

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHARLES RIVER LABORATORIES, INC.
Petitioner,

v.

SEIKAGAKU CORPORATION,
Patent Owner.

PGR2025-00023
Patent 11,959,109 B2

Before MICHAEL J. FITZPATRICK, SUSAN L. C. MITCHELL, and
TAWEN CHANG, *Administrative Patent Judges*.

Opinion for the Board filed PER CURIAM.

Opinion Dissenting filed by Administrative Patent Judge Fitzpatrick.

PER CURIAM

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 328(a)

I. INTRODUCTION

Petitioner, Charles River Laboratories, Inc., filed a Petition (Paper 2 (“Pet.”)) to institute a post grant review of claims 1–10 of U.S. Patent No. 11,959,109 B2 (Ex. 1001, “the ’109 patent”). In response, Patent Owner, Seikagaku Corporation, filed: (1) a Discretionary Denial Brief (Paper 6); (2) a Preliminary Response (Paper 7 (“Prelim. Resp.”)); and (3) a Disclaimer of Claim 10 under 37 C.F.R. § 1.321(a) (Ex. 2001). Petitioner filed an Opposition (Paper 8) to the Discretionary Denial Brief. The Acting Director denied Patent Owner’s request for discretionary denial and referred the Petition to the Board. Paper 9. We granted the Petition. Paper 14 (“Inst. Dec.”).

During the review, Patent Owner filed a Patent Owner Response (Paper 26 (“PO Resp.”)); Petitioner filed a Reply (Paper 30 (“Pet. Reply”)); and Patent Owner filed a Sur-Reply (Paper 31 (“PO Sur-Reply”)). Pursuant to our authorization, Patent Owner filed a short brief regarding the Federal Circuit’s April 16, 2026, decision in *Teva Pharmaceuticals Int’l GmbH v. Eli Lilly & Co.*, 172 F.4th 1367 (Fed. Cir. 2026), and Petitioner filed a response thereto. Papers 37, 38.

An oral hearing was held on June 9, 2026, and a transcript of the hearing is included in the record. Paper 42 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6, and this Final Written Decision, issued pursuant to 35 U.S.C. § 328(a), addresses issues and arguments raised during the review. For the reasons discussed below, we determine that Petitioner has proved, by a preponderance of the evidence, that claims 1–9 of the ’109 patent are unpatentable.

II. BACKGROUND

A. Real Parties in Interest

Each party identifies itself as the sole real party in interest. Pet. 6; Paper 3, 1.

B. Related Matters

The parties direct us to the related applications data referenced in the '109 patent. Pet. 6–7; Paper 3, 1. The only proceeding identified by either party is IPR2025-00440 involving related U.S. Patent No. 11,236,318 B2 (“the '318 patent”). Paper 3, 1.¹ The '109 patent issued from an application which was a continuation of the application from which the '318 patent issued. Ex. 1001, 1:8–11.

C. The '109 Patent

The '109 patent is titled “Recombinant Factor C and Method for Producing the Same, and Method for Measuring Endotoxin.” Ex. 1001, code (54).

Endotoxin is a pyrogen produced by Gram-negative bacteria, and “even a very small amount of endotoxin causes various pathological conditions via bacterial infection.” *Id.* at 1:38–42. “Therefore, detection of endotoxin is essential in pharmaceutical products such as an injection, water, medical devices, and the like.” *Id.* at 1:45–47.

It has long been known that horseshoe crabs naturally undergo blood clotting when infected with endotoxin. *Id.* at 1:52–54. The blood clotting reaction is a cascade that involves three serine protease zymogens and one

¹ The Board instituted *Inter partes* review in IPR2025-00440 on September 9, 2025. IPR2025-00440, Paper 14. We are concurrently issuing a Final Written Decision in that proceeding. *Id.*, Paper 52.

clottable protein (coagulogen). Ex. 1003 ¶32. Petitioner's declarant, Siddhartha Jain, Ph.D., explains the reaction as follows: "Endotoxin initiates the cascade by binding to and activating the first serine protease called Factor C. Factor C then cleaves and activates Factor B, which in turn converts pro-clotting enzyme to clotting enzyme. Clotting enzyme cleaves coagulogen, which subsequently forms coagulin gel, giving rise to clotting." *Id.* (citing Ex. 1001, 1:66–2:11, 13:36–49, Fig. 1).

It was further known that the blood (or hemolymph) of horseshoe crabs could be harvested and employed for the detection of endotoxin in pharmaceutical and medical applications. Ex. 1001, 1:54–56. "However, for using such a lysate, or Factor C, Factor B, and Pro-clotting enzyme purified from the lysate, horseshoe crabs must be caught and blood must be recovered therefrom." *Id.* at 2:26–29. "Hence, from the viewpoint of protection of biological resources, difficulty is encountered in supply of such ingredients in an inexhaustible manner." *Id.* at 2:29–31. Thus, there had been a demand for ways to produce the zymogen proteins through genetic engineering. *Id.* at 2:32–34. According to the '109 patent, those efforts had not been satisfactory. The '109 patent explains:

For example, there is known a case where Factor C, Factor B, and Pro-clotting enzyme were expressed in insect cells as host cells, to thereby reconstitute a cascade reaction system (Patent Documents 1 and 2). However, it has been reported that since the reconstituted system contains sodium chloride, magnesium sulfate, or calcium chloride in the reaction system, the cascade reaction is suppressed (Patent Document 1).

Alternatively, there is known a case of using mammalian cells as host cells, wherein Factor C derived from the Singaporean horseshoe crab (*Carcinoscorpius rotundicauda*) was expressed in COS-1, which is a cell line derived from African green monkey kidney cells, as host cells. However, it

has been reported that when COS-1 was used as a host, the expressed Factor C was insoluble (Non-Patent Documents 3 and 4). That is, there has never been known a case where functional Factor C is produced using mammalian cells as host cells.

Id. at 2:36–53.

As further background, there are four species of horseshoe crab: *Limulus polyphemus* (American horseshoe crab), *Tachypleus tridentatus* (Japanese horseshoe crab), *Tachypleus gigas* (Southeast Asian horseshoe crab), and *Tachypleus rotundicauda* (also called *Carcinoscorpius rotundicauda* whose common name is Singaporean horseshoe crab). *Id.* at 13:58–62; Ex. 1015 ¶4. According to Dr. Jain, and as relevant to Petitioner’s grounds of unpatentability:

The gene and amino acid sequences of Factor C proteins from certain species of horseshoe crab (including *Tachypleus tridentatus* Factor C and *Carcinoscorpius rotundicauda*) were known prior to the earliest claimed priority date of the ’109 patent, however the sequences encoding Factor C, Factor B, and Pro-clotting enzyme for the horseshoe crab species *Limulus polyphemus* had **not** been described or fully characterized until much more recently.

Ex. 1003 ¶37.

The ’109 patent issued from application number 18/346,420 (“the ’420 application”), which was filed July 3, 2023. Ex. 1001, codes (21), (22). The ’420 application (and thus the ’109 patent) claims priority to numerous related applications, stating:

This is a Continuation of U.S. patent application Ser. No. 17/554,128 filed Dec. 17, 2021, which is a Continuation of U.S. patent application Ser. No. 16/399,386 filed Apr. 30, 2019, now U.S. Pat. No. 11,236,318 [(i.e., the ’318 patent challenged in IPR2025-00440)], which is a Continuation of U.S. patent application Ser. No. 15/983,725 [(“the ’725 application”)] filed

May 18, 2018, now U.S. Pat. No. 10,982,202, which is a continuation of U.S. patent application Ser. No. 14/650,767 [(“the ’767 application”)] filed Jun. 9, 2015, now U.S. Pat. No. 10,144,923, which is National Stage of International Application No. PCT/JP2013/083082 filed Dec. 10, 2013, claiming priority based on Japanese Patent Application No. 2012-269840 filed Dec. 10, 2012, the contents of all of which are incorporated herein by reference in their entirety.

Id. at 1:8–21; *see also id.* at code (63).

As explained below, the parties’ priority arguments focus exclusively on whether the challenged claims are enabled and described by the ’767 application as of its December 10, 2013, filing date under the Patent Cooperation Treaty. Ex. 1016, code (22). The ’767 application appears in the record as published by the Office (Ex. 1016) and as filed by Patent Owner (Ex. 1017).

D. Challenged Claims

The Petition challenges all ten claims of the ’109 patent. Of these, only claims 1 and 10 are independent. As stated above, however, claim 10 was disclaimed by Patent Owner after the Petition was filed. Ex. 2001. Each of claims 2–9 depends from claim 1. Ex. 1001, 47:17–48:54. Claim 1 is representative and reproduced below, with Petitioner’s bracketed labels preserved.

1. A method for producing an endotoxin assay agent comprising a horseshoe crab Factor C, a horseshoe crab Factor B, and a horseshoe crab Pro-clotting enzyme, the method comprising:

[1A] expressing the horseshoe crab Factor C in a Chinese Hamster Ovary cell or a Human Embryonic Kidney cell as a host cell,

[1B] secreting the horseshoe crab Factor C into an extracellular culture supernatant, and

[1C] recovering the horseshoe crab Factor C in the culture supernatant,

[1D] wherein the recovered horseshoe Factor C has activity of Factor C, and

[1E] wherein the horseshoe crab Factor C is a *Tachypleus tridentatus* Factor C or a *Limulus polyphemus* Factor C,

[1F] expressing the horseshoe crab Factor B having activity of Factor B in a mammalian cell as a host cell,

[1G] expressing the horseshoe crab Pro-clotting enzyme in a mammalian cell as a host cell, and

[1H] producing an endotoxin assay agent comprising the horseshoe crab Factor C, the horseshoe crab Factor B and the horseshoe crab Pro-clotting enzyme,

[1I] wherein the host cell for expressing the horseshoe crab Factor C, the host cell for expressing the horseshoe crab Factor B, and the host cell for expressing the horseshoe crab Pro-clotting enzyme may be the same or different.

Id. at 47:17–40; *see also* Pet. 61–70 (parsing claim 1 and adding bracketed labels).

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability, accounting for Patent Owner's disclaimer of claim 10:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–9	112	Written Description
1–9	112	Enablement
1–9	102 ²	'629 publication ³

III. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner contends a person of ordinary skill in the art (“POSITA” or “POSA”)

would have a *Ph.D.* degree in biological, chemical or biochemical engineering, *molecular biology*, or *biochemistry* and *at least two years of experience* in the field of utilizing or *assessing horseshoe crab zymogen proteins* (lysate, purified native and/or recombinantly produced) *for endotoxin detection and quantitation*. More education could substitute for experience to a certain extent, and vice versa.

Pet. 22 (citing Ex. 1003 ¶¶48–49, emphasis added). Patent Owner

“disagrees with Petitioner's definition” and contends that a POSA

would have a *Ph.D.* in *molecular biology*, *biochemistry*, or *enzymology* and *at least two years of experience* with cloning genes, protein expression and characterization. EX2062 ¶58. A POSA may collaborate with others, including those with specific

² In addition to other changes to Title 35, the America Invents Act (“AIA”) introduced amendments to 35 U.S.C. § 102. Because the '109 patent claims priority to the '725 application (*see* Ex. 1001, 1:11–14), and because Patent Owner previously represented that the '725 application “contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013” (*see* Ex. 1022), the AIA version of § 102 applies to the '109 patent. AIA § 3(n)(1)(B).

³ US 2019/0241629 A1, published August 8, 2019 (“the '629 publication” (Ex. 1015)).

experience in conducting structure-function analyses of enzyme function, *evaluating horseshoe crab zymogen proteins* individually, or in a cascade reaction *for endotoxin detection and quantitation*.

PO Resp. 21–22 (emphasis added).

The parties’ contentions regarding the level of skill bear significant overlap, as noted by the terms we italicize above, although the proposals differ slightly in the specific subjects in which a POSITA would have had a doctoral degree. A more significant difference is that Patent Owner proposes that the POSITA need not have direct experience with horseshoe crab zymogen proteins and their cascade reaction and instead may rely on collaborators having such experience.

We find that a rigid requirement as to the subject of a POSITA’s doctoral degree (*e.g.*, biochemical engineering, enzymology), or experience working specifically with horseshoe crab proteins, is not consistent with the evidence of record. *See, e.g.*, Ex. 1067, 20:23–21:2 (Dr. Schaefer testifying that the fact the “name of [his] Ph.D. is immunology . . . does not change the fact that the core of [his] thesis training was really in molecular biology”), 22:3–15 (explaining that “the fact that the production of proteins recombinantly is mostly species agnostic”); Ex. 1069, 45:20–47:17 (Dr. Morris testifying that whether a person is a POSITA depends on the person’s “experience, [] publications,” and work done for the Ph.D. rather than the name of the Ph.D. program). We also find that evidence of record supports Petitioner’s assertion that, for purposes of defining a POSITA, “[m]ore education could substitute for experience, and vice versa.” *See, e.g.*, Pet. 22; Ex. 1065, 99:14–100:3.

Accordingly, based on the entirety of the trial record, we find a POSITA with respect to the claims of the ’109 patent would have had a

Ph.D. in molecular biology, biochemistry, or a related discipline, and about two years of experience with cloning genes, expressing cloned genes as proteins, and/or characterizing such cloned genes and proteins, with more education being able to substitute for experience, and vice versa. A POSITA may also have collaborated with others, including those with specific experience in utilizing or assessing horseshoe crab Factor C for endotoxin detection and quantitation.

IV. CLAIM CONSTRUCTION

In a post-grant review, claim terms “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.200(b).

Neither party proposes an express construction of any claim term. *See* Pet. 22–23 (not proposing any constructions); PO Resp. 23 (“Patent Owner agrees that the terms can be afforded their plain and ordinary meaning.”).

However, Patent Owner states that some of Petitioner’s arguments *implicitly* construe claim 1 in an erroneous manner. PO Resp. 23–28. “For example, Petitioner argues that ‘an adequate written description would have to either disclose representative examples of the possible ***working cascades*** of various proteins or some accurate structural feature of the claimed proteins that allow them to ***function in the claimed assay as a whole.***” *Id.* at 23 (quoting Pet. 35). Patent Owner argues that, contrary to what Petitioner’s argument allegedly implies, “Claim 1 is directed to a method for producing an endotoxin assay agent” and does not require the use –

successful or otherwise – of the assay agent. *Id.* at 24. We agree with Patent Owner that claim 1 does not require the *use* of endotoxin assay agent.

However, the claimed endotoxin *assay* agent must be capable of performing the assay, as counsel for Patent Owner acknowledged. Tr. 83:5–9.

V. GROUND 1: LACK OF WRITTEN DESCRIPTION BY
THE APPLICATION THAT ISSUED AS THE '109 PATENT

Section 112(a) of Title 35 mandates the following:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

35 U.S.C. § 112(a).

In Ground 1, Petitioner contends that claims 1–9 are unpatentable for failing to meet the written description requirement. Pet. 23–38.

As Petitioner points out, “[t]he written description requirement of 35 U.S.C. § 112 exists ‘to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him.’” Pet. 23 (quoting *In re Wertheim*, 541 F.2d 257, 262, (CCPA 1976)); *see also ICU Med., Inc. v. Alaris Med. Sys.*, 558 F.3d 1368, 1376 (Fed. Cir. 2009) (“[T]he purpose of the written description requirement is to ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor’s contribution to the field of art as described in the patent specification.” (alteration in original, internal quotations omitted)). The test for sufficiency of the written description “is whether the disclosure of the application relied upon reasonably conveys to

those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010). “[T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art.” *Id.* Whether a specification provides a written description of the claimed invention is a question of fact. *Id.*

Citing *Ariad*, Petitioner argues that, “to assess the written description support of claims such as those challenged herein which were sought in an application filed in 2023 but claim a priority date of a 2012 JP Priority Application and a PCT filing on December 10, 2013, the question is whether a POSA would understand the inventors to have been in possession of the full scope of such claims *in 2013*.” Pet. 23–24 (emphasis added, footnote omitted). This argument conflates written description support as required by § 112 with written description support in a priority application as required by § 120 to benefit from an earlier filing date.

In this case, to show that the claims of the ’109 patent are unpatentable for lack of written description, Petitioner would have needed to show that the specification as filed (i.e., the ’420 application) fails to reasonably convey to those skilled in the art that Patent Owner had possession of the claimed subject matter as of the July 3, 2023, filing date. Petitioner did not. Pet. 23–24. Nor does Petitioner’s declarant offer testimony that could support such a showing. *See* Ex. 1003 ¶50 (“I have been asked to provide my opinions as to the state of the art in this field for purposes of determining what the inventors disclosed as their invention as of December 10, 2013.”), ¶51 (“Whenever I offer an opinion in this declaration about the knowledge of a POSA, the manner in which a POSA would have understood the claims of the ’109 patent or its description, the manner in

which a POSA would have understood the prior art, or what a POSA would have been led to do based on the prior art, I am referencing the December 10, 2013 timeframe.”).

In our Institution Decision, we stated:

Although the ’420 application is essentially identical to the ’767 application, the person of ordinary skill in 2013 is not the same as in 2023. *See Ariad*, 598 F.3d at 1351 (“[T]he [written description] test requires an objective inquiry into the four corners of the specification *from the perspective of a person of ordinary skill in the art.*” (emphasis added)). Thus, the information presented in the Petition, which is limited to the perspective of a 2013 POSITA, does not demonstrate that it is more likely than not that at least 1 of the claims challenged in the Petition is unpatentable for lack of written description.

Inst. Dec. 12 (alterations in original). During trial, Petitioner did not present any further arguments in support of Ground 1. *See generally* Pet. Reply.

Petitioner has failed to prove that claims 1–9 are unpatentable for failing to meet the written description requirement set forth in 35 U.S.C. § 112(a).

VI. GROUND 2: LACK OF ENABLEMENT BY THE APPLICATION THAT ISSUED AS THE ’109 PATENT

In Ground 2, Petitioner contends that claims 1–9 are unpatentable for failing to meet the enablement requirement. Pet. 38–60.

The enablement requirement, like the written description requirement, is set forth in 35 U.S.C. § 112(a). As Petitioner points out, to satisfy the enablement requirement, “the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without ‘undue experimentation.’” *Genentech Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997). Conversely, “[c]laims are not enabled

when, *at the effective filing date of the patent*, one of ordinary skill in the art could not practice their full scope without undue experimentation.” *Wyeth & Cordis Corp. v. Abbott Labs.*, 720 F.3d 1380, 1384 (Fed. Cir. 2013) (emphasis added).

“Enablement is a question of law based on underlying factual findings.” *FS.com Inc. v. Int’l Trade Comm’n*, 65 F.4th 1373, 1376 (Fed. Cir. 2023). As summarized in *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988), the underlying factual inquiries may “include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.” 858 F.2d at 737. These so-called *Wands* factors are not a mandatory or exclusive list of factors to be considered. *Id.*

In making its case, including addressing the *Wands* factors, Petitioner focuses on whether the ’767 application would have enabled a 2013 POSITA to practice the invention. For example, in addressing *Wands* Factors 4, 5, and 7, Petitioner argues that, “while recombinant technology was not new as of 2013, a significant amount of research and experimentation was required to generate a particular protein, with the ability to detect endotoxin, across a number of different expression systems.” Pet. 42–43; *see id.* at 43 (“[A]s of December 10, 2013, there had been no reports of successful recombinant production of Factors B or Pro-clotting enzyme for any species of horseshoe crab, in any mammalian expression system.”). Likewise, Petitioner’s declarant offers testimony that explicitly does not account for any developments in the art after 2013. *See* Ex. 1003 ¶¶50–51; *see also id.* ¶86 (“In my opinion, the ’767 Application

does not provide enough information for a POSA in 2013 to make and use the full scope of challenged claim 1.”).

In our Institution Decision, we stated: “The information presented in the Petition, which is limited to the perspective of a 2013 POSITA, does not demonstrate that it is more likely than not that at least 1 of the claims challenged in the Petition is unpatentable for lack of enablement.” Inst. Dec. 14. During trial, Petitioner did not present any further arguments in support of Ground 2. *See generally* Pet. Reply.

Petitioner has failed to prove that claims 1–9 are unpatentable for failing to meet the enablement requirement set forth in 35 U.S.C. § 112(a).

VII. GROUND 3: ANTICIPATION BY THE ’629 PUBLICATION

Petitioner contends that claims 1–9 are anticipated by the ’629 publication. Pet. 60–86. The ’629 publication is a United States patent application owned by Patent Owner that was published on August 8, 2019. Ex. 1015, codes (43), (73). It is titled “Recombinant Proteins Derived From Genus *Limulus*, and DNA Molecules Encoding Same.” *Id.* at code (54). Two of its three named inventors are also named inventors of the ’109 patent. *Compare id.* at code (72), *with* Ex. 1001, code (72). Petitioner asserts the ’629 publication as prior art under 35 U.S.C. § 102(a)(1) based on its August 8, 2019, publication date predating the actual filing date of the ’109 patent (July 3, 2023). Pet. 60.

Patent Owner, for its part, does not dispute Petitioner’s mapping of the disclosure of the ’629 publication to the challenged claims. PO Resp. 30. But, Patent Owner disputes that the ’629 publication is prior art, arguing “[t]he Challenged Claims are entitled to claim priority to the December 10, 2013 filing date of PCT/JP2013/083082 because the ’767 Application

provides written description support and enables the Challenged Claims.”

Id. We turn to the priority issue first.

A. Whether the ’629 Publication is Prior Art to the Challenged Claims

An application for patent for an invention disclosed in the manner provided by section 112(a) (other than the requirement to disclose the best mode) in an application previously filed in the United States, or as provided by section 363 or 385, which names an inventor or joint inventor in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application[.]

35 U.S.C. § 120. Pursuant to this statute, Patent Owner argues that the challenged claims have the effect as though filed on the date that the ’767 Application was effectively filed, *i.e.*, December 10, 2013.⁴ PO Resp. 30. Petitioner argues that the challenged claims are not entitled to the ’767 Application’s filing date because the ’767 Application did not, when filed, provide an adequate written description or enablement of the challenged claims. Pet. 23–60; Pet. Reply 11–26.

“[A] patent’s claims are not entitled to an earlier priority date because the patentee claims priority. . . . Rather, for a patent’s claims to be entitled to an earlier priority date, the patentee must demonstrate that the claims meet the requirements of 35 U.S.C. § 120.” *In re NTP, Inc.*, 654 F.3d 1268, 1276

⁴ The ’767 application was filed June 9, 2015, as a National Stage of International Application No. PCT/JP2013/083082, which was filed December 10, 2013, and which claims priority based on Japanese Patent Application No. 2012-269840 filed December 10, 2012. Ex. 1001, 1:14–21; *see also id.* at codes (63), (30). Patent Owner does not assert priority to 2012 and focuses instead on the 2013 PCT filing date.

(Fed. Cir. 2011). For example, the Federal Circuit, in an appeal from a civil action, previously explained the following:

At that point TLC [(patent owner)] has the burden of going forward with evidence either that the prior art does not actually anticipate, or, as was attempted in this case, that it is not prior art because the asserted claim is entitled to the benefit of a filing date prior to the alleged prior art. This requires TLC to show not only the existence of the earlier application, but why the written description in the earlier application supports the claim. In the context of the allegedly anticipating Elantec prior art, that means producing sufficient evidence and argument to show that an ancestor to the '250 patent, with a filing date prior to the Elantec date, contains a written description that supports all the limitations of claim 33, the claim being asserted.

Assuming then that TLC's evidence and argument in support of the earlier filing date is now before the court, the burden of going forward again shifts to the proponent of the invalidity defense, Gennum, to convince the court that TLC is not entitled to the benefit of the earlier filing date. "Convince" is the operative word, because if the court is not persuaded by clear and convincing evidence that Gennum is correct, Gennum has failed to carry its ultimate burden of persuasion, and its defense of invalidity, based on anticipation by the Elantec art, fails.

Tech. Licensing Corp. v. Videotek, Inc., 545 F.3d 1316, 1327–28 (Fed. Cir. 2008). Notably, the Federal Circuit explicitly followed *Technology Licensing* in the AIA context, holding that the same burdens of production apply but that a petitioner's burden of persuasion of unpatentability is the lower, preponderance standard. See *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1375–76 (Fed. Cir. 2016) (citing *Technology Licensing* and holding that, in an IPR, "a patent challenger has the burden of producing evidence to support a conclusion of unpatentability under § 102 or § 103, but a patentee bears the burden of establishing that its claimed invention is entitled to an earlier priority date than an asserted prior art reference").

Similarly, the Court in *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1379 (Fed. Cir. 2015), explained the burden shifting as follows:

In this case, Dynamic, as the petitioner, had the burden of persuasion to prove unpatentability by a preponderance of the evidence, and this burden never shifted. Dynamic also had the initial burden of production, and it satisfied that burden by arguing that Raymond anticipated the asserted claims of the '196 patent under § 102(e)(2).

The burden of production then shifted to National Graphics to argue or produce evidence that either Raymond does not actually anticipate, or, as was argued in this case, that Raymond is not prior art because the asserted claims in the '196 patent are entitled to the benefit of a filing date (constructive or otherwise) prior to the filing date of Raymond.

Dynamic Drinkware, 800 F.3d at 1379–80.

For reasons explained below, when all of the evidence and arguments from Patent Owner and Petitioner have been considered, we are persuaded that the challenged claims are not entitled to an effective filing date of December 10, 2013. PO Resp. 30–76.

Petitioner identifies multiple purported deficiencies in the disclosure of the '767 Application in regard to the challenged claims. This Decision does not address all of them. Instead, this Decision focuses on a single limitation—wherein the CHO- or HEK-expressed horseshoe crab Factor C is “a *Limulus polyphemus* Factor C”—recited in claim 1 and incorporated by reference into claims 2–9. As explained below, the record shows that this limitation was neither adequately described, nor the claims reciting the limitation enabled, by the '767 application as of its December 10, 2013, filing date.

1. Lack of Written Description by the '767 Application

“[T]he purpose of the written description requirement is to ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor’s contribution to the field of art as described in the patent specification.” *ICU Med.*, 558 F.3d at 1376 (alteration in original, internal quotations omitted). The test for sufficiency of the written description “is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad*, 598 F.3d at 1351. “[T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art.” *Id.* Whether a specification provides a written description of the claimed invention is a question of fact. *Id.*

Petitioner argues that “the ’109 patent inventors did not and could not have described an example of the[serine protease] proteins from *Limulus polyphemus* for the claimed assay because the gene and sequence information for Factor C, Factor B, and Pro-clotting enzyme for *Limulus polyphemus* horseshoe crabs was not yet disclosed as of the claimed priority date of the ’109 patent.” Pet. 31 (citing Ex. 1003 ¶¶66; Ex. 1011, 36; Ex. 1015 ¶¶4–13).

Patent Owner does not dispute that ’767 application lacks an example wherein *Limulus polyphemus* Factor C was recombinantly produced. However, Patent Owner argues that, because the ’767 application “discloses the cDNA and amino acid sequences of Factor C from *Tachyplesus tridentatus* and *Carcinoscorpius rotundicauda* . . . , [t]he information available from public sources would allow a POSA to arrive at the cDNA

and amino acid sequences of *Limulus polyphemus* Factor C through routine experimentation.” PO Resp. 33 (citing Ex. 2062 ¶¶68–69).

In the Patent Owner-cited testimony, Dr. Schaefer states: “Although the ’767 Application does not expressly disclose the *Limulus polyphemus* sequences of these three proteins [(referring to Factor C, Factor B, and Pro-clotting enzyme)], their cDNA sequences could be obtained from public sources and through routine experimentation as of December 10, 2013.” Ex. 2062 ¶¶68. Dr. Schaefer supports his opinion with extrinsic evidence, as follows:

[T]he NCBI BioProject database contains two BioProjects registered by the University of Connecticut for *Limulus polyphemus*. The first, accession number PRJNA178588, is an amoebocyte cDNA transcriptome from a horseshoe crab sampled from coastal waters near Cape Cod. EX2072 (PRJNA178588). This BioProject generated experimental dataset SRX202160 with one sequencing run, number SRR610305. EX2072 (PRJNA178588); EX2073 (SRX202160); EX2074 (NCBI SRR610305). The other BioProject, accession number PRJNA178587 was a whole genome shotgun sequence, which generated two experimental datasets SRX202152 and SRX202154. EX2071 (PRJNA178587); EX2075 (SRX202152 and SRX202154). The sequence data deposited in connection with these two BioProjects was published by October 31, 2013. EX2072; EX2073; EX2074; EX 2075; EX2078.

Id. ¶¶69. This database is not referenced in, let alone incorporated by reference into, the ’767 application. Moreover, the database does not supply the missing information from the ’767 application. Instead, it provides datasets that a POSITA *allegedly* could have used in an *extensive* effort to identify the cDNA sequence encoding the *Limulus polyphemus* Factor C. *See id.* ¶¶70–73.

In its brief, Patent Owner cites additional extrinsic evidence that it asserts demonstrates written description by the '767 application. *See* PO Resp. 33–39. For example, Patent Owner argues that Exhibit 1025⁵ shows that, “[i]n 1991, researchers published a partial amino acid sequence of *Limulus polyphemus* Factor C, determined its full amino acid composition, and found that that composition was identical to the *Tachypleus tridentatus* protein.” *Id.* at 33 (citing Ex. 1025, 151; Ex. 2062 ¶122). This evidence is not persuasive for multiple reasons. First, the sequence is “partial.” Second, the partial sequence is of the amino acids that comprise *Limulus polyphemus* Factor C (i.e., the protein), not the base sequence of the *Limulus polyphemus* gene that encodes it. Third, the cited evidence states that the “compositions” of Factor C from the two species “were indistinguishable,” not that they were identical. *See* Ex. 1025, 151 (“[T]he individual amino acid compositions of the two proteins and of their chain subunits were indistinguishable.”). Fourth, a composition is not a sequence.

None of the extrinsic evidence Petitioner identifies demonstrates that the named inventors were in possession of recombinant expression of *Limulus polyphemus* Factor C when they filed their '767 application in December 2013. To the contrary, such extrinsic evidence underscores that extensive work was necessary before a POSITA, having the '767 application in December 2013, could obtain the full length genetic sequence *Limulus polyphemus* Factor C and recombinantly express it. Moreover, Patent

⁵ Exhibit 1025 is Fuminori Tokunaga et al., *Further Studies on Lipopolysaccharide-Sensitive Serine Protease Zymogen (Factor C): Its Isolation from Limulus polyphemus Hemocytes and Identification as an Intracellular Zymogen Activated by α-Chymotrypsin, Not by Trypsin*, 109 J. BIOCHEM 150–157 (1991).

Owner's broad reliance on extrinsic evidence is in tension with the purpose of the written description requirement. *See ICU Med.*, 558 F.3d at 1376 (“[T]he purpose of the written description requirement is to ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor's contribution to the field of art as described in the patent specification.” (alteration in original, internal quotations omitted)); *see also Ariad*, 598 F.3d at 1351 (“[T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art.”).

Patent Owner relies heavily on *Falko-Gunter Falkner v. Inglis*, 448 F.3d 1357 (Fed. Cir. 2006), and in particular, its holding that:

(1) examples are not necessary to support the adequacy of a written description (2) the written description standard may be met (as it is here) even where actual reduction to practice of an invention is absent; and (3) there is no *per se* rule that an adequate written description of an invention that involves a biological macromolecule must contain a recitation of known structure.

Id. at 1366 (quoted at PO Resp. 31). *Falko-Gunter* may excuse a lack of examples and/or actual reductions to practice, but it does not excuse failure to describe a recited feature of an invention that is *unknown* in the prior art. Rather, *Falko-Gunter* merely excuses “a re-description of what was already known.” *Id.* at 1367 (quoting *Capon v. Eshhar*, 418 F.3d 1349, 1358 (Fed. Cir. 2005)). *Falko-Gunter* holds that, “where . . . accessible literature sources clearly provided, as of the relevant date, genes and their nucleotide sequences (here ‘essential genes’), satisfaction of the written description requirement does not require either the recitation or incorporation by reference (where permitted) of such genes and sequences.” *Id.* at 1368 (emphasis added, footnote omitted); *see also id.* (“[T]he forced recitation of

known sequences in patent disclosures would only add unnecessary bulk to the specification.” (emphasis added)).

Although the evidence before us shows that, in 2013, a POSITA knew how to recombinantly express genes in expression systems such as CHO or HEK-293 cell lines, the evidence shows that this was true only for genes whose genetic sequences were known or readily available. *See, e.g.*, Ex. 1069, 34:11–22 (“Q. Okay. So you would agree that the creation of the recombinant protein requires the underlying sequence of, as you said, the original animal? A. Of course.”) Because it is undisputed that, in 2013, the genetic sequence for *Limulus polyphemus* Factor C was unknown, or least not publicly available, *Falko-Gunter* does not support a finding of adequate written description here. *See, e.g.*, Tr. 48:18–19 (“Patent Owner agrees that there had not been, as of 2013, the full length cDNA sequence for *Limulus polyphemus* Factor C published.”).

In supplemental briefing we authorized, Patent Owner argues that a more recent case supports its written description position, namely *Teva Pharmaceuticals Int’l GmbH v. Eli Lilly & Co.*, 172 F.4th 1367 (Fed. Cir. 2026). Paper 37. In *Teva*, the Federal Circuit reversed and remanded a lower court’s judgment as a matter of law that the asserted patent claims were invalid for failure to satisfy both the written-description and enablement requirements. *Teva*, 172 F.4th 1367. In addressing the written description issue, the Federal Circuit explained the circumstances in *Teva* as follows:

The asserted claims are to methods of using humanized anti-CGRP⁶ antagonist antibodies to treat headache. Although

⁶ CGRP is “a protein found in humans . . . associated with headache.” *Teva*, 172 F.4th at 1371.

the specification disclosed just one humanized anti-CGRP antagonist antibody, it also disclosed several murine versions and prior-art methods of humanization—against a backdrop of anti CGRP antagonist antibodies (and methods of making them) being well known and humanization being routine. And, critically, a skilled artisan would have understood from the specification that all humanized anti-CGRP antagonist antibodies treat headache. The jury therefore could have reasonably found that the specification disclosed a representative number of species of humanized anti-CGRP antagonist antibodies for purposes of the claimed invention, thus rendering JMOL of no written description improper.

Id. at 1376–77. Petitioner argues that, “just as *Teva* found that murine [(i.e., mouse)] antibodies could be representative of humanized antibodies in a well-known genus, the Board should find that the *T. tridentatus* sequences and examples are representative of proteins from other crab species,” including *Limulus polyphemus*. Paper 37, 4.

Teva is not analogous to the facts here. In *Teva*, the gap between the claimed “methods of using humanized anti-CGRP antagonist antibodies to treat headache” and the disclosure of “just one humanized anti-CGRP antagonist antibody” was filled in by the fact that the Specification also disclosed “several” murine anti-CGRP antagonist antibodies “against a backdrop of anti CGRP antagonist antibodies (and methods of making them) being well known and humanization being routine.” *Teva*, 172 F.4th at 1376–77.

Here, a gap clearly exists between what the claim covers and the express disclosure of the ’767 application. More specifically, whereas claim 1 recites “expressing the horseshoe crab Factor C in a Chinese Hamster Ovary cell or a Human Embryonic Kidney cell as a host cell . . . wherein the horseshoe crab Factor C is a *Tachypleus tridentatus* Factor C or

a *Limulus polyphemus* Factor C” (underlining added), the disclosure is limited to Factor C of *Tachypleus tridentatus*.

In an attempt to fill this gap, Patent Owner cites extrinsic evidence indicating that a portion of the genetic sequence for *L. polyphemus* Factor C had been discovered prior to 2013 and that a full-length sequence conceivably could have been obtained using prior art techniques. *See* PO Resp. 33–39; Ex. 1025; Ex. 2004; Ex. 2006; Ex. 2062; Exs. 2071–2074; Ex. 2078). Some of Patent Owner’s evidence comes from a declaration by a Michael A. Frohman, which Petitioner filed in opposition to a European patent owned by Patent Owner. *See* Ex. 2006 (Notice of Opposition of EP 3,530,670), at 3 (identifying reference “**D8**: Declaration of Professor Frohman”). Patent Owner filed a copy of the declaration in this proceeding and relies heavily on it. *See* Ex. 2004; PO Resp. 34–36, 40, 60, 64–67, 80 (citing and/or discussing Ex. 2004). To summarize, Professor Frohman testified that, as of October 18, 2016, a person of ordinary skill in the art could have obtained the coding sequence of *Limulus polyphemus* Factor C and recombinantly expressed it. *See* Ex. 2004 ¶3 (identifying October 18, 2016, as the operative date for a POSITA in the context of the European patent), ¶¶4–47 (substantive testimony).

Patent Owner’s extrinsic evidence is insufficient to fill the gap. First, Professor Frohman’s opinions were in relation to the level of skill in the art as of October 2016, not December 2013, with the latter being the critical time frame. Second, even as of that later date, Professor Frohman does not opine that the genetic sequence for *Limulus polyphemus* Factor C was well known or that it would have been routine to obtain it. This is in clear contrast to the facts in *Teva*. *See Teva*, 172 F.4th at 1376–77 (“Although the specification disclosed just one humanized anti-CGRP antagonist antibody,

it also disclosed several murine versions and prior-art methods of humanization—against a backdrop of anti-CGRP antagonist antibodies (and methods of making them) being well known and humanization being routine.”).

Moreover, Petitioner cites compelling evidence that the genetic sequence of *Limulus polyphemus* was unknown in December 2013 and remained that way until Patent Owner itself claimed a breakthrough years later. Pet. 32; Ex. 1015 ¶¶7–13, 25. In that regard, Petitioner draws our attention to Patent Owner’s own statements in the ’629 publication. Pet. 32 (citing Ex. 1015 ¶¶7–12). As stated above, the ’629 publication is a published United States patent application *owned by Patent Owner*. Ex. 1015, code (73). The ’629 publication names two of the same three co-inventors as the ’109 patent. *Id.* at code (72); Ex. 1001, code (72). The ’629 publication was filed on October 18, 2017, and its earliest claimed priority date is October 18, 2016. Ex. 1015, codes (22), (30).

We reproduce below excerpts from the ’629 publication.

[0007] At present, the lysate reagent (*Limulus* reagent or LAL reagent) used by pharmaceutical manufacturers in Japan, U.S. and Europe is derived from *Limulus polyphemus* as a raw material. The number of captures of *Limulus polyphemus* is strictly limited due to extinction concerns, however, some reports also say that the population is still decreasing.

[0008] In order to protect horseshoe crabs, there has been an idea that the reagent is prepared by artificially producing proteins in the amoebocyte lysate using a recombinant technique (PTL 1 to PTL 8). Then, by utilizing recombinant proteins, products such as PyroGene (trademark) (Lonza), EndoZyme (trademark) (Hyglos), and PyroSmart (trademark) (Seikagaku Corporation) have been actually launched in the market.

[0009] However, any of these uses recombinant proteins derived from an organism of the genus *Tachypleus*, and there has been no report of a reagent using recombinant proteins derived from *Limulus polyphemus* which has been widely spread as the lysate reagent.

[0010] The reason for this is because proteins involved in a mechanism of occurrence of clotting by an endotoxin and genes thereof in *Limulus polyphemus* have not been completely identified structurally and functionally.

[0011] In the genus *Tachypleus*, for example, with respect to factor C which is one of the proteins involved in the clotting mechanism, a full gene sequence and a full amino acid sequence derived from *Tachypleus tridentatus* have been reported in 1991 (NPL 1), and a full gene sequence and a full amino acid sequence derived from *Tachypleus rotundicauda* (*Carcinoscorpius rotundicauda*) have been reported in 1995 (NPL 2).

[0012] However, in *Limulus polyphemus*, complete identification of these proteins and genes from both structural and functional aspects has not been achieved even though 20 years or more has passed since the reports regarding the genus *Tachypleus* described above were published. This is because accurate determination of the full-length sequence structures and elucidation of the expression and functions of these proteins and genes could not be achieved by general techniques due to various differences in biomolecules, diversities, etc. because of differences in genera or species of horseshoe crabs.

[0013] In fact, as part of the invertebrate genome project using a next-generation sequencer, a comprehensive analysis of genes of *Limulus polyphemus* has been carried out (<http://genome.wustl.edu/genomes/detail/limulus-polyphemus/>), however, the full-length sequences of all proteins and genes involved in the clotting mechanism of *Limulus polyphemus* have not been elucidated yet. This fact also supports the difficulty in accurate determination of the full-length sequence structures of these proteins and genes in *Limulus polyphemus*.

...

[0025] The present inventors were successful in the acquisition of full-length cDNAs encoding all protein factors involved in the clotting mechanism of *Limulus polyphemus* which no one had ever been successful for a long time, and the expression of all recombinant proteins thereof, and further found that these can be utilized in various applications, and thus completed the present invention.

Id. ¶¶7–13, 25. As Petitioner argues, these statements constitute admissions by Patent Owner “that the field had struggled to sequence and structurally and functionally characterize the *Limulus polyphemus* species of horseshoe crab.” Pet. 32 (citing Ex. 1015 ¶¶7–12). These statements by Patent Owner – that all efforts prior to October 18, 2016, to obtain the genetic sequence for *Limulus polyphemus* Factor C (among other proteins) and recombinantly express it had proved fruitless – are devastating to Patent Owner’s position that the ’767 application somehow demonstrates possession of the same.

Patent Owner argues that “these statements do not establish that it was difficult or impossible to determine the gene and amino acid sequences for *Limulus polyphemus* zymogen proteins as of **December** 2013, since all of the *Tachypleus tridentatus* sequences were published by **October** 1993.” PO Resp. 60. This argument is premised erroneously on interpreting paragraph 12 of the ’629 publication as describing the state of the art for *Limulus polyphemus* being exactly twenty years behind that of *Tachypleus tridentatus*. It does not. See Ex. 1015 ¶12 (“[I]n *Limulus polyphemus*, complete identification of these proteins and genes from both structural and functional aspects has not been achieved even though 20 years *or more* has passed since the reports regarding the genus *Tachypleus* described above were published.” (emphasis added)); see also Ex. 1003 ¶133 (“The inventors later admitted that the uncovering of such information could not be achieved

for *over* 20 years after the same information became available for other species of horseshoe crabs.” (emphasis added)).

For the foregoing reasons, we find that the ’767 application lacks adequate written description of the required claim limitation “expressing the horseshoe crab Factor C in a Chinese Hamster Ovary cell or a Human Embryonic Kidney cell as a host cell . . . wherein the horseshoe crab Factor C is a . . . a *Limulus polyphemus* Factor C,” as recited in claim 1 and incorporated by reference into all other challenged claims.

2. Lack of Enablement by the ’767 Application

Although we find that the ’767 application lacks an adequate written description of the challenged claims, and thus, the ’629 publication is prior art, we nonetheless address the issue of enablement.

“Claims are not enabled when, at the effective filing date of the patent, one of ordinary skill in the art could not practice their full scope without undue experimentation.” *Wyeth*, 720 F.3d at 1384. “Enablement is a question of law based on underlying factual findings.” *FS.com*, 65 F.4th at 1376. The so-called *Wands* factors (identified above) are not a mandatory or exclusive list of factors to be considered. *In re Wands*, 858 F.2d at 737. Here, in view of the extensive discussion above regarding a lack of written description, we only briefly address some of the *Wands* factors.

In relation to *Wands* factor 8, we find that the breadth of the claims includes recombinant expression of *Limulus polyphemus* Factor C. In relation to *Wands* factors 2 and 3, we find that the ’767 application lacks guidance and working examples involving the *Limulus polyphemus* species of horseshoe crab. In relation to *Wands* factors 5 and 6, we find that the state of the prior art and the relative skill of those in the art demonstrated an inability of those in the field to accurately determine the full-length genetic

of *Limulus polyphemus* Factor C or to recombinantly express it. Ex. 1015 ¶¶9–13, 25. This finding is based on Patent Owner’s own statements in describing the prior art well after December 2013. *Id.* ¶¶9–13, 25.

Based on these findings, we determine that the ’767 application lacks an enabling description of “expressing the horseshoe crab Factor C in a Chinese Hamster Ovary cell or a Human Embryonic Kidney cell as a host cell . . . wherein the horseshoe crab Factor C is a . . . a *Limulus polyphemus* Factor C,” as recited in claim 1 and incorporated by reference into all other challenged claims.

3. Conclusion as to Priority

Patent Owner has not met its burden of production to show that the challenged claims are entitled to a priority date that would obviate the ’629 publication as prior art. In the alternative, to the extent Patent Owner may be considered to have met its burden of production, we find Petitioner has nevertheless established, based on a preponderance of the evidence, that the challenged claims are not entitled to an effective filing date prior to the actual filing date of the ’109 patent. Therefore, the ’629 publication is prior art to the challenged claims and we proceed to analyze Petitioner’s unpatentability grounds on that basis.

B. The ’629 Publication Anticipates Claims 1–9

Despite that Patent Owner does not dispute Petitioner’s mapping, Petitioner nonetheless bears the burden to prove that the ’629 publication anticipates each challenged claim. 35 U.S.C. § 326(e). We address each claim below.

1. Claim 1

a. A method for producing an endotoxin assay agent comprising a horseshoe crab Factor C, a horseshoe crab Factor B, and a horseshoe crab Pro-clotting enzyme, the method comprising:

Although a claim's preamble is not necessarily limiting, Petitioner presents evidence that the '629 publication discloses the subject matter recited in the preamble of claim 1. In that regard, Petitioner cites to numerous paragraphs and claims of the '629 publication and to testimony of Dr. Jain interpreting the '629 publication. Pet. 61–62 (citing Ex. 1015 ¶¶135–137, 169–171, 182–184, 268–277, 350–358, claims 1–4; Ex. 1003 ¶¶146–147).

Petitioner cites disclosures, including a description of the “transfection of the expression plasmids [for three serine protease zymogens] into cells and collection of the recombinant proteins.” Ex. 1015 ¶351; *see also id.* ¶352 (stating that recombinant proteins have the activity of Factor C, Factor B, and Pro-clotting enzyme). Petitioner also cites a description of producing an endotoxin assay agent using the recombinant proteins. *See, e.g., id.* ¶355 (“[B]y utilizing these recombinant proteins, an endotoxin can be detected.”).

Patent Owner does not dispute that the '629 publication discloses the preamble. *See* PO Resp. 30–76 (contesting anticipation only on the basis that the '629 publication is not prior art). We are persuaded that it does.

b. [1A] expressing the horseshoe crab Factor C in a Chinese Hamster Ovary cell or a Human Embryonic Kidney cell as a host cell

For limitation [1A], Petitioner directs us to, among other things, the '629 publication's disclosure that “using these expression plasmids and the

expression plasmid (in which the cDNA of SEQ ID NO: 1 was integrated) obtained in the above ([step] 3-7), and ExpiCHO™ Expression System (Thermo Fisher Scientific), recombinant proteins thereof were obtained as culture supernatant fractions.” Ex. 1015 ¶350 (quoted at Pet. 63). In the ’629 publication, SEQ ID NO: 1 is described as the base sequence of cDNA for *Limulus polyphemus* Factor C. *Id.* ¶¶28–32, 367. And, Thermo Fisher Scientific’s ExpiCHO™ Expression System uses a Chinese Hamster Ovary (“CHO”) cell line. Ex. 1041, 4.

Patent Owner does not dispute that the ’629 publication discloses limitation [1A]. We are persuaded that it does.

*c. [1B] secreting the horseshoe crab Factor C
into an extracellular culture supernatant, and [1C]
recovering the horseshoe crab Factor C
in the culture supernatant*

For limitations [1B] and [1C], Petitioner directs us to, among other things, the ’629 publication’s disclosure that the “recombinant proteins . . . were obtained as culture supernatant fractions.” Ex. 1015 ¶350 (quoted at Pet. 64); *see also id.* ¶352 (describing “the expression and acquisition of the protein (SEQ ID NO: 2) that may have the factor C activity of *Limulus polyphemus*”). In the ’629 publication, SEQ ID NO: 2 is described as the amino acid sequence of *Limulus polyphemus* Factor C. *Id.* ¶¶28–32, 368.

Patent Owner does not dispute that the ’629 publication discloses limitations [1B] and [1C]. We are persuaded that it does.

d. [1D] wherein the recovered horseshoe Factor C has activity of Factor C, and [1E] wherein the horseshoe crab Factor C is a Tachypleus tridentatus Factor C or a Limulus polyphemus Factor C

For limitation [1D] and [1E], Petitioner first directs us to the '629 publication's disclosure that "the expression and acquisition of the protein (SEQ ID NO: 2) that may have the factor C activity of *Limulus polyphemus* . . . [was] achieved for the first time." Pet. 65 (quoting Ex. 1015 ¶352) (alterations in original). And, as pointed out by Petitioner, the '629 publication describes having confirmed that the recombinant proteins, including the recombinant Factor C, were active.

[I]t was shown for the first time that the expressed protein that may have the factor C activity, the expressed protein that may have the factor B activity, and the expressed protein that may have the proclotting enzyme activity have the factor C activity, the factor B activity, and the proclotting enzyme activity, respectively, and the cascade reaction is caused by contact with an endotoxin. Further, it was shown for the first time that by utilizing these recombinant proteins, an endotoxin can be detected.

Ex. 1015 ¶355 (quoted at Pet. 65–66).

Patent Owner does not dispute that the '629 publication discloses limitations [1D] and [1E]. We are persuaded that it does.

e. [1F] expressing the horseshoe crab Factor B having activity of Factor B in a mammalian cell as a host cell

For limitation [1F], Petitioner directs us to the '629 publication's description of the "[a]cquisition of cDNA (Second cDNA) of Protein Having Factor B Activity of *Limulus polyphemus*." Ex. 1015 ¶¶346–347 (cited at Pet. 67). As Petitioner points out, the cDNA for Factor B was then expressed in a CHO cell line. Pet. 67 (citing Ex. 1015 ¶350). Further, the

'629 publication reports successful acquisition of the recombinant Factor B and confirmation of its activity. Ex. 1015 ¶¶351–355 (cited at Pet. 67).

Patent Owner does not dispute that the '629 publication discloses limitation [1F]. We are persuaded that it does.

f. [1G] expressing the horseshoe crab Pro-clotting enzyme in a mammalian cell as a host cell

For limitation [1G], Petitioner directs us to the '629 publication's description of the "[a]cquisition of cDNA (Third cDNA) of Protein Having Proclotting Enzyme Activity of *Limulus polyphemus*." Ex. 1015 ¶¶348–349 (cited at Pet. 68). As Petitioner points out, the cDNA for Pro-clotting enzyme was then expressed in a CHO cell line. Pet. 68 (citing Ex. 1015 ¶350). Further, the '629 publication reports successful acquisition of the recombinant Pro-clotting enzyme and confirmation of its activity. Ex. 1015 ¶¶351–355 (cited at Pet. 68).

Patent Owner does not dispute that the '629 publication discloses limitation [1G]. We are persuaded that it does.

g. [1H] producing an endotoxin assay agent comprising the horseshoe crab Factor C, the horseshoe crab Factor B and the horseshoe crab Pro-clotting enzyme

For limitation [1H], Petitioner directs us to, among other things, the '629 publication's statement that, "by utilizing these recombinant proteins, an endotoxin can be detected." Ex. 1015 ¶355 (quoted at Pet. 69–70). Patent Owner does not dispute that the '629 publication discloses limitation [1H]. We are persuaded that it does.

h. [11] wherein the host cell for expressing the horseshoe crab Factor C, the host cell for expressing the horseshoe crab Factor B, and the host cell for expressing the horseshoe crab Pro-clotting enzyme may be the same or different.

For limitation [11], Petitioner directs us to the '629 publication's teaching of expressing all three of the recombinant proteins in mammals. Pet. 70 (citing Ex. 1015 ¶350; Ex. 1003 ¶157). Petitioner does not explicitly argue whether, in the '629 publication, the host cell for the three recombinant proteins could be the same. However, it is clear enough that it teaches using different host cells. *See* Ex. 1015 ¶350 (describing expression of recombinant Pro-clotting enzyme in unspecified "mammalian cells," expression of recombinant factor B "according to a literature (Kobayashi et al., 2015, J Biol Chem, 290: 19379-19386 [(i.e., Ex. 1007)])," and describing the use of Thermo Fisher Scientific's ExpiCHO™ Expression System); Ex. 1007 (describing expression of recombinant factor B in human embryonic kidney (HEK) cell lines). And, if not, then it would be the same type of host cells, which limitation [11] also covers.

Patent Owner does not dispute that the '629 publication discloses limitation [11]. We are persuaded that it does.

i. Conclusion as to Claim 1

Petitioner has proved, by a preponderance of the evidence, that the '629 publication anticipates claim 1.

2. Claim 2

Claim 2 recites: "The method according to claim 1, wherein the mammalian cell expressing the Factor B is a Chinese Hamster Ovary cell or a Human Embryonic Kidney cell." Ex. 1001, 47:41–43. For this claim, Petitioner directs us to the '629 publication's description of using Thermo

Fisher's ExpiCHO™ Expression System, which uses Chinese hamster ovary cells, for expressing Factor B. Pet. 75–76 (citing Ex. 1015 ¶¶346–347; Ex. 1003 ¶¶168–169).

Patent Owner does not dispute that the '629 publication discloses the subject matter of claim 2. We are persuaded that it does.

3. Claim 3

Claim 3 recites: “The method according to claim 1, wherein the mammalian cell expressing the Pro-clotting enzyme is a Chinese Hamster Ovary cell or a Human Embryonic Kidney cell.” Ex. 1001, 47:44–46. For this claim, Petitioner directs us to the '629 publication's description of using Thermo Fisher's ExpiCHO™ Expression System for expressing pro-clotting enzyme. Pet. 76 (citing Ex. 1015 ¶¶348–349; Ex. 1003 ¶¶170–171).

Patent Owner does not dispute that the '629 publication discloses the subject matter of claim 3. We are persuaded that it does.

4. Claim 4

Claim 4 recites: “The method according to claim 1, wherein the horseshoe crab for the Factor B and/or the horseshoe crab for the Pro-clotting enzyme is selected from the group consisting of *Tachypleus tridentatus* and *Limulus polyphemus*.” Ex. 1001, 47:47–50. For this claim, Petitioner directs us to the '629 publication's description of using the *Limulus polyphemus* species of horseshoe crab for these proteins. Pet. 77 (citing Ex. 1015 ¶¶346–349; Ex. 1003 ¶¶172–174).

Patent Owner does not dispute that the '629 publication discloses the subject matter of claim 4. We are persuaded that it does.

5. Claim 5

Claim 5 recites: “The method according to claim 1, wherein the horseshoe crab Factor C contains (α -2,3)-linked terminal sialic acid in a greater amount, as compared with a corresponding Factor C protein recombinantly expressed using Sf9 as a host cell.” Ex. 1001, 47:51–55. For this claim, Petitioner relies on inherent disclosure because the ’629 publication “discloses the recombinant expression of Factor C via CHO cells,” which it argues will inherently result in (α -2,3)-linked terminal sialic acid in a greater amount than when using insect cells. Pet. 78–79 (citing Ex. 1015 ¶¶341–345, 350; Ex. 1015 ¶¶325, 328; Ex. 1019, 2; Ex. 1003 ¶¶175–178). The cited evidence adequately supports inherent disclosure.

Patent Owner does not dispute that the ’629 publication discloses the subject matter of claim 5. We are persuaded that it does.

6. Claim 6

Claim 6 recites: “The method according to claim 1, wherein the horseshoe crab Factor C has a molecular weight of 115 kDa to 130 kDa, as measured through SDS-PAGE under a nonreducing condition.” Ex. 1001, 48:17–20. For this claim, Petitioner argues that, although the ’629 publication does not expressly measure or report the molecular weight of the expressed Factor C, a POSITA would understand from the disclosure of the ’629 Publication that the recombinant Factor C protein described therein would have a molecular weight within the recited range. Pet. 80–81 (citing Ex. 1003 ¶¶179–180). Specifically, Petitioner argues that it was known that native *Limulus polyphemus* Factor C has a molecular weight of 123 kDa and that it was also known, based on observation, that recombinant expression yields only a slight increase in molecular weight relative to the native protein. *Id.* at 81 (citing Ex. 1003 ¶180). The cited testimony of Dr. Jain is

supported by underlying documentary evidence. *See, e.g.*, Ex. 1003 ¶180 (“*Characterization of L. polyphemus Factor C* – The purity of the final preparation of *L.*-factor C was examined by SDS-PAGE. The purified zymogen factor C gave a single band of 123 kDa under nonreduced conditions.” (quoting Ex. 1025, 151)).

Patent Owner does not dispute that the ’629 publication discloses the subject matter of claim 6. We are persuaded that it does.

7. Claim 7

Claim 7 recites: “The method according to claim 1, further comprising filtering the culture supernatant comprising the horseshoe crab Factor C.” Ex. 1001, 48:21–23. For this claim, Petitioner directs us to the ’629 publication’s description of collecting the recombinant proteins from culture supernatant fractions using the “accompanying instructions” for the ExpiCHO™ Expression System, which teach the user to “Filter supernatant through a 0.22-µm filter.” Pet. 82 (citing Ex. 1015 ¶¶350–351⁷; Ex. 1041, 17; Ex. 1003 ¶¶181–182).

Patent Owner does not dispute that the ’629 publication discloses the subject matter of claim 7. We are persuaded that it does.

8. Claim 8

Claim 8 recites: “The method according to claim 1, wherein the endotoxin assay agent is formulated as a solid, a liquid, or a gel.” Ex. 1001, 48:24–25. For this claim, Petitioner directs us to the ’629 publication’s description of mixing the recombinant Factor C, Factor B, and pro-clotting enzyme into a “solution,” which it argues a POSITA would understand to be

⁷ Page 82 of the Petition quotes from paragraphs 351 and 352 of the ’629 publication, but it inadvertently cites to only paragraph 351.

a liquid. Pet. 82–83 (citing Ex. 1015 ¶¶354; Ex. 1003 ¶¶183–184). Petitioner also directs us to the ’629 publication’s statement that “the form of this detecting agent is also not particularly limited, and the agent can be formulated into an arbitrary form such as a solid form (for example, a lyophilized form) or a liquid form.” *Id.* at 83 (quoting Ex. 1015 ¶274)

Patent Owner does not dispute that the ’629 publication discloses the subject matter of claim 8. We are persuaded that it does.

9. Claim 9

Claim 9 recites: “The method according to claim 1, wherein the horseshoe crab Factor C, the horseshoe crab Factor B, and the horseshoe crab Pro-clotting enzyme are separately expressed in individually established host cells.” Ex. 1001, 48:26–29. For this claim, Petitioner directs us to the ’629 publication’s description of the separate expression of each of the zymogen proteins (i.e., Factor C, Factor B, and pro-clotting enzyme) in individual host cells. Pet. 83–84 (citing Ex. 1015 ¶350; Ex. 1003 ¶¶185–186).

Patent Owner does not dispute that the ’629 publication discloses the subject matter of claim 9. We are persuaded that it does.

VIII. RESPONSE TO DISSENT

We respectfully disagree with the dissent’s position that we should vacate our Decision on Institution and dismiss the Petition as a sanction for Petitioner’s violation of 37 C.F.R. § 42.51(b)(1)(iii). Opinion of Administrative Patent Judge Fitzpatrick, dissenting (“Dissent”).

The Dissent bases its proposed sanction on Petitioner’s failure “to serve the Frohman Declaration (Ex. 2004) on Patent Owner when it filed its

Petition, despite that the Frohman Declaration contains relevant information that is inconsistent with a position advanced in the Petition.” Dissent 2.

The Dissent points to the following statements from the Petition, which argues that challenged claim 1 is not entitled to the claimed priority date of December 10, 2013:

While challenged claim 1 explicitly recites using *Limulus polyphemus* Factor C for the production of recombinant Factor C (and places no species limitation on the recombinant production of Factor B or Pro-clotting enzyme), the ’109 patent inventors did not and could not have described an example of these proteins from *Limulus polyphemus* for the claimed assay because the gene and sequence information for Factor C, Factor B, and Pro-clotting enzyme for *Limulus polyphemus* horseshoe crabs was not yet disclosed as of the claimed priority date of the ’109 patent.

Dissent 3; and

Claim 1 covers over 3,400 options for making recombinant Factor C, Factor B, and Pro-clotting enzyme including that of the *Limulus polyphemus* species to produce an endotoxin assay agent. However, per the ’109 patent inventors’ own admission years after the ’767 Application was filed, the field had struggled to sequence and recombinantly produce a significant proportion of these options—those involving *Limulus polyphemus* zymogen proteins.

Id. at 3–4.

The Dissent suggests that these statements are clearly inconsistent with Professor Frohman’s testimony that “the skilled person would have most likely used Rapid Amplification of cDNA Ends (RACE) to obtain the sequence of the cDNA encoding Factor C from *Limulus polyphemus*”; that “there were multiple ways a skilled person could have obtained ‘the coding sequence of the *Limulus* Factor C protein . . . before October 18, 2016’”; and that “there was no reason to believe that *Limulus polyphemus* Factor C

would have been difficult to express after the cDNA sequence had been obtained.” Dissent 4 (citing Ex. 2004 § III; ¶¶ 7, 44) (emphasis omitted).

We note that the above testimony from Professor Frohman was in the context of “[h]ow . . . the skilled person wishing to obtain the coding sequence of the *Limulus* Factor C protein [would] have gone about obtaining this information before **October 18, 2016**” and whether “this protein would have been difficult to express ***after the cDNA sequence had been obtained.***” Ex. 2004, §§ III, VIII (emphasis added).

As to the first statement in the Petition quoted by the Dissent, the test for adequate written description is whether the *disclosure* reasonably conveyed to a POSITA that the *inventors* were in *possession* of the claimed subject matter. *Ariad*, 598 F.3d 1351. “[A] description that merely renders the invention obvious does not satisfy the [written description] requirement,” and claims that do not require undue experimentation to make and use may, nevertheless, “have not been invented, and thus cannot be described.” *Id.* at 1352. Thus, there is no clear inconsistency between the quoted testimony from Professor Frohman—which suggests that a POSITA *could* have obtained the coding sequence of the *Limulus* Factor C protein before October 18, 2016 using RACE, and then expressed the protein—and Petitioner’s position in this proceeding that claim 1 is not entitled to the asserted priority date of December 10, 2013 because of lack of adequate written description.

The second statement quoted in the Dissent characterizes Patent Owner’s own statements. As we noted in our Order Granting-in-Part Patent owner’s Motion for Routine Discovery (“Discovery Order”), “we do not find statements in the Petition and Opposition that merely *describe* Patent

Owner's statements during prosecution to be inconsistent" with the Frohman Declaration. Paper 17, 11.

The Dissent highlights our determination in the Discovery Order that "[t]he Frohman Declaration 'is inconsistent with Petitioner's position in the Petition that the '109 patent claims are not enabled *in part* because making recombinant proteins such as factor C were difficult and 'highly unpredictable.'" Dissent 3 (citing Paper 17, 8) (emphasis added). We do not disagree that there are statements in the Frohman Declaration that at least appear to be inconsistent with specific statements in the Petition. *See, e.g.*, Paper 17, 7–8. We do not find the Frohman Declaration, however, to be so inconsistent with arguments in the Petition to warrant vacating the Institution Decision and dismissing the Petition as a discovery sanction. For instance, we understand Petitioner's main argument with respect to enablement to be that "the '767 Application . . . leaves a POSA to engage in random trial-and-error discovery to assemble *functional* claimed assays from the *myriad of options* covered by challenged claim 1," not merely or even primarily that "*Limulus polyphemus* Factor C would have been difficult to express after the cDNA sequence had been obtained." Pet. 40 (emphasis added); Ex. 2004 ¶ 44.

The Dissent acknowledges that Dr. Frohman's testimony is directed towards a later time frame, October 18, 2016, rather than Patent Owner's claimed priority date of December 10, 2013. Dissent 4. The Dissent cites to our explanation in the Discovery Order that the Frohman Declaration may nevertheless be inconsistent because "Patent Owner may seek to establish entitlement to . . . other effective dates [in the priority chain]" that is "after the 2016 date Petitioner argues is relevant in the Frohman Declaration." *Id.* at 5 (citing paper 17, 9). It is now clear, at the conclusion of this proceeding,

that Patent Owner is not asserting any priority date other than December 10, 2013.

We find vacating the Institution Decision and dismissing the Petition to be particularly unwarranted in this case because (1) the sanction would be issued *sua sponte*, at a late stage of the proceeding, without any showing of prejudice to Patent Owner;⁸ (2) there has been no apparent consideration of the efficacy of lesser sanctions;⁹ (3) the Board and the parties have been aware of the issues with respect to the '670 Opposition and the Frohman Declaration since the earliest stages of this proceeding, including during discretionary denial briefing in front of then-Acting Director Stewart (Papers 6, 8, 9), and there were no prior indication to Petitioner that its discovery shortcomings could result in the dismissal of the Petition;¹⁰ (4) as discussed above, Patent Owner has made statements in its other patent applications that are more directly contradictory to positions it has taken in this proceeding; and (5) Petitioner has made non-frivolous arguments as to why the Opponent's position in the '670 Opposition is not contradictory to the position it has taken in this proceeding (*see, e.g.*, Paper 13).¹¹

⁸ Patent Owner deposed Petitioner's expert, Dr. Jain, extensively on the Frohman Declaration. *See, e.g.*, Ex. 1065, 64:22–87:20.

⁹ The Dissent asserts that “the majority offer no insight on what would be an appropriate, non ‘*sua sponte*,’ process for resolving this issue.” Dissent 5–6. These procedures, however, are set forth in 37 C.F.R. §§ 42.11 and 42.12.

¹⁰ Then-Acting Director Stewart determined that “discretionary denial of institution is not appropriate in [this] proceeding[.]” and referred it to the Board for “merits and other non-discretionary considerations.” Paper 9, 2. In our Institution Decision, we noted that, “even if we were to take it into account, the Frohman Declaration would not tip the balance of evidence in favor of denying institution.” Inst. Dec. 27.

¹¹ This is not similar to the situation in the *Revvo* line of cases. *Revvo Techs., Inc. v. Cerebrum Sensor Techs., Inc.*, IPR2025-00632, Paper 20

Finally, the dissent asserts that “Petitioner’s failure to [serve the Frohman Declaration with its Petition] particularly troubling because Petitioner attempted to keep its relationship to the Frohman Declaration secret.” Dissent 5. It is not disputed that the EPO permits parties to file patent oppositions anonymously. For the reasons set forth in the Discovery Order, the majority also determined that whether Petitioner initiated the ’670 Opposition is more properly the province of additional, rather than routine, discovery. Paper 17, 4–5. Patent Owner subsequently filed a Motion to Compel Additional Discovery, after which Petitioner confirmed that it was the party behind the ’670 Opposition, which resolved the discovery dispute. Paper 29.

IX. CONCLUSION

A preponderance of the evidence shows that claims 1–9 are unpatentable. In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–9	112	Written Description		1–9
1–9	112	Enablement		1–9
1–9	102	’629 publication	1–9	
Overall Outcome			1–9	

(Nov. 3, 2025) (precedential). In *Revvo*, Petitioner advanced different claim construction positions in litigating the same patent in front of the Board and the district court. *Id.* Here, neither party suggests that the ’670 Opposition is a related matter. *See supra* Section II.B. Likewise, we do not find the Frohman Declaration to be necessarily inconsistent with Petitioner’s core positions in this case.

X. ORDER

Accordingly, it is:

ORDERED that claims 1–9 of U.S. Patent No. 11,959,109 B2 are unpatentable; and

FURTHER ORDERED that, because this Decision is final, a party to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHARLES RIVER LABORATORIES, INC.
Petitioner,

v.

SEIKAGAKU CORPORATION,
Patent Owner.

PGR2025-00023
Patent 11,959,109 B2

FITZPATRICK, *Administrative Patent Judge*, dissenting.

I respectfully dissent from the majority's Final Written Decision because I would not reach any final decision on the merits. Instead, I would vacate our Decision on Institution (Paper 14) and dismiss the Petition (Paper 2) on account of Petitioner's violation of 37 C.F.R. § 42.51(b)(1)(iii).

That Rule states:

Unless previously served, a party must serve relevant information that is inconsistent with a position advanced by the party during the proceeding concurrent with the filing of the documents or things that contains the inconsistency. This requirement does not make discoverable anything otherwise protected by legally recognized privileges such as attorney-client or attorney work product. This requirement extends to inventors,

corporate officers, and persons involved in the preparation or filing of the documents or things.

37 C.F.R. § 42.51(b)(1)(iii). “Routine discovery under 37 C.F.R. § 42.51(b)(1)(iii) is narrowly directed to specific information known to the responding party to be inconsistent with a position advanced by that party in the proceeding, and not broadly directed to any subject area in general within which the requesting party hopes to discover such inconsistent information.” *Garmin Int’l, Inc. v. Cuozzo Speed Techs. LLC*, No. IPR2012-00001, Paper 26, 4 (March 5, 2013) (precedential) (“*Garmin*”).

Petitioner failed to serve the Frohman Declaration (Ex. 2004) on Patent Owner when it filed its Petition, despite that the Frohman Declaration contains relevant information that is inconsistent with a position advanced in the Petition. The Frohman Declaration was submitted to the European Patent Office as part of an anonymously filed Opposition to Patent Owner’s European Patent No. 3530670 (“the ’670 Opposition”). *See* Ex. 2006, at 2–3 (Notice of Opposition identifying “**D8**: Declaration of Professor Frohman” as a document “relied upon”).

On August 8, 2025, Patent Owner filed a Motion to Compel in this proceeding. Paper 12. The Motion sought two things from Petitioner: (1) “to confirm whether it initiated the [’670] Opposition” in Europe and (2) to “produce any other relevant information of which it is aware that is inconsistent with a position it advanced in PGR2025-00023.” Paper 12, at 1. In a September 30, 2025, Order, the Board granted the latter and, over a dissent, denied the former. Paper 17.

At the time of the September 30, 2025, Order, it was not established that Petitioner had commissioned the Frohman Declaration or that Petitioner had requested the ’670 Opposition. Those are now undisputed facts of

record. *See* Paper 29 (“On December 19, 2025, Patent Owner informed the Board that Petitioner has confirmed that Petitioner is ‘the party behind the European Opposition proceeding.’” (quoting Ex. 3003)).

It is a fact that the Frohman Declaration was known to Petitioner at the time Petitioner filed its Petition. It is a fact that Petitioner did not serve the Frohman Declaration concurrent with the filing of its Petition. And, the Board has already decided, as a matter of fact, that the Frohman Declaration contains information that is inconsistent with a position advanced in the Petition. *See* Paper 17, at 8 (The Frohman Declaration “is inconsistent with Petitioner’s position in the Petition that the ’109 patent claims are not enabled in part because making recombinant proteins such as Factor C were difficult and ‘highly unpredictable.’”). It clearly does.

In asserting a lack of written description for priority purposes, the Petition argues the following:

While challenged claim 1 explicitly recites using *Limulus polyphemus* Factor C for the production of recombinant Factor C (and places no species limitation on the recombinant production of Factor B or Pro-clotting enzyme), the ’109 patent inventors did not and could not have described an example of these proteins from *Limulus polyphemus* for the claimed assay because the gene and sequence information for Factor C, Factor B, and Pro-clotting enzyme for *Limulus polyphemus* horseshoe crabs was not yet disclosed as of the claimed priority date of the ’109 patent.

Pet. 31 (citing Ex. 1003 ¶¶66; Ex. 1011, 36; Ex. 1015 ¶¶4–13). Similarly, in asserting a lack of enablement for priority purposes, the Petition argues the following:

Claim 1 covers over 3,400 options for making recombinant Factor C, Factor B, and Pro-clotting enzyme including that of the *Limulus polyphemus* species to produce an endotoxin assay agent. However, per the ’109 patent inventors’

own admission years after the '767 Application was filed, the field had struggled to sequence and recombinantly produce a significant proportion of these options—those involving *Limulus polyphemus* zymogen proteins.

Pet. 42.

In contrast to the arguments quoted above that relate to Factor C, Professor Frohman testified that there were multiple ways a skilled person could have obtained “**the coding sequence of the *Limulus* Factor C protein . . . before October 18, 2016.**” Ex. 2004 § III. For example, Professor Frohman testified that “the skilled person would have most likely used Rapid Amplification of cDNA Ends (RACE) to obtain the sequence of the cDNA encoding Factor C *from Limulus polyphemus.*” *Id.* ¶7. Professor Frohman further testified that there was no reason to believe that *Limulus polyphemus* Factor C would have been difficult to express after the cDNA sequence had been obtained. *Id.* ¶44.

Although Professor Frohman testified as to the skill in the art as of October 18, 2016 (*see id.* ¶3), his testimony nonetheless is inconsistent with Petitioner’s arguments quoted above, which arguments Petitioner employs to establish anticipation of claim 1 by the '629 publication.

The Petition asserts the '629 publication is prior art under 35 U.S.C. § 102(a)(1) based on the date of its publishing—August 8, 2019. Pet. 61; Ex. 1015, code (43). The '109 patent claims priority, not only to the much-discussed December 10, 2013, date, but also to May 18, 2018, and April 30, 2019. Ex. 1001, 1:8–21; *see also id.* at code (63). Both of these additional dates are prior to the '629 publication becoming prior art on August 18,

2019, yet after the date on which Professor Frohman premises his opinions (October 18, 2016). As explained in our September 30, 2025, Order:

[A]lthough Petitioner explicitly challenges only one priority application as lacking written description and enablement (i.e., the '767 application filed in 2013), the '109 patent identifies multiple priority applications filed at later times, including, e.g., application 15/983,725, which was filed on May 18, 2018, after the 2016 date Petitioner argues is relevant in the Frohman Declaration but before the publication of the '629 publication on August 8, 2019. Ex. 1001, code (63); Pet. 60. As Petitioner acknowledges, Patent Owner may seek to establish entitlement to these other effective filing dates based on advancement in the art since 2013. Pet. 60.

Paper 17, at 9.

Petitioner should have served the Frohman Declaration with its Petition. I find Petitioner's failure to do so particularly troubling because Petitioner attempted to keep its relationship to the Frohman Declaration secret.

As a sanction for Petitioner's violation of 37 C.F.R. § 42.51(b)(1)(iii), I would vacate the Decision on Institution (Paper 14) and dismiss the Petition (Paper 2).

The majority state that such a sanction is unwarranted here, in part, because the sanction "would be issued *sua sponte*, at a late stage of the proceeding, without any showing of prejudice by Patent Owner." Supra. However, Patent Owner first brought attention to this issue in a Motion to Compel filed over a month before this case was instituted. Paper 12. The prejudice is the institution. That institution was prejudicial became clear only upon Petitioner admitting, months later, that it was the party that had requested the '670 Opposition (and thus had commissioned and submitted the Frohman Declaration to the EPO). Ex. 3003. Further, the majority offer

no insight as to what would be an appropriate, non “*sua sponte*,” process for resolving this issue *that a majority of this panel would support*.

The majority point out that Patent Owner itself has made inconsistent statements (admissions) in an unrelated patent application. This is true and quite troubling. Indeed, I am *certain* that the majority’s determination that the claims of ’109 patent are unpatentable based, in part, on those own admissions is *correct*. The ends, however, do not justify the means.

Finally, the majority note that “Petitioner has made non-frivolous arguments as to why [Petitioner]’s position in the ’670 Opposition is not contradictory to the position it has taken in this proceeding.” *Supra*. I do not know to which arguments the majority is referring. Regardless, such arguments, even if non-frivolous, do not dissuade us that the Frohman Declaration contains relevant information that is inconsistent with a position advanced in the Petition. Paper 17.

It is a matter of record that Petitioner violated 37 C.F.R. § 42.51(b)(1)(iii). Paper 1. There must be some meaningful repercussion for violation of a discovery obligation. Had I known, prior to institution, that Petitioner was the party who presented the Frohman Declaration to the EPO (which document Petitioner did not serve with its Petition), I would not have agreed with instituted this proceeding. Thus, I believe that vacating our Decision on Institution and dismissing the Petition would be appropriate here.

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