IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

BIO-RAD LABORATORIES, INC.

Plaintiffs,

v.

C.A. No. 18-1679-RGA

10X GENOMICS, INC.

Defendants.

JOINT CLAIM CONSTRUCTION CHART

Pursuant to the Scheduling Order (D.I. 27), as amended by the Court's Order entered on December 5, 2019 (D.I. 72), Plaintiff Bio-Rad Laboratories, Inc. ("Bio-Rad") and Defendant 10X Genomics, Inc. ("10X") (collectively, the "parties") hereby respectfully submit the attached Joint Claim Construction Chart at Exhibits A-B. Exhibit A sets forth the parties' agreed upon claim constructions. Exhibit B is a side by side comparison of the parties' proposed constructions and the intrinsic evidence that the parties may rely on in support of their proposed constructions for disputed terms.

Pursuant to Paragraph 7 of the Scheduling Order (D.I. 27), the Parties further provide copies of the patents at issue and the cited intrinsic evidence in support of each party's proposed constructions, as follows:

<u>Exhibit C:</u> U.S. Patent No. 9,562,837

Exhibit D: U.S. Patent No. 9,896,722

Exhibit E: 9/7/2016 Applicant Interview Summary

Exhibit F: 9/9/2016 Response

Exhibit G: 9/14/2016 Applicant Interview Summary

Exhibit H: 3/4/2016 Response

Exhibit I: U.S. Patent Publication No. 2008/0003142

Exhibit J: U.S. Patent Publication No. 2010/0022414

Exhibit K: U.S. Patent Publication No. 2011/0250597

Exhibit L: Baker, Monya. "Clever PCR: more genotyping, smaller volumes." *Nature Methods* 7 (2010): 351-356.

Exhibit M: Excerpts of 722 Patent file history (BRL00000001-BRL00000500)

Exhibit N: Excerpts of 837 Patent file history (BRL00000501-BRL00001705)

Exhibit O: Burns, Mark A. et al. "An integrated nanoliter DNA analysis device." *Science* 282 5388 (1998): 484-7.

Exhibit P: Ismagilov, Rustem F. "Integrated microfluidic systems." *Angewandte*Chemie 42 35 (2003): 4130-2.

Exhibit Q: Mayr, Lorenz Martin and Peter Fuerst. "The Future of High-Throughput Screening." *Journal of Biomolecular Screening* 13 (2008): 443 - 448.

Exhibit R: Mcdonald, J. C. and George M. Whitesides. "Poly(dimethylsiloxane) as a material for fabricating microfluidic devices." *Accounts of chemical research* 35 7 (2002): 491-9.

Exhibit S: Ouellette J. "A new wave of microfluidic devices." *Ind Phys*, 9(4):14-17, 2003.

<u>Exhibit T:</u> U.S. Patent No. 4,683,195

<u>Exhibit U:</u> U.S. Patent No. 4,683,202

<u>Exhibit V:</u> U.S. Patent No. 7,041,481

Exhibit W: U.S. Patent No. 9,074,242

Exhibit X: U.S. Patent No. RE41,780

Exhibit Y: Vogelstein, Bert and Kenneth W. Kinzler. "Digital PCR." Proceedings of

the National Academy of Sciences of the United States of America 96 16

(1999): 9236-41.

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EXHIBIT A - AGREED TERMS

Patent and Claim	Term/Phrase	Agreed Construction	Intrinsic Evidence
U.S. Patent No. 9,562,837, Claims 1, 4, 7-8, 10	Droplet[s]	an isolated portion of a first fluid that is completely surrounded by a second fluid	Not disputed
U.S. Patent No. 9,896,722, Claims 1-3, 5, 14-15, 17			

EXHIBIT B - DISPUTED TERMS

U.S. Patent No. 9,562,837 and U.S. Patent No. 9,896,722		
Term/Phrase: sample		
837 patent, Claims 1, 2		
722 patent, Claims 1, 10, and 14		
Bio-Rad's Proposed Construction and	10X's Proposed Construction and	
Intrinsic Evidence	Intrinsic Evidence	
fluid containing molecules, cells, small molecules (organic or inorganic) or particles	a compound, composition, and/or mixture of interest, from any suitable source(s)	
The claims and specification of the '837 patent, including Col. 26:40-41, and the '722 patent, including Col. 26:48-50.	The specification of the 837 Patent, including, <i>e.g.</i> , 837 Patent, 26:37-43, 5:21-23, 18:46-48, 35:27-30, 21:52-56, 1:50-55, 1:64-66, 2:4-23, 2:35-53, 2:58-3:10, 3:17-31, 3:46-48, 4:29-36, 4:40-56, 5:21-23, 5:61-67, 6:4-14, 7:49-50, 13:8-10, 13:43-45, 14:43-47, 14:64-66, 16:44-17:20, 18:43-59, 19:54-22:27, 24:47-62, 26:33-27:12, 27:39-27:67, 28:44-61, 30:23-25, 35:27-30, 43:65-44:10, 44:45-65, 45:30-34, 48:1-30, 52:26-56, 53:47-65, 54:15-33, 56:17-19, 57:44-58:30, 59:36-47, 60:22-43, 61:2-5, 66:11-29, 69:1-31, 70:50-60, 71:32-36, 71:59-61, 73:9-10, 73:25-49, 74:59-63, 75:37-40, 76:39-77:3, 77:46-50, 78:8-14, 78:43-54, 78:62-66, 79:11-13. 837 Patent Claims, including, <i>e.g.</i> , Claims 1-2, 16-17. The specification of the 722 Patent, including, <i>e.g.</i> , 722 Patent, 26:45-51, 5:21-23, 18:53-57, 21:59-63, 35:33-35, 1:50-55, 1:64-66, 2:4-23, 2:35-53, 2:58-3:10, 3:17-31, 3:46-48, 4:29-36, 4:40-56, 5:21-23, 5:61-67, 6:4-14, 7:49-50, 13:11-13, 13:46-48, 14:47-51, 15:2-4, 16:51-63, 17:5-27, 18:49-22:34, 24:57-25:3, 26:41-27:4, 27:47-28:8, 28:50-67, 30:29-32, 35:32-35, 44:6-17,	

44:57-63, 45:34-51, 48:6-16, 52:35-65, 53:56-67, 54:4-38, 56:23-27, 57:52-54, 58:7-10, 58:26-33, 59:43-54, 60:30-32, 60:40-42, 61:9-12, 66:19-37, 69:12-33, 70:55-67, 71:25-37, 71:60-62, 73:8-26, 74:59-63, 75:37-40, 76:39-77:3, 77:46-50, 78:8-14, 78:43-54, 78:62-66, 79:11-13

722 Patent Claims, including, e.g., Claims 1, 2, 8-10.

The file history of the 837 Patent, including, *e.g.*, BRL00000633-35 (claims); BRL00001544-51, including at 1546, 1550 (September 23, 2015 Response to Office Action); BRL00001612 (March 3, 2016 Interview Summary); BRL00001601-07 (March 4, 2016 Response to Office Action); BRL00001652 (September 1, 2016 Interview Summary); BRL00001666 (September 8, 2016 Interview Summary); BRL00001656-61 (September 9, 2016 Response to Office Action, including Publication No. 2013/0260447 cited therein); BRL00001674-82 (Notice of Allowability).

The file history of the 722 Patent, including, *e.g.*, BRL0000003-06 (Claims); BRL00000482-88 (Notice of Allowance).

Prior art cited during prosecution, including, e.g.,

Vogelstein, Bert and Kenneth W. Kinzler. "Digital PCR." *Proceedings of the National Academy of Sciences of the United States of America* 96 16 (1999): 9236-41.

Ouellette J. "A new wave of microfluidic devices." *Ind Phys*, 9(4):14-17, 2003.

Mcdonald, J. C. and George M. Whitesides. "Poly(dimethylsiloxane) as a material for fabricating microfluidic devices." *Accounts of chemical research* 35 7 (2002): 491-9.

Mayr, Lorenz Martin and Peter Fuerst. "The Future of High-Throughput Screening." *Journal of Biomolecular Screening* 13 (2008): 443 - 448.

Ismagilov, Rustem F. "Integrated microfluidic systems." *Angewandte Chemie* 42 35 (2003): 4130-2 .

Burns, Mark A. et al. "An integrated nanoliter DNA analysis device." *Science* 282 5388 (1998): 484-7.

Baker, Monya. "Clever PCR: more genotyping, smaller volumes." *Nature Methods* 7 (2010): 351-356.

10X incorporates the intrinsic evidence cited by Bio-Rad.

U.S. Patent No. 9,562,837 and U.S. Patent No. 9,896,722		
Term/Phrase: separation chamber		
837 patent, Claims 1, 4 722 patent, Claims 1, 14		
Bio-Rad's Proposed Construction and Intrinsic Evidence	10X's Proposed Construction and Intrinsic Evidence	
chamber sized to accommodate multiple droplets and an immiscible fluid in separated form	a space that is substantially closed	
The claims and specification of the '837 patent, including Abstract, Col. 3:38-39, 53:21-25, 54:34-46, 53:35-38, and the '722 patent, including Abstract, Col. 3:38-39, 53:30-34, 54:46-55, 53:44-47.	The specification of the 837 Patent, including, <i>e.g.</i> , 837 Patent, Abstract, 2:4-3:10, 3:37-5:43, 8:22-26, 52:26-56:67, 57:22-58:30, 59:36-61:17, Figs. 38-40. 837 Patent Claims, including, <i>e.g.</i> , 1, 3-10, 14, 19.	
 The file history of the '837 patent, including the following portions thereof: March 4, 2016 Response at 6 (Lee's conduit differs from the claimed chamber because Lee's conduit accommodates only one droplet across its width at a 	The specification of the 722 Patent, including, e.g., 722 Patent, Abstract, 2:4-3:10, 3:37-5:43, 8:23-28, 52:35-57:8, 57:30-58:38, 59:43-61:24, Figs. 38-40	
time. In contrast, the width of the claimed chamber is sized to accommodate multiple droplets, which allows for droplet concentration and removal of carrier fluid	722 Patent Claims, including, e.g., 1-4, 14.	
 from between the droplets") Sept. 7, 2016 Interview ("Examiner suggested to include structural significance of the invention, such as vertical chamber connected perpendicular to the module, the vertical chamber having a volume sufficient to contain a mixture of sample droplets and immiscible fluid.") Sept. 9, 2016 Response at 5 ("Lee's cross-intersection is different from the separation chamber because Lee's 	New matter added during prosecution, including as shown by comparing Applications No. 13/855,318 (Publication No. 2013/0260447, 837 Patent) and No. 15/415,044 (Publication No. 2017/0183722, 722 Patent) with Applications No. 11/803,104 (Publication No. 2008/0003142), No. 12/504,764 (Publication No. 2010/0022414) and No. 13/026,120 (Publication No. 2011/0250597, Patent No. 9,074,242);	
cross-intersection is not a vertical chamber to separate droplets from an immiscible carrier fluid.")	including particularly the new matter added to the applications	

- Sept. 9, 2016 Response at 5-6 ("Nor does Lee's crossintersection have a wider cross-intersection than the channel cross-section to accumulate droplets in an immiscible fluid or have a specific volume to separate droplets from an immiscible fluid"
- Sept. 9, 2016 Response at 6 ("fails to teach or suggest any desirability to *separate the fluidic segments in a vertical chamber*")
- Sept. 14, 2016 Interview ("suggested reciting the position of the vertical separation chamber in references to the claimed assembly *i.e.*, placed upright away from the plane of the assembly")

leading to the 837 and 722 Patents in columns 1-5, figures 38-41, and columns 52-61.

The file history of the 837 Patent, including, *e.g.*, BRL00000633-35 (claims); BRL00001544-51, including at 1546, 1550 (September 23, 2015 Response to Office Action); BRL00001612 (March 3, 2016 Interview Summary); BRL00001601-07 (March 4, 2016 Response to Office Action); BRL00001652 (September 1, 2016 Interview Summary); BRL00001666 (September 8, 2016 Interview Summary); BRL00001656-61, including at 1657, 1660-61 (September 9, 2016 Response to Office Action, including Publication No. 2013/0260447 cited therein); BRL00001674-82 (Notice of Allowability).

The file history of the 722 Patent, including, *e.g.*, BRL00000003-06 (Claims); BRL000000482-88 (Notice of Allowance).

10X incorporates the intrinsic evidence cited by Bio-Rad.

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U.S. Patent No. 9,562,837		
Term/Phrase: droplet receiving outlet		
837 patent, Claims 1, 4, 7-8, 10		
Bio-Rad's Proposed Construction and Intrinsic Evidence	10X's Proposed Construction and Intrinsic Evidence	
a portion of the separation chamber where droplets are collected	Subject to 112(f): Structure: the outlet structure described in 3:46-58, 53:21-35, or outlet 805 as described at 54:34-46, and Figure 38 and equivalents thereof Function: receiving substantially only droplets when exiting from the chambers Alternatively – if not subject to 112(f) a structure connected to the interior space of the chamber and configured so that substantially only droplets flow into it when exiting the chamber	
The claims and specification of the 837 patent, including Col. 3:46-58, 4:11-22, 53:24-25, 53:28-61, 56:38-50, 59:61-63, Fig. 8.	The specification of the 837 Patent, including, <i>e.g.</i> , 837 Patent, Abstract, 2:4-3:10, 3:37-5:43, 8:22-26, 52:26-56:67, 57:22-58:30, 59:36-61:17, Fig. 38-40. 837 Patent Claims, including, <i>e.g.</i> , 1, 3-10, 14, 19. The file history of the 837 Patent, including, <i>e.g.</i> , BRL0000633-35 (claims); BRL00001544-51, including at 1546, 1550 (September 23, 2015 Response to Office Action); BRL00001612 (March 3, 2016 Interview Summary); BRL00001601-07 (March 4, 2016 Response to Office Action); BRL00001652 (September 1, 2016 Interview Summary);	

BRL00001666 (September 8, 2016 Interview Summary); BRL00001656-61, including at 1657, 1660-61 (September 9, 2016 Response to Office Action, including Publication No. 2013/0260447 cited therein); BRL00001674-82 (Notice of Allowability).
10X incorporates the intrinsic evidence cited by Bio-Rad.

U.S. Patent No. 9,562,837		
Term/Phrase: coupled		
837 patent, Claims 7-8		
Bio-Rad's Proposed Construction and Intrinsic Evidence	10X's Proposed Construction and Intrinsic Evidence	
operably linked	fastened or joined	
The claims and specification of the 837 patent, including 4:17-20, 4:26-31, 55:5-11.	The specification of the 837 Patent, including, <i>e.g.</i> , 2:4-3:10, 3:37-5:43, 37:10-14, 39:43-45; 39:55-58; 40:42-43; 52:26-56, 55:1-21, 55:48-65, 59:64-60:3; 80:35-38. 837 Patent Claims, including, <i>e.g.</i> , Claims 1, 7-9. The file history of the 837 Patent, including, <i>e.g.</i> , BRL0000633-35 (claims); BRL00001544-51 (September 23, 2015 Response to Office Action); BRL00001612 (March 3, 2016 Interview Summary); BRL00001601-07 (March 4, 2016 Response to Office Action); BRL00001652 (September 1, 2016 Interview Summary); BRL00001666 (September 8, 2016 Interview Summary); BRL00001656-61 (September 9, 2016 Response to Office Action, including Publication No. 2013/0260447 cited therein); BRL00001674-82 (Notice of Allowability).	
	10X incorporates the intrinsic evidence cited by Bio-Rad.	

U.S. Patent No. 9,562,837		
Term/Phrase: polymerase chain reaction ("PCR")		
837 patent, Claim 13		
Bio-Rad's Proposed Construction and Intrinsic Evidence	10X's Proposed Construction and Intrinsic Evidence	
polymerase chain reaction (PCR) refers to methods by K. B. Mullis for increasing concentration of a segment of a target sequence in a mixture of genomic DNA without cloning or purification	Method of amplifying a target sequence of nucleic acids that involves repeated cycles of DNA replication wherein 1) strands of DNA are denatured to form single-strand templates; 2) the templates are treated with oligonucleotide primers and a polymerase enzyme is used to extend the primers to produce replicated double stranded DNA; 3) the replicated DNA then serves as a template for additional replication. The target sequence need not be specifically identified as a target in advance of the reaction.	
The claims and specification of the '837 patent, including Col. 60:20-21 (citing U.S. patent application Ser. No. 13/026,12, issued as U.S. Patent No. 9,074,242, at 13:13-23)	The specification of the 837 Patent, including, <i>e.g.</i> , 837 Patent, 1:56-2:31, 5:24-43, 7:44-48, 68:25-48, 69:49-70:10, 71:56-73:9, 83:4-17, Fig. 28, 57:22-58:4 (including the incorporated reference Anderson et al (U.S. Pat. No. 7,041,481, which reissued as RE41,780) at 3:51-4:9), 58:5-61:17 (including U.S. patent application Ser. No. 13/026,120, issued as U.S. Patent No. 9,074,242, at 13:13-23; and including the incorporated reference U.S. Pat. Nos. 4,683,195 to Mullis et al., at 2:45-5:31, and 4,683,202 to Mullis at 2:36-3:14). 837 Patent claims, including, <i>e.g.</i> , Claims 1, 11-13. The file history of the 837 Patent, including, <i>e.g.</i> , BRL00000633-35 (claims); BRL00001544-51 (September 23, 2015 Response to Office Action); BRL00001601-07 (March 4, 2016 Response to Office Action); BRL00001652 (September 1, 2016	

Interview Summary); BRL00001666 (September 8, 2016 Interview Summary); BRL00001656-61 (September 9, 2016 Response to Office Action, including Publication No. 2013/0260447 cited therein); BRL00001674-82 (Notice of Allowability)
Allowability). 10X incorporates the intrinsic evidence cited by Bio-Rad.

TI	S	Patent	No.	9 896	72.2.
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Term/Phrase: providing an immiscible fluid flowing through a main channel that is in fluid communication with the sample inlet		
722 patent, Claims 1 and 14 Pio Padia Proposed Construction and 10Via Proposed Construction and		
Bio-Rad's Proposed Construction and Intrinsic Evidence	10X's Proposed Construction and Intrinsic Evidence	
providing an immiscible fluid moving within a main channel that is in fluid communication with the sample inlet	supplying a stream of immiscible fluid that flows in one end and out the other end of a main channel, which is in fluidic communication with the sample inlet at a point downstream of where the immiscible fluid is first supplied	
	The specification of the 722 Patent, including, <i>e.g.</i> , 722 Patent, 3:11-20, 14:20-67, 16:32-37, 26:31-27:6, 52:35-53:12, 86:19-38.	
	722 Patent claims, including, e.g., Claims 1, 14.	
The claims and specification of the '722 patent, including at C 14:20-56, Figs. 2, 3, 4, 5A, 5B, 6E, 7E	The file history of the 837 Patent, including, <i>e.g.</i> , BRL00000633-35 (claims); BRL00001544-51, including at 1546, 1550 (September 23, 2015 Response to Office Action); BRL00001612 (March 3, 2016 Interview Summary); BRL00001601-07 (March 4, 2016 Response to Office Action); BRL00001652 (September 1, 2016 Interview Summary); BRL00001666 (September 8, 2016 Interview Summary); BRL00001656-61 (September 9, 2016 Response to Office Action, including Publication No. 2013/0260447 cited therein); BRL00001674-82 (Notice of Allowability).	
	The file history of the 722 Patent, including, <i>e.g.</i> , BRL00000003-06 (Claims); BRL00000482-88 (Notice of Allowance).	

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	10X incorporates the intrinsic evidence cited by Bio-Rad.
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U.S. Patent No. 9,896,722		
Term/Phrase: main channel		
722 patent, Claims 1 and 14		
Bio-Rad's Proposed Construction and Intrinsic Evidence	10X's Proposed Construction and Intrinsic Evidence	
a channel of the device of the invention which permits the flow of molecules, cells, small molecules or particles	a channel that permits the flow of molecules, cells, small molecules or particles past a coalescence module for coalescing one or more droplets, a detection module for detection (identification) or measurement of a droplet and a sorting module, if present, for sorting a droplet based on the detection in the detection module	
The claims and specification of the '722 patent, including at Col. 12:59-13:6; 34:47-48	The specification of the 722 Patent, including, <i>e.g.</i> , 722 Patent, 8:50-58, 12:2-5, 12:62-13:9. 722 Patent Claims 1, 14. The file history of the 837 Patent, including, <i>e.g.</i> , BRL00000633-35 (claims); BRL00001544-51 (September 23, 2015 Response to Office Action); BRL00001612 (March 3, 2016 Interview Summary); BRL00001601-07 (March 4, 2016 Response to Office Action); BRL00001652 (September 1, 2016 Interview Summary); BRL00001666 (September 8, 2016 Interview Summary); BRL00001656-61 (September 9, 2016 Response to Office Action, including Publication No. 2013/0260447 cited therein); BRL00001674-82 (Notice of Allowability). The file history of the 722 Patent, including, <i>e.g.</i> , BRL00000003-06 (Claims); BRL00000482-88 (Notice of Allowance).	

10X incorporates the intrinsic evidence cited by Bio-Rad.

U.S. Patent No. 9,896,722	
Term/Phrase: continuous phase carrier fluid	
722 patent, Claims 15-16	
Bio-Rad's Proposed Construction and Intrinsic Evidence	10X's Proposed Construction and Intrinsic Evidence
a continuous phase fluid that is immiscible with the discontinuous phase	flow of continuous fluid in a specific direction
The claims and specification of the '722 patent, including at Col. 48:12-38.	The specification of the 722 Patent, including, <i>e.g.</i> , 722 Patent, 14:20-67, 24:20-27, 48:12-38.
	722 Patent Claims, including, e.g., Claims 14-17.
	The file history of the 837 Patent, including, <i>e.g.</i> , BRL00000633-35 (claims); BRL00001544-51 at 1546, 1550 (September 23, 2015 Response to Office Action); BRL00001612 (March 3, 2016 Interview Summary); BRL00001601-07 (March 4, 2016 Response to Office Action); BRL00001652 (September 1, 2016 Interview Summary); BRL00001666 (September 8, 2016 Interview Summary); BRL00001656-61 (September 9, 2016 Response to Office Action, including Publication No. 2013/0260447 cited therein); BRL00001674-82 (Notice of Allowability).
	The file history of the 722 Patent, including, <i>e.g.</i> , BRL00000003-06 (Claims); BRL000000482-88 (Notice of Allowance).
	10X incorporates the intrinsic evidence cited by Bio-Rad.