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Paper 79
Date: December 9, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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BLUECATBIO MA INC.,
Petitioner,

v.

YANTAI AUSBIO LABORATORIES CO., LTD.,
Patent Owner.

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PGR2020-00051
Patent 10,338,063 B2

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Before CHRISTOPHER L. CRUMBLEY, JO-ANNE M. KOKOSKI, and ELIZABETH M. ROESEL, *Administrative Patent Judges.*

ROESEL, *Administrative Patent Judge*.

# JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
*35 U.S.C. § 328(a)*

Dismissing Patent Owner's Motion to Exclude
*37 C.F.R. § 42.64*

# I. INTRODUCTION

## *A. Background and Summary*

BlueCatBio MA Inc. ("Petitioner") filed a Petition (Paper 2, "Pet.") seeking post-grant review of claims 1, 3–5, 7, 10–12, and 14–20 ("the challenged claims") of U.S. Patent No. 10,338,063 B2 (Ex. 1001, "the '063 Patent"). Yantai AusBio Laboratories Co., Ltd. ("Patent Owner") filed a Preliminary Response. Paper 23 ("Prelim. Resp."). We instituted a post-grant review of the challenged claims. Paper 26 ("Inst. Dec."). We denied Patent Owner's request for rehearing of the Decision granting institution. Papers 28, 41.

After institution, we issued an Order (Paper 51) granting-in-part Patent Owner's Motion for additional discovery (Paper 43), which was opposed by Petitioner (Paper 48). *See also* Paper 49 (Patent Owner's reply). Our Order required Petitioner to produce two categories of information: (1) particular documents sought by Patent Owner to show secondary considerations of non-obviousness; and (2) all communications between Petitioner's declarants, Prof. Alexander Slocum and Mr. Yoshiki Yagi, in the time period leading up to the filing of the Petition. Paper 51.

Thereafter, Patent Owner filed a Response to the Petition (Paper 53, "PO Resp."), Petitioner filed a Reply (Paper 58, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 64, "PO Sur-reply"). Patent Owner filed a Motion to exclude evidence (Paper 69), Petitioner filed an Opposition (Paper 70), and Patent Owner filed a Reply (Paper 71). An oral hearing was held on September 17, 2021, and a transcript of the hearing is included in the record. Paper 78 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 328(a). For the reasons that

follow, we determine that Petitioner has not shown that the challenged claims of the '063 Patent are unpatentable. In brief, we determine that the claims, when properly construed, require that the claimed centrifuge generate a wind that drives to the drain all or nearly all of the liquid expelled from a reaction vessel onto the inner surface of the centrifuge housing, and that Petitioner failed to show by a preponderance of the evidence that the Gyro Washer, asserted as prior art, drives all or nearly all of the expelled liquid to the drain.

*B. Related Matters*

The parties state that the '063 Patent is not currently involved in any other judicial or administrative matters that would affect, or be affected by, a decision in this proceeding. Pet. xi; Paper 6, 2 (Patent Owner's Mandatory Notices).

*C. The '063 Patent (Ex. 1001)*

The '063 Patent was issued on an application filed February 5, 2016, and claims priority to PCT Application No. PCT/EP2014/066947, filed August 6, 2014, and EP Application No. 13179437, filed August 6, 2013. Ex. 1001, codes (21), (22), (30), (86).

The '063 Patent is titled, "Centrifuge and Method for Centrifuging a Reaction Vessel Unit." Ex. 1001, code (54). An object of the '063 Patent "is to provide a centrifuge for cleaning a reaction vessel unit." *Id.* at 3:18–19. The '063 Patent discloses that the centrifuge has a rotor for holding at least one reaction vessel unit with its openings directed outwardly, a motor for rotating the rotor around a rotation axis, a housing having a substantially cylindrical inner surface, and a drain for discharging fluid expelled from the reaction vessel unit. *Id.* at 3:23–29. According to

the ’063 Patent, “a gap is provided between the inner surface and the rotor so that by rotating the rotor a wind is generated which drives the expelled fluid on the inner surface to the drain wherein an aspiration pump is connected to the drain for discharging fluid.” *Id.* at 3:29–33; *see also id.* at 3:53–4:5 (discussing the size of the gap and its function).

Figure 2 of the ’063 Patent is reproduced below.

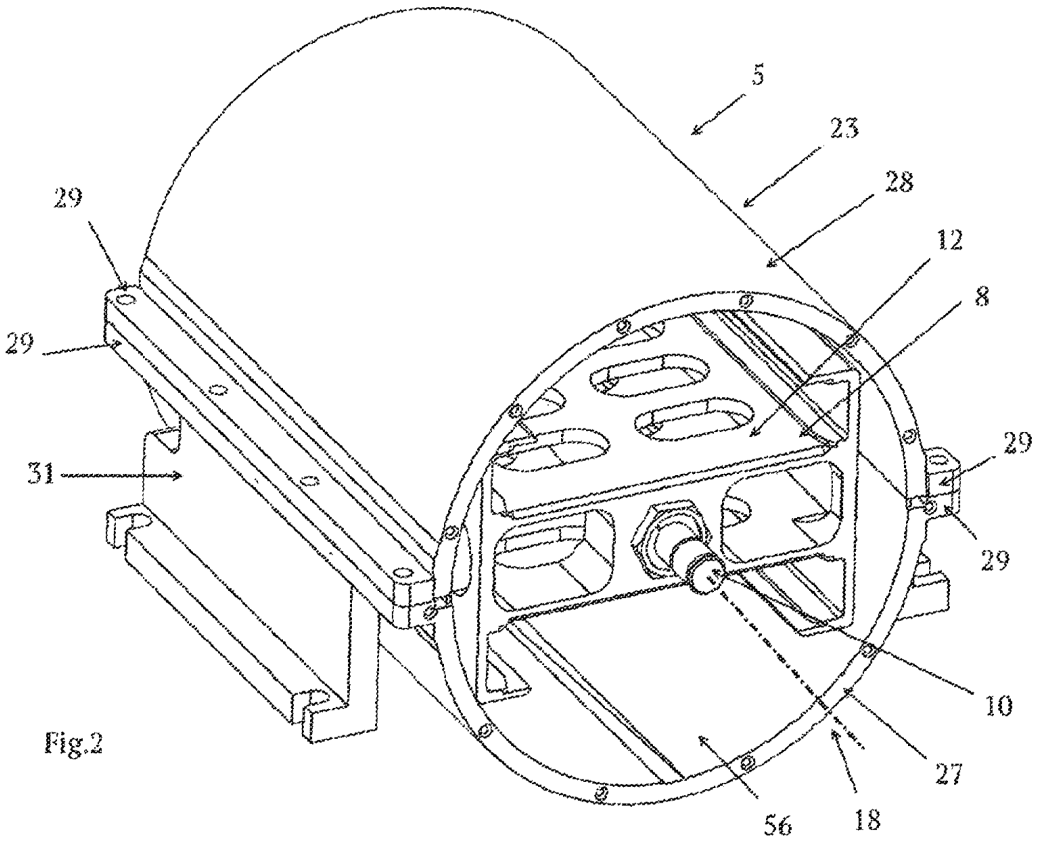


Figure 2 is a perspective view of a rotor and housing of a centrifuge with its front side wall removed. Ex. 1001, 9:30–31.

Figure 3 of the ’063 Patent is reproduced below.

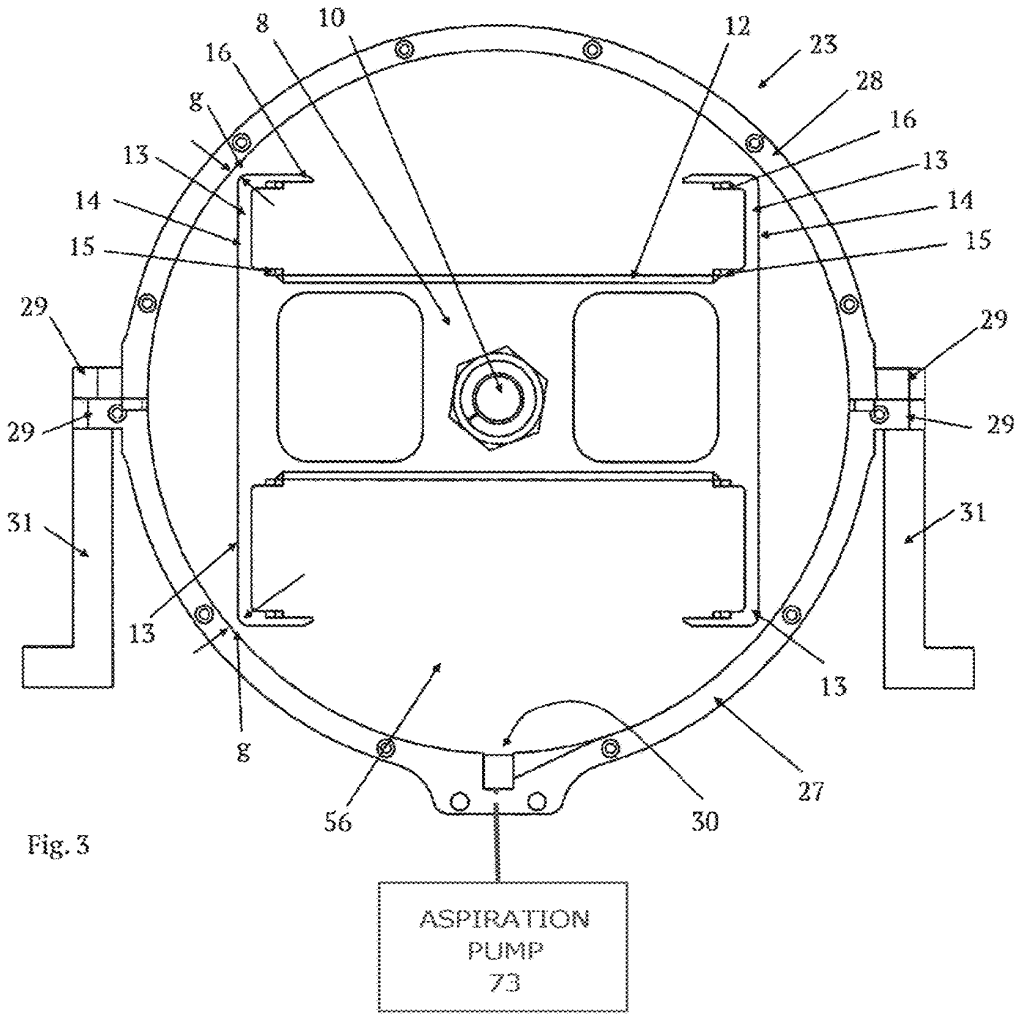


Fig. 3

Figure 3 is a front view of a rotor and housing of a centrifuge with its front side wall removed. Ex. 1001, 9:33–34.

As shown in Figures 2 and 3, rotor 8 comprises two receptacle sections, each for receiving one microtiter plate (not shown). Ex. 1001, 10:15–16. Rotor 8 is mounted on horizontal shaft 10 and surrounded by housing 23 having cylindrical jacket wall 24 (not labeled) comprising lower and upper half shells 27, 28 connected by outwardly arranged flanges 29. *Id.* at 10:14–15, 10:63–67. Groove-shaped drain 30 is provided in the lower

section of the inner surface of the jacket wall 24. *Id.* at 11:6–8. The depth of the groove increases toward the rear of housing 23, where aspiration pump 73 is connected to drain 30. *Id.* at 11:8–12.

Referring to Figure 3, the '063 Patent discloses:

> A gap g between the radial outmost portions of the rotor 8 and the inner surface of the jacket wall 24 is preferably not larger than one millimeter, particularly not larger than 0.75 millimeter and most preferably not larger than 0.5 millimeter. The smaller the gap is the stronger a circular airstream is generated when the rotor 8 is rotating in the housing 23. However, this gap g should preferably not be smaller than 0.1 millimeter and in particular not smaller than 0.2 millimeter or 0.3 millimeter, because such small gaps could cause the rotor to come into contact with a fluid film on the inner surface of the jacket wall 24.

Ex. 1001, 11:15–25.

The '063 Patent additionally discloses:

> During the centrifugation the liquid is expelled from the reaction vessels 3 and drops of the liquid are impinged on the inner surface of the jacket wall 24. The drops form a liquid film on the inner surface of the jacket wall 24. Due to the rotation of the rotor 8 and the small gap between the rotor 8 and the inner surface of the jacket wall 24, a strong rotational airstream is caused, which forces the liquid film on the inner surface of the jacket wall 24 to flow in the rotational direction of the rotor. Thus, the liquid is driven to the drain 30, from which the liquid is withdrawn by means of the aspiration pump.

Ex. 1001, 12:62–13:5

*D. Illustrative Claims*

Claims 1, 3–5, 7, 10–12, and 14–20 of the '063 Patent are challenged in the Petition. Claims 1 and 12 are the challenged independent claims and are reproduced below:

> 1. A centrifuge for cleaning a reaction vessel unit that includes at least one opening, comprising:

a housing including a cylindrical inner surface and a drain;

a rotor disposed within the housing and including an outmost surface, the rotor being configured to hold the reaction vessel unit with its at least one opening directed outwardly;

a motor for rotating the rotor around a rotation axis in a first rotational direction to cause liquid from the reaction vessel to be expelled from the at least one opening onto the inner surface of the housing;

wherein a gap is provided between the inner surface of the housing and the outmost surface of the rotor, a size of the gap being such that by rotating the rotor a wind is generated which drives the expelled liquid on the inner surface of the housing to the drain; and

wherein a size of the gap is not less than 0.3 mm.

Ex. 1001, 23:64–24:14.

12. A method for cleaning a reaction vessel unit with a centrifuge, wherein the reaction vessel unit comprises at least one opening and wherein the centrifuge comprises a housing including a cylindrical inner surface and a drain, a rotor disposed within the housing and including an outmost surface, and a gap between the inner surface of the housing and the outmost surface of the rotor, the method comprising the steps of:

loading the reaction vessel unit into the centrifuge so that it is held by the rotor with its at least one opening directed outwardly; and

centrifuging the reaction vessel unit by rotating the rotor in a first rotational direction, wherein the centrifuging causes liquid in the reaction vessel unit to be expelled onto the inner surface of the housing, and wherein a size of the gap and a rotation speed of the rotor are such that centrifuging generates a wind which drives the expelled liquid on the inner surface of the housing to the drain, wherein the centrifuging is performed with a gap not less than 0.3 mm.

*Id.* at 24:60–25:12.

*E. Asserted Grounds and Evidence*

We instituted post-grant review based on the following grounds of unpatentability asserted in the Petition.

| **Claim(s)** | **35 U.S.C. §** | **Basis** |
|---|---|---|
| 1, 3–5, 11, 12, 14–16, 18–20 | 102(a)(1) | Alleged public use of Gyro Washer |
| 10 | 103 | Alleged public use of Gyro Washer in view of alleged sale of Gyro Washer to Kyowa Hakko |
| 7, 12, 14–17 | 103 | Alleged public use of Gyro Washer in view of alleged knowledge of a POSA[1] |

*F. Testimonial Evidence*

Petitioner filed a Declaration (Ex. 1005) and a Reply Declaration (Ex. 1038) of Yoshiki Yagi, a fact witness who resides in Japan. Pursuant to a procedure agreed upon by the parties and approved by the Board (Papers 45, 47), Patent Owner twice interviewed Mr. Yagi with the assistance of an interpreter and submitted transcripts of the interviews as sworn witness statements. Exs. 2068, 2080. Petitioner filed a Declaration (Ex. 1006) and a Reply Declaration (Ex. 1039) of Alexander H. Slocum, Ph.D. After receiving the Reply, Patent Owner cross-examined Prof. Slocum and filed a transcript of his deposition testimony as Exhibit 2079.

[1] Petitioner asserts two separate grounds that rely on the knowledge of a person of ordinary skill in the art ("POSA"), one for claims 7 and 17 and another for claims 12 and 14–17.

Along with its opposition to Patent Owner's motion for additional discovery concerning real parties-in-interest and its motion for leave to file updated mandatory notices (Paper 18), Petitioner filed the declarations of Frank Feist, Wolfgang Mann, and Wolfgang Heimberg. Exs. 1019–1021. Patent Owner cross-examined Mr. Feist, Dr. Mann, and Dr. Heimberg and filed transcripts of their deposition testimony as Exhibits 2065–2067.

Patent Owner filed a Declaration (Ex. 2016)[2] and a second Declaration (Ex. 2031) of Joseph Katz, Ph.D. Petitioner cross-examined Dr. Katz and filed a transcript of his deposition testimony as Exhibit 1041. Patent Owner filed a Declaration of Paul Nisson, Ph.D. Ex. 2035. Petitioner cross-examined Dr. Nisson and filed a transcript of his deposition testimony as Exhibit 1040.

## II. ANALYSIS

### *A. Principles of Law*

In addition to patents and printed publications, the prior art for purposes of a post-grant review includes products that were "in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention." 35 U.S.C. § 102(a)(1);[3] 35 U.S.C. § 282(b)(2), (3); 35 U.S.C. § 321(b).

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. Inc., v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987).

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[2] The Katz Declaration was filed as Exhibit 2016 but is mislabeled "Exhibit 2015" in the footer of every page.

[3] We cite the post-AIA version of § 102.

*B. Prior Art Status of Petitioner's References*

For purposes of institution, we determined that Petitioner had shown sufficiently that the Gyro Washer, as shown in Exhibit 1004, was in public use before the effective filing date of the '063 Patent and is prior art to the '063 Patent under 35 U.S.C. § 102(a)(1). Inst. Dec. 11–13. We also determined that Petitioner had shown sufficiently that a Gyro Washer was commercially sold by Micronix before the effective filing date of the '063 Patent and is prior art to the '063 Patent under 35 U.S.C. § 102(a)(1). *Id.* at 13. In the post-institution phase, Patent Owner does not challenge Petitioner's showing of the prior art status of the Gyro Washer, except by arguing that Petitioner has not shown that the method of claims 12 and 14–17 was in public use. PO Resp. 70–72.

For purposes of resolving the parties' dispute, we do not need to determine whether the Gyro Washer or the method performed when operating the Gyro Washer is prior art to the '063 Patent. As discussed below, we determine that, even if the Gyro Washer and its method of operation are prior art to the '063 Patent, Petitioner has not met its burden to show that the apparatus and method meet all limitations of the challenged claims.

*C. Level of Ordinary Skill in the Art*

Petitioner provides the following contention regarding a person of ordinary skill in the art ("POSA"):

> A POSA would have had at least a bachelor's degree in mechanical engineering or a related field with some experience designing laboratory centrifuges and/or a post-graduate education in mechanical engineering or a related field with an understanding of fluid flow.

Pet. 16. Petitioner's contention is supported by Prof. Slocum's testimony. Ex. 1006 ¶ 52.

Patent Owner contends that Petitioner's definition of a POSA is incomplete. PO Resp. 13. According to Patent Owner, "the POSA would have been aware of the operational requirements of reaction vessel unit washing devices and methods used to process biochemical assays." *Id.* at 15. In addition, Patent Owner contends that, "[w]hile the POSA would not need to be an expert in biochemical assays, the POSA would need to be aware of the sensitivities of biochemical assays to cross-contamination." *Id.* Patent Owner's contentions are supported by Dr. Katz's testimony. Ex. 2031 ¶ 37.

Petitioner does not oppose Patent Owner's proposed additions to the knowledge of a POSA. *See generally* Pet. Reply. Prof. Slocum testifies that he does not believe that a POSA would require significant background in biochemical assays, but agrees with Dr. Katz that a POSA "would readily have had access to information making him or her 'aware of the sensitivities of biochemical assays to cross-contamination' through collaboration with colleagues or reading basic literature on the subject." Ex. 1039 ¶ 138.

We find that Patent Owner's additions are supported by the '063 Patent. Patent Owner directs us to portions of the Specification that discuss immunoassays, magnetic bead assays, and cellular assays, as well as the need to avoid cross-contamination for these types of reactions. PO Resp. 14; Ex. 1001, 1:24–28, 3:43–45; 3:63–66, 4:25–32, 13:25–50, 15:52–16:2, 19:41–59. We find that these disclosures support Patent Owner's contention that a POSA would have been aware of the operational requirements of reaction vessel unit washing devices, methods used to

process biochemical assays, and the sensitivities of biochemical assays to cross-contamination.

For these reasons, we apply Petitioner's definition of a POSA as modified by Patent Owner's additions. Pet. 16; PO Resp. 15.[4]

*D. Claim Construction*

In a post-grant review, we apply the same claim construction standard as would be used by a district court to construe a claim in a civil action involving the validity or infringement of a patent. 37 C.F.R. § 42.200(b) (2021). Under that standard, claim terms are given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *Id.*; *Phillips*

[4] Patent Owner argues that Petitioner's declarants, Mr. Yagi and Prof. Slocum, are unqualified to testify regarding cross-contamination. PO Sur-reply 10–12. In view of our resolution of Petitioner's challenges, we do not need to reach this issue. In any event, Petitioner offers Mr. Yagi as a fact witness, not as an expert. *See* Pet. 5, 60 (describing Mr. Yagi's testimony and referring to him as a "fact witness"). After reviewing his qualifications, we find that Prof. Slocum has sufficient technical expertise to be qualified to testify from the perspective of a POSA regarding the subject matter of the '063 Patent. Ex. 1006 ¶¶ 2–9 (summary of professional background); Ex. 1007 (curriculum vitae). *See Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1361–64 (Fed. Cir. 2008) (error to admit testimony of witness with no relevant technical expertise on issues such as obviousness, which requires analysis from the perspective of a POSA); *see also SEB S.A. v. Montgomery Ward & Co.*, 594 F.3d 1360, 1373 (Fed. Cir. 2010), *aff'd sub nom. Glob.-Tech Appliances, Inc. v. SEB S.A.*, 563 U.S. 754 (2011) (expert testimony admissible where testimony established an "adequate relationship" between witness's experience and the claimed invention).

*v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc); *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012).

Below we address several claim terms. For purposes of determining patentability of the challenged claims, it is not necessary to address the parties' dispute about the meaning of "cylindrical inner surface." We determine that no other claim term other than those discussed below requires express construction for purposes of resolving the parties' patentability dispute. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy."); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (applying *Vivid Techs.* in the context of an AIA proceeding).

*1. "the expelled liquid on the inner surface of the housing"*

For purposes of the Institution Decision, we construed the term "the expelled liquid" as "at least the main part of the liquid expelled from the reaction vessel unit." Inst. Dec. 20. Our construction was based on Patent Owner's contention that the phrase "the expelled liquid on the inner surface of the housing" means "at least the main part of the liquid expelled from the reaction vessel unit onto the inner surface of the housing." *Id.* at 17 (quoting Prelim. Resp. 15–16, 18). We rejected Petitioner's contention that "the expelled liquid" means "at least some of the liquid expelled from the reaction vessel unit." *Id.* (quoting Pet. 22).

In the post-institution phase, Patent Owner contends that "at least the main part," as used in our preliminary construction, would be understood by the POSA to mean "all or nearly all of the liquid expelled from the reaction

vessels onto the wall." PO Resp. 21–22, 26. Petitioner disputes that contention (Pet. Reply 5–12) and argues that the proper construction requires that the wind drive "at least some of the expelled liquid" to the drain (*id.* at 4 n.5, 12–13).

After considering both parties' arguments and evidence, we find that the intrinsic evidence favors Patent Owner's proposed construction. In our view, both the claim language and the Specification support Patent Owner's interpretation that "the expelled liquid on the inner surface of the housing" means "all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing." PO Resp. 21–26; PO Sur-reply 2–9 (Patent Owner's arguments in support of a claim construction that requires that "all or nearly all" of the expelled liquid on the inner surface of the housing be driven by the wind to the drain).[5]

We begin with the language of the claims. Claim 1 recites in pertinent part:

> [1c] a motor for rotating the rotor around a rotation axis in a first rotational direction to cause liquid from the reaction vessel to be expelled from the at least one opening onto the inner surface of the housing;
>
> [1d] wherein a gap is provided between the inner surface of the housing and the outmost surface of the rotor, a size of the gap being such that by rotating the rotor a wind is generated

[5] We construe the entire phrase "the expelled liquid on the inner surface of the housing" rather than just the phrase "the expelled liquid" because, as Patent Owner points out, some of the liquid may be expelled directly into the drain. PO Sur-reply 5. The claims recite that a wind is generated that drives "the expelled liquid on the inner surface of the housing" to the drain. Any liquid expelled directly to the drain when the rotor rotates does not need to be driven by the wind to the drain. *Id.*

> which drives ***the expelled liquid on the inner surface of the housing*** to the drain.

Ex. 1001, 24:5–13 (emphasis added; bracketed notations added to correspond with Petitioner's identification of claim limitations, Pet. 14). Claim 12 recites in pertinent part:

> centrifuging the reaction vessel unit by rotating the rotor in a first rotational direction, wherein the centrifuging causes liquid in the reaction vessel unit to be expelled onto the inner surface of the housing, and wherein a size of the gap and a rotation speed of the rotor are such that centrifuging generates a wind which drives ***the expelled liquid on the inner surface of the housing*** to the drain.

*Id.* at 25:4–11 (emphasis added).

There is no dispute that "the expelled liquid on the inner surface of the housing" refers to liquid that is expelled from the reaction vessel onto the inner surface of the housing. Pet. 18, 20; PO Sur-reply 5. The block-quoted claim language supports this interpretation. Ex. 1001, 24:5–8, 25:5–7.

The claims recite that, when the rotor rotates, a wind is generated "which drives the expelled liquid on the inner surface of the housing to the drain." Ex. 1001, 24:11–13, 25:9–11. The parties dispute how much of the expelled liquid on the inner surface of the housing must be driven by the wind to the drain. Petitioner contends that "only some portion" must be driven to the drain. Pet. 19; Pet. Reply 12. Patent Owner, on the other hand, argues that "all or nearly all" of the expelled liquid on the inner surface of the housing must be driven to the drain. PO Resp. 21–26; PO Sur-reply 2–9.

We agree with Patent Owner that its proposed construction stays true to the claim language. PO Sur-reply 5. As just discussed, "the expelled liquid on the inner surface of the housing" refers back to an earlier part of the claim that recites that rotating the rotor (referred to in claim 12 as

"centrifuging") causes liquid to be expelled from the reaction vessel onto the inner surface of the housing. Ex. 1001, 24:5–8, 25:5–7. Claims 1 and 12 recite "the expelled liquid" without any modifier, such as "at least some." In our view, Patent Owner's proposed construction is consistent with the claim language because the antecedent for "the expelled liquid" is the liquid that is expelled from the reaction vessel onto the inner surface of the housing, not merely some portion of that liquid.

Nothing in the claim language suggests that "the expelled liquid on the inner surface of the housing" is divisible, with some of the liquid being driven by the wind to the drain and some of the liquid not being driven by the wind to the drain. For example, we see no support in the claim language for Petitioner's argument that "the first expelled milliliter qualifies as 'liquid . . . expelled,' and the second milliliter also qualifies as 'liquid . . . expelled,' and so on." Pet. 20 (citing Ex. 1006 ¶ 65). Although "all or nearly all" is not expressly recited in the claim, neither is "some." As between these two constructions, "all or nearly all" more closely aligns with the language and structure of claims 1 and 12, including the antecedent for "the expelled liquid on the inner surface of the housing," which in our view refers to the undivided whole of the liquid.[6]

Petitioner argues that claim limitation "[1c] does not specify an amount of liquid, and thus is satisfied when any portion of liquid in a

[6] In the Institution Decision, we stated that "the claim language supports any of three possible constructions for 'the expelled liquid,' i.e., all, some, or most of the liquid expelled from the reaction vessel unit." Inst. Dec. 19. Upon consideration of the record now before us, we determine that our preliminary finding is incorrect to the extent it implies that the claim language supports a construction requiring that only some of the liquid on the inner surface of the housing be driven by the wind to the drain.

reaction vessel is expelled onto the housing." Pet. Reply 12. Petitioner's argument is not helpful in construing the phrase "the expelled liquid on the inner surface of the housing" in claim limitation [1d] because it does not address how much of the expelled liquid on the inner surface of the housing must be driven by the wind to the drain. Petitioner's follow-on argument about claim limitation [1d] is not persuasive because there is no support for construing "the expelled liquid" as referring "equally to each individual drop of liquid that is expelled onto the housing's inner surface" (Pet. Reply 13) instead of "the expelled liquid" as a whole.

We agree with Patent Owner that dependent claims 7 and 17 are consistent with construing claims 1 and 12 as requiring that "all or nearly all" of the expelled liquid on the inner surface of the housing be driven by the wind to the drain. PO Sur-reply 6–7. Claim 7 depends from claim 1 and recites that "a liquid film on the inner surface on a rear side of the drain with respect to the first rotational direction is driven into the drain by rotating the rotor with a second rotational direction." Ex. 1001, 24:34–37. Claim 17 depends from claim 12 and recites that "a liquid on the inner surface on the rear side of the drain with respect to the first rotational direction is driven into the drain by rotating the rotor in a second rotational direction." *Id.* at 26:7–10. Dependent claims 7 and 17 demonstrate that independent claims 1 and 12 are broad enough to encompass an embodiment in which most, but not all, of the expelled liquid on the inner surface of the housing is driven by the wind to the drain after rotating the rotor in a first rotational direction. The parties agree that "a liquid" in claim 17 is the "residual liquid" discussed in the Specification. PO Sur-reply 7; Ex. 1039 ¶ 39; Ex. 1001, 3:41–43 ("Any residual liquid remaining in the housing after switching off the aspiration pump can be removed manually."). We find that

"a liquid film" in claim 7 likewise refers to this residual liquid. A small amount of residual liquid remaining on the inner surface of the housing is not inconsistent with a requirement that "all or nearly all" of the expelled liquid on the inner surface of the housing must be driven to the drain.

Next, we turn to the Specification. Both parties rely on the Specification as support for their proposed constructions, and in some cases, they offer competing interpretations of the same Specification passages. Pet. 19; PO Resp. 23–25; Pet. Reply 5–10; PO Sur-reply 2–4.

For example, both parties rely on the following passage from the Specification:

> [A] gap is provided between the inner surface and the rotor so that by rotating the rotor a wind is generated which drives the expelled fluid on the inner surface to the drain wherein an aspiration pump is connected to the drain for discharging fluid. An aspiration pump connected to the drain of the centrifuge allows a faster and improved clearing of the housing. This is important for avoiding cross-contaminations based on sample liquid present on the walls and bottom of the housing of the centrifuge. By the connected aspiration pump the liquid discharged from the reaction vessel(s) is sucked immediately when the pump is switched on. The pump can either be running during the centrifugation or switched on at any point of time as desired. Any residual liquid remaining in the housing after switching off the aspiration pump can be removed manually. However, the main part will already be removed by the pump and thus, decreases the risk of any cross-contamination enormously.

Ex. 1001, 3:29–45; *see* Pet. 19; Pet. Reply 7–8; PO Sur-reply 4.

Petitioner relies on the above-quoted passage as support for its argument that "'the expelled liquid' that the 'wind . . . drives . . . to the drain' in limitation [1d] cannot refer to all of the liquid that is expelled from the microplate; it must refer to only some portion of the liquid that is

expelled from the microplate." Pet. 19. We disagree. That some expelled liquid remains in the housing does not mean that only some of the expelled liquid needs to be driven to the drain. Instead, the Specification states that "the main part [of the liquid discharged from the reaction vessel(s)] will already be removed by the pump [i.e., through the drain] and thus, decreases the risk of any cross-contamination enormously." Ex. 1001, 3:37–45. In our view, the Specification's reference to "residual liquid remaining in the housing" (*id.* at 3:41–43) is consistent with a requirement that all or nearly all of the expelled liquid on the inner surface of the housing be driven to the drain.

Petitioner interprets the above-quoted passage as teaching that a ***pump*** decreases the risk of cross-contamination,[7] and the ***wind*** plays no role. Pet. Reply 7–8. We disagree. The Specification discusses both a wind and a pump and then states "[t]his is important for avoiding cross-contaminations based on sample liquid present on the walls and bottom of the housing of the centrifuge." Ex. 1001, 3:29–37. In our view, "this" refers to both the wind and the pump.[8] The wind helps to avoid cross-contamination by driving

[7] We accept Petitioner's definition of "cross-contamination," which is based on Dr. Nisson's testimony that "[c]ross-contamination can occur when material from the wells of the microtiter plate is removed and some of the material gets into wells other than [the ones] they originated in." Ex. 1040, 23:16–22; Pet. Reply 6. The '063 Patent discusses the need to avoid both "cross-contamination" and "contamination." Ex. 1001, 3:35–37, 3:63–66, 4:25–28, 15:61–16:2. We understand both of these terms as referring to the cross-contamination described in Dr. Nisson's testimony.

[8] Petitioner relies on Dr. Nisson's deposition testimony as support for its interpretation of the Specification, arguing that Dr. Nisson admitted that "this" refers to the pump. Pet. 7 (citing Ex. 1040, 92:1–93:8). To the extent the testimony supports Petitioner's argument (Ex. 1040, 93:3–8), we find that Dr. Nisson's testimony is inconsistent with the intrinsic evidence and

"liquid present on the walls" of the housing to the drain, and the pump helps to avoid cross-contamination by removing liquid in the drain at the bottom of the housing. For this reason, the above-quoted passage is not reasonably interpreted as linking only the pump and not the wind to cross-contamination avoidance. *See* PO Sur-reply 4; Tr. 59:20–60:16 (argument by Patent Owner). As discussed below, we find that a link between the wind and avoiding cross-contamination is even more clearly established by another passage from the Specification.

Both parties discuss the following Specification passage:

> Due to the small gap between the rotor and the cylindrical inner surface a strong circular air-stream is created by the rotating rotor, which drives the expelled fluid to the drain. ***Thus, it is possible to withdraw completely all liquid contained in the reaction vessel of the reaction vessel unit before rotating the rotor from the interior of the housing***. This fluid is regarded as contaminating material. As this contaminating material can be completely be [sic] withdrawn, there is no danger of contamination.

Ex. 1001, 3:58–66 (emphasis added); *see* PO Resp. 23–24; Pet. Reply 9; PO Sur-reply 2–3. We agree with Patent Owner that the above-quoted passage establishes "a clear link between the wind and avoiding cross-contamination." PO Sur-reply 4; *see also id.* at 2–3 (quoting this passage); PO Resp. 23–24 (quoting and discussing this passage).

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deserving of little weight. For the reasons discussed herein, we find that Petitioner's interpretation of the Specification is not reasonable. *See Phillips*, 415 F.3d at 1318 ("a court should discount any expert testimony 'that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent,'" quoting *Key Pharms. v. Hercon Labs. Corp.*, 161 F.3d 709, 716 (Fed. Cir. 1998)).

Petitioner argues that the sentence in bold and italics above "describes 'withdrawal' of liquid from a microplate's well." Pet. Reply 9. We are not persuaded. The sentence plainly states, "it is possible to withdraw completely all liquid . . . from the interior of the housing." Ex. 1001, 3:61–63. The clause we have replaced with ellipses states: "contained in the reaction vessel of the reaction vessel unit before rotating the rotor." *Id.* "[B]efore rotating the rotor" modifies "contained in the reaction vessel of the reaction vessel unit" and identifies when the liquid is contained in the reaction vessel, not when it is withdrawn from the interior of the housing. *See* Tr. 58:9–16 (argument by Patent Owner). The bolded, italicized sentence in the block quote above describes removal of liquid "from the interior of the housing," not "from a microplate's well," as argued by Petitioner. Pet. Reply 9.[9] Our interpretation is supported by the sentence itself in which the preposition "from" appears only in the prepositional phrase "from the interior of the housing." Ex. 1001, 3:61–63. The prepositional phrase "in the reaction vessel of the reaction vessel unit" uses the preposition "in," not "from." *Id.* Our interpretation is further supported by the introductory word "thus" that begins the sentence and transitions from

[9] Again, Petitioner relies on Dr. Nisson's deposition testimony as support for its interpretation of the Specification. Pet. Reply 9 (citing Ex. 1040, 129:10–130:21, 130:23–133:15). To the extent Dr. Nisson agreed that the above-quoted Specification passage "is talking about withdrawing liquid from . . . a well of a microtiter plate, not from the housing" (Ex. 1040, 130:15–21), we find that Dr. Nisson's testimony is inconsistent with the intrinsic evidence and deserving of little weight. *Phillips*, 415 F.3d at 1318. In any event, the testimony cited by Petitioner supports Patent Owner's claim construction to the extent Dr. Nisson testified that "[t]he expelled liquid is driven by the wind into the drain to remove all or nearly all of the liquid that's expelled from the wells of the plates." Ex. 1040, 132:9–13.

the preceding sentence that discusses "a strong circular air-stream" that "drives the expelled fluid to the drain." *Id.* There is no argument by Petitioner that this "strong circular air-stream" causes liquid to be withdrawn from a microplate's well.

Petitioner argues that the above-quoted passage "provides no link between wind and avoiding cross-contamination." Pet. Reply 9. Again, we disagree. The passage discusses "a strong circular air-stream" that is "created by the rotating rotor," i.e., a wind, "which drives the expelled fluid to the drain." Ex. 1001, 3:58–60. The passage states that creating a wind to drive the expelled liquid to the drain makes it "possible to withdraw completely all liquid . . . from the interior of the housing." *Id.* at 3:58–63. The passage explains that "[t]his fluid is regarded as contaminating material" and that because "this contaminating material can be completely withdrawn, there is no danger of contamination." *Id.* at 3:63–66. In our view, the above-quoted passage establishes that the purpose of the wind is to drive the expelled fluid to the drain so as to withdraw completely all liquid from the interior of the housing and avoid a danger of contamination.

The Specification's use of the phrases, "withdraw completely all liquid" and "contaminating material can be completely . . . withdrawn" supports a construction that requires that "all or nearly all" of the expelled liquid on the inner surface of the housing be driven by the wind to the drain. This construction is further supported by the Specification's disclosure that the purpose of the wind is to drive the expelled liquid to the drain and avoid contamination. Ex. 1001, 3:58–66.

Patent Owner directs us to the Specification's disclosure that "[t]he centrifuge . . . can be used for numerous kinds of assays" including immunoassays, such as ELISA, cellular assays, and immunoassays using

magnetic beads. Ex. 1001, 9:15–21, 13:25–32; 13:45–50, 19:41–47; PO Resp. 25. Referring to these disclosures, Dr. Nisson testifies that "[a] skilled artisan with knowledge of these 'numerous kinds of assays' would understand that, when conducting these assays, any contaminating liquid that comes into contact with a microtiter plate would be unacceptable and cause for discarding the test." Ex. 2035 ¶ 42. Dr. Nisson explains that "drops left on the inner surface of the centrifuge after a washing cycle would pose an unacceptable danger of cross-contamination to the skilled artisan, because such drops may dislodge and contaminate one or more of the wells." *Id.* We find that the Specification's disclosure of assays for which the centrifuge can be used (Ex. 1001, 9:15–21, 13:25–32; 13:45–50, 19:41–47) and Dr. Nisson's testimony about the need to avoid cross-contamination when conducting these kinds of assays supports a claim construction that requires all or nearly all of the liquid expelled onto the inner surface of the housing be driven by the wind to the drain.

To be clear, we do not construe the claims as imposing any functional requirement to avoid contamination or to permit the conduct of any particular kinds of assays. Instead, we rely on the Specification to provide context for resolving the parties' dispute about how much of the expelled liquid on the inner surface of the housing must be driven by the wind to the drain. *See Phillips*, 415 F.3d at 1316 ("The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

As between Petitioner's construction ("at least some of the liquid expelled from the reaction vessel unit") and Patent Owner's construction

("all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing"), we find that Patent Owner's construction more closely aligns with the description in the Specification, which emphasizes the importance of removing all or nearly all of the expelled liquid from the housing. Ex. 1001, 3:29–45, 3:58–66; *see also id.* at 12:62–13:5 (rotation of the rotor and the small gap between the rotor and the inner surface of the jacket wall results in a "strong rotational airstream" that drives liquid on the inner surface of the jacket wall to the drain); *id.* at 13:6–9 (discussing the rotational speeds necessary for "reliably withdrawing the liquid from the internal space of the housing"). Petitioner's construction is inconsistent with the '063 Patent's teaching that the purpose of generating a wind to drive the expelled liquid to the drain is to avoid cross-contamination. Ex. 1001, 3:58–66. Petitioner does not explain persuasively how driving only some of the expelled liquid to the drain would be consistent with the '063 Patent teachings, including the desire to avoid cross-contamination.

Petitioner argues that the '063 Patent teaches to avoid cross-contamination in ways other than generating a wind, including controlling rotational acceleration, cooling the housing, and inverting the microtiter plate to discharge most of the liquid before centrifugation. Pet. Reply 6, 10 (citing Ex. 1001, 4:19–32, 15:61–16:2, 8:4–39). These teachings are not persuasive to rebut Patent Owner's showing that the purpose of generating a wind that drives the expelled liquid to the drain is to avoid cross-contamination. PO Resp. 23–24; PO Sur-reply 2–4; Ex. 1001, 3:58–66. Nor do these teachings persuade us to reject Patent Owner's proposed construction.

Petitioner contends that Patent Owner's proposed construction contradicts the file history. Pet. Reply 11. Petitioner argues that "[t]he Examiner rejected [Patent Owner's] narrow application of the wind limitation" and that Patent Owner "surrendered and amended the claims as instructed." *Id.* (emphasis omitted). Referring to Pietilä,[10] Petitioner contends that "[t]he wind limitation cannot now be construed to exclude the same prior art the Examiner found it covered." *Id.* We disagree.

"[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Phillips*, 415 F.3d at 1317. For example, "[a] patentee may, through a clear and unmistakable disavowal in the prosecution history, surrender certain claim scope to which he would otherwise have an exclusive right by virtue of the claim language." *SpeedTrack, Inc. v. Amazon.com*, 998 F.3d 1373, 1377 (Fed. Cir. 2021) (citation and quotes omitted).

The doctrine of prosecution history surrender has no application to the facts of this case. Here, Petitioner is arguing for a broader claim interpretation than the one Patent Owner relied upon to distinguish the claims from the prior art during prosecution. Patent Owner's arguments distinguishing Pietilä are wholly consistent with its arguments distinguishing the Gyro Washer. In both cases, Patent Owner relies on the wind limitation to distinguish art in which liquid falls from the walls of the housing onto the sample plates. Ex. 1002, 1179; PO Sur-reply 22.

[10] Ex. 1016, Pietilä et al., US 6,112,603, issued Sept. 5, 2000 ("Pietilä").

During prosecution, Patent Owner did not surrender a narrow interpretation of the wind limitation, as argued by Petitioner. Pet. Reply 11. Patent Owner responded to the Examiner's rejection over Pietilä by amending the independent claims to recite a gap of "not less than 0.3 mm." Ex. 1002, 1210, 1216, 1257, 1259, 1261, 1283. The claim amendment recites a lower limit on the gap size, not an upper limit. Amending the claims to recite a lower limit on the gap size is consistent with a narrow interpretation of the wind limitation because, according to the '063 Patent, "[t]he smaller the gap the stronger is the circular airstream," i.e., wind, generated when the rotor is rotating in the housing. Ex. 1001, 3:66–4:1, 11:19–20; *see also* Ex. 1006 ¶ 31 (Dr. Slocum's testimony that the '063 Patent Specification describes upper limits on the size of the gap "to maximize the strength of the wind").

Petitioner argues that our preliminary claim construction (and presumably also Patent Owner's proposed construction) would exclude an embodiment disclosed in the Specification. Pet. Reply 13 (citing Ex. 1001, 8:7–11, 8:33). Petitioner's argument is not persuasive. The embodiment referenced by Petitioner is a method for cleaning a reaction vessel unit including the steps of: (1) rotating the reaction vessel unit a half rotation (180 degrees) to discharge most of the sample liquid onto the bottom of the housing; (2) shaking the reaction vessel unit to discharge additional sample liquid; and (3) centrifuging the reaction vessel unit "to remove all residual undesired sample liquid from the reaction vessel." Ex. 1001, 7:58–8:39. Petitioner does not persuade us that this embodiment would be excluded by a claim construction requiring that all or nearly all of the liquid expelled from a reaction vessel onto the inner surface of the housing be driven by the wind to the drain. Our construction resolves the parties' dispute about how

much of the expelled liquid on the inner surface of the housing must be driven by the wind to the drain. In the disclosed embodiment, most of the sample liquid is discharged from the reaction vessel in the first step, before centrifuging begins, and no wind is generated until the third step, centrifuging the reaction vessel. *Id.* The discharge of liquid from a reaction vessel ***before*** centrifuging says nothing about how much of the expelled liquid on the inner surface of the housing is driven by the wind to the drain ***during*** centrifuging.

Petitioner relies on Prof. Slocum's testimony as support for its claim construction arguments. Pet. 19–22 (citing Ex. 1006 ¶¶ 63–67); Pet. Reply 6–10 (citing Ex. 1039 ¶¶ 1–51). We find that Prof. Slocum's testimony is substantively similar to the arguments in the Petition and the Reply and that Prof. Slocum's opinions are not persuasive for the reasons discussed above.

For these reasons, we construe the term "the expelled liquid on the inner surface of the housing" in claims 1 and 12 to mean "all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing."

*2. "to the drain," "into the drain"*

For purposes of the Institution Decision, we construed the terms "to the drain" and "into the drain" both as meaning "into the drain." Inst. Dec. 20–21. Neither party contests that construction. Accordingly, we apply the same construction here.

*E. Alleged Anticipation*

In its first ground of unpatentability, Petitioner contends that claims 1, 3–5, 11, 12, 14–16, and 18–20 are anticipated by the Gyro Washer.[11] Pet. 61–104. Patent Owner argues that the Gyro Washer does not anticipate the challenged claims because it lacks two limitations recited in independent claims 1 and 12—a "cylindrical inner surface" and what we refer to as the "wind limitation" (see below). PO Resp. 26–70. After considering both parties' arguments and evidence and the record as a whole, we determine that Petitioner has not met its burden to show that the Gyro Washer meets the wind limitation.

Claim 1 recites: "a gap is provided between the inner surface of the housing and the outmost surface of the rotor, a size of the gap being such that by rotating the rotor a wind is generated which drives the expelled liquid on the inner surface of the housing to the drain." Ex. 1001, 24:9–14. Claim 12 similarly recites: "a size of the gap [between the inner surface of the housing and the outmost surface of the rotor] and a rotation speed of the rotor are such that centrifuging generates a wind which drives the expelled liquid on the inner surface of the housing to the drain." *Id.* at 24:65–66, 25:7–11. Any differences between these claim recitations are not important for our analysis, and we refer to both of them with the shorthand, the "wind limitation." As discussed above, we construe "the expelled liquid on the inner surface of the housing" in claims 1 and 12 to mean "all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing."

[11] Unless the context indicates otherwise, we use the term "Gyro Washer" to refer to the machine that Petitioner alleges was in public use at trade shows in the United States in 2009 and 2010.

The Petition is based on a different claim construction. Petitioner asserts that the claim language is met by the prior art, "as long as the device is configured such that some of the expelled liquid from the microplate is driven by the wind into the drain." Pet. 88. Petitioner's expert, Prof. Slocum, relied on the same claim construction when providing his opinion that the Gyro Washer anticipates. Ex. 1006 ¶ 122. As discussed above, Petitioner's construction is inconsistent with the claim language and the Specification, including the '063 Patent's teaching that the reason for generating a wind to drive the expelled liquid to the drain is to avoid cross-contamination. Ex. 1001, 3:58–66. In the Reply, Petitioner contends that the Gyro Washer satisfies all constructions for the wind limitation, but provides only scant argument and evidence under what it calls Patent Owner's "construction-of-the-construction." Pet. Reply 14, 17 (citing Ex. 1011 ¶ 50; Ex. 1038 ¶¶ 29–35; Ex. 1040, 172:14–20; Ex. 1041, 64:11–65:10).[12] At the hearing, Petitioner all but conceded that the Gyro Washer does not meet Patent Owner's construction (Tr. 10:6–10), arguing that the "important point" is claim construction (Tr. 11:9–12). Nevertheless, in determining whether the Gyro Washer satisfies the wind limitation, we consider all of the relevant evidence, regardless of the claim construction relied upon by Petitioner.

The record includes four categories of evidence offered to show whether the Gyro Washer meets the wind limitation: (1) videos and observations of the Gyro Washer in operation; (2) photos and observations of the Gyro Washer after a wash cycle; (3) Petitioner's droplet experiments; and (4) Petitioner's bucket experiments. The evidence also includes the

[12] Petitioner's evidence cited here is discussed below at pages 38–39.

testimony of Mr. Yagi, Prof. Slocum, and Dr. Katz. We analyze this evidence in the following subsections.

*1. Videos and Observations of the Gyro Washer in Operation*

The record includes videos and observations of the Gyro Washer in operation with full microplates, as viewed through a plexiglass door installed in place of the Gyro Washer's stainless steel door to enable an observer to view inside the housing during a wash cycle. Ex. 1005 ¶¶ 73–79 (Yagi Declaration); Ex. 1006 ¶¶ 109–113, 116 (Slocum Declaration); Ex. 1012 (video of Gyro Washer in operation); Ex. 1039 ¶¶ 57–61 (Slocum Reply Declaration); Exs. 1043, 1044 (videos of Gyro Washer in operation); Ex. 2031 ¶¶ 75–79 (Katz Declaration); Ex. 2033 (video of Gyro Washer in operation).[13]

Petitioner submitted Exhibit 1012 with the Petition, and we relied on this video in the Institution Decision, referring to it as Petitioner's "first experiment." Inst. Dec. 23–27. Exhibit 1012 shows the Gyro Washer operating at a speed of 2,975 RPM. Ex. 1005 ¶¶ 77–79. The Yagi Declaration includes four images from this video. *Id.* As we stated in the Institution Decision (Inst. Dec. 25–26), the video at 19 seconds shows a large amount of water on the plexiglass cover flowing toward the drain. Ex. 1005 ¶ 78; Ex. 1012 (time stamp 0:19). At 28 seconds, there is a smaller amount of water on the plexiglass cover flowing toward the drain. Ex. 1005

[13] Petitioner's declarants installed two different plexiglass doors on the Gyro Washer. Before institution, Mr. Yagi installed a first plexiglass door that was later re-installed by Prof. Slocum's assistant for purposes of Dr. Katz's inspection. Ex. 1005 ¶ 74; Ex. 2031 ¶¶ 52, 67. After institution, Prof. Slocum and his assistant installed a second, better-fitting plexiglass door. Ex. 1039 ¶¶ 54–57.

¶ 79; Ex. 1012 (time stamp 0:28). At the end of the video, there are very few water droplets left on the plexiglass cover. Ex. 1012 (time stamp 1:01).

Mr. Yagi and Prof. Slocum observed the Gyro Washer in operation as shown in Exhibit 1012, but neither of them testifies about how much of the water that was expelled onto the inner surface of the housing was driven to the drain. Mr. Yagi testifies: "After the initial splash onto the inner cylindrical surface of the horizontal drum, the liquid quickly aggregated into rivulets and droplets. The rivulets and droplets moved along the inner surface of the plexiglass cover, following the arced surface downward to the lower section of the drum." Ex. 1005 ¶ 79 (citing Ex. 1012, time stamp 0:21–0:51). Mr. Yagi does not say how much of the water that was expelled onto the inner surface of the housing was driven to the drain.

Prof. Slocum testifies:

> In the video (Ex. 1012) we see that a circular airstream drives the liquid on the inner surface of the housing along the inner surface toward the drain at the bottom. Indeed, one can clearly see (particularly when running the video in slow motion or examining successive still images) powerful rivulets of water being driven downward by the wind, followed by individual droplets of water being driven downward by the wind once the rivulets have removed the bulk of the water from the inner surface into the drain.

Ex. 1006 ¶ 116 (citing Ex. 1005 ¶ 79; Ex. 1012, time stamp 0:21–0:51). Based on his review of the video, Prof. Slocum opines that the Gyro Washer meets the wind limitation, asserting that "[t]he swiftness and power of the rivulets and droplets being driven downward along the inner surface of the plexiglass cover leaves no doubt about this." *Id.* Like Mr. Yagi, however, Prof. Slocum offers no opinion on how much of the water that was expelled onto the inner surface of the housing was driven to the drain.

Patent Owner submitted Exhibit 2033 with its Response. PO Resp. 50. Exhibit 2033 is a clip from a slow motion video taken during Dr. Katz's inspection of the Gyro Washer and shows a plate washing cycle using settings selected to match those in Petitioner's first experiment. Ex. 2031 ¶¶ 75–79, 149. Patent Owner's Sur-reply includes images from the full video that Patent Owner produced to Petitioner. PO Sur-reply 18–21; *see also id.* at 18 (explaining that Patent Owner "trimmed portions of its inspection video to comply with the PTAB E2E file-size requirements").

Based on his observation of the Gyro Washer in operation, Dr. Katz testifies:

> Through the Plexiglas door, I observed water from the wells in the first and second plates being expelled onto the Plexiglas door. Some drops of water remained on the Plexiglas door during the wash cycle and others ran down the Plexiglas door. Water running down the Plexiglas door entered the pocket between the bottom of the Plexiglas door and the outer surface of the centrifuge housing. A significant amount of that water leaked out of the door. I did not observe any water on the Plexiglas door being driven into the drain.

Ex. 2031 ¶ 77. Dr. Katz's testimony weighs against a finding that all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing was driven by the wind to the drain.

Petitioner submitted Exhibits 1043 and 1044 with the Reply. Pet. Reply vi, 15. Exhibits 1043 and 1044 are video clips, and Patent Owner's Sur-reply includes images from the full video that Petitioner produced to Patent Owner. PO Sur-reply 17, 21–25.[14] Exhibits 1043 and 1044 show the

[14] *See also* Ex. 1039 ¶¶ 57–60 (explaining that the full video produced to Patent Owner as BlueCat_000861 is too large for upload to the Board's system).

Gyro Washer with a "well-fitting plexiglass door" fabricated by Prof. Slocum and his assistant in response to Dr. Katz's observation that Mr. Yagi's plexiglass door leaked. Ex. 1039 ¶¶ 52, 54; Ex. 2031 ¶ 77. Exhibits 1043 and 1044 are clips from a single video of the Gyro Washer running at 500 RPM for 30 seconds, stopping, and running again at 3,000 RPM for 30 seconds, without the door being opened or the microplates being refilled between the runs. Ex. 1039 ¶¶ 57–60.

Prof. Slocum testifies that, "at 500 RPM, liquid expelled onto the inner surface of the housing agglomerates into fairly large drops that, at 500 RPM, move little if at all." Ex. 1039 ¶ 59 (citing Ex. 1043). According to Prof. Slocum, "when accelerated to 3,000 RPM, the rotor creates a strong wind that drives the drops (which were not driven at 500 RPM) downward, in the direction of the wind, to the drain." *Id.* ¶ 60 (citing Ex. 1044). Prof. Slocum opines that, "[a]s the viewer can see, when the Gyro Washer is operated at 3,000 RPM, other than a few small droplets left behind on the inner surface of the housing, ***all*** of the liquid is driven by wind into the drain." *Id.* ¶ 61.

We find that Prof. Slocum's opinion is not supported by the evidence. Although Prof. Slocum relies on the video clips Petitioner submits as Exhibits 1043 and 1044, Patent Owner's Sur-reply includes images from the full video taken by Prof. Slocum and his assistant and produced by Petitioner to Patent Owner in discovery. PO Sur-reply 17, 21–25; Ex. 1039 ¶¶ 57–58. These images show more than just "a few small droplets left behind on the inner surface of the housing," as characterized by Prof. Slocum. Ex. 1039 ¶ 61. In the images from Petitioner's video, the water is colored orange, making the droplets more easily visible, as compared with Exhibit 1012 that we relied upon at the institution stage. PO Sur-reply 17, 22–25; *see also*

Ex. 1039 ¶¶ 56, 57 (photo of microplate filled with orange-colored water before video of Gyro Washer running at 500 RPM, then 3000 RPM). The images from Petitioner's video show numerous large droplets on the plexiglass door, especially around the gasket. PO Sur-reply 17, 22–25. Some of the images from Petitioner's video also show droplets on the microplates and the rotor—locations not mentioned in Prof. Slocum's reply declaration. *Compare* PO Sur-reply 22–25, *with* Ex. 1039 ¶ 61. Patent Owner asserts that the droplets on the microplates are "liquid that appears to have dripped from the inner surface of the Gyro Washer housing back into the wells of the microplate" and "dropped onto the Gyro Washer rotor." PO Sur-reply 21, 24–25. Patent Owner's assertion is consistent with Dr. Katz's testimony that, when he observed the Gyro Washer in operation, liquid was expelled from the microplate onto the centrifuge housing and then dripped back onto the microplate after completion of the centrifugation operation. Ex. 2031 ¶ 143.

Petitioner relies on Exhibit 1044 to show that the Gyro Washer satisfies the Board's preliminary claim construction, but does not rely on this video clip or Exhibit 1043 as evidence that Patent Owner's construction-of-the construction is met. *Compare id.* at 14–15 (addressing the Board's preliminary claim construction and citing Exhibit 1044), *with id.* at 17 (addressing Patent Owner's construction-of-the construction). Petitioner argues that Exhibit 1044 "shows ***all*** liquid flowing to the drain with a well-fitting plexiglass door." Pet. Reply 15 (citing Ex. 1039 ¶¶ 54–61; Ex. 1044). We find Petitioner's argument is unsupported for the same reasons as we find that Prof. Slocum's testimony is unsupported.

For these reasons, the videos and observations of the Gyro Washer in operation with full microplates as viewed through a plexiglass door are ***not***,

in our view, persuasive evidence that the Gyro Washer generates a wind that drives to the drain "all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing," as required by our claim construction.

*2. Photos and Observations of the Gyro Washer and Microplates after a Wash Cycle*

The record also includes photos and observations of the Gyro Washer and microplates after completion of a wash cycle. Ex. 1004, Fig. 5; Ex. 2031 ¶¶ 80–84, 150–154, 156, Figs. 31–45. Our analysis of this evidence follows.

Figure 5 in Exhibit 1004 is a photograph of the Gyro Washer with the stainless steel door open. Mr. Yagi testifies that the photograph was "taken after one of my experiments." Ex. 1005 ¶ 53.[15] The photograph shows numerous droplets on the inside surface of the stainless steel door. Ex. 1004, Fig. 5. Neither Mr. Yagi nor Prof. Slocum comments on the droplets shown in Figure 5. Nor do they dispute Dr. Katz's testimony that the photograph shows that "substantial liquid remains on the metallic door of the Gyro Washer after a plate washing cycle." Ex. 2031 ¶ 156.

Aside from Figure 5 of Exhibit 1004 and the videos and observations showing the Gyro Washer as viewed through a plexiglass door discussed in the preceding subsection, Petitioner submits no evidence demonstrating what the interior of the Gyro Washer housing and the microplates look like after a

[15] The record is unclear as to which experiment Mr. Yagi is referring to when he testifies that Figure 5 is a "photograph taken after one of my experiments." Ex. 1005 ¶ 53. The first experiment described in Mr. Yagi's declaration used a plexiglass door, not a steel door as shown in Figure 5. *Id.* ¶¶ 73, 74. Mr. Yagi's second experiment used "dyed-blue droplets (water with food coloring)," not clear droplets as shown in Figure 5. *Id.* ¶ 80.

wash cycle is completed. Patent Owner, on the other hand, submits Dr. Katz's observations and photographs showing the inside of the Gyro Washer housing and microplates after a wash cycle. Ex. 2031 ¶¶ 80, 82–84, 149, 150, 152–155, Figs. 31, 32, 34, 35, 37–40, 42–45.

Dr. Katz testifies that, when he inspected the Gyro Washer before starting a wash cycle, he "observed numerous blue dye stains on the inner surface of the centrifuge housing, including the inner surface of the metal door, and on the rotor." Ex. 2031 ¶ 59, Figs. 4–10. According to Dr. Katz, the stains appeared to be "caused by dry residue left behind by dyed water that had dried on these [*sic*, this] surface." *Id.* ¶ 59. Dr. Katz testifies that the dye residue was "completely dry" before starting a wash cycle, but after the wash cycle finished, he "observed numerous drops of water on the inner surface of the Plexiglas door (Figures 31 and 32) . . . [and] on the rotor and the interior of the centrifuge housing (Figures 34 and 35)." *Id.* ¶ 80; *see also id.* ¶ 149 ("substantial liquid remained on the inner surface of the centrifuge housing, including the door"). According to Dr. Katz, "[s]ome of the water was dyed blue because of contact with the dry dye residue that was already in the centrifuge when it was made available for my inspection." *Id.* ¶ 80.

Dr. Katz testifies that, after the plexiglass door was removed, he observed "additional droplets . . . throughout the interior of the centrifuge." Ex. 2031 ¶ 82 (citing Figs. 37–40). According to Dr. Katz, when he "reached into the housing and touched the inner surface," his "fingers became wet with water that had been dyed blue from the residue in the centrifuge housing." *Id.* (citing Fig. 43). Dr. Katz testifies that "[a] great deal of water on the inner surface of the centrifuge housing had collected where the inner surface was not smooth, such as on the crease (Figures 39 and 40), the fluid injectors and the weldments (Figures 37–40), and the

Plexiglas door (Figure 42)." *Id.* ¶ 83; *see also id.* ¶ 153 ("[t]here was liquid surrounding the weldments, fluid injectors, and screws that form portions of the inner surface of the centrifuge housing"); *id.* ¶ 154 ("[t]here was liquid in the crease in the back wall of the inner surface of the centrifuge housing"). Based on the amount of liquid Dr. Katz observed remaining on the inner surface of the Gyro Washer centrifuge housing after a wash cycle, Dr. Katz opines that "the Gyro Washer failed to generate a wind sufficient to drive the main part (i.e., 'all or nearly all') of the liquid expelled onto the inner surface to the drain." *Id.* ¶ 83; *see also id.* ¶ 155 (same opinion).

Dr. Katz also testifies that he "inspected the microtiter plates and observed water on both of the plates" after completion of a Gyro Washer wash cycle. Ex. 2031 ¶ 84. According to Dr. Katz, "[s]ome of the water on the plates had also been dyed blue and was easily detected visually and confirmed by contacting the plates with an absorbent paper towel that soaked up the water." *Id.* (citing Figs. 44, 45). Dr. Katz testifies that "the plates were completely dry before the plate washing cycle and did not have any dye spots on them." *Id.*; *see also id.* ¶ 76 ("[t]wo clean and dry microtiter plates . . . were placed in the supply stack of the Gyro Washer . . ., and the plate washing cycle was initiated"). Dr. Katz explains his observations as follows:

> The centrifugation operation (i.e., plate washing) performed during my inspection of the Gyro Washer was performed with clean microplates and undyed water. Dry blue dye residue was already present on the inner surface of the Gyro Washer centrifuge housing, presumably left over from tests performed by Petitioner's expert. . . . After the centrifugation operation was completed, I discovered blue liquid on the microplates used in the centrifugation operation. Because the liquid was blue, I was able to confirm that clear liquid expelled from the microplate mixed with the dye residue on the centrifuge

> housing and then dripped back onto the microplate subsequent to completion of the centrifugation operation.

*Id.* ¶ 143 (citing Ex. 2034, letter from Petitioner's counsel to Patent Owner's counsel confirming that the Gyro Washer will be made available for inspection by Dr. Katz and disclosing tests performed by Prof. Slocum for his reply declaration).

As further evidence that the microplates were clean when loaded into the Gyro Washer and contaminated after centrifugation, Patent Owner provides screenshots from its video of the plate washing cycle, including magnified images of the portions that were contaminated. PO Sur-reply 18–21 (providing images from the full version of the video from which Exhibit 2033 is a clip).

Petitioner's declarants, Mr. Yagi and Prof. Slocum, do not dispute Dr. Katz's observations and photographs showing the inside of the Gyro Washer housing and microplates after a wash cycle. Ex. 2031 ¶¶ 80, 82–84, 149, 150, 152–155; Figs. 31, 32, 34, 35, 37–40, 42–45. Instead, Petitioner argues that "the Gyro Washer is suitable for the same assays" as disclosed in the '063 Patent, which Petitioner characterizes as a "touchstone" of Patent Owner's claim construction. Pet. Reply 17 (citing Ex. 1011 ¶ 50; Ex. 1038 ¶¶ 29–35). We disagree. While suitability for cellular and ELISA assays may provide some circumstantial evidence that the Gyro Washer satisfies the wind limitation, we do not give it as much weight as the direct evidence provided by Patent Owner in the form of Dr. Katz's observations and photographs showing the inside of the Gyro Washer housing and microplates after a wash cycle. As discussed above, Patent Owner's direct evidence shows that a substantial amount of liquid remains in the housing

after a wash cycle and that a few drops of liquid dripped onto the microplates.

Next, Petitioner argues that Patent Owner's experts "provided no 'before' pictures for comparison, and admitted the dye was on an outside surface, ***not*** in a well." Pet. Reply 17 (citing Ex. 1040, 172:14–20; Ex. 1041, 64:11–65:10). As discussed above, however, Patent Owner provided "before" pictures when it produced the full version of Exhibit 2033 to Petitioner. PO Sur-reply 18–21. Furthermore, images from Petitioner's own video show drops of orange liquid that appears to have dripped from the inner surface of the Gyro Washer housing back into the wells, confirming that cross-contamination of microplate wells occurs after a Gyro Washer wash cycle. PO Sur-reply 21–24. We are not persuaded by Petitioner's argument that contaminating liquid was not in a well of the microplate. In our view, Dr. Katz's testimony and photographs and the images from Petitioner's video show that, during a Gyro Washer wash cycle, liquid is expelled from a microplate onto the inner surface of the housing and then drips back onto the microplate after completion of the wash cycle. Ex. 2031 ¶¶ 76, 84, 143, Figs. 44, 45; PO Sur-reply 21–24.

*3. Petitioner's Droplet Experiments*

The record includes three sets of droplet experiments. We discuss each set of experiments before providing our evaluation of this evidence.

First, Mr. Yagi conducted a set of blue droplet experiments, which are discussed in the Petition, the Slocum Declaration, and the Institution Decision, which refers to them as Petitioner's "second experiment." Inst. Dec. 24–27; Pet. 80–88; Ex. 1005 ¶¶ 80–84; Ex. 1006 ¶¶ 118–121. In these experiments, Mr. Yagi placed a line of blue-dyed water droplets on the inner

surface of the Gyro Washer's housing a short distance from the drain and ran a cleaning cycle at 2,975 RPM with empty microplates. Pet. 81; Ex. 1005 ¶¶ 80, 82. Mr. Yagi repeated this experiment four times, and each time he placed the line of blue droplets farther away from the drain. Pet. 83; Ex. 1005 ¶ 84; Ex. 1006 ¶ 120. The Petition and Yagi Declaration include photographs showing the blue droplets before each cleaning cycle and residue of the blue droplets after each cleaning cycle. Pet. 82–87; Ex. 1005 ¶¶ 81, 83, 84.

Prof. Slocum testifies that "these experiments showed the wind was sufficient to drive even small droplets into the drain." Ex. 1006 ¶ 121. Dr. Katz testifies that Petitioner's photographs show "all or nearly all of the blue drops ***remain*** on the inner surface of the centrifuge housing of the Gyro Washer" and do not show "even a single drop of fluid in the drain." Ex. 2031 ¶ 165; *see also* PO Resp. 66–67 (reproducing Petitioner's photographs and citing Dr. Katz' testimony). Prof. Slocum responds that "it is clear that the droplets were driven over the edge into the drain because, in every case, one can clearly see the trail of residue all the way to that edge." Ex. 1039 ¶ 75.

Second, Petitioner conducted another experiment in which a line of blue water droplets was placed on the plexiglass door,[16] and a wash cycle was run with empty microplates. PO Resp. 62–65; Pet. Reply 16; Ex. 1039 ¶¶ 71, 73; Ex. 2031 ¶¶ 163, 164. Petitioner did not disclose or rely upon this blue droplet experiment in the Petition, but Petitioner produced a video of

[16] As discussed above, Mr. Yagi installed a plexiglass door in place of the Gyro Washer's stainless steel door to allow an observer to view inside the Gyro Washer housing during a wash cycle. Ex. 1005 ¶ 74.

the experiment to Patent Owner in discovery, and Patent Owner filed the video as Exhibit 2045. PO Resp. 62. The Patent Owner Response and Katz Declaration include images from the video showing the blue droplets before the wash cycle and residue of the blue droplets after the wash cycle. PO Resp. 62–65; Ex. 2031 ¶ 163. Dr. Katz testifies that "not a single one of the thirteen blue drops placed on the door of the Gyro Washer made it to the bottom of the door . . . much less to the drain." Ex. 2031 ¶ 164. Prof. Slocum responds that "the fact that the small droplets in Exhibit 2045 did not reach the drain is irrelevant to whether the Gyro Washer practices the wind limitation." Ex. 1039 ¶ 73.

Third, Prof. Slocum and his assistant conducted an experiment in which they placed droplets in a horizontal line on the inner surface of the Gyro Washer's housing and then ran the Gyro Washer at 3,000 RPM for 60 seconds.[17] Ex. 1039 ¶ 76. Exhibit 1045 is video clip of this experiment. *Id.* ¶¶ 76, 77. The video clip shows orange droplets as viewed through a plexiglass door. Ex. 1045. Prof. Slocum testifies that "a little over halfway into the clip, the viewer can see the droplets being driven by the wind into the drain." Ex. 1039 ¶ 77. Prof. Slocum and his assistant conducted another droplet experiment in which they placed a line of droplets on the other side of the drain and then ran the Gyro Washer at 3,000 RPM for 60 seconds. *Id.* ¶¶ 78, 79 (photograph with a green arrow pointing to the line of droplets). Exhibit 1046 is video clip of this experiment. *Id.* ¶¶ 79, 80. The video clip

[17] Prof. Slocum states that they "re-created Yagi-san's droplet experiment using my well-fitting plexiglass door." Ex. 1039 ¶ 76. We find this characterization puzzling because Mr. Yagi's droplet experiment that Prof. Slocum relied on in his first declaration did not use a plexiglass door. Ex. 1005 ¶ 80; Ex. 1006 ¶ 117.

shows blue droplets as viewed through one of the slots in the housing side wall through which microplates are loaded into the rotor. Ex. 1039 ¶¶ 78, 79; Ex. 1046. Prof. Slocum testifies that the "clip shows that the wind is so powerful, it propels the drops on the far side of the drain upward, overcoming gravity." Ex. 1039 ¶ 80.

We find that Petitioner's droplet experiments are not strong evidence that the wind limitation is met under our claim construction for several reasons. First, Petitioner does not rely on this evidence to show that Patent Owner's construction-of-the construction is met. *See* Pet. Reply 17.

Second, Petitioner's droplet experiments are inconclusive because, in almost all cases, the droplets left a substantial residue on the inner surface of the Gyro Washer housing. PO Resp. 62–67 (images from video of Mr. Yagi's experiment (Ex. 2045) and photographs of four of Mr. Yagi's experiments from his declaration (Ex. 1005 ¶ 84)). We find that Dr. Katz accurately characterizes Petitioner's photographs when he states, in unrebutted testimony, that they show "all or nearly all of the blue drops ***remain*** on the inner surface of the centrifuge housing of the Gyro Washer." Ex. 2031 ¶ 165.

Third, and most importantly, Petitioner's reliance on the droplet experiments is severely undermined by its assertion that the video of Petitioner's experiment in which blue water droplets were placed on a plexiglass door (Exhibit 2045) is "irrelevant" because the claims "do not require that the wind limitation be met by small droplets rather than a filled microplate." Pet. Reply 16 (citing Ex. 1039 ¶¶ 70–73). Petitioner's criticism applies equally to Mr. Yagi's droplet experiments relied upon in the Petition (Pet. 80–88; Ex. 1005 ¶¶ 80–84; Ex. 1006 ¶¶ 118–121) and Prof. Slocum's droplet experiments relied upon in the Reply (Pet. Reply 16;

Ex. 1039 ¶¶ 76–80; Exs. 1045, 1046), all of which involve "small droplets rather than a filled microplate." Pet. Reply 16.

*4. Petitioner's Bucket Experiments*

At Prof. Slocum's request, Mr. Yagi conducted additional experiments with the Gyro Washer that were not disclosed or relied upon in the Petition, but that Petitioner disclosed to Patent Owner in discovery and that both parties rely on in the post-institution phase. PO Resp. 99–100, 107; Pet. Reply 15, 28; PO Sur-reply 31–32; Ex. 1035, BlueCat_000479, BlueCat_000492–96; Ex. 1038 ¶¶ 46–57; Ex. 1039 ¶¶ 64–69; Exs. 2046, 2047; Ex. 2048, 11; Ex. 2049, 2–3.

In these experiments, the amount of liquid expelled from a microplate and discharged through the drain of the Gyro Washer via a hose into a bucket on a scale during a wash cycle was measured and recorded by video at two different rotational speeds, 500 RPM and 2,975 RPM. Ex. 1038 ¶¶ 49–51 (Mr. Yagi's reply declaration); Ex. 2049, 2–3 (Prof. Slocum's description of the requested experiment). Six experiments were run at each speed. Ex. 1038 ¶ 50. Exhibit 2046 is a video of one of the experiments run at 500 RPM, and Exhibit 2047 is a video of one of the experiments run at 2,975 RPM. *Id.* The record also includes a table of results, including the amount of water in the microplate before centrifuging and the amount of water collected in a container (bucket) after centrifuging. Ex. 1035, BlueCat_000492.

Relying on the videos (Exhibits 2046 and 2047), Patent Owner argues that the difference between the amount of water collected at 2975 RPM (28.57 grams) versus 500 RPM (34.35 grams) shows that "the wind does not play a meaningful part in the motion of the liquid" because "[t]he POSA

would expect that the faster speed should result in the collection of more liquid." PO Resp. 107 (citing Ex. 2031 ¶ 50).

Petitioner argues that the experiments in Exhibits 2046 and 2047 were performed under different conditions. Pet. Reply 28 (citing Ex. 1038 ¶¶ 46–57; Ex. 1039 ¶¶ 66, 67). Mr. Yagi explains that Exhibit 2047 shows "the first run of the day, when the interior of the hose from the drain of the Gyro Washer to the bucket was dry," and Exhibit 2046 shows "the second run of the day, when the interior of the hose from the drain of the Gyro Washer to the bucket was already wet from a prior run." Ex. 1038 ¶¶ 52, 53. Mr. Yagi and Prof. Slocum attribute the difference in output to the amount of water left behind in the hose after the first run, as compared to subsequent runs. *Id.* ¶ 54; Ex. 1039 ¶ 66.

Petitioner relies on the bucket experiments in a different way. Relying on our preliminary claim construction and the experiment run at 2,975 RPM shown in Exhibit 2047, Petitioner argues that 28.57 grams of water collected in a bucket is "the main part" of the original 38.93 grams of water in the microplate. Pet. Reply 15 (citing Ex. 1038, ¶¶ 48–52; Ex. 1035, BlueCat_000492–495; Ex. 1039 ¶¶ 64–69). Prof. Slocum testifies that "a total of about 10 grams of liquid remained in the hose and the housing of the Gyro Washer" and opines that 28.57 grams qualifies as "at least the main part of the liquid expelled from the reaction vessel unit" because it is "over 73% of 38.93 grams." Ex. 1039 ¶ 69.

Patent Owner disagrees, arguing that 10.36 grams of water is "enough contaminating liquid to fill more than 103 wells of a 384 well plate" and "presents an unreasonable risk of cross-contamination." PO Sur-reply 31.

Applying our claim construction for the wind limitation, we find that the evidence relating to Petitioner's bucket experiments favors Patent

Owner's position for several reasons. First, Petitioner does not rely on this evidence to show that Patent Owner's construction-of-the construction is met. *See* Pet. Reply 17.

Second, we are not persuaded by Prof. Slocum's explanation for why the bucket experiments were not disclosed or relied upon in his first declaration. Ex. 1039 ¶¶ 65–67. Prof. Slocum testifies that he decided not to use Exhibits 2046 and 2047 in his first declaration (Exhibit 1006) "because they did not reflect an apples-to-apples comparison under the same operating conditions." Ex. 1039 ¶ 67. Prof. Slocum's testimony is not consistent with the record, which shows that his objective in requesting the bucket experiments was "to compare the rate at which water is expelled depending on the number of RPMs at which the machine is run." Ex. 2049, 3 (description of experiment requested by Prof. Slocum). Even if the experiments in Exhibits 2046 and 2047 were run under different conditions, one with a wet hose and the other with a dry hose, as Mr. Yagi and Prof. Slocum assert (Ex. 1038 ¶¶ 52–54; Ex. 1039 ¶ 66), that difference would not have prevented Prof. Slocum from making an "apples-to-apples comparison" between ***other runs*** of the bucket experiments, most of which were run under wet conditions. Mr. Yagi testifies that six experiments were run at 2,975 RPM, six experiments run at 500 RPM, all but the first experiment in each set (i.e., n=2 to n=6) were run under wet conditions, and the data for all experiments is shown in Exhibit 1035 at page BlueCat_000492. Ex. 1038 ¶¶ 50, 54. Prof. Slocum does not explain why he could not have used the data in Exhibit 1035 to make an apples-to-apples comparison consistent with his objective for the bucket experiments. Ex. 2049, 3.

Furthermore, Prof. Slocum does not dispute Patent Owner's assertion that "[t]he POSA would expect that the faster speed should result in the collection of more liquid." PO Resp. 107. In fact, Prof. Slocum's objective for the bucket experiments suggests that he expected more liquid to be collected at 2,975 RPM than at 500 RPM. Ex. 2049, 3. An apples-to-apples comparison between the experiments run under wet conditions shows that only slightly more water was collected at 2,975 RPM (average of 36.52 grams for n=2 to n=6) than at 500 RPM (average of 34.84 grams for n=2 to n=6). Ex. 1035, BlueCat_000492. Despite this result, Petitioner and Prof. Slocum do not rely on the bucket experiments to show that the Gyro Washer generates a wind that drives more liquid to the drain at higher rotational speed than at a lower rotational speed.

Third, we are not persuaded that 28.57 grams out of an original 38.93 grams or 73% amounts to "all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing," as required by our claim construction. *Cf.* Pet. Reply 15 (arguing that "28.57 grams plainly qualify as 'the main part' of the original 38.93 grams"); Ex. 1039 ¶ 69 (testifying that "28.57 grams plainly qualifies, under the Board's preliminary construction, as 'at least the main part of the liquid expelled from the reaction vessel unit' since 28.57 grams is over 73% of 38.93 grams"). As Petitioner and Dr. Slocum recognize, Petitioner's bucket experiments run under dry conditions provide quantitative information about how much of the water expelled from a microplate onto the inner surface of the Gyro Washer housing was driven by the wind to the drain. Pet. Reply 15;

Ex. 1039 ¶¶ 68, 69.[18] As discussed above, our claim construction does not impose any functional requirement to avoid cross-contamination. Nevertheless, the '063 Patent's disclosed objective of avoiding cross-contamination provides context for resolving the parties' dispute as to how much of the expelled liquid on the inner surface of the housing must be driven by the wind to the drain. Against the backdrop of avoiding cross-contamination, 28.57 grams out of an original 38.93 grams or 73% cannot be viewed "all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing."

Prof. Slocum opines that "[m]uch of" the approximately 10 grams of remaining liquid "was likely in the hose" rather than in the housing of the GyroWasher. Ex. 1039 ¶ 69. We give little weight to Prof. Slocum's testimony for two reasons. First, it is inconsistent with Prof. Slocum's analysis of the bucket experiments when communicating with Mr. Yagi after receiving the results of the experiments. At that time, Prof. Slocum attributed the difference between the first and the second through the sixth experiments to water retained in the Gyro Washer housing, not in the hose. Ex. 2048, 2 ("Professor Slocum has estimated that the amount of water discharged is lower in the first test compared to the second tests, because the inside of the GyroWasher's drum was completely dry, as opposed to the inside of the drum not being completely dry afterwards."); *see also* Ex. 1035, 2 (same).

[18] Although Petitioner's bucket experiments run under wet conditions enable an apples-to-apples comparison of the Gyro Washer run at different speeds, they do not enable an accurate comparison between the amount of water in the microplate and the amount of water collected in the bucket for purposes of determining how much of the water expelled from the microplate is driven to the drain.

Second, Prof. Slocum's testimony is speculative ("was likely in the hose"), and Prof. Slocum provides no reason why speculation could not have been avoided by actually measuring the amount of water in the hose.

For these reasons, Petitioner's bucket experiments are ***not***, in our view, persuasive evidence that the Gyro Washer generates a wind that drives to the drain "all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing," as required by our claim construction.

*5. Weighing the Evidence*

For all of the foregoing reasons, we determine that Petitioner has not shown persuasively that the Gyro Washer generates a wind that drives to the drain "all or nearly all of the liquid expelled from the reaction vessel onto the inner surface of the housing," as required by our claim construction. More particularly, we find that the photos and observations of the Gyro Washer and microplates after completion of a wash cycle, as discussed in subsection 2 above, show that a substantial amount of the liquid expelled from a microplate onto the inner surface of the housing is not driven by the wind to the drain of the Gyro Washer. We find that this evidence outweighs the other evidence relied upon by Petitioner to show that the wind limitation is met, including the videos and observations of the Gyro Washer in operation, as discussed in subsection 1 above, Petitioner's droplet experiments, as discussed in subsection 3 above, and Petitioner's bucket experiments, as discussed in subsection 4 above.

Although our determination is fully supported by the foregoing analysis of each category of evidence, we also take into account the overall credibility of the positions advanced by Petitioner. We find several instances where Petitioner's argument overstates what is reasonably

supported by the record. First is Petitioner's argument that a passage from the '063 Patent discusses withdrawal of liquid from a well, rather than from the interior of the housing, and "provides no link between wind and avoiding cross-contamination." Pet. Reply 9 (discussing Ex. 1001, 3:58–66). As discussed above, Petitioner's interpretation is inconsistent with the Specification, which states that a strong circular air-stream drives the expelled liquid to the drain, making it possible to withdraw completely all of the expelled liquid from the interior of the housing and avoid a danger of contamination. Ex. 1001, 3:58–66. Second is Petitioner's argument that the wind limitation would be satisfied if just a single milliliter, a single drop, or even a single molecule of water were driven by the wind to the drain. Pet. 20; Pet. Reply 13; Tr. 28:15–29:7. Third is Petitioner's argument that "[a] reply video from Prof. Slocum shows ***all*** liquid flowing to the drain with a well-fitting plexiglass door he made." Pet. Reply 15 (citing Ex. 1039 ¶¶ 54–61; Ex. 1044). For the reasons discussed above, we find that each of these arguments is not plausibly supported by the evidence and that these overstatements undermine the reliability of the positions advanced by Petitioner.

Petitioner's overall credibility is also negatively impacted by statements made in its opposition to Patent Owner's motion seeking discovery of communications between Prof. Slocum and Mr. Yagi. In an effort to persuade us to deny the requested discovery, Petitioner argued that Mr. Yagi's declaration provided a complete description of the experiments he performed at Prof. Slocum's request and that nothing is missing from Mr. Yagi's description of what he did. Paper 48, 9–10. Specifically, Petitioner represented that "Yagisan's record of his experiments set forth in his declaration . . . is complete." *Id.* at 10. Petitioner also quoted Mr. Yagi's

sworn interview statement, as follows: "Q: Does your declaration fully describe Professor Slocum's request? A: Yes. I believe it describes fully." *Id.* (quoting Ex. 1032, 16:5–7). As the record now shows, however, Mr. Yagi performed two types of experiments—the blue-droplet-on-the-plexiglass-door experiment and the bucket experiments—that were not disclosed in his declaration, and the bucket experiments were specifically requested by Prof. Slocum. Ex. 1035; Exs. 2045–2049. Petitioner argues that, because the undisclosed experiments are consistent with Petitioner's position, it had no obligation to produce them until the Board granted additional discovery. Pet. Reply 28; Tr. 31:8–16. Petitioner's argument misses the point, however, because what concerns us are Petitioner's statements in opposition to Patent Owner's discovery motion (Paper 48, 9–10), not whether Petitioner had an obligation to disclose the experiments before the motion was granted. Petitioner does not provide an adequate explanation for its representation that Mr. Yagi's declaration provided a complete record of the experiments he performed (*id.*), when the reply declarations show it was not complete. Ex. 1038 ¶¶ 46–57 (discussing bucket experiments not disclosed Mr. Yagi's first declaration); Ex. 1039 ¶¶ 70–73 (discussing droplet experiment not disclosed in Mr. Yagi's first declaration).

For all of the foregoing reasons, Petitioner has not shown by a preponderance of the evidence that the Gyro Washer satisfies the wind limitation of independent claims 1 and 12 and therefore has not met its burden to show that these claims and dependent claims 3–5, 11, 14–16, and 18–20 are anticipated by the Gyro Washer.

*F. Alleged Obviousness*

Petitioner asserts several obviousness grounds. Pet. 104–114. For dependent claim 10, Petitioner contends that it would have been obvious to use an aspiration pump with the Gyro Washer. Pet. 104–105 (relying on evidence that a Gyro Washer was sold with an aspiration pump). For dependent claims 7 and 17, Petitioner contends that it would have been obvious to modify the Gyro Washer so that the rotor is rotated in a second rotational direction. Pet. 105–108, 114. For method claims 12 and 14–17, Petitioner contends that, even in the absence of Mr. Yagi's demonstrations of the Gyro Washer at the 2009 and 2010 trade shows, the method of using the Gyro Washer would have been obvious in view of the device itself and that the limitations claims 12 and 14–16 are satisfied by the natural, ordinary, and intended use of the Gyro Washer. Pet. 108–114.

Petitioner's contentions do not remedy the deficiencies in Petitioner's arguments and evidence addressing the wind limitation, as discussed above. Accordingly, we determine that Petitioner has not met its burden to show that claims 7, 10, 12 and 14–17 would have been obvious in view of the Gyro Washer.

*G. Patent Owner's Arguments for Reconsideration of the Institution Decision*

Patent Owner argues that we should reconsider the Institution Decision and dismiss the proceeding for various reasons, including alleged violations of Petitioner's duty of candor; alleged unreliability of Petitioner's witness, Mr. Yagi; and alleged alteration of Mr. Yagi's declaration after he signed it. PO Resp. 98–113. To the extent that Patent Owner's arguments impact our evaluation of Petitioner's evidence, we have taken them into account in our analysis above.

In addition, Patent Owner argues that the Board should reconsider its decision permitting Petitioner to update its identification of the real parties-in-interest ("RPIs") and its decision that the Petition complied with 35 U.S.C. § 321, which does not allow the filing of a petition by an owner of the challenged patent. PO Resp. 114–120; PO Sur-reply 47–48. We addressed these arguments in our September 3, 2020 order (Paper 21) denying Patent Owner's motion for additional discovery concerning alleged unnamed RPIs (Paper 16) and granting Petitioner's motion for leave to file amended mandatory notices to add the unnamed RPIs (Paper 18). We addressed these arguments again in our Institution Decision. Inst. Dec. 39–40. Nothing in the Patent Owner Response or Sur-reply persuades us that we made a mistake.

Patent Owner argues that "[t]here have been clear attempts of 'intentional concealment or bad faith in the omission of the identified parties as RPIs.'" PO Resp. 118 (quoting Paper 21, 7). We are not persuaded. In our September 3, 2020 order, we accepted Petitioner's representation that there was no intentional concealment or bad faith in the omission of Dr. Mann, Dr. Heimberg, BlueCatBio GmbH, HTI Bio-X GmbH, or Micronix Corp., as RPIs. Paper 21, 7 (quoting Paper 18, 1). Patent Owner fails to show that omission of these parties from Petitioner's original mandatory notices was the result of concealment or bad faith. Petitioner's willingness to amend its mandatory notices to list these parties as RPIs shows that Petitioner did not act in bad faith. Papers 18, 22. Furthermore, Patent Owner fails to address the effect of the Board's precedential decision holding that no RPI analysis is necessary at institution absent an allegation of a time bar or estoppel based on the unnamed RPI. *SharkNinja Operating*

*LLC v. iRobot Corp.*, IPR2020-00734, Paper 11, 18–20 (Oct. 6, 2020) (designated precedential Dec. 4, 2020).

*H. Patent Owner's Motion to Exclude*

Patent Owner moves to exclude Petitioner's Exhibits 1004–1006, 1008–1010, 1012, 1014, 1038, 1039, and 1043–1046, in whole or in part, as well as portions of Petitioner's Reply. Paper 69, 1–2. For the reasons discussed above, we determine that Petitioner has not shown unpatentability of the challenged claims, even taking into account these exhibits and the portions of the Reply. For this reason, we *dismiss as moot* Patent Owner's motion as it pertains to the above-listed exhibits and brief.

Patent Owner also moves to exclude Petitioner's Exhibit 1033. Paper 69, 1. Because Exhibit 1033 is not cited or discussed in any brief or declaration filed by Petitioner, we *dismiss as moot* Patent Owner's motion as it pertains to Exhibit 1033.

## III. CONCLUSION

In summary:

| Claim(s) | 35 U.S.C. § | Basis | Claims Shown Unpatentable | Claims Not Shown Unpatentable |
|---|---|---|---|---|
| 1, 3–5, 11, 12, 14–16, 18–20 | 102(a)(1) | Alleged public use of Gyro Washer | | 1, 3–5, 11, 12, 14–16, 18–20 |
| 10 | 103 | Alleged public use of Gyro Washer in view of alleged sale of Gyro Washer to Kyowa Hakko | | 10 |

| Claim(s) | 35 U.S.C. § | Basis | Claims Shown Unpatentable | Claims Not Shown Unpatentable |
|---|---|---|---|---|
| 7, 12, 14–17 | 103 | Alleged public use of Gyro Washer in view of alleged knowledge of a POSA | | 7, 12, 14–17 |
| **Overall Outcome** | | | | 1, 3–5, 7, 10–12, 14–20 |

## IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 1, 3–5, 7, 10–12, and 14–20 of the '063 Patent are unpatentable based on alleged public use of the Gyro Washer, alone or in combination with alleged sale of the Gyro Washer to Kyowa Hakko and the knowledge of a POSA;

FURTHER ORDERED that Patent Owner's motion to exclude is *dismissed as moot*;

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.

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