

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BIO-RAD LABORATORIES, INC.,
Petitioner,

v.

CALIFORNIA INSTITUTE OF TECHNOLOGY,
Patent Owner.

Case No. IPR2024-01451
U.S. Patent No. 11,827,921 B2

**PETITIONER’S SUPPLEMENTAL CLAIM CONSTRUCTION REPLY
BRIEF**

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PETITIONER'S UPDATED EXHIBIT LIST

Exhibit #	Description
EX1001	U.S. Patent No. 11,827,921 “the ’921 patent”
EX1002	Declaration of Carl A. Batt, Ph.D.
EX1003	Joint Claim Construction Statement, filed on June 18, 2024, Dkt No. 65, <i>ChromaCode, Inc. v. Bio-Rad Laboratories et al.</i> , Case No. 5:23-cv-06360, N.D. Cal.
EX1004	U.S. Patent Application Publication No. US 2013/0040841 A1 “Saxonov”
EX1005	Information Disclosure Statement noting Saxonov from Prosecution File History of U.S. Patent No. 10,068,051 filed on August 5, 2014
EX1006	Notice of Allowance from Prosecution File History of U.S. Patent No. 11,827,921 filed on August 10, 2023
EX1007	U.S. Patent Provisional Application No. 61/510,013 (filed July 20, 2011) (Serge Saxonov, Simant Dube, John F. Regan, applicants) (“the ’013 Provisional”)
EX1008	Intentionally Left Blank
EX1009	U.S. Patent Application Publication No. US 2011/0312704 A1 “Silverbrook”
EX1010	Intentionally Left Blank
EX1011	Intentionally Left Blank
EX1012	U.S. Patent No. 11,827,921 Infringement Claim Charts from Infringement Contentions, served on March 21, 2024, <i>ChromaCode, Inc. et al. v. Bio-Rad Laboratories, Inc.</i> , Case No. 5:23-cv-06360, N.D. Cal.
EX1013	Internet Archive WayBackMachine, Feb. 22, 2024, archived copy of Synbio Technologies, Precision and Accuracy with TaqMan Probes, https://synbio-tech.com/precision-and-accuracy-with-taqman-probes/ , https://web.archive.org/web/20240519044916/https://synbiotech.com/precision-and-accuracy-with-taqman-probes/ , accessed Sept. 12, 2024.
EX1014	Pamela M. Holland, et al., “Detection of specific polymerase chain reaction product by utilizing the 5’ → 3’ exonuclease activity of

Exhibit #	Description
	<i>Thermus aquaticus</i> DNA polymerase,” <i>Proc. Natl. Acad. Sci. USA</i> , Vol. 88, pp. 7276-7280, August 1991 Biochemistry “TaqMan Paper”
EX1015	Information Disclosure Statement from Prosecution File History of U.S. Patent No. 10,770,170 filed on March 7, 2018
EX1016	Information Disclosure Statement from Prosecution File History of U.S. Patent No. 11,827,921 filed on May 1, 2020
EX1017	U.S. Patent Application Publication No. US 2011/0250597 A1 “Larson”
EX1018	Intentionally Left Blank
EX1019	Intentionally Left Blank
EX1020	Intentionally Left Blank
EX1021	Intentionally Left Blank
EX1022	U.S. Patent No. 9,366,632 “Link”
EX1023	Federal Judicial Caseload Statistics (2023), at https://www.uscourts.gov/statistics-reports/analysis-reports/federal-judicial-caseload-statistics
EX1024	Civil Minutes - General, filed on December 7, 2023, Dkt No. 34, <i>ChromaCode, Inc. et al. v. Bio-Rad Laboratories</i> , Case No. 2:23-cv-08417, C.D. Cal.
EX1025	PO’s Response to Non-Final Office Action from Prosecution File History of U.S. Patent No. 11,827,921 filed on March 28, 2023
EX1026	Final Rejection from Prosecution File History of U.S. Patent No. 11,827,921 filed on May 10, 2023
EX1027	Joint Stipulation and Order Regarding Filing of Second Amended Complaint and Amended Case Schedule, filed on March 27, 2024, Dkt No. 53, <i>ChromaCode, Inc. v. Bio-Rad Laboratories et al.</i> , Case No. 5:23-cv-06360, N.D. Cal.
EX1028	Amended Complaint for Patent Infringement of U.S. Patent Nos. 10,068,051 and 10,770,170, filed on October 13, 2023, Dkt No. 12, <i>ChromaCode, Inc. et al. v. Bio-Rad Laboratories</i> , Case No. 2:23-cv-08417, C.D. Cal.
EX1029	PO’s Response to Final Office Action from Prosecution File History of U.S. Patent No. 11,827,921 filed on July 10, 2023

Exhibit #	Description
EX1030	Non-Final Rejection from Prosecution File History of U.S. Patent No. 11,827,921 filed on December 28, 2022
EX1031	Intentionally Left Blank
EX1032	Intentionally Left Blank
EX1033	U.S. Patent No. 9,441,266 "Larson patent"
EX1034	Intentionally Left Blank
EX1035	Intentionally Left Blank
EX1036	Nucleic Acids, https://www.genome.gov/genetics-glossary/NucleicAcids , updated July 7, 2024
EX1037	Introduction of Molecular Beacons, https://molecular-beacons.org/MB_introduction.html (downloaded July 10, 2024)
EX1038	Shivaprasad H. Sathyanarayana and Lauren M. Wainman, "Chapter 2, Laboratory approaches in molecular pathology: the polymerase chain reaction," <i>Diagnostic Molecular Pathology</i> , 2024
EX1039	U.S. Patent No. 10,068,051 Infringement Claim Charts from Infringement Contentions, served on March 21, 2024, <i>ChromaCode, Inc. et al. v. Bio-Rad Laboratories</i> , Case No. 5:23-cv-06360, N.D. Cal.
EX1040	U.S. Patent No. 10,770,170 Infringement Claim Charts from Infringement Contentions, served on March 21, 2024, <i>ChromaCode, Inc. et al. v. Bio-Rad Laboratories</i> , Case No. 5:23-cv-06360, N.D. Cal.
EX1041	Order of Consolidation filed August 16, 2024, Dkt. No. 77, <i>ChromaCode, Inc. v. Bio-Rad Laboratories, Inc.</i> , Case No. 5:23-cv-04823, N.D. Cal.
EX1042	Order Reassigning Case filed August 20, 2024, Dkt. No. 78, <i>In re: ChromaCode Litigation</i> , Case No. 5:23-cv-04823, Dkt. No. 78, N.D. Cal.
EX1043	Declaration of Carl A. Batt, Ph.D. in Support of Petitioner's Reply to Patent Owner's Response
EX1044	Deposition of Kevin Struhl, Ph.D., <i>Bio-Rad Labs., Inc. v. Cal. Inst. Tech.</i> , IPR2024-01451 (July 24, 2025)

Exhibit #	Description
EX1045	Transcript of Proceedings held on September 16, 2025, Dkt. No. 150, <i>ChromaCode, Inc. v. Bio-Rad Laboratories, Inc.</i> , Case No. 5:23-cv-04823, N.D. Cal.
EX1046	Order Granting in Part and Denying in Part Chromacode's Motion for Leave to Amend Infringement Contentions filed October 9, 2025, Dkt. No. 154, <i>ChromaCode, Inc. v. Bio-Rad Laboratories, Inc.</i> , Case No. 5:23-cv-04823, N.D. Cal.

Pursuant to the Board's October 17, 2025 e-mail, Petitioner submits this reply brief on the construction of "single sample volume." *See* EX3003.

As PO's supplemental brief confirms, PO has unambiguously abandoned any attempt to put a narrowing spin on the term "single sample volume." As shown in the table below, in a rather startling turnabout, PO originally asserted that "the claimed 'single sample volume' does *not* include a volume that is subsequently partitioned into droplets" but now asserts that "the term single 'single sample volume' by itself *can* include 'volumes that are subsequently partitioned into droplets:'"

PO's position in Patent Owner's Response (Paper 17 at 26)	PO's position in Supplemental Claim Construction Brief (Paper 29 at 5)
"For example, the amendments clarify the claimed 'single sample volume' does not include a volume that is subsequently partitioned into droplets, but, consistent with the express claim language, is where the reaction occurs (e.g., a droplet or well)."	"Indeed, PO <i>agrees</i> with Petitioner that the term 'single sample volume' by itself can include 'volumes that are subsequently partitioned into droplets.'" (emphasis in original)

While PO's reversal is stark, PO ultimately had little choice but to abandon its attempt to narrow the interpretation of "single sample volume." This is because, as Petitioner explained in its supplemental brief, there is overwhelming evidence in the claim language, specification, and file history confirming that PO's narrowed interpretation is without merit. *See* Paper No. 25 at 4-8. Bio-Rad had presented this

evidence—which is supported by expert witness testimony—many times before. *See* Paper No. 9 at 1-3; Paper No. 20 at 9-11; EX1043 ¶¶ 12-16. And each time, PO ignored it.

Now, in its supplemental brief, the only thing PO presents is attorney argument that “the term ‘separation’ in the ’921 Patent claims, specification, and prosecution history clearly relates to the ‘use of beads or a solid phase,’ *not* to forming droplets through a purported ‘separation’ process.” Paper No. 29 at 9. PO, however, ignores that the specification treats “separation” as a distinct concept from beads or a solid phase, stating “the invention could be used with separation, beads, or a solid phase, if desired.” EX1001 at 36:4-6. If “separation” were the same thing as the use of beads or a solid phase, the specification would not treat it as a distinct concept in this manner.

Although Petitioner had presented its arguments based on the specification's disclosure that “separation” need not be used in its pre-institution reply, *see* Paper No. 9 at 1-2, PO presented no rebuttal at all in its Patent Owner's response, let alone responsive expert witness testimony. The expert witness testimony of Petitioner's expert, Dr. Carl Batt, on this point thus now stands un rebutted. *See* EX1043 ¶¶ 14-15. In any event, PO ultimately concedes that its arguments are unimportant because it “agrees ‘single sample volume’ is broad.” Paper No. 29 at 9.

Rather than fully respond to PO's arguments on the merits, PO spends its energy arguing about something the Board never asked the parties to brief. Specifically, PO argues that even if the term "single sample volume" is given its plain and ordinary meaning, the claims further recite a "wherein" clause requiring that "the analytes are amplified in the single sample volume." *See id.* at 1-2, 6-7. Ostensibly, PO raises this in its supplemental brief because it wants to argue that the "wherein" clause is not disclosed in Larson such that Larson does not anticipate for the purposes of Ground 1 of the Petition. *See id.* at 1.

As Petitioner has explained, however, Larson indeed discloses the claimed "wherein" clause in ¶¶ 79 and 193. *See* Paper No. 20 at 23; EX1043 ¶ 34. PO never meaningfully addresses this disclosure. In its PO sur-reply, PO at most argues in passing that Petitioner's reliance on ¶¶ 79 and 193 "misses the point of PO's actual arguments, which is that Larson does not disclose detecting at least three targets *in a droplet* using fewer colors." Paper No. 27 at 20. If anyone has missed the point, however, it is PO. Indeed, as the Petition makes clear, Ground 1 does not rely upon a "droplet" as the claimed "single sample volume." *See* Petition at 29-32, 51. So, with respect to Ground 1, whether Larson discloses "at least three targets in a droplet" is irrelevant, a point that Petitioner will further address at the oral argument on this matter.

Dated: November 7, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of **Petitioner's Claim Construction Reply Brief** is being served on November 7, 2025, via electronic mail pursuant to 37 C.F.R. § 42.6(e) to the counsel for PO at the addresses below:

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