UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

THERMO FISHER SCIENTIFIC INC.,
Petitioner,

v.

BIO-RAD LABORATORIES, INC.,
Patent Owner.

Case IPR2017-00054
Patent 8,236,504 B2

Before SHERIDAN K. SNEDDEN, ZHENYU YANG, and

YANG, Administrative Patent Judge.

DECISION
Institution of Inter Partes Review
37 C.F.R. § 42.108
INTRODUCTION

Thermo Fisher Scientific Inc. (“Petitioner”) filed a Petition for an 
inter partes review of claims 1–3, 6–11, 13–17, and 19–22 of U.S. Patent 
Laboratories, Inc. (“Patent Owner”) timely filed a Preliminary Response. 

For the reasons provided below, we determine Petitioner has satisfied 
the threshold requirement set forth in 35 U.S.C. § 314(a). Because 
Petitioner has established a reasonable likelihood that it would prevail in 
showing the unpatentability of claims 1–3, 6–11, 13–17, and 19–22, we 
institute an inter partes review of the challenged claims.

Related Proceedings

According to the parties, Patent Owner has asserted the ’504 patent 
against Petitioner in Bio-Rad Labs, Inc. v. Thermo Fisher Scientific Inc., 
Case No. 16-358 (D. Del.). Pet. 47; Paper 5, 2.

Petitioner has concurrently filed IPR2017-00055, challenging the 
same claims of the ’504 patent based on different prior art. Pet. 47; Paper 5, 
2.

The ’504 Patent

The ’504 patent “relates in general to fluorescence detection systems 
and in particular to a fluorescence detection system having a movable 
excitation/detection module for use with a thermal cycler.” Ex. 1001, 1:21–
24.

The ’504 patent states that both thermal cyclers and fluorometers for 
use with fluorescent-labeled samples were known in the art. Id. at 1:25–64.
It also acknowledges the teachings in prior art of an integrated optical reader with a thermal cycler. *Id.* at 2:1–4. According to the ’504 patent, then-“[e]xisting fluorometers suffer from various drawbacks,” and the ’504 patent discloses “an improved fluorometer for a thermal cycler that overcomes these disadvantages.” *Id.* at 2:11, 54–55.

**Illustrative Claims**

Among the challenged claims, claims 1 and 13 are independent. They are reproduced below (emphases and brackets added):

1. A fluorescence detection apparatus for analyzing samples located in a plurality of wells in a thermal cycler, the apparatus comprising:
   
   [a] a support structure attachable to the thermal cycler;
   
   [b] a shuttle movably mounted on the support structure; and
   
   [c] a detection module attached to the shuttle, the detection module including:
   
   [c1] a housing having an opening oriented toward the plurality of wells;
   
   [c2] an excitation light generator disposed within the housing; and
   
   [c3] an emission light detector disposed within the housing,

   wherein, when the support structure is attached to the thermal cycler, *a heating element is disposed between the detection module and the sample wells* and the shuttle is movable to position the detection module in optical communication with different wells of the plurality of wells through a plurality of openings extending through the heating element.
13. A thermal cycler apparatus comprising:

[a] a thermal cycler having an exterior housing and a plurality of sample wells for holding reaction vessels;

[b] a heater to prevent condensation from forming on a surface of the reaction vessels when the reaction vessels are in the sample wells, the heater having a plurality of transparent portions to permit optical communication with each of the plurality sample wells;

[c] a support structure disposed inside the exterior housing on an opposite side of the heater from the sample wells;

[d] a shuttle movably mounted on the support structure; and

[e] a detection module attached to the shuttle, the detection module including:

a module housing having an opening that is oriented toward the plurality of sample wells when the thermal cycler is in an operating state;

an excitation light generator disposed entirely within the module housing; and

an emission light detector disposed entirely within the module housing;

wherein, when the thermal cycler is in the operating state, the shuttle is movable to position the detection module in optical communication with different sample wells of the plurality of sample wells through the transparent portions of the heater.
asserted grounds of unpatentability:

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In support of its patentability challenge, Petitioner relies on the Declaration of Dr. Richard Mathies. Ex. 1002.

ANALYSIS

Claim Construction

In an inter partes review, the Board interprets a claim term in an unexpired patent according to its broadest reasonable construction in light of the specification of the patent in which it appears. 37 C.F.R. § 42.100(b); Cuozzo Speed Techs., LLC v. Lee, 136 S. Ct. 2131, 2144–46 (2016). Under that standard, and absent any special definitions, we assign claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention, in the context of the entire patent disclosure. In re Translogic Tech., Inc., 504 F.3d 1249, 1257 (Fed. Cir).

⁴ Miller, et al., U.S. Patent No. 5,528,050, issued June 18, 1996 (Ex. 1029).
2007). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

The parties seek the construction of “heating element” as recited in claim 1, or “heater” as recited in claim 13. Pet. 4–5; Prelim. Resp. 6–9.

Claim 1 recites that the “heating element is disposed between the detection module and the sample wells.” Similarly, claim 13 requires the detection module be positioned “in optical communication with different sample wells of the plurality of sample wells through the transparent portions of the heater.” The parties agree that, for purpose of this proceeding, these two terms should be “treated as equivalent.” Pet. 4; *see also* Prelim. Resp. 6 (proposing the same construction for the two terms).

Petitioner asserts the ’504 patent discloses a sample unit and a lid heater, both of which have the heating function. Pet. 4; *see also* Ex. 1001, 4:59 (“Sample unit 202 also includes heating elements”); *id.* at 5:1–3 (“Lid heater 204 has . . . electronically controlled heating elements”). The parties agree that, the lid heater is, and the sample unit is not, the claimed “heating element”/“heater.” Pet. 5, 7–8; Prelim. Resp. 8–9. They, however, dispute whether a “heating element”/“heater” is limited to the lid heater disclosed in the ’504 patent—Petitioner argues that it should not (Pet. 4–5); Patent Owner contends it should (Prelim. Resp. 6–9). At this stage, we find Petitioner’s argument more persuasive.

Petitioner argues that in the ’504 patent, “the lid heater is invariably depicted as being directly on top of the sample unit.” Pet. 9. Patent Owner contends that “[t]he specification nowhere mandates that lid heaters of the
disclosed apparatuses be ‘on top of’ sample tubes that are placed in the
csample units of the apparatuses.” Prelim. Resp. 18. We are not persuaded.
In the ’504 patent, the lid heater “is coupled to” the lid. Ex. 1001, 5:3–4.
The ’504 patent discloses, and Patent Owner acknowledges, that the lid is
placed “on the sample unit.” Id. at 5:8–9. Patent Owner does not present
persuasive evidence, and we do not find any, to show that the lid heater in
the ’504 patent is anywhere other than above the sample wells.

Petitioner then points to claim 21, which depends from claim 13 and
further recites that “the detection module is positioned such that the opening
is below the plurality of sample wells.” According to Petitioner, “[a]rtisans
would have understood that an optics head [i.e., detection module] placed
below sample wells as required by claim 21 could not view the wells
‘through’ the lid heater, which is only described as necessarily placed on top
of the wells.” Id. at 5 (citing Ex. 1002 ¶ 24). We find this argument
persuasive.

Thus, based on the current record, we determine that the “heating
element”/“heater” recited in the challenged claims is not limited to the lid
heater disclosed in the ’504 patent. This determination as to the scope of
“heating element”/“heater” is sufficient for purposes of this Decision, and
we need not further address the terms at this time.

On this record and for purposes of this Decision, we see no need to
construe any other term expressly. See Wellman, Inc. v. Eastman Chem.
Co., 642 F.3d 1355, 1361 (Fed. Cir. 2011) (stating that claim terms need
only be construed to the extent necessary to resolve the controversy).
**Priority Date**

The ’504 patent issued from application number 12/827,521 (“the ’521 application), which was filed on June 30, 2010. Ex. 1001, (21), (22). It also claims priority to 11/555,642 (“the ’642 application), which was filed on November 1, 2006, and 10/431,708, which was filed on May 8, 2003. *Id.* at (63).

Petitioner asserts that the challenged claims are not entitled to priority before June 30, 2010. Pet. 6–14. According to Petitioner, the ’642 application fails to provide written description support for the “heating element”/“heater.” *Id.* at 7–11. Based on the current record, and because we determine the “heating element”/“heater” is not limited to the lid heater, we agree with Petitioner.

Claims are entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides written support for those claims, as required by 35 U.S.C. § 112. *In re Chu*, 66 F.3d 292, 297 (Fed. Cir. 1995). To satisfy the written description requirement, the prior application must convey with reasonable clarity to those skilled in the art that, as of the earlier filing date, the inventor was in possession of the invention. *Vas–Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991).

According to Patent Owner, the disclosures in the ’642 application are identical to those in the challenged ’504 patent. Prelim. Resp. 11. We note, however, independent claims 1 and 13 were amended during prosecution of the ’521 application to add the recitation to “heating element” and “heater,” respectively, to overcome obviousness rejections. Ex. 1004, 22–30.
Petitioner asserts that the ’642 application only discloses a lid heater, “which is a single narrow example of the generic heating element/heater recited in the claims.” Pet. 8. As explained above, we determine that the “heating element”/“heater” recited in the challenged claims is not limited to the lid heater disclosed in the ’504 patent. Supra at 7. Patent Owner does not point to any portion of the ’642 application that describes a “heating element”/“heater” other than a lid heater. Thus, based on the current record, we are persuaded that the description of the lid heater “does not provide commensurate support” for the “heating element”/“heater” recited in the challenged claims. See Pet. 7; see also Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473, 1479 (1998) (holding the disclosure of a console as the only possible location for the controls does not support claims in which the location of the controls is other than on the console).

We acknowledge that the ’642 application states that “the fluorescence detection assembly described herein may be adapted for use with a wide variety of thermal cycler systems and may interrogate sample wells from any direction (e.g., above or below) in accordance with the design of a particular instrument.” Ex. 1007 ¶ 80 (emphasis added). Although a heater other than a lid heater might have been obvious in view of this disclosure, entitlement to a priority date, “does not extend to subject matter which is not disclosed, but would be obvious over what is expressly disclosed.” In re Huston, 308 F.3d 1267, 1277 (Fed. Cir. 2002) (quoting Lockwood v. Am. Airlines Inc., 107 F.3d 1565, 1571–72 (Fed. Cir. 1997)). In analyzing written description support:
While the meaning of terms, phrases, or diagrams in a disclosure is to be explained or interpreted from the vantage point of one skilled in the art, all the limitations must appear in the specification. The question is not whether a claimed invention is an obvious variant of that which is disclosed in the specification. Rather, a prior application itself must describe an invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.


In sum, based on the current record, we conclude that the ’642 application does not provide adequate written description support for the “heating element”/“heater” recited in the challenged claims. As a result, at this time, we find the challenged claims are not entitled to the priority of the ’642 application filing date. Instead, for purposes of this Decision, the priority date of the challenged claims is June 30, 2010, the actual filing date of the ’521 application, which issued as the ’504 patent.

*Anticipation by Kordunsky*

Petitioner argues that claims 1–3, 6–11, 13–17, 19, 20, and 22 are anticipated by Kordunsky. Pet. 15–23. Because, on the present record, we

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5 Petitioner also contends that the ’642 application does not provide adequate written description support for a heating element with “a plurality of openings extending through” it, as recited in claim 1, or a “heater having a plurality of transparent portions to permit optical communication” with each well, as recited in claim 13. Pet. 11–14. We need not address this argument because we conclude the ’642 application does not provide adequate written description support for “heating element”/“heater.”
have determined that the priority date of the challenged claims is June 30, 2010, Kordunsky (published on December 2, 2004) qualifies as prior art under 35 U.S.C. § 102(b).

Patent Owner states that Kordunsky is a member of the ’504 patent family with a disclosure identical to the ’504 patent. Prelim. Resp. 11; see also Pet. 15 (stating the disclosures of Kordunsky and the challenged ’504 patent are “substantially identical”). Petitioner provides claim charts, matching each limitation of the challenged claims with the disclosures of Kordunsky. Id. at 16–23. Patent Owner does not dispute these representations. After reviewing Petitioner’s claim charts, we are persuaded that Kordunsky discloses each and every limitation of the challenged claims. We, therefore, adopt the claim charts as our own and concludes that Petitioner has established a reasonable likelihood that it would prevail in showing that claims 1–3, 6–11, 13–17, 19, 20, and 22 are anticipated by Kordunsky.

*Obviousness over Li*

Petitioner argues that claims 1–3, 6, 7, 9, 13, 14, 16, and 19–22 would have been obvious over Li. Pet. 25–44. Based on the current record, we determine Petitioner has established a reasonable likelihood that it would prevail in this assertion.

Because, on the present record, we have determined that the priority date of the challenged claims is June 30, 2010, Li (published on November 13, 2002 (Ex. 1006, [43])) qualifies as prior art under 35 U.S.C. § 102(b). Li also qualifies as prior art under 35 U.S.C. § 102(a) even if the challenged
claims can claim priority to May 8, 2004, the earliest possible priority date shown on the face of the ‘504 patent.

Petitioner asserts that Li teaches or suggests each elements of claims 1–3, 6, 7, 9, 13, 14, 16, and 19–22. Pet. 25–44. For example, regarding claim 1, Petitioner refers to Li for teaching a “fluorescence quantitative PCR analyzing system” that is a thermal cycler comprising a thermal cycling unit, which has “a row of wells,” as the preamble requires. Id. at 27 (citing Ex. 1006, Abstract, claim 1). For limitations [a] and [b], Petitioner contends that Li teaches “a shuttle in the form of a ‘belt capable of moving back and forth,’ movably mounted on a support in the form of a shaft bearing ‘a stepper motor.’” Id. at 28 (citing Ex. 1006, claim 1, 3:10, 6:15–27, 8:16–17). Petitioner acknowledges that “Li does not literally mention that its support is attached to the rest of the cycler.” Id. According to Petitioner, however, an ordinary artisan would have understood “this attachment was obvious” because “the shaft should be attached to the cycler to work effectively as a support for a moving head.” Id. (citing Ex. 1002 ¶ 63).

Petitioner argues that Li teaches “a fluorescence detection unit,” with its housing fixed on the belt, as limitation [c] requires. According to Petitioner, the detection unit in Li has a housing with an opening in the form of a hole. Id. at 29 (citing Ex. 1006, 3:17–18, 8:19–20). Petitioner asserts that because Li’s detection unit is located below the cycling block and the hole is “provided on top of the housing,” the hole is oriented towards the sample wells above it, as limitation [c1] requires. Id. (citing Ex. 1006, Fig. 3, 8:16–20, 8:28–9:1). In addition, Petitioner contends that the detection unit in Li includes an excitation light source as a generator and a
photomultiplier tube as detector, as limitations [c2] and [c3] require. *Id.* at 29–30 (citing Ex. 1006, Fig. 3, 8:16–9:7).

Patent Owner does not dispute that Li teaches or suggests each of the above-discussed limitations. After reviewing the record, we are satisfied that Petitioner has made a sufficient showing regarding these limitations.

Petitioner argues that Li also teaches or suggests the wherein clause of claim 1. Pet. 30–32. Specifically, Petitioner contends that the cycling block in Li is the recited “heating element.” *Id.* at 30–31. According to Petitioner, in Li, the “row of wells” are on the top of the cycling block, and the detection unit is located below the cycling block. *Id.* at 31 (citing Ex. 1006, 6:15–27; Ex. 1002 ¶ 68). Thus, Petitioner asserts the cycling block, which can heat the samples (*id.* at 30), is the “heating element . . . disposed between the detection module and the sample wells,” as required in the wherein clause (*id.* at 31).

Patent Owner does not address Petitioner’s argument. Instead, Patent Owner asserts that the “heated lid” in Li is not the same as, and there was no reason to modify it into, the “lid heater” in the challenged ’504 patent. Prelim. Resp. 23–25. Patent Owner’s assertion is inapposite because Petitioner refers to the cycling block in Li, and not the “heated lid,” as teaching the “heating element” recited in claim 1. *See* Pet. 30–31.

Petitioner also contends that Li renders independent claim 13 obvious. Pet. 36–39. All but one limitations of claim 13 are similar to those of claim 1. The only limitation that was not present in claim 1 is “a heater to prevent condensation from forming on a surface of the reaction vessels when the reaction vessels are in the sample wells.” Petitioner argues that cyclers in
general, and Li’s cycling block in particular, would “heat the sides of the sample tubes right up to the tube caps in order to prevent condensation onto the sides of the tubes during such heating.” *Id.* at 37 (citing Ex. 1002 ¶ 80; Ex. 1006, Figure 3; Ex. 1027 ¶¶ 7, 50, 63). Patent Owner does not dispute this. After reviewing the record, we find Petitioner’s argument addressing this issue persuasive.

In sum, based on the current record, we conclude that Petitioner has established a reasonable likelihood of prevailing on its assertion that claims 1 and 13 are unpatentable as obvious over Li. After considering Petitioner’s arguments and evidence with respect to claims 2, 3, 6, 7, 9, 14, 16, and 19–22 (Pet. 40–44), which Patent Owner does not address separately, we determine that Petitioner has made a sufficient showing as to those claims, as well.6

*Obviousness over Li and Heffelfinger or Miller*

Petitioner contends that (1) claims 8, 10, and 15 would have been obvious over Li and Heffelfinger (Pet. 44–46); and (2) claims 11 and 17 would have been obvious over Li and Miller (*id.* at 46). Based on the current record, we determine Petitioner has established a reasonable likelihood that it would prevail in these assertions.

Heffelfinger teaches an apparatus capable of measuring quantities of biological or other types of samples that have been labeled using, for

6 Petitioner also challenges claim 21 as obvious over Li and Kordunsky. Pet. 24–25. In view of our institution of an *inter partes* review of claim 21 on another ground (i.e., obviousness over Li), we deny institution on this additional ground. *See* 37 C.F.R. § 42.108(a)–(b).
example, fluorescence. Ex. 1015, 2:61–64. Petitioner refers to Heffelfinger for teaching a modular design for a detection system is advantageous because a module can be “easily and quickly replaced” when needed. Pet. 45 (citing Ex. 1015, 8:24–29). According to Petitioner, in Heffelfinger, the detection module, which is in the form of a scan head, is coupled to the shuttle, which is form of a scan head mount, as claim 8 requires. Id. (citing Ex. 1015, 9:30–31, 10:32–34). In addition, Petitioner asserts that Heffelfinger teaches two stepper motors move the shuttle in two dimensions, as claims 10 and 15 require. Id. at 45–46 (citing Ex. 1015, 9:27–40, 9:54–56).

Miller teaches a movable compact scan head having multiple scanning modalities so that the scan head supports two or more optical systems within a small space. Ex. 1029, 1:53–56. Specifically, Petitioner argues that Miller teaches a dual-head configuration, as claims 11 and 17 require. Pet. 46 (citing Ex. 1029, Figs. 1–4). According to Petitioner, the two-headed module in Miller has the advantage to monitor two different wavelengths simultaneously, and thus, allows multiplexed analysis. Id. (citing Ex. 1029, 1:64–2:1).

Patent Owner does not dispute that Heffelfinger teaches the additional limitations recited in claims 8, 10, and 15, and that Miller teaches the additional limitation recited in claims 11 and 17. Instead, Patent Owner contends that neither Heffelfinger nor Miller teaches a lid heater. Prelim. Resp. 27, 29. Patent Owner also repeats the argument that there was no reason to modify the “heated lid” in Li into the “lid heater” in the challenged ’504 patent. Id. at 27–29.
As explained above, based on the current record, we conclude Petitioner has made a sufficient showing that Li teaches “heating element”/“heater” (in the form of the cycling block), as recited in the challenged claims. Thus, it is irrelevant whether Heffelfinger or Miller teaches a lid heater. Similarly, it is unnecessary to modify the “heated lid” in Li into the “lid heater” in the challenged ’504 patent.

In sum, based on the current record, we conclude that Petitioner has established a reasonable likelihood of prevailing on its assertions that claims 8, 10, and 15 would have been obvious over Li and Heffelfinger, and claims 11 and 17 would have been obvious over Li and Miller.

CONCLUSION

For the foregoing reasons, we find that Petitioner has offered sufficient evidence to institute an inter partes review. The information presented in the Petition and accompanying evidence establishes a reasonable likelihood that Petitioner would prevail in showing the unpatentability of claims 1–3, 6–11, 13–17, and 19–22 of the ’504 patent.

At this stage of the proceeding, the Board has not made a final determination as to the construction of any claim term or the patentability of any challenged claim.

ORDER

Accordingly, it is

ORDERED that pursuant to 35 U.S.C. § 314, an inter partes review is hereby instituted on the following grounds:

1. claims 1–3, 6–11, 13–17, 19, 20, and 22 as anticipated by Kordunsky;
2. claims 1–3, 6, 7, 9, 13, 14, 16, and 19–22 as obvious over Li;  
3. claims 8, 10, and 15 as obvious over Li and Heffelfinger; and  
4. claims 11 and 17 as over Li and Miller;  
FURTHER ORDERED that no other ground of unpatentability is authorized in this inter partes review; and  
FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), inter partes review of the ’504 patent is hereby instituted commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

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