

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

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JOHNS HOPKINS UNIVERSITY,	:	
	:	
Plaintiff,	:	
	:	
v.	:	C.A. No. 13-1853-LPS
	:	
454 LIFE SCIENCES CORPORATION,	:	
	:	
Defendant.	:	

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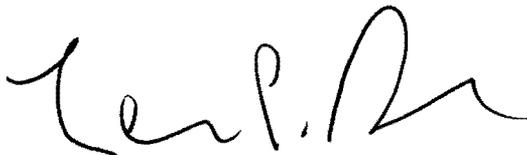
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**MEMORANDUM OPINION**

August 24, 2015  
Wilmington, Delaware



**STARK, U.S. District Judge:**

Pending before the Court are claim construction disputes related to pending patent applications assigned to Johns Hopkins University (“JHU” or “Plaintiff”) and 454 Life Sciences Corporation (“454” or “Defendant”). (See D.I. 22 Document 6 at 2, Document 9 at 2) The applications at issue are U.S. Patent Application Nos. 12/361,690 (D.I. 39 Ex. 1) (Plaintiff’s “’690 application”) and 13/33,240 (D.I. 39 Ex. 5) (Defendant’s “’240 application”).

JHU filed this action pursuant to 35 U.S.C. § 146 on November 6, 2013 to review the Decision and Final Judgment of the Board of Patent Appeals and Interferences (“the Board”) in Interference No. 105,857 (“the Interference”). (See D.I. 1 at 1, 8) JHU was the junior party in the Interference and 454 was the senior party. (See *id.*) The Interference involved a single count (“the Count”)<sup>1</sup> with the interfering subject matter represented by claim 1 of Plaintiff’s ’690 application and claim 52 of Defendant’s ’240 application. (See D.I. 44 at 1; D.I. 45 at 1)

Claim 1 of the ’690 application is representative and recites the following:

A method for analyzing nucleic acid sequences comprising:

- (a) generating a plurality of molecules of a fragment of deoxyribonucleic acid;
- (b) delivering the plurality of molecules of the fragment of deoxyribonucleic acid into aqueous microreactors in a water-in-oil emulsion such that a plurality of aqueous microreactors comprise a single molecule of the fragment of deoxyribonucleic acid, a single bead capable of hybridizing the fragment of

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<sup>1</sup>“The applicant must identify at least one patentable claim from every application or patent that interferes for each count. A count is just a description of the interfering subject matter, which the Board of Patent Appeals and Interferences uses to determine what evidence may be used to prove priority under 35 U.S.C. § 102(g)(1).” Manual of Patent Examining Procedure § 2304.02(b).

deoxyribonucleic acid, and reagents necessary to perform deoxyribonucleic acid amplification;

(c) amplifying the fragment of deoxyribonucleic acid in the microreactors to form amplified copies of said fragment of deoxyribonucleic acid bound to beads in the microreactors;

(d) determining presence of amplified copies of said fragment of deoxyribonucleic acid bound to a bead.

(D.I. 44 at 2-3)

454 provoked the interference by copying the language of claim 1 of the '690 application into its '240 application. (D.I. 45 at 1) Both parties filed priority motions, claiming priority to the subject matter of the Count, and the Board ultimately decided that 454 had established, by a preponderance of the evidence, that it was entitled to priority. (*See* D.I. 23-6 Paper 370 at 23)

In its Complaint, JHU recites three paragraphs of chargeable errors allegedly committed by the Board in deciding the parties' priority motions. (*See* D.I. 1 at 6-7) Specifically, JHU argues that the Board erred in (1) denying JHU "authorization to file its motion on the adequacy of the written description of 454's involved application," (2) rejecting JHU's arguments with respect to the construction of certain claim terms, and (3) accepting and finding sufficient "evidence offered by 454 that . . . satisfied 454's burden of proof with respect to [prior] conception" of step (a) of the Count. (*See id.* at 6-7)

Pursuant to the operative Scheduling Order (D.I. 40), the parties submitted technology tutorials on April 2, 2015 (D.I. 41, 42, 43) and completed claim construction briefing on May 1, 2015 (D.I. 39, 44, 45, 47, 50). The Court held a claim construction hearing on June 9, 2015. (*See* Transcript ("Tr."))

## I. LEGAL STANDARDS

The ultimate question of the proper construction of a patent claim is a question of law. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 837 (2015) (citing *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 388-91 (1996)). “It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (internal quotation marks omitted). “[T]here is no magic formula or catechism for conducting claim construction.” *Phillips*, 415 F.3d at 1324. Instead, the court is free to attach the appropriate weight to appropriate sources “in light of the statutes and policies that inform patent law.” *Id.*

“[T]he words of a claim are generally given their ordinary and customary meaning . . . [which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1312-13 (internal citations and quotation marks omitted). “[T]he ordinary meaning of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Id.* at 1321 (internal quotation marks omitted). While “the claims themselves provide substantial guidance as to the meaning of particular claim terms,” the context of the surrounding words of the claim also must be considered. *Phillips*, 415 F.3d at 1314. The patent specification “is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

“[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s

lexicography governs.” *Phillips*, 415 F.3d at 1316. It bears emphasis that “[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (internal quotation marks omitted), *aff’d*, 481 F.3d 1371 (Fed. Cir. 2007).

In addition to the specification, a court “should also consider the patent’s prosecution history, if it is in evidence.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996). The prosecution history, which is “intrinsic evidence,” “consists of the complete record of the proceedings before the PTO [Patent and Trademark Office] and includes the prior art cited during the examination of the patent.” *Phillips*, 415 F.3d at 1317. “[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.” *Id.*

In some cases, “the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Teva*, 135 S. Ct. at 841. Extrinsic evidence “consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Markman*, 52 F.3d at 980. For instance, technical dictionaries can assist the court in determining the meaning of a term to those of skill in the relevant art because such dictionaries “endeavor to collect the

accepted meanings of terms used in various fields of science and technology.” *Phillips*, 415 F.3d at 1318. Overall, while extrinsic evidence “may be useful” to the court, it is “less reliable” than intrinsic evidence, and its consideration “is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” *Id.* at 1318-19. Where the intrinsic record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. See *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999) (citing *Vitronics*, 90 F.3d at 1583).

“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.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that “a claim interpretation that would exclude the inventor’s device is rarely the correct interpretation.” *Osram GmbH v. Int’l Trade Comm’n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007).

Finally, the Federal Circuit’s cases “clearly hold that when a party challenges written description support for an interference count or the copied claim in an interference, the originating disclosure provides the meaning of the pertinent claim language.” *Robertson v. Timmermans*, 603 F.3d 1309, 1312 (Fed. Cir. 2010) (internal quotation marks omitted). In other words, “[w]hen interpretation is required of a claim that is copied for interference purposes, the copied claim is viewed in the context of the patent from which it was copied.” *In re Spina*, 975 F.2d 854, 856 (Fed. Cir. 1992). The Federal Circuit “has approved of the **broadest reasonable interpretation** standard in a variety of proceedings, including . . . **interferences** . . .” *In re Cuozzo Speed Technologies, LLC*, 2015 WL 4097949, at \*6 (Fed. Cir. July 8, 2015) (emphasis

added).<sup>2</sup>

## II. PERTINENT EVIDENCE

As a threshold matter, the parties dispute what intrinsic evidence the Court should consult when construing the disputed claim language. JHU argues that the subject matter of the Count “originated in JHU’s ’690 application and was copied by 454 into its ’240 application” and, therefore, “the intrinsic evidence for this Count consists of the specification of JHU’s ’690 application and its prosecution history (including its supporting provisional applications to which priority is claimed).” (D.I. 45 at 4) 454 argues that “JHU’s involved claims originated from 454’s applications, and so 454’s applications control the interpretation of the claims.” (D.I. 44 at 4) Specifically, 454 argues that JHU “first copied [the] claims from 454’s patent – U.S. Patent No. 7,323,305 (‘the ’305 patent’)” – into JHU’s ’690 application, and then 454 subsequently copied the claims from JHU’s ’690 application into 454’s ’240 application. (D.I. 50 at 1)

When a party is challenging a claim’s compliance with 35 U.S.C. § 112’s written description requirement during an interference, as JHU did during the Interference at issue in this case, Federal Circuit case law instructs that “the *originating disclosure* provides the meaning of the pertinent claim language.” *Robertson*, 603 F.3d at 1312 (emphasis added). In this case, *some* of the disputed claim language was originally copied by JHU from the ’305 patent assigned to 454. (See D.I. 47 at 2-3) In particular, one of the disputed limitations JHU copied from 454’s ’305 patent – “a single bead capable of hybridizing to the fragment” (the “hybridizing limitation”) – survived prosecution of JHU’s ’690 application and was copied unamended into

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<sup>2</sup>The Court will apply the broadest reasonable interpretation standard for all disputed terms, even though the standard is not explicitly referenced for each term.

Defendant's '240 application. (*See* D.I. 39 Ex. 6 at 3)

However, the other three disputed limitations (which will be discussed below) originated from a series of Patent Office rejections and applicant amendments during prosecution of Plaintiff's '690 application, and not from any of 454's patents or patent applications. (*See* D.I. 47 at 3-4) These amendments were made by JHU in order to traverse rejections in light of 454's '305 patent, and the Patent Office ultimately determined that representative claim 1 of the '690 application was patentable over 454's '305 patent. (*See id.*) As such, the Court does not agree with 454 that 454's '305 patent (or any of the applications incorporated in or related to the '305 patent) were "originating disclosure[s]" under Federal Circuit case law for the other three disputed limitations. Instead, the prosecution history shows, if anything, that the subject matter of these limitations is *not* disclosed in the '305 patent, since the Patent Office (in finding the '690 patent's claims to be allowable) ultimately distinguished the final version of the '690 application's claims from the '305 patent's disclosure. (*See id.*)

In addition, although the hybridizing limitation survived unamended as copied from 454's '305 patent, a claim term is informed by the context of the surrounding words of the claim. *See Phillips*, 415 F.3d at 1314 (citing *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003) ("[T]he context of the surrounding words of the claim also *must* be considered in determining the ordinary and customary meaning of those terms.")(emphasis added). It would be improper for the Court to disregard the context of the hybridizing limitation – specifically, the other claim language as amended by JHU – and interpret it solely in light of 454's '305 patent and related/incorporated applications, as 454 suggests. Doing so would divorce the hybridizing limitation from its context, which informs its meaning.

For example, the original language that JHU copied from 454's '305 patent recited "a single bead capable of hybridizing to *the fragments nucleic [sic] acid.*" (D.I. 47 at 3) (emphasis added) The final language of claim 1 of the '690 application, in contrast, recites "a single bead capable of hybridizing to *the fragment of deoxyribonucleic acid*" (emphasis added). Thus, the required capability of the "single bead" changed during prosecution, since the bead is now required to be capable of hybridizing to only a *single* fragment of *deoxyribonucleic* acid rather than to *multiple* fragments of *nucleic* acid. Both parties acknowledge that the "deoxyribonucleic acid" of the final claim is a narrower in scope than the "nucleic acid" of the original JHU claim as copied from 454's '305 patent. (See D.I. 39 at 3) Thus, both parties admit that the meaning of the hybridizing limitation changed as a result of JHU's amendments to the '690 application.

In light of the above, the Court agrees with JHU that the '690 application and its prosecution history are the proper sources of intrinsic evidence for interpreting the disputed claim language. To the extent that the '690 application's prosecution history includes 454's patent(s) or application(s), however, these would also qualify as relevant intrinsic evidence. The Court rejects 454's proposal to rely on the '240 application and related/incorporated applications to the exclusion of the '690 application.

### III. CONSTRUCTION OF DISPUTED TERMS

#### **"generating a plurality of molecules of a fragment of deoxyribonucleic acid"**

<p><b>Plaintiff</b>  "synthesizing two or more of the same DNA fragment, not merely generating a plurality of DNA fragments overall"</p>
<p><b>Defendant</b>  "fragmenting large template deoxyribonucleic acid molecules to generate a plurality of fragmented deoxyribonucleic acid molecules"</p>

**Court**

“generating two or more of the same DNA fragment, not merely generating a plurality of DNA fragments overall”

At the hearing, Defendant indicated that it would agree with Plaintiff’s proposed construction if the word “synthesizing” were replaced with “generating.” (*See* Tr. at 55) Plaintiff disagreed with changing the word “synthesizing” to “generating” and argued that “generating” includes “[r]andom fragmenting,” which, according to Plaintiff, was relinquished from the scope of the ’690 application’s claims during prosecution. (*See* Tr. at 72)

The Court will adopt Plaintiff’s proposed construction, but will (as Defendant proposes) replace the word “synthesizing” with “generating.” Plaintiff stated at the hearing that it was not seeking to limit the scope of step (a) to cover only implementations that use PCR (i.e., polymerase chain reaction) (*see* Tr. at 42). However, the Board, Defendant, and the specification of Plaintiff’s ’690 application all use the word “synthesizing” in the context of generating “PCR products” **but not** in the context of DNA fragments produced by fragmentation. (*See, e.g.*, D.I. 23-4 Paper 236 at 17 (Board); Tr. at 69 (Defendant); D.I. 39 Ex. 1 at ¶ 18 (’690 application)) The Court concludes that “synthesizing” may improperly narrow the scope of the claim to the PCR-specific embodiment disclosed in the ’690 application. The plain and ordinary meaning of “generating,” in this context, is broader than “synthesizing,” which is appropriate based on the record before the Court.

One reason “synthesizing” is improperly narrow is because at least one kind of “fragmenting” may be used to implement the “generating” limitation of step (a) as explained by 454’s expert, Dr. Matthew Levy. (*See* D.I. 50-4 at ¶ 34) (“The genome within each of these cells can be fragmented, for example with the use of a restriction endonuclease, to yield **identical**

*fragments of the same DNA sequence.* It was well understood that restriction endonucleases, which physically fragment DNA, are highly reliable and precise in terms of the sequences they recognize.”) (emphasis added) Indeed, both parties acknowledged at the hearing that restriction endonuclease could be used to create “identical fragments” of DNA. (See Tr. at 69, 75) Moreover, both sides acknowledge that “fragmenting” is distinct from “synthesizing.” (See JHU’s Technology Tutorial at 6:32-7:02; see also Tr. at 68-69) Because “synthesizing” would *not* include this “fragmenting” practice of using “restriction endonucleases,” but such a practice is properly viewed as encompassed by the claim limitation of step (a), using the term “synthesizing” in the Court’s construction would result in an improperly narrowed claim scope.

The Court finds further support for its construction in the Board’s decision on 454’s “Motion 1” from the Interference, in which the Board stated:

Regarding (a) in Count 1, we interpret the plain meaning of the term “generating” to encompass “fragmenting” in relation to DNA fragments. In addition, nothing in . . . JHU’s application suggests a more narrow interpretation limiting “generating” as argued by JHU and its expert Dr. Shendure, i.e., that “fragmenting” an existing source of DNA (such as genomic DNA or cDNA) fails to “generate” DNA fragments. We are persuaded by a common sense understanding of the term (i.e., cutting up DNA “generates” DNA fragments), as well as evidence cited by 454 in support of that plain meaning.

(See D.I. 23-4 Paper 236 at 11) As the Board stated, the plain meaning of the term “generating” – in the context of the disputed claim limitation (a) – includes “fragmenting.”

The Court rejects Plaintiff’s argument that Plaintiff clearly and unambiguously disavowed “fragmenting” during prosecution of the ’690 application. (See Tr. at 23-24) As Defendant points out, instead of attempting to argue around the ’305 patent as prior art, Plaintiff attempted

to swear behind the '305 patent. (*See* Tr. at 47; *see also* D.I. 47 at 3-4) In response to Plaintiff's declaration supporting its swearing-behind argument, the *Patent Office* stated that the declaration showed prior invention of "generating a plurality of molecules of a PCR product" as opposed to "generating a plurality of molecules of a fragment of genomic nucleic acids." However, *Plaintiff's* statements during prosecution are what matter for showing a disavowal of claim scope. *See Phillips*, 415 F.3d at 1317. The Patent Office's characterization of Plaintiff's declaration does not constitute a clear and unambiguous disavowal of claim scope by Plaintiff.

Finally, the Court rejects Plaintiff's invitation to limit the scope of the disputed claim language to what Plaintiff argues is the only embodiment disclosed in the specification. (*See* Tr. at 20) "Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction." *Liebel-Flarsheim*, 358 F.3d at 906. The Court finds no such clear intention. Plaintiff emphasizes that "fragmenting" has no written description support in the '690 application because it is not supported by the sole embodiment in the '690 application. (*See* Tr. at 20-21) However, as Plaintiff acknowledged at the hearing, the Court is not tasked during the claim construction process with determining whether the disputed claim language has written description support. (*See id.* at 21) Moreover, the Court does not find anywhere in the intrinsic evidence any evidence of a clear disclaimer of "fragmenting."

**"delivering the plurality of molecules of the fragment of deoxyribonucleic acid into aqueous microreactors in a water-in-oil emulsion such that a plurality of aqueous microreactors comprise a single molecule of the fragment of deoxyribonucleic acid, a single bead capable of hybridizing to the fragment of deoxyribonucleic acid, and reagents necessary to perform deoxyribonucleic acid amplification"**

**Plaintiff**

“delivering the plurality of molecules of the particular fragment of deoxyribonucleic acid into aqueous microreactors in such a way that the aqueous microreactors contain three separate elements: (1) one molecule of a fragment of DNA; (2) one bead capable of hybridizing to the fragment; and (3) reagents for DNA amplification”

**Defendant**

“Delivering the fragmented deoxyribonucleic acid molecules into aqueous microreactors in a water-in-oil emulsion such that a plurality of aqueous microreactors comprise a single molecule of the fragmented deoxyribonucleic acid molecule, a single bead capable of binding to the fragmented deoxyribonucleic acid molecule, and amplification reaction solution containing reagents necessary to perform deoxyribonucleic acid amplification”

**Court**

No construction necessary

JHU’s proposed construction is improper because it limits the claim language to cover just a single embodiment disclosed in JHU’s ’690 specification. JHU argues that “[w]here, as here, the specification provides only one description of the interaction between the method steps providing the basis for the claimed invention, JHU’s construction which stays true to that description is the only correct construction.” (See D.I. 47 at 11) “When the specification describes a single embodiment to enable the invention, this Court will not limit broader claim language to that single application unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.” *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1288 (Fed. Cir. 2009) (internal quotation marks omitted). JHU has not pointed to any evidence of a “clear intention to limit the claim scope.” Thus, the Court determines that JHU’s construction is improperly narrow in light of the plain and ordinary meaning of the claim language.

Moreover, it is unclear why JHU’s proposed construction omits the “water-in-oil emulsion” language recited in the claim language. The parties did not appear to dispute the

meaning of this phrase in their briefing or at the hearing. Thus, the Court will reject JHU's apparent invitation to leave out limitations recited in the claim language.

454's proposed construction improperly narrows the scope of this limitation using the "fragmented" language carried over from 454's improper construction of step (a), discussed above. In supporting its proposed construction, 454 cites as intrinsic evidence its '305 patent, its '240 application, and related U.S. Patent Application No. 10/767,779 ("779 application"). However, as discussed, above, the Court has determined that the intrinsic evidence in this case consists of the '690 application and its prosecution history. In addition, 454 introduces a limitation into its construction that is not present in the original claim language, namely "amplification reaction solution." This phrase originated from the '240 and '779 applications, which the Court has rejected as intrinsic evidence. The Court will decline to construe this term as including the "amplification reaction solution" limitation, which is not supported by the plain and ordinary meaning of the claim language or the specification or prosecution history of the '690 application.

The Court agrees with 454 when it states, "[n]or is it even necessary to look to a specification given the clear language of this step." (D.I. 50 at 9) Step (b)'s meaning is elucidated by the Court's constructions of the other three disputed terms. Specifically, the "plurality of molecules of the fragment of deoxyribonucleic acid" has already been construed (as "two or more of the same DNA fragment") and "delivering" is given its plain and ordinary meaning in both parties' constructions.

In addition, the "aqueous microreactors" are defined in the claim language to include: (1) a single molecule of the same "fragment of deoxyribonucleic acid" already construed, for step

(a); (2) a single bead capable of hybridizing, as will be construed below, to the fragment of deoxyribonucleic acid; and (3) reagents necessary to perform deoxyribonucleic acid amplification. Regarding the “reagents,” the parties do not ask the Court to further construe what the reagents are, and the parties appear to agree on the same construction of the “reagents” limitation. In Plaintiff’s proposed construction, Plaintiff removes the requirement that the reagents be “necessary” to perform DNA amplification. But Plaintiff expressly states in its brief that the reagents are “necessary for amplification” (D.I. 45 at 11), and Defendant states that the parties do not dispute the meaning of the “reagents” limitation (D.I. 44 at 8). Thus, the Court will decline to construe the “reagents” limitation without the word “necessary.”

Ultimately, then, the Court has concluded that it is unnecessary to construe this claim term because the parties’ disputes are fully addressed by the Court’s constructions of the other disputed terms. *See Biotec Biologische Naturverpackungen GmbH v. Biocorp, Inc.*, 249 F.3d 1341, 1349 (Fed. Cir. 2001) (finding no error in decision not to construe “melting” when claim term was used in ordinary sense and did not otherwise require construction); *Appelra Corp. v. MicrosMass, UK, Ltd.*, 186 F. Supp. 2d 487, 524, 526 (D. Del. 2002) (declining to construe terms that were clear on their face and whose meaning was “self-evident”).<sup>3</sup>

**“deoxyribonucleic acid” / “DNA”**

**Plaintiff**

“a nucleic acid that consists of two long chains of nucleotides twisted together into a double helix and joined by hydrogen bonds between complementary base pairs”

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<sup>3</sup>This case will not involve a jury trial (*see* D.I. 1; D.I. 6), so no concerns arise as to potential juror confusion.

<b>Defendant</b>
“a nucleic acid molecule comprising deoxyribonucleotides”
<b>Court</b>
“a nucleic acid molecule comprising deoxyribonucleotides”

The parties dispute whether this term includes only double-stranded DNA or both double- and single-stranded DNA. (See D.I. 47 at 12-14; D.I. 50 at 13-15) The Court concludes that 454 has presented the broadest reasonable interpretation of “DNA.” Specifically, the Court is persuaded by 454’s citations to various portions of the ’690 application that discuss both single- and double-stranded DNA. (See D.I. 50 at 14-15 (noting that “cDNA,” disclosed in ’690 application, is single-stranded); see also Tr. at 37 (showing JHU’s understanding that at least some cDNA is single-stranded); D.I. 39 Ex. 1 at ¶ 36 (’690 application) (“Sample DNA for amplification and analysis according to the present invention can be genomic DNA, *cDNA*, PCR products of genomic DNA, or PCR products of cDNA, for example.”) (emphasis added))

JHU has presented no evidence of clear disavowal of single-stranded DNA. Instead, JHU merely states that its construction comports with the “usual” definition of DNA. (See D.I. 45 at 13) However, 454’s expert, Dr. Matthew Levy, convincingly explained in his expert report how a person of ordinary skill in the art would understand the term “DNA” to encompass both single- and double-stranded DNA. (See D.I. 50-4 at ¶¶ 24-29) The Court credits Dr. Levy’s testimony in this regard.

Moreover, even assuming, *arguendo*, that the word “DNA” *usually* refers to double-stranded DNA only, the Court must interpret this term under the *broadest* reasonable interpretation standard, since this case arises out of an interference. See *Davis v. Loesch*, 998 F.2d 963, 968 (Fed. Cir. 1993). That standard, and the evidence cited above, require the Court to

construe this limitation as 454 proposes, to include both single- and double-stranded DNA.

**“a single bead capable of hybridizing to the fragment”**

<b>Plaintiff</b> “a bead that has the attributes required to hybridize to the fragment of DNA and which is not hybridized to the fragment at the time of its delivery into the aqueous microreactor”
<b>Defendant</b> “a single bead capable of binding to the fragmented deoxyribonucleic acid molecule”
<b>Court</b> “a single bead capable of binding to the fragment of deoxyribonucleic acid”

The Court agrees with 454 and the Board that a single bead need not be separate from, and not yet bound to, the fragment in order to be “capable of hybridizing.” (*See* D.I. 23-4 Paper 236 at 5) (“Certainly, a bead that is bound to a fragment has the capability to bind the [sic] fragment, as evidenced by the binding itself.”) (*see also* D.I. 50 at 10-13) The broadest reasonable interpretation of the plain and ordinary meaning of this limitation requires only that the bead be *capable* of hybridizing. *See Davis*, 998 F.2d at 968 (“Interference counts are given the broadest reasonable interpretation possible, and resort to the specification is necessary only when there are ambiguities inherent in the claim language or obvious from arguments of counsel.”) (internal quotation marks and citations omitted). A bead that is already hybridized is obviously *capable* of hybridizing (otherwise it would not have hybridized).

The Court rejects 454’s construction, however, because 454 again relies on its flawed inclusion of the “fragmented” DNA language first found in step (a). This renders 454’s proposed construction overly narrow.

JHU agrees that the word “binding” is the same as “hybridizing” in the context of this disputed term. (*See* Tr. at 27) Therefore, the Court will use the clearer “binding” in its

construction.

Finally, the Court agrees with JHU to the extent that its construction requires the bead to be capable of binding to the *fragment* of DNA, as is clear from the claim language, rather than to any particular “molecule” of the DNA, as 454 proposes. It is unclear whether this is a meaningful dispute between the parties, as both parties agree that the “aqueous microreactors” comprise a single *molecule* of DNA, a single bead, and reagents. (*See* Tr. at 26; *see also* 454’s proposed construction) In any event, the Court will omit “molecule” from its construction, since its omission more closely comports with the plain and ordinary meaning of the claim language.

### **III. CONCLUSION**

The Court construes the disputed terms as explained above. An appropriate Order follows.

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

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JOHNS HOPKINS UNIVERSITY,	:	
	:	
Plaintiff,	:	
	:	
v.	:	C.A. No. 13-1853-LPS
	:	
454 LIFE SCIENCES CORPORATION,	:	
	:	
Defendant.	:	

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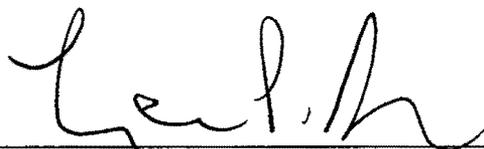
**ORDER**

At Wilmington, this 24th day of August, 2015:

For the reasons set forth in the Memorandum Opinion issued this date,

IT IS HEREBY ORDERED that the disputed claim terms are construed as follows:

Claim Term	Court's Construction
<b>generating a plurality of molecules of a fragment of deoxyribonucleic acid</b>	“generating two or more of the same DNA fragment, not merely generating a plurality of DNA fragments overall”
<b>delivering the plurality of molecules of the fragment of deoxyribonucleic acid into aqueous microreactors in a water-in-oil emulsion such that a plurality of aqueous microreactors comprise a single molecule of the fragment of deoxyribonucleic acid, a single bead capable of hybridizing to the fragment of deoxyribonucleic acid, and reagents necessary to perform deoxyribonucleic acid amplification</b>	No construction necessary
<b>deoxyribonucleic acid / DNA</b>	“a nucleic acid molecule comprising deoxyribonucleotides”
<b>a single bead capable of hybridizing to the fragment</b>	“a single bead capable of binding to the fragment of deoxyribonucleic acid”



HON. LEONARD P. STARK  
UNITED STATES DISTRICT JUDGE