Ex. 2001 at 350–53. The Examiner correctly recognized that Long, alone or in combination

with the other cited references, did not teach or suggest “a formulation ha[ving] greater than about 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation.” Ex. 2001 at 318.

III. LEVEL OF ORDINARY SKILL IN THE ART.

Patent Owner disputes Petitioner’s definition of a person of ordinary skill in the art and Petitioner’s expert’s qualifications as one skilled in the relevant art.

A. Petitioner’s Definition of Ordinary Skill in the Art is Erroneous.

Petitioner offers a confusing and internally inconsistent definition of the level of ordinary skill. Ex. 2031, ¶ 32. Petitioner first defines a POSITA as a “multidisciplinary team.” Pet. at 37. Petitioner later contends that a “POSITA would be part of a research team,” apparently maintaining that a POSITA is an individual rather than the team itself. Pet. at 37. It is thus unclear from the Petition whether Petitioner contends that a POSITA is a team or a single individual, much less the actual level of qualifications that the individual or team needs to have to qualify. This leaves significant ambiguity regarding the perspective from which Petitioner conducts its obviousness analysis. The level of ordinary skill is a *Graham* factor—a necessary part of the obviousness analysis—and, without a clear definition, the Petition fails to satisfy the particularity requirement of 35 U.S.C. § 322(a)(3).

Patent Owner disagrees with Petitioner’s confusing and inconsistent definition of the level of ordinary skill. Patent Owner instead submits that a POSITA

would have had a bachelor's degree in chemistry, organic chemistry, biology, biochemistry, or a related biologic or chemical degree, with at least three to five years of experience in herbicide development. Alternatively, a POSITA would have a master's degree in chemistry, organic chemistry, biology, biochemistry, or a related biologic or chemical degree, with at least two to five years of experience in herbicide development. *See* Ex. 2031, ¶ 30. This definition reflects the skills and experience necessary to understand herbicide formulation and is consistent with the relevant art. The Federal Circuit requires “that ‘an expert must at a minimum possess ordinary skill in the art.’” *Osseo Imaging, LLC v. Planmeca USA Inc.*, 116 F.4th 1335, 1340 (Fed. Cir. 2024) (citation omitted).

B. Petitioner Has Not Established that its Expert Has Experience or Skill in the Relevant Art.

Petitioner and Patent Owner agree that practical experience with herbicide development is needed for one to qualify as a person of ordinary skill in the art. Petitioner's expert, Dr. Suri Iyer, does not meet either Petitioner or Patent Owner's definition of a POSITA. Ex. 2031, ¶ 34. Critically, Dr. Iyer does not have any experience with the development of herbicides as required by each party's definition. *Id.* Petitioner's definition requires a POSITA to be “familiar with formulations of organic bioactive compounds, such as herbicides, in a racemic form or in individual form, as well as their properties and applications.” Pet. at 37. Petitioner's definition also requires that a POSITA have experience “attend[ing] meetings with team

members typical of a team developing herbicides for commercial applications.” Pet. at 37. Further, Petitioner’s definition requires that a POSITA also “have regularly attended lectures, symposia, and conferences on formulations and applications of herbicides.” Moreover, under Petitioner’s definition, a POSITA must have at least “five years of practical experience” including experience developing herbicides. Patent Owner’s definition likewise requires two or more years of experience with herbicide development. *Supra* Section III.A.

Dr. Iyer’s background does not reflect any experience with herbicide development. His CV and declaration reflect only general organic chemistry experience in academia. *See* Ex. 1004; Ex. 1003, ¶¶ 7–12. Dr. Iyer does not indicate any experience with herbicides or their formulation. *See* Ex. 1004; Ex. 1003, ¶¶ 7–12. Nor does his CV provide any reference to experience specifically involving enantiomers of organic bioactive compounds including herbicides. *See* Ex. 1004. Moreover, Dr. Iyer’s CV contains no indication of commercial or team-based herbicides development experience or regular attendance at lectures, symposia, or conferences on formulations and applications of herbicides. *See* Ex. 1004.

In short, the Petition does not establish that Dr. Iyer has experience with synthesizing, formulating, or testing herbicides. Instead, Dr. Iyer’s listed experience focuses on virus and ligand identification and characterization, among other academic organic chemistry pursuits. *Id.* at 5–7.

The Federal Circuit has found that when an expert lacks expertise across all the specified disciplines, that expert is unqualified to testify on matters requiring the missing expertise. *Sierra Wireless, ULC v. Sisvel S.p.A.*, 130 F.4th 1019, 1025 (Fed. Cir. 2025) (“We hold that the Board abused its discretion by relying on [expert’s] testimony where he does not satisfy the requirements for an ordinarily skilled artisan”). And to offer “expert testimony from the perspective of a skilled artisan in a patent case—like for claim construction, validity, or infringement—a witness must at least have ordinary skill in the art. Without that skill, the witness’ opinions are neither relevant nor reliable.” *Kyocera Senco Indus. Tools, Inc. v. Int’l Trade Comm’n*, 22 F.4th 1369, 1376–77 (Fed. Cir. 2022) (“[T]o be qualified to offer expert testimony on issues from the vantage point of an ordinarily skilled artisan in a patent case, an expert must at a minimum possess ordinary skill in the art.”); *see also Avail Medsystems, Inc. v. Teladoc Health, Inc.*, IPR2022-00444, Paper 10 at 26 (P.T.A.B. July 21, 2022) (declining to consider the expert’s testimony “on any issue that is analyzed through the lens of an ordinarily skilled artisan” because expert did not have the specific experience as required by the POSITA definition).

Without relevant experience with herbicide development, Dr. Iyer does not qualify in the pertinent art and is not positioned to provide reliable testimony regarding what would and would not have been obvious to a person of ordinary skill in the art of developing herbicides. Dr. Iyer likewise does not have the requisite

experience to testify reliably as to what a person skilled in the art of herbicide development would understand regarding the disclosures of Long. Accordingly, Dr. Iyer does not fall within the definition of a POSITA and under either party's definition he is not qualified to offer expert testimony in this matter. *See* Ex. 2031, ¶ 34.

Without Dr. Iyer's testimony, the Petition lacks evidentiary support (*infra* Section VII) and institution should be denied.

IV. CLAIM CONSTRUCTION

The deficiencies of the Petition addressed herein do not turn on claim construction issues. Accordingly, Patent Owner does not propose constructions at this time. Patent Owner takes no position on the constructions advanced by Petitioner at this time and reserves the right to propose constructions for one or more terms during trial if instituted.

V. PETITIONER'S GROUNDS FAIL BECAUSE THE PETITION DOES NOT ESTABLISH THAT ANY CHALLENGED CLAIM IS MORE LIKELY THAN NOT TO BE UNPATENTABLE.

The Board may not institute a post grant review unless the Petition demonstrates that it is more likely than not that at least one of the challenged claims is unpatentable. 35 U.S.C. § 324(a).⁵

⁵ The standard for instituting a PGR is higher than the "reasonable likelihood" threshold for IPR. *Compare* 35 U.S.C. § 314(a) ("reasonable likelihood that the

The Petition does not establish that any challenged claim is more likely than not to be unpatentable. Grounds 1–3 fail to teach essential elements of the challenged claims. Specifically, none of the prior art references teach or suggest a formulation of L-glufosinate with the presence of D-glufosinate in which the formulation has greater than about 90% L-glufosinate compared to the sum of the D- and the L-glufosinate in the formulation. Moreover, Ground 3 is not set forth with particularity, and record evidence that was accepted by the Examiner during prosecution demonstrates unexpected results of the claimed formulation.

A. Ground 1: Petitioner Fails to Show that Claim 1 is Anticipated by Long.

Ground 1 relies on U.S. Patent No. 8,445,406 to Long (“Long,” Ex. 1005). Long is fundamentally different from the claims of the ’206 Patent, because it lacks the enantiomeric excess of L-glufosinate of 90% with presence of the D-enantiomer.

1. Overview of Long

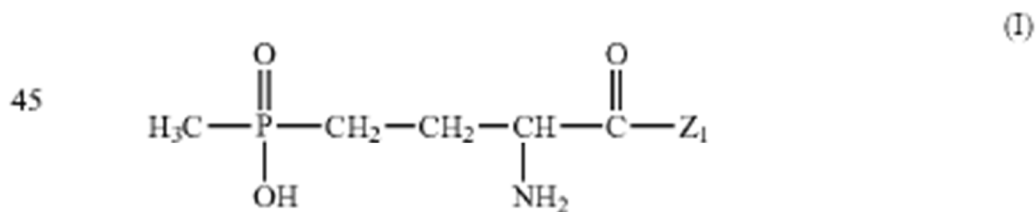
Long, titled “Stable Concentrated Herbicidal Compositions,” teaches an herbicidal composition that comprises a water-soluble herbicidal ingredient, which may be racemic glufosinate, “to provide a high-concentration herbicidal composition that overcomes the drawbacks of the prior art by demonstrating enhanced biological

petitioner would prevail”), *with* § 324(a) (“more likely than not that at least 1 of the claims challenged in the petition is unpatentable”).

activity in a stable formulation without compromising viscosity requirements.” Ex. 1005, 2:34–36; *Id.*, 1:31–35.

Long’s composition was developed to provide “a high-concentration herbicidal composition” in a “stable formulation.” Ex. 1005, 1:32–36. According to Long, “stable” means “physically stable compositions, i.e., liquid compositions that exist in a substantially continuous, single phase.” *Id.* at 2:26–29. Long’s claims recite a glufosinate composition comprising “20 to 35 percent by weight, based on the total weight of the composition, of a water-soluble herbicidal ingredient.” Ex. 1005, claims 1–3. Long discloses formula (I) as the typical water-soluble ingredient:

40 Typically the water-soluble herbicidal ingredient may
comprise a compound of the formula (I) and/or salts thereof:



50 wherein Z_1 is a radical of the formula $-\text{OM}$, $-\text{NHCH}(\text{CH}_3)\text{CONHCH}(\text{CH}_3)\text{CO}_2\text{M}$, or $-\text{NHCH}(\text{CH}_3)\text{CONHCH}[\text{CH}_2\text{CH}(\text{CH}_3)_2]\text{CO}_2\text{M}$, where M is H or a salt-forming cation.

Ex. 1005, 2:39–53.

The generic Markush structure of formula (I) can be one of several acids or salt-forming cations, one of which is glufosinate. Ex. 1005, 2:39–53. Long further

contemplates mixtures of the herbicidal ingredients depicted in formula (I), stating that “[m]ixtures may also be used.” Ex. 1005, 2:37–38.

The compounds of formula (I) have a chiral (asymmetric) center at the carbon bonded to the amino group. By not depicting stereochemistry with wedged and dashed bonds, formula (I) depicts a racemic mixture of both the left-handed and right-handed enantiomers of the various herbicidal ingredients encompassed by the genus. Ex 2031, ¶ 41. Indeed, Long explains that the compounds of formula (I) contain an asymmetric carbon atom and that formula (I) is “intended to encompass all stereoisomers and mixtures thereof, particularly the racemate” Ex. 1005, 3:10–11.

Note that the compounds of formula (I) contain an asym- 10
metric carbon atom. The L enantiomer has been observed to
be the biologically active isomer. The formula (I) therefore is
intended to encompass all stereoisomers and mixtures
thereof, particularly the racemate, and the biologically active
enantiomer in each case. Examples of active ingredients of 15
the formula (I) include glufosinate and/or its ammonium salt
such as in a racemic mixture; i.e., 2-amino-4[hydroxy(methyl)phosphinoyl]butanoic acid and its ammonium salt, the L
enantiomer of glufosinate and its ammonium salt or other
salts such as potassium, sodium, diethylamine, triethylamine, 20
bilanafos/bialaphos; e.g., L-2-amino-4-[hydroxy(methyl)
phosphinoyl]butanoyl-L-alaninyl-L-alanine and its sodium
salt.

Ex. 1005, 2:10–23. The above passage was cited during prosecution of the '206 Patent.

As explained in Patent Owner’s response to the Office Action dated October 10, 2024, Long does not disclose a formulation of L-glufosinate in enantiomeric excess. Ex. 1005, 2:20–23; Ex. 2001 at 317. Long in general, and this paragraph in particular, discloses a generic chemical structure omitting any stereochemistry, and only addresses the L-enantiomer as one part (the active ingredient) of the racemic mixture encompassed by the formula (I). Ex. 2031, ¶ 41. In other words, Long only discloses a formula that contains an asymmetric carbon, in which the formula describes a compound that is a mixture of L- and D-isomers. Ex. 1005, 2:39–53; 3:10–11 (“Note that the compounds of formula (I) contain an asymmetric carbon atom.”); Ex. 2031, ¶ 41. Long then goes on to explain that the formula “encompasses” both stereoisomers and mixtures of the compounds in the genus. Ex. 1005, 3:12–15. That means the formula covers the racemic mixture of glufosinate, which contains both L-glufosinate and D-glufosinate in equal amounts. Ex. 2031, ¶ 41. The *formula* that Long describes does not consist only of the L-enantiomer, much less a combination of the L- and D-enantiomers with the L-enantiomer in enantiomeric excess, and even less a combination of the L- and D-enantiomers with the L-enantiomer comprising greater than about 90% of the total glufosinate. Ex. 2031, ¶¶ 41, 43. A POSITA reading Long would not understand Long to disclose a formula that discloses L-glufosinate, whether purified or in enantiomeric excess, and

would not understand Long to disclose the particular relative amounts of L- and D-isomers as claimed in the '206 Patent. Ex. 2031, ¶ 44.

The rest of Long's disclosures comports with this. Notably, Long never discusses any formulations with an enantiomeric excess of the L-enantiomer such that the formula would comprise L-glufosinate alone or at high concentrations. Ex. 2031, ¶ 49. Additionally, all of Long's examples (and other related disclosures) use and describe Long's formula as being comprised of racemic glufosinate. *See e.g.*, Ex. 1005, col. 6–9; Ex. 2031, ¶¶ 42, 47. The Petition concedes that all of Long's examples are formulations of racemic glufosinate. *See Pet.* at 49, 63, 72, 92, 93

Finally, even if the above quoted paragraph of Long were to be interpreted incorrectly to be a disclosure of pure L-glufosinate—as Petitioner proposes—this disclosure would still fall short of disclosing the limitations of the challenged claims. Ex. 2031, ¶ 48. The '206 Patent claims specific relative proportions of L- to D-glufosinate wherein the amount of L-glufosinate is greater than about 90% relative to the sum total of L- and D-glufosinate. Nowhere in Long is there a disclosure of a formulation within this range. Ex. 2031, ¶ 49. Indeed, Petitioner's attempts to fill this gap through its obviousness grounds is an implicit acknowledgement of Long's deficiencies in this regard.

2. Long Fails to Disclose at Least One Claim Element in the '206 Patent.

Petitioner does not meet the anticipation standard because Long does not disclose a formulation wherein “the formulation has greater than about 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation.” *See Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1083 (Fed. Cir. 2008) (“To anticipate, the reference ‘must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements arranged as in the claim.’” (citation omitted)); *see also Eli Lilly & Co. v. Los Angeles Biomedical Rsch. Inst. at Harbor-UCLA Med. Ctr.*, 849 F.3d 1073, 1074 (Fed. Cir. 2017) (“To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either expressly or inherently.”). In other words, it is not enough to be able to find all of the pieces of the claimed invention somewhere in a prior art reference; rather, those elements must be set out in the prior art reference in the same way they are in the claimed invention. *Sanofi-Synthelabo*, 550 F.3d at 1083 (“To anticipate, the reference ‘must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements arranged as in the claim.’” (quoting *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008))).

Petitioner does not identify any embodiment of Long that falls within the challenged claim, nor could it. Petitioner’s anticipation argument relies on what is,

at best, a vague passing disclosure of the L-enantiomer as part of a racemic mixture. There is no discussion or disclosure in Long of formulations in enantiomeric excess and there is no disclosure of a formulation wherein the relative amounts of L- and D-glufosinate has L-glufosinate present in an amount of greater than 90%. Ex. 2031, ¶¶ 42, 49. Petitioner attempts to fill this gap by using other references. Pet. at 62–68. But Petitioner’s use of other references to fill a missing element in Long’s disclosure is an impermissible use of multiple references in the anticipation analysis. *Studiengesellschaft Kohle, m.b.H. v. Dart Indus., Inc.*, 726 F.2d 724, 727 (Fed. Cir. 1984) (rejecting an anticipation challenge where the challenger relied on two additional articles “for a very specific teaching, not for any light they shed on what [the anticipatory reference] would have meant to those skilled in the art”); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 851 F.3d 1270, 1274–75 (Fed. Cir. 2017). Accordingly, Petitioner’s anticipation argument, fails as a matter of law.

More particularly, Long fails to disclose “L-glufosinate ammonium in an amount from 10–30% by weight of the formulation and D-glufosinate, wherein the formulation has greater than about 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation.” Ex. 2031, ¶ 48. Petitioner alleges that Long’s passing mention of the L-enantiomer as part of a racemic mixture discloses this required claim element. *See* Pet. at 62–63. It does not.

Long does not disclose any amount or concentration of D-glufosinate or L-glufosinate beyond a 50/50 racemic mixture. Nor does it make any suggestion of an amount or concentration of L-glufosinate, which is expected since Long is only directed or concerned with racemic glufosinate. Long does not compare the amount of L-glufosinate to D-glufosinate anywhere within its four corners, which further underscores that Long only ever discloses the racemic mixture. *UCB, Inc. v. Accord Healthcare, Inc.*, 890 F.3d 1313, 1330 (Fed. Cir. 2018) (“Although [prior art reference] discloses the chemical structure of the racemic compound 107e, it does not disclose its separation into individual enantiomers nor does it disclose any pharmaceutical data of the R enantiomer recited in claim 9 of the [asserted] patent.”).

Similarly, every one of Long’s disclosures only uses or describes racemic glufosinate (i.e., Glufosinate 50%⁶), as reproduced below:

⁶ “Glufosinate 50%” indicates use of racemic glufosinate in the form of a 50 percent by weight aqueous solution. Ex. 1005, 3:28–32 (“Note that because the water-soluble herbicidal ingredient is typically provided in a 50 percent by weight aqueous solution, an equal amount of water is usually provided with the water-soluble herbicidal ingredient.”).

	1	2	3	4	5	6	7	8	9
Glufosinate 50%	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
SLES (sodium lauryl ether sulfate) 70%	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00
BREAK THRU S200 ¹	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
THFA	7.00	7.00	7.00						
(tetrahydrofurfuryl alcohol)									
Propylene glycol monomethyl ether				7.00	7.00	7.00			
Dipropylene Glycol							7.00	7.00	7.00
Iso-propanol	3.00			3.00			3.00		
Iso-Butanol		3.00			3.00			3.00	
1-Butanol			3.00			3.00			3.00
AKZO 6206 Linear Hexyl polyglycoside ²	5.00					5.00		5.00	
AKZO 6202 2-ethylhexyl polyglycoside ³		5.00		5.00					5.00
AL 2575 C8-10 Alkyl polyglycoside ⁴			5.00		5.00		5.00		
Sodium Xylene Sulfonate 40% aqueous	1.75				1.75				1.75

PGR2026-00026
PETITIONER EX1005

Ex. 1005, col. 6.

Examples 10 to 12

Examples 10 to 12 illustrate the effects of dipropylene glycol with various co-solvents. Example 10 is a composition of the present invention while Examples 11 and 12 are comparative.

INGREDIENT:	10		11		12	
	%	grams	%	grams	%	grams
Glufosinate 50%	44.00	88.00	44.00	88.00	44.00	88.00
SLES 70%	38.00	76.00	38.00	76.00	38.00	76.00
BREAK THRU S200	1.00	2.00	1.00	2.00	1.00	2.00
Dipropylene Glycol	7.00	14.00	7.00	14.00	7.00	14.00
Iso-propanol	3.00	6.00				
Iso-butanol			3.00	6.00		
1-butanol					3.00	6.00
AKZO 6206 Linear Hexyl polyglycoside			5.00	10.00		
AKZO 6202 2-ethylhexyl polyglycoside					5.00	10.00
AL 2575 C8-C10 Alkyl polyglycoside	5.00	10.00				
Sodium Xylene Sulfonate 40%					1.75	3.50
Sodium Toluene Sulfonate 40%			1.75	3.50		
PLANTAPON CMGS ¹	1.75	3.50				
FLUOWET PL80B	0.25	0.50	0.25	0.50	0.25	0.50
TOTAL:	100.00	200.00	100.00	200.00	100.00	200.00
RESULTS:						
Viscosity, cps- Initial Room Temperature	140		NT		NT	
Appearance - Initial Room Temp.	no separation		separation		separation	

Ex. 1005, col. 7.

Example 13

Comparative

Each composition in the following example contained, in 5 parts by weight:

Glufosinate 50% Concentrate	49	10
BREAK THRU 9903 Antifoam ¹	0.8	
BREAK THRU S200 Silicone Surfactant ²	0.6	
Potassium Hydroxide 50% Solution	0.12	

^{1, 2}Available from Degussa Corporation

15

Ex. 1005, col. 9.

Example 14

The following example illustrates the preparation of an herbicidal composition in accordance with the present invention. The ingredients were mixed together in the order listed:

Percent by weight	
INGREDIENT:	
Glufosinate 50%	48.600
AGNIQUE SLES 270 ¹	34.544
AGNIQUE PG 8105 ²	9.850
THEFA	5.500
BREAK THRU S200	0.600
BREAK THRU AF 9903	0.800
Potassium Hydroxide 50% Solution	0.100
D&C Red 17	0.006
TOTAL	100.000

Ex. 1005, col. 9.

Long's use of "Glufosinate 50%" (i.e., racemic glufosinate) in every example underscores that Long only contemplates use of a glufosinate racemate and does not disclose the required L-glufosinate enantiomeric excess formulation limitation as required by claim 1 of the '206 Patent. Ex. 2031, ¶ 47.

A prior art reference cannot anticipate if any one claim element is missing. Here, an element of claim 1 is missing from Long's disclosure. Thus, Long does not anticipate claim 1. Accordingly, Ground 1 does not provide a basis for instituting a PGR.

3. Petitioner Improperly Attempts to Fill the Gaps in Long with Other References.

The Petition impermissibly attempts to rely on additional references and expert testimony to fill gaps in Long, confirming that Long itself does not disclose each and every recited limitation.

In Ground 1, Petitioner first cites to Long's depiction of the genus of formula (I) and related description in column 3 at lines 10–23. Pet. at 62–63. The Petition relies on self-serving interpretation of this passage by Dr. Iyer to contend that Long's formulations are not limited to racemic glufosinate. *Id.* (citing Ex. 1003, ¶¶ 125–26). Dr. Iyer's interpretation is incorrect as explained above, but even if it were accepted as correct at this stage of the proceeding, neither Petitioner nor Dr. Iyer further identifies any teaching in Long of the "greater than about 90% L-glufosinate"

limitation of claim 1. Rather, Petitioner erroneously attempts to buttress this gap in Long's teaching through the use of *other prior art references*.

Petitioner attempts to gap-fill using other prior art references through the guise of enablement. Despite the lack of any teaching in Long of a formulation of L- and D-glufosinate with greater than about 90% L-glufosinate, Petitioner asserts that “a POSITA would have been aware of several prior art references enabling the preparation of L-glufosinate and its ammonium salt at a purity greater than about 90% (compared to the sum of L- and D-isomers) as claimed” and specifically points to the six references that Petitioner collectively refers to as the “L-Glufosinate Synthesis References.” Pet. at 64–65. Petitioner then contends that 35 U.S.C. § 102(a)(1) allows application of “multiple references when the additional references are cited to prove that the primary reference contains an enabling disclosure.” Pet. at 66. But Petitioner is not citing the L-Glufosinate Synthesis References as an enabling disclosure. Rather, Petitioner is citing those references for the “greater than about 90% L-Glufosinate” limitation, where Long contains no such teaching. In doing so, Petitioner is presenting an obviousness combination under the guise of anticipation in an apparent effort to avoid the compelling evidence of unexpected results that were presented during prosecution. The Board should reject this effort.

“A patent is invalid for anticipation if a *single prior art reference* discloses each and every limitation of the claimed invention, either expressly or inherently.” *Galderma Lab’ys, L.P. v. Teva Pharms. USA, Inc.*, 799 F. App’x 838, 842–43 (Fed. Cir. 2020) (emphasis added) (finding that district court erred by finding the asserted claims anticipated by the disclosures of two references, “in contravention of settled law”); *Studiengesellschaft Kohle*, 726 F.2d at 727 (rejecting an anticipation challenge where the challenger relied on two additional articles “for a very specific teaching, not for any light they shed on what [the anticipatory reference] would have meant to those skilled in the art”); *see also Nidec Motor Corp.*, 851 F.3d at 1274–75.

An anticipatory reference must “clearly and unequivocally disclose the claimed [invention] or direct those skilled in the art to the [invention] without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.” *Sanofi-Synethelabo*, 550 F.3d at 1083 (alterations in original) (quoting *In re Arkley*, 455 F.2d 586, 587 (C.C.P.A. 1972)). While it may be “permitted [to] use of additional references to confirm the contents of the allegedly anticipating reference, [the Federal Circuit] ha[s] made clear that anticipation *does not permit an additional reference to supply a missing claim limitation.*” *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1335 (Fed. Cir. 2002) (emphasis added) (internal citations omitted) (finding plaintiff’s

anticipation argument unpersuasive where plaintiff attempts to combine the teachings of references to build anticipation where primary reference fails to show all limitations of patent claims). The Board should reject Petitioner's effort to use secondary references to supply a missing claim limitation in an anticipation ground.

Petitioner's theory also depends on a POSITA engaging in undue experimentation to arrive at the claimed formulation, which is inconsistent with anticipation. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (finding that a reference must also "enable one of ordinary skill in the art to make the invention without undue experimentation." (citation omitted)). A POSITA reading Long would not be directed to the claimed formulation without such undue experimentation.

Long simply does not disclose a formulation that comprises 90% L-glufosinate in the presence of the D-enantiomer and thus does not anticipate claim 1. Petitioner cannot look to six other references to supply that missing limitation. Accordingly, Petitioner's anticipation argument fails, and Ground 1 does not meet the threshold for institution.

B. Ground 2: Petitioner Fails to Show that Claims 1–6 are Obvious Over Long.

In Ground 2, Petitioner contends that claims 1–6 would have been obvious in view of Long alone. Ground 2 does not support institution because Petitioner simply incorporates its anticipation analysis and fails to conduct a full obviousness analysis

in view of Long. Pet. at 79–80. Ground 2 thus fails for the same reasons as Ground 1.

Post-grant proceedings are “guided by [the] petition describing ‘each claim challenged’ and ‘the grounds on which the challenge to each claim is based.’” *SAS Institute Inc. v. Iancu*, 584 U.S. 357, 364 (2018) (citation omitted). In Ground 2, Petitioner simply incorporates by reference its anticipation analysis, stating that “[a] single reference which anticipates also renders a claim obvious under §103.” Pet. at 80. Petitioner simply states that claim 1 is obvious in view of Long for “the same reasons it anticipates claim 1.” Pet. at 79–80. Petitioner thus contends that claim 1 is obvious because it is anticipated. Given this framing by the Petitioner and the Supreme Court’s guidance that the Petition “is supposed to guide the life of the litigation,” *SAS*, 584 U.S. at 366, the Board should reject Ground 2 for the same reasons as Ground 1.

Even if considered further, Ground 2 is legally insufficient. Obviousness challenges require Petitioner to “ascertain[] the differences between the claimed invention and the prior art,” a *Graham* factor. MPEP § 2141. The Federal Circuit has repeatedly held that “[a] determination of whether a patent claim is invalid as obvious under § 103 requires consideration of all four *Graham* factors.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016); *Luv n’ Care, Ltd. v. Laurain*, 98 F.4th 1081, 1100 (Fed. Cir. 2024) (same); *Anderson’s-Black Rock, Inc.*

v. Pavement Salvage Co., 396 U.S. 57, 62, (1969) (“Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. We admonished that ‘strict observance’ of those requirements is necessary.” (internal citations omitted)).

Petitioner does not identify any differences between the ’206 Patent and Long or explain why such differences would have nevertheless been obvious to a person of ordinary skill in the art. *See* Pet. at 79–80. Petitioner repeatedly asserts that a single reference “describes and enables” claim 1, without identifying any gap in the reference that would need to be addressed or explaining how a POSITA would know to bridge such a gap. Although Petitioner asserts that a “POSITA would be motivated to make and use” the L-glufosinate formulations as described in Long, Petitioner does not identify the motivation in Ground 2 and does not explain what or how that motivation fills any missing information, because Petitioner never identifies one. In doing so, Petitioner skips the threshold requirement of ascertaining differences between the claims and the prior art as required by *Graham*.

This deficiency is not cured by Petitioner’s reliance on an expert declaration. An expert cannot supply an obviousness analysis where the Petition itself fails to identify what is missing from the prior art. Without first articulating a gap between the challenged claims and the cited reference, there is nothing for an expert to bridge.

And incorporation by reference of an expert declaration is impermissible. 37 C.F.R. § 42.6(a)(3) (prohibiting incorporating arguments by reference from one document into another); Consolidated Trial Practice Guide 35–36 (Nov. 2019).

Further, even if there were a gap disclosed, as addressed further below, Petitioner’s expert merely restates the Petition. Ex. 1003, ¶¶ 115–56. Such testimony does not substitute for the required identification of differences or a reasoned explanation for modification or combination in the Petition. Absent a clearly identified gap and a supported rationale for filling it, the expert declaration amounts to little more than parroting the Petition and does not acknowledge, much less satisfy, Petitioner’s burden under § 103.

Ground 2 as presented adds nothing to Ground 1 and does not support institution.

C. Ground 3: Petitioner Fails to Show that Claims 1–6 are Obvious in View of the “L-Glufosinate Synthesis References.”

In Ground 3, Petitioner contends that claims 1–6 would have been obvious over Long in view of “one or more of” six prior art references which Petitioner collectively terms the “L-Glufosinate Synthesis References.” Pet. at 7, 9, 36, 79. These six unrelated references are Schulz (Ex. 1006), Zeiss (Ex. 1007), Grabley (Ex. 1008), Nakanishi (Ex. 1009), Minowa (Ex. 1010), and Knorr (Ex. 1011).

Ground 3 does not support institution. First, as a threshold matter, Petitioner fails to identify the grounds on which the challenge is based with particularity.

Petitioner presents 63 alternative combinations of “one or more” of the six L-Glufosinate Synthesis References. Petitioner does not detail these individual grounds and presents no motivation to combine analysis beyond a conclusory statement. This is insufficient to meet the particularity requirement of 35 U.S.C. § 322(a)(3) and does not fairly put Patent Owner on notice of the basis for the challenge.

Second, the L-Glufosinate Synthesis References collectively fail to teach a formulation as recited in the claims and do not fill the gap in Long. Indeed, none of the references teach or suggest a formulation as claimed with “greater than about 90% L-glufosinate” as compared to the sum total of L- and D-glufosinate, and there is no motivation identified for having done so.

Third, record evidence of unexpected results supports patentability over the cited prior art. The Examiner considered this evidence of unexpected results during prosecution of the '206 Patent and correctly allowed the claims over the same art and arguments based on a finding of unexpected results. The Examiner’s conclusion was correct, and the Petition identifies no reason to institute review to consider the same art and evidence for a second time.

1. Petitioner’s Catch-All Ground Fails to Identify the Basis for the Challenge with Particularity.

In Ground 3, Petitioner asserts obviousness based on “Long (Ex. 1005) in view of one or more of the L-Glufosinate Synthesis References.” Pet. at 36. The so-

called “L-Glufosinate Synthesis References” are six unrelated references: Schulz (Ex. 1006), Zeiss (Ex. 1007), Grabley (Ex. 1008), Nakanishi (Ex. 1009), Minowa (Ex. 1010), and Knorr (Ex. 1011). Thus, Ground 3 is a catch-all ground combining Long with any one or more of six different references.

By asserting obviousness in view of Long and “one or more of” these six references, Petitioner’s Ground 3 actually consists of **63 *unique prior art combinations***⁷. Ex, 2031, ¶ 58. These 63 combinations are listed in the accompanying expert declaration. Ex, 2031, ¶ 58. Not only does Petitioner present a voluminous number of combinations but also fails to detail any of these individual combinations, never identifying specific combinations, teachings, and motivations to combine and leaving the door open to mixing and matching references as it sees fit going forward.

A petitioner must identify “with particularity . . . the grounds on which the challenge[s] to each claim [are] based, and the evidence that supports the grounds for challenge to each claim.” 35 U.S.C. § 312(a)(3). “In a case where failure to meet the particularity requirement ‘results in voluminous and excessive grounds,’ the Board can exercise its discretion to deny an entire petition ‘in the interests of efficient administration of the Office and integrity of the patent system and as a

⁷ The number of combinations of 6 elements, excluding the null set, is determined by the formula $2^n - 1$. Here, the number of unique combinations of one or more of the 6 references is $2^6 - 1 = 63$ combinations.

matter of procedural fairness to Patent Owner.” *IKEA Supply AG v. Everlight Elecs. Co., Ltd.*, IPR2024-00988, Paper 6 at 27–28 (P.T.A.B. Dec. 12, 2024) (quoting *Adaptics Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20 at 24 (P.T.A.B. Mar. 6, 2019) (informative)). The Board has found use of “catch-all” grounds like this one to be unduly burdensome and lacking in particularity. *Id.* at 28–29 (finding a petitioner’s use of “and/or” results in “potentially at least 25 different combinations of Shin with the cited Thin Film Art”). Here, combining Long with “one or more” of six other references results in 63 different combinations—more than the Board has found unduly burdensome and lacking in particularity in past cases.

Not only is the sheer number of grounds unduly burdensome and procedurally unfair, but also the actual presentation of the ground is lacking in particularity. Petitioner never addresses any of the 63 combinations individually and its motivation to combine “analysis” is boilerplate. Indeed, Petitioner’s entire motivation argument for Ground 3 consists of two sentences. Pet. at 82. Petitioner cites Long’s description of the L-isomer as the “biologically active isomer” and asserts that “a POSITA would have been motivated to prepare and purify the biologically active isomer of an herbicidal agent for use in Long’s formulations and to look to prior art methods of doing so.” Pet. at 82. This is not a motivation but rather a conclusion entire lacking in analysis. There is no specificity as to why a person of ordinary skill in the art would have looked to any “one or more of” the L-

Glufosinate Synthesis References or what specific teachings they would have looked to in those references. Indeed, the motivation to combine section *does not even mention* the L-Glufosinate Synthesis References, much less provide any analysis of motivation to look to any “one or more” of those references in particular.

Petitioner’s declaration from its expert, Dr. Iyer, fares no better. *See* Ex. 2031, ¶ 54. The two sentences from the Petition are repeated almost verbatim in the Iyer Declaration. Ex. 1003, ¶ 162. The conclusory statements regarding motivation in the Petition and the Iyer Declaration fail to set forth with particularity the grounds for the challenge and would not support a finding of obviousness.

Neither Petitioner nor its expert provides evidence or adequate analysis showing that a POSITA would have been motivated to combine Long and the individual L-Glufosinate Synthesis References, rather than merely suggesting that it would have been possible to do so. As the Federal Circuit has explained, “obviousness concerns whether a skilled artisan ***not only could have made but would have been motivated to*** make the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (emphasis added). In a recent opinion, the Federal Circuit clarified that the fact that “possible arrangements existed in the prior art does not provide a reason that a skilled artisan would have . . . [made] the substitution.” *Virtek Vision Int’l ULC v. Assembly Guidance Sys.*, 97 F.4th 882, 887 (Fed. Cir. 2024)

(internal citation omitted). In that case, like here, the Petitioner and expert did not “articulate any reason” for combining the references. *Id.* This lack of analysis leaves Patent Owner in the dark as to what Petitioner specifically contends would have motivated a POSITA to modify the formulations set forth in Long, much less why a POSITA would have looked specifically to one or more of the other six references for teachings that Petitioner fails to identify with specificity.

Without more, Petitioner’s Ground 3 lacks the required particularity and does not support institution.

2. The L-Glufosinate Synthesis References Do Not Fill the Gaps in Long.

The combination of Long with any one or more of the so-called L-Glufosinate Synthesis References fails to disclose or suggest the formulations recited in claims 1–6, including the specific compositions recited in those claims.

As discussed above, Long discloses only racemic glufosinate and does not disclose a formulation comprising both L-glufosinate and D-glufosinate “wherein the formulation has greater than 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation.” The L-Glufosinate Synthesis References do not cure this deficiency. Ex. 2031, ¶ 56. Petitioner does not identify any formulation in any of the L-Glufosinate Synthesis References comprising “greater than 90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation.” Pet. at 81–90. Indeed,

the entire analysis in Ground 3 fails to discuss any of the L-Glufosinate Synthesis References individually, much less what specific teachings Petitioner purportedly relies on. Pet. at 81–90. Petitioner instead simply refers back to the section of the Petition summarizing the prior art. Pet. at 82 (“The scope and content of the prior art, as viewed from the perspective of a POSITA as explained by Dr. Iyer is described *supra* §VII.”). Those individual summaries of the six references do not identify any glufosinate formulations, much less a formulation as recited in the challenged claims.

None of the six L-Glufosinate Synthesis References disclose or teach a formulation with “90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation.” Ex. 2031, ¶ 56. Each reference is directed to methods of synthesizing, isolating, or purifying L-glufosinate, not formulating mixtures of L- and D-glufosinate as claimed in the ’206 Patent. For example, Schulz (Ex. 1006) discloses isolation and characterization phosphinothricin-specific transaminase from *E. coli* to produce L-glufosinate from 2-oxo-4-[(hydroxy)(methyl)phosphinoyl] butyric acid (PPO) by transamination; Zeiss (Ex. 1007) discloses the synthesis of L-phosphinothricin via regioselective addition of alkyl methylphosphinates to protected L-vinylglycine derivative followed by hydrolysis of the intermediate; Grabley (Ex. 1008) discloses the enzymatic preparation of L-2-amino-4-methylphosphinobutyric acid (i.e., L-

glufosinate) via enzymatic cleavage of certain derivatives using a penicillin based enzyme; Nakanishi (Ex. 1009) discloses the production of glufosinate P free acid (i.e., L-glufosinate) by neutralizing and crystallizing glufosinate P hydrochloride salt; Minowa (Ex. 1010) discloses the production of L-2-amino-4-(hydroxymethylphosphinyl)-butanoic acid through a catalytic asymmetric synthesis reaction; Knorr (Ex. 1011) discloses preparing L-homoalanin-4-yl(methyl)phosphinic acid by racemate resolution. Without disclosure of any formulation, none of these references teach or suggest to one skilled in the art to formulate the particular mixture of L-glufosinate and D-glufosinate as claimed in the '206 Patent.

Synthesis and purification methods do not disclose or suggest the claimed formulation, which requires the presence of 90% L-glufosinate with D-glufosinate. Thus, none of the prior art teaches or suggests the claimed formulation.

3. Record Evidence of Unexpected Results Establishes Patentability over Long and the Six L-Glufosinate Synthesis References.

During prosecution the Examiner rejected the pending claims based on Long. In response, Patent Owner distinguished Long in part by presenting evidence of unexpected results of phytotoxicity testing for its formulation. The Examiner found these results compelling and allowed the claims. The Petition does not dispute that Patent Owner's testing is credible evidence showing unexpected results. Rather, the

Petition only argues, without evidence, that the surprising results showed “inherent properties of L-glufosinate ammonium” and were not commensurate in scope with the claims. The Petition fails to justify re-plowing the same ground already covered during prosecution.

The evidence of unexpected results submitted by Patent Owner was correctly accepted by the Examiner and supports patentability. Herbicides can affect both weeds and crops when applied. Ex. 2031, ¶ 60. Although glufosinate formulations are often used on glufosinate tolerant crops, there still may be residual damage to the glufosinate tolerant crop (i.e., phytotoxicity) caused by the application of the herbicide. *Id.* As a result, persons of ordinary skill in the art would expect that increasing the effective concentration of L-glufosinate (the active enantiomer) would cause a corresponding increase in **both** weed control and unintended crop damage. Ex. 2029, ¶ [0005]; Ex. 2031, ¶ 61. In a case where the amount of L-glufosinate applied in a formulation were doubled, for example, one would expect increased herbicidal activity on weeds and also increased phytotoxicity to glufosinate-tolerant crops. Ex. 2031, ¶ 64.

Testing of formulations comprising both L-glufosinate and D-glufosinate in which the formulation included greater than 90% L-glufosinate compared to the total L- and D-glufosinate in the formulation unexpectedly showed the opposite result. Surprisingly, formulations with such high amounts of L-glufosinate and low

amounts of D-glufosinate did not exhibit increased damage to glufosinate tolerant crops. Ex. 2029, ¶ [0006]; Ex. 2031, ¶¶ 64–66. Instead, those formulations with high L-glufosinate and low D-glufosinate showed lower phytotoxicity compared to similar molar amounts of racemic glufosinate. Ex. 2029, ¶ [0006]; Ex. 2031, ¶¶ 64–66.

This is shown in Patent Owner’s testing data. For example, L-glufosinate formulations could provide enhanced weed control while also reducing phytotoxicity compared to racemic glufosinate. 2029, ¶¶ [0010]–[0011].

[0009] Table 2B of the application shows the surprising reduction of phytotoxicity caused to glufosinate tolerant field crops in comparison to the same molar amount of racemic glufosinate-ammonium:

TABLE 2B								
Ratings of herbicidal activity in field trials against the above-mentioned glufosinate tolerant field crop species GLXMA, GOSHI and ZEAMX after a single post-emergence treatment with products P1 and PX in an amount of 600 g/ha of L-glufosinate-ammonium and 600 g/ha of racemic glufosinate-ammonium, respectively								
Field crop (BBCH stage)	Product							
	P1: 600 g/ha of L-glufosinate-ammonium				PX: 600 g/ha of racemic glufosinate-ammonium			
	DAA 7	DAA 15	DAA 28	MAX	DAA 7	DAA 15	DAA 28	MAX
GLXMA (12)	3%	0%	0%	3%	8%	5%	5%	8%
GOSHI (11)	0%	0%	0%	0%	10%	7%	5%	10%
ZEAMX (13)	8%	5%	5%	8%	13%	8%	6%	13%

Ex. 2029, ¶ [0009]. Instead of seeing increased phytotoxicity damage, e.g., at about an expected 16% (i.e., about double the 8% damage of racemic glufosinate on the glufosinate tolerant crop GLXMA (12)) when using 600 g/ha L-glufosinate, there was a *reduction* in damage to only 3% despite the use of almost twice as much L-glufosinate.

As evidenced during the prosecution of the '206 Patent, this finding was confirmed in further tests. Ex. 2001 at 213. Patent Owner conducted testing comparing approximately the same amounts of L-glufosinate in both LGA mixtures and racemic glufosinate-ammonium mixtures. One of ordinary skill in the art would have expected to find a similar amount of damage to the field crops. Ex. 2031, ¶ 65. Patent Owner's experimental results showed the opposite. Instead of similar damage to the field crops, the phytotoxicity unexpectedly decreased with approximately the same amount of L-glufosinate use. Ex. 2001 at 213.

[0005] The results of the phytotoxicity experiment are summarized in table 2e below. Surprisingly, all LGA treatments are causing less phytotoxicity than respective GA treatments applied at the same molecular weight. There is some difference in sensitivity to glufosinate between the two soybean varieties but the difference in crop response from LGA as compared to GA is visible in both varieties and at all three application rates 300, 600 and 1200 g/ha. This was not expected.

Table 2e: Ratings of herbicidal activity (phytotoxicity) in an greenhouse experiment against the above mentioned glufosinate tolerant soybeans (GLXMA) after a single post-emergence treatments with racemate glufosinate-ammonium (GA) and L-glufosinate-ammonium (LGA) rated 7 DAA.

Field crop	LGA 300 g/ha	GA 300 g/ha	LGA 600 g/ha	GA 600 g/ha	LGA 1200 g/ha	GA 1200 g/ha
GLXMA (CZ1660)	0	5	10	15	10	40
GLXMA (CZ3519)	5	10	10	35	15	70
average	2.5	7.5	10	25	12.5	55

Ex. 2001 at 213 (annotated). As shown in the results above, 300 g/ha of LGA had significantly less damage on field crops, 0 on CZ1660 crops and 5 on CZ3519 crops, compared to approximately similar amount of L-glufosinate in a racemic GA, 15 on CZ1660 crops and 35 on CZ3519 crops.⁸

[0005] The results of the phytotoxicity experiment are summarized in table 2e below. Surprisingly, all LGA treatments are causing less phytotoxicity than respective GA treatments applied at the same molecular weight. There is some difference in sensitivity to glufosinate between the two soybean varieties but the difference in crop response from LGA as compared to GA is visible in both varieties and at all three application rates 300, 600 and 1200 g/ha. This was not expected.

Table 2e: Ratings of herbicidal activity (phytotoxicity) in an greenhouse experiment against the above mentioned glufosinate tolerant soybeans (GLXMA) after a single post-emergence treatments with racemate glufosinate-ammonium (GA) and L-glufosinate-ammonium (LGA) rated 7 DAA.

Field crop	LGA 300 g/ha	GA 300 g/ha	LGA 600 g/ha	GA 600 g/ha	LGA 1200 g/ha	GA 1200 g/ha
GLXMA (CZ1660)	0	5	10	15	10	40
GLXMA (CZ3519)	5	10	10	35	15	70
average	2.5	7.5	10	25	12.5	55

Ex. 2001 at 213 (annotated). The same surprising effect is shown by LGA 600 g/ha when compared to approximately the same amount of L-glufosinate in GA 1200 g/ha.⁹ LGA 600 g/ha had a phytotoxic effect of only 10 on both CZ1660 crops and CZ3519 crops, where GA 1200 g/ha had a phytotoxic effect of 40 on CZ1660 crops and 70 on CZ3519 crops. This showed even larger differences in phytotoxic effects despite use of approximately the same amount of L-glufosinate. Ex. 2031, ¶¶ 64–66

⁸ GA 600 g/ha would consist of 50% D-glufosinate and 50% L-glufosinate, therefore there would be about 300 g/ha L-glufosinate in the GA.

⁹ GA 1200 g/ha would consist of 50% D-glufosinate and 50% L-glufosinate, therefore there would be about 600 g/ha L-glufosinate in the GA.

As shown in the data, even though the amount of L-glufosinate effectively almost doubled in the LGA 300 g/ha compared to the GA 300 g/ha, there was significantly less damage to the field crop. Ex. 2001 at 213. This is the opposite of what would have been anticipated, which is an increased amount of phytotoxicity when the amount of active ingredient is increased. Ex. 2031, ¶¶ 64–66. The Examiner interpreted this data correctly and properly allowed the claims.

Petitioner also appears to argue that even if the data is accurate, there are still problems that would require the Patent Office to revisit its allowance of the claims. For example, Petitioner states that “there is no way to tell whether claim 1 encompasses the test formulation” except to accept Patent Owner’s statement, that “the claimed herbicidal formulation recited in claims 1 has unexpected results.” Pet. at 88. But Petitioner cites no authority requiring additional proof beyond what was already presented and credited during prosecution. Nor does the Petitioner provide any basis to call into question the data provided, which demonstrated that the claimed herbicidal formulation recited in the claims unexpectedly showed reduced phytotoxicity to glufosinate tolerant crops. Ex. 2033, ¶ 6 (“Each of the testing treatments of LGA used in the greenhouse tests contained 26% of technical grade LGA, 33% of SLES, and 41% of water.”). Nothing in the Petition warrants revisiting the same issue.

Petitioner next argues that the test formulation included a single adjuvant, without indication of any of the other “additional components.” Pet. at 88. This argument is inconsistent with Petitioner’s construction that the claim recites a Markush group requiring only one of the listed components. Pet. at 42–43 (“A POSITA would understand from the claim language that the ‘one or more additional components’ limitation in claim 1 only requires the presence of any one of the four Markush members at the recited weight percentages.”). Thus, the tested formulation is within and sufficiently commensurate in scope with claim 1.

Petitioner cites *In re Peterson*, 315 F.3d 1325, 1329–31 (Fed. Cir. 2003), as purportedly holding that testing of a composition within a range cannot support unexpected results. Pet. at 89. But in that case, evidence suggested that 3% rhenium, which was within the range, possessed *inferior* properties. *In re Peterson*, 315 F.3d at 1331. Such is not the case here. The Federal Circuit has limited application of the *Peterson* case, explaining that “absolute identity of scope” is not required, and only “rejected unexpected results where the evidence was plainly disproportionate to the scope of the claim.” *Genetics Inst., LLC v. Novartis Vaccines and Diagnostics, Inc.*, 655 F.3d 1291, 1308 (Fed. Cir. 2011) (citing *In re Peterson*, 315 F.3d at 1331) (“Indeed, a rigid requirement of absolute identity that ignores relevant properties of claimed compounds would defy the mandate of § 103 requiring consideration of the claimed ‘subject matter as a whole.’”). Here, Patent Owner’s evidence of unexpected

results for phytotoxicity in soybeans was relevant evidence that the Examiner not only properly considered and credited but was required to consider in evaluating obviousness. Petitioner's arguments regarding scope of testing are misplaced.

Petitioner's third point is also incorrect. Petitioner contends that testing on two soybean varieties is insufficient to establish unexpected results. But Petitioner identifies no requirement that testing must encompass every crop species. The law is not so stringent. An unexpected result for any particular use of the invention is evidence that must be considered in an obviousness analysis. For example, in *In re Chupp*, 816 F.2d 643 (Fed. Cir. 1987), the applicant submitted evidence that a compound was five times more effective as an herbicide on corn and soybeans than the closest prior art herbicide. *Id.* at 644. The Board rejected this evidence because it did not show unexpected results for other crops. *Id.* at 645. The Federal Circuit reversed the Board, explaining that the claims—like those in this case—did not recite specific uses and that unexpected results need not be superior for every way the invention may be used. *Id.* at 646. “There is no set number of crops on which superiority must be shown.” *Id.*

Finally, Petitioner fails to explain how the cited results establish inherent properties of L-glufosinate. Rather than providing analysis or evidence, Petitioner relies solely on conclusory statements from its expert. *See* Pet. at 86. As discussed above, the inherent property of L-glufosinate would cause more residual damage to

the glufosinate tolerant crops as the crops were being exposed to more active ingredients. Ex. 2031, ¶ 67. This is demonstrated in the test results that show increasing phytotoxicity with increased amounts of GA. It was Petitioner's inventive formulation that showed unexpectedly decreased phytotoxicity. Petitioner's attack on unexpected results as inherent is misplaced and does not warrant institution.

Finally, other testing demonstrates unexpected results and supports patentability. For example, in another patent family, Patent Owner submitted the following data to further show the decrease of phytotoxicity when using L-glufosinate compared to racemic glufosinate.

Table 2B: Ratings of herbicidal activity in field trials against the above-mentioned glufosinate tolerant field crop species GLXMA, GOSHI and ZEAMX after a single post-emergence treatment with products P1 and PX in an amount of 600 g/ha of L-glufosinate-ammonium and 600 g/ha of racemic glufosinate-ammonium, respectively

Product	P1: 600 g/ha of L-glufosinate-ammonium	PX: 600 g/ha of racemic glufosinate-ammonium
---------	--	--

Field crop (BBCH stage)	DAA 7	DAA 15	DAA 28	MAX	DAA 7	DAA 15	DAA 28	MAX
GLXMA (12)	3%	0%	0%	3%	8%	5%	5%	8%
GOSHI (11)	0%	0%	0%	0%	10%	7%	5%	10%
ZEAMX (13)	8%	5%	5%	8%	13%	8%	6%	13%

Ex. 2030 at 34.

As explained above, it would be expected that increasing the amount of active L-isomer would cause greater harm to the field crops compared to a racemic mixture, containing less L-glufosinate. *Id.*; Ex. 2031, ¶ 64. However, Patent Owner's experiments show the opposite. Ex. 2030, Table 2B. For example, 600 g/ha of racemic glufosinate ammonium harmed 8% of GLXMA field crop, whereas double the amount of L-Glufosinate ammonium (600 g/ha), which contains almost twice as much L-glufosinate, harmed only 3% of the same field crop. *Id.*, Table 2B. Therefore, Petitioner's unexpected results arguments do not provide support for its argument that claims 1–6 are unpatentable.

Petitioner did not plead ground 3 with particularity, Petitioner did not show that the combination of Long and the L-Glufosinate Synthesis References teaches or discloses all of the claim limitations, and the Examiner correctly determined that record evidence of unexpected results establishes patentability. For these reasons, Ground 3 does not support institution.

VI. NO MATERIAL ERROR

Petitioner contends that the Examiner committed material error during examination of the '206 Patent. This is incorrect. As an initial matter, Petitioner only challenges two of the three bases under which the Examiner allowed the claims.

Petitioner's complaints about those two bases is incorrect, and Petitioner's failure to address the third basis is also fatal to its Petition.

After a thorough review and consideration of Long, other prior art of record, and Patent Owner's arguments, the Examiner allowed the amended claims. The Examiner's allowance was in view of (1) Patent Owner's persuasive arguments that Long only taught the racemic mixture of glufosinate, (2) Patent Owner's showing of unexpected results in its claimed formulations, and (3) Patent Owner's claim amendments to specifically recite a formulation wherein there is greater than about 90% of L-glufosinate to the total amount of glufosinate in the formulation. Ex. 2001 at 352; Pet. at 76–78.

The Petition's challenge to (1), *i.e.*, that Long discloses L-glufosinate in enantiomeric excess, is the same issue the Examiner already decided. And for the reasons explained above, the Examiner was correct in concluding that Long did not teach formulations other than those containing racemic glufosinate. *Supra* at V.A.2.

The Petition's challenge to (2), *i.e.*, that the Examiner incorrectly relied on unexpected results in its anticipation analysis, is wrong for the reasons explained in Paper 8 at 6–7 and *supra* at V.C.3.

Finally, the Petition does not analyze or address (3), *i.e.*, the Examiner's reliance on Patent Owner's claim amendments to allow the claim. Patent Owner's amendment independently supplies a compelling rationale for patentability. More

specifically, Patent Owner's amendments claim the presence of the D-enantiomer in the formulation and that the formulation has greater than about 90% of L-glufosinate compared to the total amount of glufosinate in the formulation. This added limitation overcame the Examiner's rejection based on Long and was one of the reasons the Examiner allowed the claims. Petitioner has not analyzed or explained how the Examiner's analysis of this limitation, and how this limitation distinguished the claim from the cited prior art, was an error on the part of the Examiner. On the other hand, the Patent Owner has explained how the claim amendment distinguished the claim from the prior art. *See supra* at II.E. Thus, Petitioner has failed to show or explain how the Examiner committed material error during prosecution. The Examiner properly allowed the amended claims to issue, and Petitioner's request to reconsider arguments on selective issues already addressed by the Examiner should be rejected.

**VII. PETITIONER'S EXPERT DECLARATION IS IMPROPER
SUBSTITUTION FOR DISCLOSURES IN THE PRIOR ART.**

Under the applicable rules and guidance from the Director, the Board should disregard portions of the Petition which improperly rely on expert testimony to substitute for disclosures in the prior art.

Expert testimony is not "prior art" upon which a PGR may be based. Under 37 C.F.R. § 204(b)(4), "[w]here the grounds for unpatentability are based on prior art, the petition must specify where each element of the claim is found in the prior

art.” On July 31, 2025, the Acting Director issued a memorandum to the Board instructing that general knowledge such as expert testimony and common sense “may not be used to supply a missing claim limitation.” Ex. 2020. Expert testimony thus cannot substitute for disclosures in the prior art. PTAB Consolidated Trial Practice Guide 36 (2019); *Unified Pats. Inc. v. Velos Media, LLC*, IPR2019-00883, Paper 16 at 15 (P.T.A.B. Nov. 15, 2019) (“We, therefore, agree with Velos that expert testimony regarding the restricted placement limitation cannot take the place of disclosure from patents or printed publications.”); *Google LLC v. Videoshare LLC*, IPR2020-01631, Paper 14 at 16 (P.T.A.B. Apr. 7, 2021) (“expert testimony may explain ‘patents and printed publications,’ but is not a substitute for disclosure in a prior art reference itself” (citation omitted)).

The Petition impermissibly relies on expert testimony and purported common sense to substitute for disclosures in the prior art. Petitioner cites Dr. Iyer’s declaration for conclusory statements about the alleged motivation to make or use purified LGA, relying only on a POSITA’s alleged common sense. Pet. at 80 (“As Dr. Iyer explains, based on Long alone, a POSITA would be motivated to make and use L-glufosinate ammonium formulations . . . at the weight percentages described in Long . . . and would have had a reasonable expectation of success. Ex.1003, ¶¶ 155–156.”). Neither the Petition nor the Iyer declaration provides a reasoned

explanation how or why a POSITA would be motivated to make and use L-glufosinate formulations, much less at the percentages recited in the claims.

Elsewhere, the Petition repeatedly invokes “common sense” and “routine optimization” to supply missing limitations. Pet. at 92 (“it would have been only a matter of routine optimization for a POSITA”); *Id.* at 93 (“POSITA’s routine calculation”). Purported common sense cannot substitute for reasoned analysis and evidentiary support, particularly where the prior art lacks the claimed limitations. *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362 (Fed. Cir. 2016); *iRobot Corp. v. SharkNinja Operating LLC*, Nos. 2023-1398, 2023-1416, 2024 WL 3687981, at *10 (Fed. Cir. Aug. 7, 2024) (requiring arguments to be “supported by evidence and a reasoned explanation” (quoting *Arendi*, 832 F.3d at 1363)).

Petitioner’s use of Dr. Iyer’s declaration goes beyond what is allowed or contemplated by the Board’s rules and procedures. *See, e.g.*, Ex. 1003, ¶¶ 107, 112, 113, 115, 121, 125, 132, 134, 139, 145, 152, 156, 164, 165, 166, 186, 188 (testifying as to what a POSITA “would understand” or what “would have been obvious” to a POSITA, “it would have been routine for a POSITA,” “would be understood by a POSITA,” “a POSITA would have had a reasonable expectation”).

For instance, regarding claim 1 element 3 (“in an amount from 10-30% by weight of the formulation”), Dr. Iyer opines:

The Examples in Long also teach formulations having L-glufosinate salts between 10-30% by weight, since a POSITA would understand

that Long's Example formulations can be used with purified L-glufosinate ammonium substituted for racemic glufosinate. Each of the Examples in Long employs a 50% solution of racemic glufosinate at 44% by weight. *Id.*, 4-5 at 6:30-7:68. A POSITA would understand that 44% by weight of a 50% solution of racemic glufosinate translates to 22% by weight racemic glufosinate ($0.44 \times 0.50 = 0.22$), half of which (0.11 or 11% by weight) is L-glufosinate. Using the same active ingredient weight percentages employed in Long's Examples, a POSITA would use half as much active enantiomer – or 11% by weight L-glufosinate ammonium – within the 10-30% by weight recited in claim 1. My calculations above assume a solution of 100% "*pure*" L-isomer. A POSITA would also account for the enantiomeric purity of the starting L-isomer, adjusting the weight percentage accordingly. For example if the starting L-glufosinate ammonium is 90% L-isomer, a POSITA would increase the weight percentage from 11% as follows:
 $11\%/0.9 = 12.2\%$

Ex. 1003, ¶ 132. This analysis "assumes" that Long teaches "90% L-glufosinate compared to the sum of the D-glufosinate and the L-glufosinate present in the formulation." But Long does not contain this disclosure much less suggest it and, thus, Dr. Iyer calculations are not derived from Long, but reflect Dr. Iyer's incorrect hindsight importation of the claimed invention.

Large swaths of Dr. Iyer's declaration also consist of nothing more than identical copy-and-paste from the Petition, with identical wording, charts and colors. *Compare, e.g.*, Pet. 61–75 (analysis of Ground 1), *with* Ex. 1003 ¶¶ 124–54 (analysis of Ground 1); Pet. 79–80 (Ground 2 analysis), *with* Ex. 1003 ¶¶ 155–56 (Ground 2 analysis); Pet. 81–94 (Ground 3 analysis), *with* Ex. 1003 ¶¶ 157–89 (Ground 3 analysis). The Board has consistently recognized that a declaration repeating the petition verbatim "is conclusory and unsupported, adds little to the conclusory

assertion for which it is offered to support, and is entitled to little weight.” *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, at 15 (P.T.A.B. Aug. 24, 2022) (precedential) (listing cases); *see also Kinetic Techs., Inc. v. Skyworks Sols., Inc.*, IPR2014-00529, Paper 8 at 14–15 (P.T.A.B. 2014). To the extent such testimony is even accepted, it is entitled to little weight. *See MarkForged Inc. v. Continuous Composites, Inc.*, IPR2022-01431, Paper 7 at 14 (P.T.A.B. Jan. 18, 2023). Such is the case here.

In view of these deficiencies in the evidentiary support for the Petition, instituting review would be a waste of the Board’s and Patent Owner’s resources.

VIII. CONCLUSION

For the foregoing reasons, Petitioner fails to establish that any claim is more likely than not unpatentable, and institution should be denied.

Dated: May 26, 2026

By: /Matias Ferrario/
Matias Ferrario
Reg. No. 51,082
Lead Counsel for Patent Owner

CERTIFICATE OF WORD COUNT

Pursuant to 27 C.F.R. § 42.24(d), the undersigned certifies that this Preliminary Response contains 11,556 words according to the word-processing program used to prepare this paper. The foregoing word count complies with the 18,700 word type-volume limit specified by 37 C.F.R. § 42.24(b)(ii).

Dated: May 26, 2026

By: /Matias Ferrario/
Matias Ferrario
Reg. No. 51,082
Lead Counsel for Patent Owner

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing PATENT OWNER'S PRELIMINARY RESPONSE has been served electronically via email upon the following:

Vincent L. Capuano – VLC@capuanoip.com
Jeffrey K. Mills – jmills@medlerferro.com
Neil P. Shull – nshull@medlerferro.com

Dated: May 26, 2026

By: /Matias Ferrario/
Matias Ferrario
Reg. No. 51,082
Lead Counsel for Patent Owner