Nos. 19-2255, -2285

IN THE

United States Court of Appeals for the Federal Circuit

BIO-RAD LABORATORIES, INC., THE UNIVERSITY OF CHICAGO,
Plaintiffs-Appellees,

v.

10X GENOMICS INC.,
Defendant-Appellant.

On Appeal from the United States District Court
for the District of Delaware
No. 1:15-cv-00152-RGA, Hon. Richard G. Andrews

REPLY BRIEF OF 10X GENOMICS INC.

Matthew D. Powers
Robert Lewis Gerrity
TENSEGRITY LAW GROUP LLP
555 Twin Dolphin Drive
Suite 650
Redwood Shores, CA 94065
(650) 802-6000

Azra M. Hadzimehmedovic
TENSEGRITY LAW GROUP LLP
8260 Greensboro Dr.
Suite 260
McLean, VA 22102
(703) 940-5031

E. Joshua Rosenkranz
ORRICK, HERRINGTON & SUTCLIFFE LLP
51 West 52nd Street
New York, NY 10019
(212) 506-5000

Melanie L. Bostwick
ORRICK, HERRINGTON & SUTCLIFFE LLP
1152 15th Street NW
Washington, DC 20005
(202) 339-8400

Elizabeth R. Moulton
ORRICK, HERRINGTON & SUTCLIFFE LLP
1000 Marsh Road
Menlo Park, CA 94025
(650) 614-7400

Counsel for Defendant-Appellant

TABLE OF CONTENTS

Page

TABLE OF CONTENTS
(continued)

Page

TABLE OF AUTHORITIES

Page(s)

Cases

Statutes

INTRODUCTION

The central theme of Bio-Rad's brief—uttered in its first sentence and repeated throughout—is just plain false. Dr. Ismagilov was not the one who "created the droplet field." AB3.[1] He conceded, "I was not the first to make droplets in a microfluidic device." Appx29666. Dr. Quake described droplets and reactions more than a year earlier, Appx29695-29696; Appx29699; Appx29776, and Dr. Ismagilov admitted that his patent copied huge swaths from Quake, Appx29759-29761; OB21. No one suggested that Dr. Ismagilov's patents solved the technological challenges necessary to enable the single-cell technology at the heart of 10x's products. Appx29781; OB14-15.

Despite Bio-Rad's repeated assertions, the Ismagilov patents are therefore not "foundational" to the field or to 10x's products. AB4; *see* AB6, 36, 47. As the district court observed, Bio-Rad's technical "expert didn't come close to saying" the patents were foundational. Appx29985. Bio-Rad's damages expert disavowed that "the Chicago patents are required to do reactions in droplets." Appx30117-30118. And the court

[1] We cite to 10x's Opening Brief as "OB" and Bio-Rad's Answering Brief as "AB."

struck a Bio-Rad executive's testimony on that point, Appx29574, instructing Bio-Rad's counsel, "you can't rely on what she said to argue later on that [the patents] are foundational," Appx29600; Appx29985-29986. Bio-Rad cannot overcome the clear record by repeatedly quoting a stray, unsupported statement in the injunction order, intended to convey an entirely different point. Appx63-64. With no support for its "foundational" mantra, Bio-Rad's arguments on damages and injunction evaporate.

Bio-Rad barely tries to defend the infringement verdict. While exalting the verdict, Bio-Rad ignores the numerous legal authorities that make clear that Bio-Rad's infringement theories never should have gone to the jury in the first place. Because 10x does not infringe any of the three patents as a matter of law, the Court should reverse. At a minimum, 10x is entitled to a new trial.

ARGUMENT

I. 10x Does Not Infringe The '083 Patent As A Matter Of Law.

A. 10x's fluorinated microchannels cannot be equivalent to the claimed "non-fluorinated microchannel."

Bio-Rad's equivalents theory is barred as a matter of law by prosecution history estoppel and vitiation. OB31-40. Bio-Rad responds

with non sequiturs that "10x added negligible fluorine" "[m]id-litigation" and did "not intend[] to change the behavior of its products." AB15. But "intent plays no role in the application of the doctrine of equivalents," and equivalence is not about the impossible task of "distinguish[ing] between the intentional copyist making minor changes to lower the risk of legal action and the incremental innovator designing around the claims." *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 36 (1997). What matters are the objective understandings of *the patentee's* claims and *the patentee's* public pronouncements about their scope.

1. Prosecution history estoppel precludes Bio-Rad's equivalence theory.

Bio-Rad does not dispute that, in amending their claims to overcome Quake's disclosure of fluorinated microchannels, the inventors presumptively surrendered the now-claimed equivalent of fluorinated microchannels. OB32-36. Bio-Rad stakes its entire case for infringement by equivalents on the argument that "the rationale underlying the narrowing amendment [bore] no more than a tangential relation to the" accused equivalent. AB20. But when the whole point of "the narrowing amendment" was to distinguish fluorinated

microchannels, whether there is fluorination in the accused product is "directly relevant"—not "peripheral"—to the amendment. *Festo Corp. v. Shoketsu Co.*, 344 F.3d 1359, 1369 (Fed. Cir. 2003).

Festo supplies two doctrinal routes in support of that conclusion, and Bio-Rad addresses neither. First, *Festo* held that a narrowing limitation that is the opposite of the equivalent could not be dismissed as "tangential." *Id.* at 1371-72. Second, the amendment "is not tangential" as a matter of law because Quake *contained* the equivalent in question. *Id.* at 1369. Quake's disclosure encompassed *all* fluorinated microchannels—whether fluorinated a little or a lot. Quake specifically disclosed microchannels that, like the accused equivalents, are manufactured from (not just later coated with) fluorinated material. OB33-35. Bio-Rad does not even try to analogize to a single case finding an amendment tangential. That is because this case is unlike those where this Court has found tangentiality—where "[t]here [wa]s *no indication* in the prosecution history of any relationship between the narrowing amendment and [the accused equivalent]." *Insituform Techs., Inc. v. CAT Contracting, Inc.*, 385 F.3d 1360, 1370 (Fed. Cir. 2004) (emphasis added).

Instead of addressing the law, Bio-Rad rewrites the claim to delete "non-fluorinated" and substitute "microchannel with negligible fluorine," or "walls [that] are chemically different from fluorinated surfactants." AB20-21. But what matters is what *the inventors* actually said and did to overcome the prior art. *Festo*, 344 F.3d at 1369-70; *see Pharma Tech Sols., Inc. v. LifeScan, Inc.*, 942 F.3d 1372, 1380 (Fed. Cir. 2019). What they said to the examiner was that they were distinguishing Quake because Quake "does not disclose or suggest the elements of the amended claims of a non-fluorinated microchannel." Appx16640-16641. And what they did was insert "non-fluorinated" as a limitation. The inventors could have proposed claims with "microchannels sufficiently fluorinated to achieve X," or "microchannels with less than X% fluorine." By instead rewriting their claim to encompass only "non-fluorinated" microchannels, they surrendered the right to accuse microchannels containing fluorine—at whatever level and for whatever purpose. *See Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858, 867-68 (Fed. Cir. 1993).

2. Claim vitiation independently bars Bio-Rad's equivalence theory.

Bio-Rad's primary argument on vitiation is that equivalence is a jury question. AB23. But it ignores the many cases we cited holding that diametric opposites like "fluorinated" and "non-fluorinated" cannot, as a matter of law, be equivalents. OB36-40. It is not enough to offer doubletalk like "[t]he opposite of a non-fluorinated microchannel is a microchannel with enough fluorine to behave like a fluorinated microchannel." AB23. No, the opposite of "non-fluorinated" is "fluorinated." If it were permissible to recast opposites that way, all those cases would have come out differently.

Bio-Rad repackages this same assertion as an argument that 10x's microchannels are equivalent to non-fluorinated microchannels because the difference is "technologically meaningless." AB15. Bio-Rad again ignores that in each of the cases about opposites, this Court rejected equivalents as a matter of law, without exploring whether the accused product functioned differently. Indeed, one of those cases expressly rejected as irrelevant the very same argument—that the accused equivalent *functioned* like the claimed element. OB38-39 (discussing

Novartis Pharm. Corp. v. Abbott Labs., 375 F.3d 1328, 1337-39 (Fed. Cir. 2004)).

Contrary to Bio-Rad's insinuation (AB23), this Court did not somehow override all these cases about opposites in *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1356 (Fed. Cir. 2012). *Deere* recognized and agreed with the Supreme Court's statement that "if prosecution history estoppel [applies] or if a theory of equivalence would entirely vitiate a particular claim element," then "the court" should remove the case from the jury and "render[]" judgment, because "there would be no further *material* issue for the jury to resolve." *Warner-Jenkinson*, 520 U.S. at 39 n.8.

Nor did *Deere* adopt some general rule that the equivalence inquiry is never "a 'binary' choice in which an element is either present or 'not present.'" AB23 (quoting *Deere*, 703 F.3d at 1356). Bio-Rad does not dispute our point (OB39) that *Deere* actually reaffirmed cases rejecting equivalents that are the "'antithesis of the claimed structure.'" *Deere*, 703 F.3d at 1356-57. *Deere* distinguished those cases because *the particular claim term* before it—"into engagement with"—was not binary language (and thus not the opposite of "indirect contact"). *Id.* So

Deere teaches that only binary claim terms get binary treatment. The term "non-fluorinated" is binary, so it is controlled by the precedents about opposites that Bio-Rad ignores. OB36-40.

3. Bio-Rad's literal infringement claim is waived and meritless.

While glorifying the jury's equivalents finding, Bio-Rad simultaneously argues that the jury was unreasonable in rejecting literal infringement. Bio-Rad argues that the only reasonable verdict is that the fluorine added to 10x's chips was a "impurity or contaminant," so that the chips are "non-fluorinated." AB16-18.

Bio-Rad waived that argument twice over by failing to file either a Rule 50(a), Appx26337-26339, or 50(b) motion, which "precludes appellate review of" the issue. *Biodex Corp. v. Loredan Biomedical, Inc.*, 946 F.2d 850, 862 (Fed. Cir. 1991); *see Williams v. Runyon*, 130 F.3d 568, 570-72 (3d Cir. 1997) (appellee's alternative ground for affirmance ordinarily waived by failing to raise it in Rule 50 motion).

As Bio-Rad realized below, it was reasonable for the jury to conclude 10x's current microchannels do not literally infringe because they are "composed of a material that includes fluorine atoms" that are not an "impurit[y] or contaminant[]." Appx8872 (claim construction).

Bio-Rad does not prove otherwise with lengthy quotations from its own expert. AB16-17. The jury was entitled to credit countervailing expert testimony that a person of skill in the art would not view a material containing quintillions of fluorine atoms to be "contaminant[s] or impurit[ies]." Appx30542-30544; Appx30553 ("A chemist like myself would know … all of those compounds are fluorinated compounds.").

B. All of 10x's products lack a "plug-fluid/microchannel wall interface" and therefore cannot infringe.

Bio-Rad admits that, in 10x's products, "no interface actually exists" between the plug-fluid and the microchannel wall. AB25. So the jury verdict must be reversed if the '083 patent requires such an interface. It plainly does. Everyone agrees that the claim says that the "surface tension at the plug-fluid/microchannel wall interface" must satisfy a specified condition (i.e., it must be "higher than surface tension at the plug-fluid/carrier fluid interface"). Appx369 73:16-21. The only way that surface tension *at* that interface could satisfy that condition is if the interface "actually exists."

Bio-Rad rewrites the claims when it insists that they require that "an actual physical interface … should *not* exist." AB25. For this counterintuitive proposition, Bio-Rad focuses on the phrase before the

interface element, asserting that "[t]he claims merely recite that a 'fluorinated surfactant' be present at a high enough concentration so that the 'surface tension'" at that key interface satisfies the stated condition. AB24. The claims do not "*merely* recite" that, they *also* recite that. The "surfactant … concentration" is *how* the claimed invention achieves the stated condition. Bio-Rad does not explain how that term *overrides* the interface element a few words later.

Bio-Rad then points to language even earlier in the claim, reciting that the plug is "substantially encased by the carrier-fluid." Appx369 73:17-18. That language cuts the other way: If a plug is "substantially encased," then it is not *entirely* encased, and there is still some contact with the channel wall to create the claimed interface. 10x's droplets are "fully encased by the carrier fluid," Appx29834, so they do not touch the wall at all.

The specification further undermines Bio-Rad's position. Nothing in the specification says that the goal "is to *prevent* the formation of an actual interface," or that "when the claimed surface tension relationship is achieved … there will *not* be a plug-fluid/channel wall interface." AB25. The specification, like the claim, assumes that the two *will*

touch. The surfactant simply ensures that when they do touch, the plugs "do not *stick* to the channel walls." Appx343 21:1-2 (emphasis added). And the passage Bio-Rad paraphrases merely explains that if the surface-tension condition is not satisfied, "plugs tend to adhere to the channel walls and do not undergo smooth transport." Appx342 20:41-63.

Bio-Rad makes the same mistake when it asserts that 10x's expert "Dr. Huck … took the opposite position." AB26. Neither the block-quoted testimony from Dr. Huck nor Bio-Rad's parentheticals say that the claims require no interface. In fact, Dr. Huck testified that one *cannot* determine whether the interface element is met simply by observing that the droplets do not touch the channel wall. Appx30548-30549.

II. 10x Is Entitled To Judgment Of Non-Infringement Of The '407 And '193 Patents As A Matter Of Law.

A. The preamble is limiting.

1. Like the district court, Bio-Rad barely addresses the three guideposts this Court has established for determining whether a preamble is limiting. OB45-49. *First*, the claims rely on their respective preambles to provide antecedent bases for "*the* microfluidic

system" and "*the* reaction." OB45-47. Numerous cases hold that this verbal device "communicates the drafter's intention to treat the preamble as limiting." OB46. Bio-Rad does not distinguish—or even acknowledge—these cases.

The omission is glaring because those cases are so instructive. For example, in *NTP, Inc. v. Research In Motion, Ltd.*, this Court held that, "based on th[e] antecedent relationship," a preamble reciting "[a] system for transmitting … information … to at least one of a plurality of destination processors in the electronic mail system" limited the claim term "the plurality of destination processors" to those that existed "in the electronic mail system." 418 F.3d 1282, 1305-06 (Fed. Cir. 2005).

Another notable omission is Bio-Rad's refusal to defend the district court's rationale that "[n]othing in the body of the claims further limits the location of the reaction." Appx29426-29427. Bio-Rad does not dispute that, by that logic, no preamble would ever be limiting. OB50. Instead, Bio-Rad substitutes its own non sequitur: that "the body of the claims is complete" because it "identifies the location of the reaction" as being in the plugs. AB28-29. But the question is whether

the preambles further limit that location to the plugs while they are "in the microfluidic system." Bio-Rad assumes the answer is no, without ever saying why.

Second, consistent with the specification, the preambles identify where "the reaction" must occur—in the "microfluidic system." OB47-48. Bio-Rad incorrectly responds that the capillary tube example in the patents is a reaction outside of the microfluidic system. AB31-32. On the contrary, the patents explain that "a microfluidic device *of the present system* can include … further capillary tubing suitable for collecting plugs ('the capillary device'; FIG. 46)." Appx283 59:18-20 (emphasis added). Reactions in plugs in a capillary tube therefore can be "reaction[s] in plugs in a microfluidic system," as required by the claims. Appx292 78:54-55.

Third, in the very office actions allowing these claims, the examiner amended both the preambles and the titles to specify that the reactions are conducted "in plugs in a microfluidic system." OB48. Bio-Rad objects that the location of the reaction could not be "significant for allowance of the patents" because "[t]here is no prior art showing off-chip droplet reactions." AB32. But a prior art comparison is not the

patent examiner's only obligation; she must also ensure that the claims satisfy the requirements of 35 U.S.C. § 112. The Ismagilov patents "don't, and they can't" "teach physically removing droplets from microchannels to conduct reactions outside of the microfluidic system." Appx30525. The examiner's addition of the disputed language reflects a desire to anchor the claims in the teachings of the specification.

2. Instead of addressing the arguments we did make, Bio-Rad offers a lengthy rebuttal to an argument we did not make: "that, because the preamble uses terms later included in the body, the entire preamble is a limitation." AB29. We explicitly acknowledged (OB50-51) that a court may construe a preamble as only partially limiting in appropriate cases, like *TomTom, Inc. v. Adolph*, 790 F.3d 1315 (Fed. Cir. 2015). Our point—which Bio-Rad never addresses—is that *this* is not an appropriate case for differential treatment because this preamble lacks the feature that made the separation possible in *TomTom*. The preamble in *TomTom* contained two "unrelated" clauses that the parties *stipulated* would be construed "separately." 790 F.3d at 1323-24; *see* Fed. Cir. No. 14-1699, Dkt. 20 at 14-15. One of those separable clauses ("generating") merely stated a "purpose or intended

use" of the invention and was not limiting. 790 F.3d at 1323-24. These preambles are different. The district court here carved up a single phrase—"*conducting* **a reaction in plugs** *in a* **microfluidic system**," Appx29428—so that the *same* phrase alternates from *not limiting* to **limiting** to *not limiting* back to **limiting**. No patentee would purposely draft a claim that way, and this Court has never condoned such a hopscotch approach to construing preambles. *See Blue Calypso, Inc. v. Groupon, Inc.*, 93 F. Supp. 3d 575, 594 (E.D. Tex. 2015) (distinguishing *TomTom* because "the language relied upon for antecedent basis is intertwined with the entireties of the preambles such that the preambles cannot be parsed into limiting and non-limiting portions"). And none of that language merely provides an "intended use or purpose" of the invention—limiting the location of the reactions to plugs *in* the microfluidic system is necessary to tie the claims to the specification and prosecution history. *Supra* 13-14.

B. 10x does not infringe as a matter of law.

With the preambles properly understood as limiting, 10x cannot infringe as a matter of law. The only biological reactions occur in the thermal cycler, and that instrument is not part of 10x's microfluidic

system. OB51-53. Bio-Rad fails to demonstrate that a reasonable jury could reject either proposition.

Bio-Rad does not deny that its own expert agreed that the "microfluidic system" is comprised of the chip, the reagents, and the controller, Appx29812; Appx29814, and the thermal cycler is a completely separate instrument, Appx30170-30172. Bio-Rad does not overcome any of this by citing 10x documents depicting the thermal cycler as part of the "workflow[]" or "[p]latform." AB33-34. "[P]roduct literature" cannot "control[] whether the accused product falls within the scope of the claim." *Plastic Omnium Advanced Innovation & Research v. Donghee Am., Inc.*, 943 F.3d 929, 936 (Fed. Cir. 2019). Listing a device in the workflow does not make it part of what the patent describes as the "microfluidic system." Thus, any reaction that occurs in the thermal cycler—like 10x's barcoding reactions—does not meet the claim limitation.

As a back-up, Bio-Rad points to a different reaction—dissolution of the plastic acrylamide gel beads—that it says occurs on the chip. AB34-35. But that reaction is irrelevant, because it is not "biological" (or "autocatalytic"). OB53. Under the claim construction, a "reaction"

must be a "physical, chemical, biochemical or biological *transformation*," Appx8871 (emphasis added), of a "biological molecule," Appx293 79:9-11. Dissolving the plastic gel beads simply "releases" the DNA, but does not in any way transform the DNA, Appx30584; Appx29848-29849—any more than you transform a potato chip by opening the bag and spilling its contents into a bowl. Appx30593; Appx30597-30598.

Bio-Rad also suggests that the jury somehow already decided this issue against 10x, even though "the Court's [claim] construction precluded 10x's 'microfluidic system' defense." AB33. Bio-Rad's logic seems to be that 10x made a different argument to the jury—that the reactions must occur "on the chip." But Bio-Rad concedes that "the District Court [also] precluded 10x" from making that argument. *Id.* So there is no reason to think the jury decided it.

Accordingly, 10x is entitled to judgment of noninfringement as a matter of law. *Saffran v. Johnson & Johnson*, 712 F.3d 549, 563-64 (Fed. Cir. 2013). At minimum, 10x is entitled to a new trial under the correct claim construction. *Omega Patents, LLC v. CalAmp Corp.*, 920 F.3d 1337, 1343 (Fed. Cir. 2019).

III. The Damages Award Should Be Vacated.

One significant indication of the weaknesses in Bio-Rad's damages evidence is that it has recast its damages theory on appeal. Below, the argument was that it was appropriate for Mr. Malackowski to cherry pick the three licenses with the highest rates simply because the "right royalty rate[] is 15% for competitors." Appx30063; *see* Appx17058-17063. Now it argues "[t]he evidence at trial established overwhelmingly that *for foundational technology* a 15% royalty rate is appropriate for competitors." AB4 (emphasis added); *see* AB6, 9, 36, 44, 47.

The critical factual premise of Bio-Rad's new argument is that the Ismagilov patents were "foundational," that they "created the droplet field by teaching how chemical reactions could be performed in droplets." AB47. As the district court noted, Bio-Rad's technical "expert didn't come close to saying" the patents were foundational, Appx29985; *supra* 1. And no reasonable juror could have accepted that the patents were foundational to 10x's products, given the many technological challenges 10x overcame to perfect single-cell technology. OB12-15.

That is why Bio-Rad never cites the trial record to support its new, critical premise. Instead, it repeatedly quotes the district court's statement that the "patented droplet technology is the foundation of 10X's droplet products." AB36 (quoting Appx63-64). That statement is (1) not accompanied by any record citation, and (2) appears only in the district court's injunction order. Nothing considered by the jury supports it. The court there was not contradicting its earlier observations about the absence of such evidence at trial. It was merely finding a sufficient nexus—"'some connection' between the patented technology and the demand for 10X's products"—for purposes of its injunction analysis. Appx64. That is not enough to prove that the *jury* found what Bio-Rad now presents as its essential premise.

In any event, Bio-Rad mischaracterizes our challenge. Our challenge focuses on the fatal flaws—in both inadmissibility and insufficiency—of the evidence *Bio-Rad* presented in support of its notion of a universal 15% competitor rate. Specifically, we are challenging Mr. Malackowski's reliance on three outlier licenses to prove such a universal rate, even though they were neither comparable nor apportioned.

We are not "argu[ing] that, because the [RainDance/Chicago] license was for the same patents, the jury was required to find it the most significant license." AB39. Rather, the RainDance/Chicago license vividly illustrates that Mr. Malackowski's opinion was not intended to "discern the value of the patented technology to the parties in the marketplace when infringement began," but only to "inflate the reasonable royalty analysis with conveniently selected licenses without an economic or other link to the technology in question." *LaserDynamics, Inc. v. Quanta Comput., Inc.*, 694 F.3d 51, 76, 79 (Fed. Cir. 2012).

A. Mr. Malackowski did not rely on comparable licenses.

Before addressing the inadequacies of the three licenses Mr. Malackowski chose, there is a threshold legal question: Who decides whether those licenses are sufficiently comparable to the hypothetical negotiation? Bio-Rad argues that comparability is "best weighed by [the] fact-finders," and that the comparability requirement is satisfied as long as 10x got to cross-examine Mr. Malackowski and the jury got to weigh competing testimony. AB41, 56.

That is not the law. A court must first decide whether Mr. Malackowski's testimony was "sufficiently tied to the facts of the case," *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 591 (1993), and then "must scrutinize the evidence carefully to ensure that the 'substantial evidence' standard is satisfied," *Lucent Technologies, Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1336 (Fed. Cir. 2009). Bio-Rad does not dispute that this Court scrutinized and rejected licenses as not comparable, *see ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 869-70 (Fed. Cir. 2010), and has endorsed numerous other cases excluding expert testimony (or finding it legally insufficient) as inadequately tied to the facts of the case, *see, e.g.*, *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1316-18 (Fed. Cir. 2011). Those are 10x's challenges here: Mr. Malackowski's opinion was so divorced from the facts of the case it should not have been admitted, and regardless it does not support the jury's verdict.

Bio-Rad proves nothing by citing cases where this Court found licenses sufficiently comparable to go to the jury. AB41. A license can be technologically comparable when it addresses "the actual patents-in-suit" or is drawn to "related technology," like "technology leading to the

claimed invention," as in the main case Bio-Rad features, *VirnetX, Inc. v. Cisco Systems, Inc.*, 767 F.3d 1308, 1330 (Fed. Cir. 2014). But the reference licenses here do not. Two address PCR—a completely different technology than single-cell. OB58-60. The other does not even address droplets, Appx29892, which Bio-Rad repeatedly claims are the "foundation" of 10x's technology.

1. The improper admission of the Applera/Bio-Rad license requires a new trial.

Bio-Rad argues that the district court erred in holding that Bio-Rad "failed to present sufficient evidence at trial to establish comparability" of the Applera/Bio-Rad license. Appx29441. But Bio-Rad's effort (AB48-50) to salvage that license is unpersuasive—and consequently the whole verdict must fall.

Comparability. Bio-Rad starts with an argument that evidence about economic comparability could make up for weaknesses in technological comparability. AB48. That is not the law. *ResQNet*, 594 F.3d at 870. A license must be sufficiently comparable along both axes. *Wordtech Sys., Inc v. Integrated Networks Sols., Inc.*, 609 F.3d 1308, 1320 (Fed. Cir. 2010).

On the critical element of technological comparability, Bio-Rad does not dispute any of the key points:

- the Applera agreement was about PCR technology;
- PCR technology was path-breaking in launching the human genome project;
- the Ismagilov patents are not PCR patents; and
- 10x does not do PCR in droplets.

OB58, 60.

Bio-Rad's response is that the specific PCR patent licensed by Applera (Higuchi) was not the PCR patent issued to Nobel laureate Dr. Kary Mullis. AB49. So what? PCR technology is still different from 10x's products, it was still path-breaking, and, as Bio-Rad executive Ms. Tumolo testified, Bio-Rad "needed" the Higuchi patent "to do … realtime PCR." Appx29605.

Remedy. That leaves only the question of remedy. While Bio-Rad tries to distinguish between admissibility and sufficiency (AB51), it misses the larger point: The district court's conclusion that the Applera license was not comparable necessarily means that it should never have gone to the jury. OB58. There was no relevant difference between the

pre-trial record and the trial record such that the license could pass *Daubert* but fail Rule 50.

That means that, at a minimum, 10x is entitled to a new trial unless it is "'highly probable' that the error did not affect the jury's verdict." *Hirst v. Inverness Hotel Corp.*, 544 F.3d 221, 228 (3d Cir. 2008) (citation omitted); *Becker v. ARCO Chem. Co.*, 207 F.3d 176, 206-07 (3d Cir. 2000) (remanding for new trial even though evidence remaining in record could have supported verdict); *ResQNet.com*, 594 F.3d at 869-73 (ordering new trial on damages due to improper reliance on noncomparable licenses).

The introduction of the Applera license was not harmless.[2] The Applera license is the *only* license that even arguably supports applying a 15% royalty rate to 10x's instruments. Bio-Rad's other "comparable" licenses applied only to much less expensive consumables. *See* OB59, 61. Moreover, Bio-Rad's theory rested on an industry-wide 15%

---

[2] Bio-Rad's citation (AB42) to *Summit 6, LLC v. Samsung Electronics Co.,* 802 F.3d 1283 (Fed. Cir. 2015), is inapt. There, this Court did not conduct a harmless-error analysis because the defendant did "not challenge the admission of the … license." *Id.* at 1299.

competitor rate. Two licenses are not enough to establish that theory, so Bio-Rad emphasized all three licenses equally in closing arguments to the jury. Appx30952-30953; Appx31017. Given the thinness of Bio-Rad's evidence—only three out of 18 licenses adopted a rate over 3%, Appx29161; OB54-56—this Court cannot be confident that an error in admitting (or a failure to establish the relevance of) one of those three licenses "'did not affect the outcome of the case.'" *Hirst*, 544 F.3d at 228.

2. The two remaining licenses are not comparable.

AppliedBio/QuantaLife: Bio-Rad provides no explanation for how a 24-cent-per-unit rate applies to a $60,000-$125,000 instrument. OB59. Nor does Bio-Rad address Ms. Tumolo's testimony that AppliedBio covered "basic rights if you want to do PCR," Appx29597, which, as discussed, is nowhere near what the Ismagilov patents taught. *Supra* 23; OB19-23.

Bio-Rad argues that PCR is technologically comparable to the Ismagilov patents merely because PCR *could* be performed in droplets. AB47. PCR could be performed in test tubes too. But that does not mean that some minor improvement on the test tube is technologically

comparable to an improvement to PCR. Moreover, 10x was not bargaining for the right to do PCR in droplets. OB60. Bio-Rad also makes the related assertion that the Ismagilov patents are comparable because they "improved performance of PCR." AB47-48. Bio-Rad cites nothing in the Ismagilov patents that supports this statement. Dr. Sia's allegations (Appx29894-29895) of "loose or vague comparability between different … licenses does not suffice." *LaserDynamics*, 694 F.3d at 79.

Caliper/RainDance: Given Bio-Rad's central theme that droplets are the foundation of 10x's products, it is incongruous to contend that the Caliper/RainDance license is comparable. It covered 550+ microfluidics patents, but, per Bio-Rad's technical expert, "not droplets." Appx29892. By Bio-Rad's own reasoning, the Caliper license "differ[s] substantially from the hypothetical negotiation scenario," should not have been admitted and cannot support the jury's damages award. *Lucent*, 580 F.3d at 1330.

Regardless, the Caliper patent portfolio is not technologically similar to the narrowly focused Ismagilov patents (OB62) and nothing in Bio-Rad's brief persuasively equates them. For example, Bio-Rad

points to Ms. Tumolo's vague statements that the entire Caliper portfolio "was a small part of the value of [RainDance's] products … in my mind, yeah," but also RainDance "couldn't put [its] products on the market … unless they had the Caliper patents." Appx29592 (cited at AB43). Ms. Tumolo did not tell the jury what technology RainDance used from the Caliper portfolio. Appx29591-29592. So her testimony provided the jury with no support for finding the Caliper technology was sufficiently similar to the Ismagilov patents to be a relevant comparator.

And Mr. Malackowski could not have "explained the role of the technical comparability" (AB44); he is not a technical expert. He simply asserted that only two Caliper patents were used in RainDance's product. *See* Appx30076-30079; Appx30135.

Bio-Rad does not dispute that the Caliper license applies only to consumables, or that the non-comparable Applera license is the only license that applied a 15% rate to instruments. OB61. Bio-Rad says 10x did not preserve this challenge to the Caliper license. AB45. But 10x consistently argued that a lower rate should apply to instruments, as in the Chicago/RainDance license (Appx32717), and that Mr.

Malackowski should not have applied a single rate to all of 10x's products. *E.g.*, Appx17002-17004 (*Daubert*).

Finally, Bio-Rad has no persuasive response to our argument that it was improper to treat the Caliper license as a competitor license because, by Bio-Rad's own admission, RainDance and Caliper were never going to compete and RainDance never paid 15%. OB63-64. All Bio-Rad says is that the parties negotiated that license "at arms-length." AB44. But that does not address our point that the result is meaningless because RainDance would not have cared what competitor rate was in the license.

Even accepting Bio-Rad's position that the 15% rate reliably reflected the parties' valuation, that rate applied *only* if the licensee's sales "directly and demonstrably impact" the patentee's sales. Appx30620; OB61. A patentee would demand much more for that right to cut so severely into its business than for a license simply authorizing some minimal level of competition. But even if a jury could believe that RainDance *someday* hoped to compete (AB36-37) there is no evidence that it would have held out for that exacting premium or that 10x would have agreed to it at the time of the hypothetical negotiation.

Chicago/RainDance: All that remains is Bio-Rad's excuse for Mr. Malackowski's decision to dismiss the only license in the record for these very patents. Bio-Rad's main assertion is that the license is from 2008 when "there was no droplet industry." AB38. Bio-Rad ignores that Chicago and RainDance renegotiated the license in April 2013 for the same 1% and 3% rates—by which point the "droplet industry" was in full force. *See* OB24; Appx30096-30097. Bio-Rad provides no legitimate justification for Mr. Malackowski to ignore the Chicago/RainDance license.

For all these reasons, Mr. Malackowski's opinion should have been excluded as unreliable, and it is insufficient to support the verdict.

B. Mr. Malackowski did not apportion damages.

Bio-Rad's apportionment argument is one big paradox. Bio-Rad does not dispute that it was required to apportion damages to "the value attributable to the infringing features of the product, and no more." *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1226 (Fed. Cir. 2014); OB65-66; Appx17015-17016. That requires more than simply asserting all the licenses dealt with "foundational" technology, because whether

"viewed as valuable, important, or even essential," the patented feature must be individually valued. *LaserDynamics*, 694 F.3d at 68.

Bio-Rad concedes that Mr. Malackowski's "apportionment" theory required proof that the relative value of the licensed technology to the licensed products in the "comparable" licenses equaled the relative value of the Ismagilov patents to 10x's products. OB66; AB53-54. Yet it argues that it had no obligation to provide a "*quantitative* analysis for every comparable license." AB52. But Mr. Malackowski's theory was structured as an equation that necessarily requires the sort of "quantitative" parsing Bio-Rad eschews. Here, merely presenting "qualitative testimony that an invention is valuable—without being anchored to a quantitative market valuation—[is] insufficiently reliable." *Commonwealth Sci. & Indus. Research Org. v. Cisco Sys., Inc.*, 809 F.3d 1295, 1302 (Fed. Cir. 2015).

Contrary to Bio-Rad's assertion (AB52-53), this Court did not reject "quantitative … parsing" in *Elbit Systems Land & C4I Ltd. v. Hughes Network Systems, LLC*, 927 F.3d 1292 (Fed. Cir. 2019). *Elbit* confirms that "'apportionment is required,'" even when relying on comparable licenses. *Id.* at 1301. In *Elbit*, the comparable settlement

license was "the closest" comparator to the technology covered by the asserted patents. *Id.* at 1300. It concerned "a comparable component of a larger product or service." *Id.* at 1300-01. And the expert did make a *quantitative* adjustment (of 20%) to the comparator. *Id.* at 1301. None of that is analogous to what Mr. Malackowski did with the three licenses he selected here: They were not to "the closest" technology (the Chicago/RainDance license was), none involved 10x or single-cell products, and Mr. Malackowski refused to perform any quantitative analysis.

Bio-Rad's approach to apportionment is not just "non-quantitative," but nonexistent. Bio-Rad presented no competent evidence to support Mr. Malackowski's quadruple coincidence that the apportionment "built into" the three cherry-picked licenses matched the hypothetical negotiation. AB52. For example, Bio-Rad points to Ms. Tumolo's testimony. But she was not a technical or economic expert, and her testimony was limited to vague statements that the licensee provided "the big idea," Appx29592, "had to do a lot of heavy lifting," Appx29606, or created "by far the value in my mind," Appx29604-29605; OB68-70. Even when Ms. Tumolo did mention a feature she believed

the licensee contributed—as she did with the "optical bench" for the non-comparable Applera license, Appx29606—she provided no basis for the jury or Mr. Malackowski to compare the value of that feature to the value of the many non-infringing features in 10x's products.

Since Ms. Tumolo did not (and could not) opine on how to apportion damages, Bio-Rad had to show that Mr. Malackowski provided the missing information. Bio-Rad asserts that Mr. Malackowski "explained …, on a license-by-license basis, why the 15% rates in the competitor agreements did not need adjustment for technical comparability." AB54. But it does not address the flaws we laid out license-by-license. OB68-70. It just broadly asserts that "Mr. Malackowski considered" a variety of other inputs "among other sources," without citing a single document that performs the missing analysis. AB54. Then Bio-Rad points (AB55) to Mr. Malackowski's demonstrative, but does not dispute that the jury could not rely on it, and it is not part of the record on appeal (OB70). This is the classic case in which the "jury is simply left to speculate or adopt the expert's unsupported conclusory opinion." *Exmark Mfg. Co. v. Briggs & Stratton Power Prods. Grp., LLC*, 879 F.3d 1332, 1350 (Fed. Cir. 2018).

C. 10x preserved these challenges.

Bio-Rad makes several assertions of waiver. AB36, 38, 45. While acknowledging that our appeal explicitly challenges both the admissibility and sufficiency of Mr. Malackowski's testimony, Bio-Rad argues that the admissibility challenge is forfeited for failure to reference "the pre-trial admissibility record for the District Court's *Daubert* ruling." AB36. That is wrong. *E.g.*, OB55, 57 (citing *Daubert* motions and expert report). 10x's arguments apply equally to both challenges. In all relevant respects, Mr. Malackowski's expert report and trial testimony were flawed for the same reasons: reliance on non-comparable licenses and lack of apportionment. Appx17012-17016 (*Daubert*); Appx27648-27654 (50(b)). And the district court's rationale for admitting the testimony (after initially rejecting it) was no more detailed than its rationale for sustaining the verdict. Appx25650-25653; Appx29441-29446.

Bio-Rad also repeatedly asserts that 10x's *Daubert*, 50(a), or 50(b) motions did not make a particular point with the same precision. But those motions do not have to, and as a practical matter never could, cover each point with the detail of an appellate brief. All 10x was

required to do was to "present[] the essence of its present arguments to the district court sufficiently to preserve those arguments for appeal." *Wm. Wrigley Jr. Co. v. Cadbury Adams USA LLC*, 683 F.3d 1356, 1360 n.3 (Fed. Cir. 2012). 10x's motions far exceeded that standard. *E.g.*, Appx17000-17004, Appx17010-17016 (*Daubert*); Appx22867-22878 (supplemental *Daubert*); Appx26450-26453 (50(a)); Appx27648-27654 (50(b)).

IV. The Permanent Injunction Should Be Vacated.

A. Bio-Rad did not show irreparable harm.

Bio-Rad does not dispute that it "must make a clear showing that it is at risk of irreparable harm." *Apple, Inc. v. Samsung Elecs. Co.*, 678 F.3d 1314, 1325 (Fed. Cir. 2012) (citation omitted); OB74-75. Bio-Rad cannot establish that showing merely by asserting that "[c]ompetition normally establishes irreparable harm." AB57; *see eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 393-94 (2006); *Nutrition 21 v. United States*, 930 F.2d 867, 871 (Fed. Cir. 1991).

That blanket assertion is especially problematic here, because Bio-Rad *still* does not dispute that only one of 10x's five products—Single

Cell 3′—could even possibly compete with Bio-Rad's ddSEQ, and *none* competes with ddPCR, OB8, 16-17, 74-76; Appx29543:

10x Product	Bio-Rad's Purported Competing Product	New Design?
Single Cell 3′	ddSEQ	✓
Single Cell V(D)J	✗	✓
Single Cell ATAC-seq	✗	✓
Single Cell CNV	✗	✗
Linked-Reads	✗	✗

Bio-Rad cannot mask the gap by repeatedly insisting that "10x admitted its infringing single cell droplet product … directly competes" with ddSEQ. AB58 (emphasis omitted). The statement applied only to that one product. The limited competition on Single Cell 3′ could not establish irreparable harm where "[e]ven if the performance of the BioRad product were improved by a factor of 10, the result would still be far inferior to that of 10X." Appx28887; *see* OB16-18, 74-76.

Bio-Rad's citations (AB62) to its corporate representative do not overcome the clear evidence that the market has rejected its product. OB17. Bio-Rad cannot dispute that this would ordinarily refute any claim of irreparable harm. Instead, Bio-Rad tries to make a virtue of this vice by insisting that this poor reception actually "*proves* the irreparable harm." AB58. Bio-Rad distorts the undisputed timeline

when it attributes its market failure to 10x's supposed "head start … due to its willful infringement." AB58. The entire time 10x and Bio-Rad were developing their single-cell products, neither company had a license to the Ismagilov patents. *See* OB19, 24. 10x could not have been "using [Bio-Rad's] technology," Appx29581, because Bio-Rad did not own any technology 10x needed.

Bio-Rad does not establish irreparable harm by quoting long swaths of Ms. Tumolo's declaration, without addressing any of 10x's substantive criticisms. *Compare* AB59-60 *to* OB74-75. She cannot create competition where there is none. Vague assertions of "increas[ed] … marketing and sales costs," "depress[ed] pricing," and "tarnished" "reputation" cannot qualify as concrete evidence of irreparable harm. AB60 (quoting Appx28498-28501).

Nor does Ms. Tumolo overcome the flaws in the district court's statement that Bio-Rad and 10x compete over "products that perform genetic analysis on a droplet platform." AB62; Appx61. It does not matter that *Bio-Rad* "formed [a] technology center around droplets." AB62. Bio-Rad's choices for how it organized its internal operations

cannot justify an injunction against products that cannot irreparably harm Bio-Rad.

Enjoining 10x will not fix Bio-Rad's market failure. 10x's sales (for three of five product lines) will go to 10x's new noninfringing products. For the other two, scientists will be left in the lurch, because no company offers similar products. OB16, 78.

B. The balance of harms and the public interest weigh against the injunction.

1. Bio-Rad does not dispute the key facts about the balance of harms. The injunction cuts off two of 10x's five product lines without even considering that 10x has not yet designed an alternative for those products. Meanwhile, ddSEQ is one of 9,000 Bio-Rad products, accounting for just 0.2% of revenues. Appx65-66.

Bio-Rad tries to minimize the harm to 10x by downplaying Linked-Reads and CNV. AB63-64, 66. Bio-Rad cannot deny that researchers are clamoring for CNV. *See* Dkt. 9 at 20-23. And while Linked-Reads's sales are relatively modest, it is an important tool used, for example, to research genetic precursors to colon cancer. Appx28852.

10x's redesign does not mitigate the harm from the injunction. AB64-66. First, launching a redesign to protect 10x's business does not

justify an otherwise unwarranted injunction. Second, Bio-Rad is wrong in asserting that 10x has "not bothered to" redesign Linked-Reads and CNV. AB66. 10x explained that its ongoing efforts to redesign CNV "are far from complete," and there are "substantial technical hurdles" for Linked-Reads. Dkt. 10.03(¶¶4, 5); Appx28862.

2. Instead of proving that the public interest would not be disserved by an injunction, Bio-Rad falls back on the district court's rationale, which ignores (1) the lack of a redesign for two of 10x's five product lines and (2) the need for scientists to replicate experiments on the same equipment. *See* OB78-79.

A dozen researchers—including researchers using CNV—explained the need for 10x's products. Appx28877-28915; Dkts. 9.05-9.08. The Broad Institute explained 10x's single-cell technology is enabling groundbreaking research initiatives like the Human Cell Atlas. Dkt. 31 at 12-13; Appx29211-29227. Bio-Rad says these submissions are "old" and "deficient." AB66-67. But many of the letters specifically refer to CNV, which is quite current. Dkts. 9.05-9.08; Appx28880-28881; Appx28892; Appx28897.

Finally, Bio-Rad says no "on-going scientific research" is enjoined, AB65, but does not address how the injunction stymies scientists who need to replicate research using 10x's accused products. *See* Dkt. 9.06(¶6); Dkt. 31 at 12-18.

The injunction fails to account for the public's interest in ongoing scientific research and should be vacated.

CONCLUSION

The Court should reverse the judgment of infringement and vacate the damages award and injunction or, at a minimum, remand for a new trial.

Respectfully submitted,

/s/E. Joshua Rosenkranz

E. Joshua Rosenkranz
ORRICK, HERRINGTON & SUTCLIFFE LLP
51 West 52nd Street
New York, NY 10019
(212) 506-5000

Melanie L. Bostwick
ORRICK, HERRINGTON & SUTCLIFFE LLP
1152 15th Street NW
Washington, DC 20005
(202) 339-8400

Elizabeth R. Moulton
ORRICK, HERRINGTON & SUTCLIFFE LLP
1000 Marsh Road
Menlo Park, CA 94025
(650) 614-7400

Matthew D. Powers
Robert Lewis Gerrity
TENSEGRITY LAW GROUP LLP
555 Twin Dolphin Drive
Suite 650
Redwood Shores, CA 94065
(650) 802-6000

Azra M. Hadzimehmedovic
TENSEGRITY LAW GROUP LLP
8260 Greensboro Dr.
Suite 260
McLean, VA 22102
(703) 940-5031

Counsel for Defendant-Appellant

December 18, 2019

CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Federal Circuit by using the appellate CM/ECF system on December 18, 2019.

I certify that all participants in the case are registered CM/ECF users and that service will be accomplished by the appellate CM/ECF system.

ORRICK, HERRINGTON & SUTCLIFFE LLP

/s/E. Joshua Rosenkranz
E. Joshua Rosenkranz
Counsel for Defendant-Appellant

CERTIFICATE OF COMPLIANCE

The brief complies with the type-volume limitation of Fed. Cir. R. 32(a) because this brief contains 6,998 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(f) and Fed. Cir. R. 32(b).

This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionally spaced typeface using Microsoft Word 2016 in Century Schoolbook 14-point font.

ORRICK, HERRINGTON & SUTCLIFFE LLP

/s/E. Joshua Rosenkranz
E. Joshua Rosenkranz
Counsel for Defendant-Appellant