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

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| 10x GENOMICS, INC. and PRESIDENT AND FELLOWS OF HARVARD COLLEGE,<br>Plaintiffs,<br>v.<br>VIZGEN, INC.,<br>Defendant. | REDACTED - PUBLIC VERSION<br>(Filed April 25, 2023)<br>C.A. No. 22-595-MFK<br>JURY TRIAL DEMANDED |
| VIZGEN, INC.,<br>Counterclaim-Plaintiff,<br>and<br>PRESIDENT AND FELLOWS OF HARVARD COLLEGE,<br>Counterclaim-Plaintiff as to certain claims,<br>v.<br>10x GENOMICS, INC.,<br>Counterclaim-Defendant as to certain claims,<br>and<br>PRESIDENT AND FELLOWS OF HARVARD COLLEGE,<br>Counterclaim-Defendant as to certain claims. | [redacted] |

**VIZGEN'S ANSWER, DEFENSES, AND COUNTERCLAIMS TO PLAINTIFFS' SECOND AMENDED COMPLAINT**

Defendant Vizgen, Inc. ("Vizgen") hereby provides its Answer and Defenses to the Second Amended Complaint ("SAC") of 10x Genomics, Inc. ("10x" or "10x Genomics") and President and Fellows of Harvard College ("Harvard") (collectively "Plaintiffs") and its Counterclaims against 10x and/or Harvard ("Counterclaim-Defendants") as set forth below. Unless expressly admitted, Vizgen denies each and every allegation in Plaintiffs' SAC. To the extent the allegations in the SAC purport to characterize the nature or contents of the Exhibits to the SAC, Vizgen lacks sufficient knowledge or information to form a belief as to the truth of those allegations and on that basis denies them. Vizgen denies any allegations that may be implied by or inferred from the headings of the SAC.

## NATURE OF THE ACTION

1. Vizgen admits that the SAC purports to state a claim for patent infringement of United States Patent Nos. 11,021,737 ("the '737 Patent"), 11,293,051 ("the '051 Patent"), 11,293,'052 ("the '052 Patent"), 11,549,136 ("the '136 Patent"), and 11,299,767 ("the '767 Patent"), (collectively, the "Asserted Patents") arising under the patent laws of the United States, Title 35, United States Code, including 35 U.S.C. § 271. Except as so admitted, Vizgen denies any remaining allegations in Paragraph 1.

## THE PARTIES

2. Vizgen admits that, on information and belief, 10x is a Delaware corporation with its principal place of business at 6230 Stoneridge Mall Road, Pleasanton, CA 94588.

3. Denied.

4. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 4 and on that basis denies them.

5. Vizgen admits that it is a Delaware corporation with its principal place of business at 61 Moulton Street, Cambridge, Massachusetts, 02138. Except as so admitted, Vizgen denies any remaining allegations in Paragraph 5.

6. Paragraph 6 contains legal conclusions to which no response is required. To the extent that a response is deemed required, Vizgen denies the allegations of Paragraph 6.

## JURISDICTION AND VENUE

7. Vizgen incorporates by reference and restates its responses to paragraphs 1-6 of the SAC as though fully set forth herein.

8. Vizgen admits that the SAC purports to bring a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1, *et seq.*, including in particular 35 U.S.C. § 271. Vizgen further admits that this Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a). Except as so admitted, Vizgen denies any remaining allegations of Paragraph 8.

9. Vizgen admits that it is a Delaware corporation and that venue is proper in this District. Except as so admitted, Vizgen denies any remaining allegations of Paragraph 9.

## BACKGROUND

### A. Response to Allegations Regarding 10x's Purported Single Cell and Spatial Technologies

10. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 10 and on that basis denies them.

11. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 11 and on that basis denies them.

12. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 12 and on that basis denies them.

13. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 13 and on that basis denies them.

14. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 14 and on that basis denies them.

**B. Response to Allegations Regarding 10x's Purported Investment In Developing *In Situ* Technologies**

15. Paragraph 15 of the SAC includes allegations that are vague, ambiguous, and incomplete, and on that basis Vizgen denies the allegations of paragraph 15.

16. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 16 and on that basis denies them.

17. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 17 and on that basis denies them.

**C. Response to Allegations Regarding Vizgen's MERSCOPE® Platform and Lab Services Program**

18. Vizgen admits that it announced the launch of its MERSCOPE® ("MERSCOPE") platform in March 2021. Vizgen further admits that it shipped the first commercial MERSCOPE platforms on or about the summer of 2021. Vizgen admits that the MERSCOPE platform is based on MERFISH (Multiplexed error-robust fluorescence in situ hybridization) technology. Paragraph 18 of the SAC further includes allegations that purport to characterize technical aspects of Vizgen's products in a manner that is vague, ambiguous, and incomplete, and on that basis Vizgen denies the remaining allegations of Paragraph 18.

19. Vizgen admits that it has provided products to its customers marketed as part of the MERSCOPE platform. Paragraph 19 of the SAC further includes allegations that purport to characterize technical aspects of Vizgen's products in a manner that is vague, ambiguous, and incomplete, and on that basis Vizgen denies the remaining allegations of Paragraph 19.

20. Denied.

21. Vizgen admits that it markets certain products under the trade name MERSCOPE. Paragraph 21 of the SAC further includes allegations that purport to characterize technical aspects of Vizgen's products in a manner that is vague, ambiguous, and incomplete, and on that basis Vizgen denies the remaining allegations of Paragraph 21.

**D. Response to Allegations Regarding the Patents In Suit**

22. Denied.

23. Vizgen admits that, on its face, the '737 Patent states that it was issued on June 1, 2021 and that it lists the named inventors as George M. Church, Je-Hyuk Lee, Daniel Levner, and Michael Super. Except as so admitted, Vizgen denies any remaining allegations of Paragraph 23.

24. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 24 and on that basis denies them.

25. Vizgen admits that, on its face, the 051 Patent states that it was issued on April 5, 2022, and that it lists the named inventors as George M. Church, Je-Hyuk Lee, Daniel Levner, and Michael Super. Except as so admitted, Vizgen denies any remaining allegations of Paragraph 25.

26. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 26 and on that basis denies them.

27. Vizgen admits that, on its face, the '052 Patent states that it was issued on April 5, 2022, and that it lists the named inventors as George M. Church, Je-Hyuk Lee, Daniel Levner, and Michael Super. Except as so admitted, Vizgen denies any remaining allegations of Paragraph 27.

28. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 28 and on that basis denies them.

29. Vizgen admits that, on its face, the '767 Patent states that it was issued on April 12, 2022, and that it lists the named inventors as George M. Church, Je-Hyuk Lee, Richard C. Terry,

and Evan R. Daugharthy. Except as so admitted, Vizgen denies any remaining allegations of Paragraph 29.

30. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 30 and on that basis denies them.

31. Vizgen admits that, on its face, the '136 Patent states that it was issued on January 10, 2023, and that it lists the named inventors as George M. Church, Je-Hyuk Lee, Daniel Levner, and Michael Super. Except as so admitted, Vizgen denies any remaining allegations of Paragraph 31.

32. Vizgen is without information or knowledge sufficient to form a belief as to the truth or falsity of the allegations of Paragraph 32 and on that basis denies them.

33. Vizgen admits that it received a letter from 10x on May 2, 2022. Except as so admitted, Vizgen denies any remaining allegations of Paragraph 33.

34. Vizgen asserts that, to the extent that the allegations in Paragraph 34 purport to summarize one or more documents, those documents are the best source of their full content and context. Vizgen denies these allegations to the extent they do not accurately represent the documents' full content and context. Except as so admitted, Vizgen denies any remaining allegations of Paragraph 34.

**COUNT I**

35. Vizgen incorporates by reference and restates its responses to paragraphs 1-34 of the SAC as though fully set forth herein.

36. Denied.

37. Denied.

38. Denied.

39. Denied.

40. Denied.

41. Denied.

42. Denied.

**COUNT II**

43. Vizgen incorporates by reference and restates its responses to paragraphs 1-42 of the SAC as though fully set forth herein.

44. Denied.

45. Denied.

46. Denied.

47. Denied.

48. Denied.

49. Denied.

50. Denied.

**COUNT III**

51. Vizgen incorporates by reference and restates its responses to paragraphs 1-50 of the SAC as though fully set forth herein.

52. Denied.

53. Denied.

54. Denied.

55. Denied.

56. Denied.

57. Denied.

58. Denied.

**COUNT IV**

59. Vizgen incorporates by reference and restates its responses to paragraphs 1-58 of the SAC as though fully set forth herein.

60. Denied.

61. Denied.

62. Denied.

63. Denied.

64. Denied.

65. Denied.

66. Denied.

**COUNT V**

67. Vizgen incorporates by reference and restates its responses to paragraphs 1-66 of the SAC as though fully set forth herein.

68. Denied.

69. Denied.

70. Denied.

71. Denied.

72. Denied.

73. Denied.

74. Denied.

**PRAYER FOR RELIEF**

These paragraphs of the SAC set forth the statement of relief requested by Plaintiffs to which no response is required. Vizgen denies that Plaintiffs are entitled to any of the requested relief and denies any allegations contained therein.

## DEMAND FOR JURY TRIAL

Vizgen acknowledges that Plaintiffs demand a trial by jury on all issues so triable.

## GENERAL DENIAL

To the extent not specifically admitted herein, the allegations of the SAC are denied. Vizgen denies any allegations that may be implied by or inferred from the headings of the SAC.

## DEFENSES

Vizgen has insufficient knowledge or information upon which to form a belief as to whether there may be additional defenses available, and therefore Vizgen reserves the right to assert such additional defenses based upon subsequently acquired knowledge or information that becomes available through discovery or otherwise. Without assuming the burden of proof on any matters where that burden rests on Plaintiffs, Vizgen asserts the following defenses with respect to the SAC:

### FIRST DEFENSE – FAILURE TO STATE A CLAIM

The SAC, and each cause of action purportedly alleged therein, fails to state any claim for which relief may be granted.

### SECOND DEFENSE - NONINFRINGEMENT

Vizgen does not infringe and has not infringed, literally or under the doctrine of equivalents, is not liable for infringement of any valid and enforceable claim of the ’737, ’051, ’052, ’136, or ’767 Patents, including under the reverse doctrine of equivalents, and has not otherwise committed any acts in violation of 35 U.S.C. § 271.

Plaintiffs have not met their burden of pleading infringement of the ’737, ’051, ’052, ’136, or ’767 Patents in their SAC and will be unable to meet their burden of proof to show infringement of the ’737, ’051, ’052, ’136, or ’767 Patents.

**THIRD DEFENSE - INVALIDITY**

Plaintiffs' claims are barred in whole or in part because one or more claims of the '737, '051, '052, '136, or '767 Patents are invalid for failure to comply with one or more of the requirements of the Patent Laws of the United States, 35 U.S.C. §§ 100, *et seq.*, including, but not limited to, §§ 101, 102, 103, and/or 112.

**FOURTH DEFENSE – 35 U.S.C. § 287**

Plaintiffs' patent infringement claims and Prayer for Relief are limited by 35 U.S.C. § 287.

**FIFTH DEFENSE – NO EQUITABLE RELIEF**

Plaintiffs are not entitled to equitable relief under any theory because Plaintiffs have not and will not suffer irreparable harm, are not without adequate remedy at law, the balance of the hardships do not favor entry of an injunction, and/or public policy concerns weigh against any equitable relief.

**SIXTH DEFENSE – EQUITABLE DEFENSES**

Plaintiffs' claims for relief are barred in whole or in part by license, laches, consent, waiver, estoppel, acquiescence, payment, and/or release.

As one example, the SAC implicates Harvard's separate license with Vizgen ("the Harvard-Vizgen License"). [redacted] Harvard is thus estopped from bringing this suit, is estopped from derogating the rights that it granted Vizgen under the Harvard-Vizgen License, and/or has granted Vizgen a license to the Asserted Patents.

As yet another example, Plaintiffs were bound by certain promises made to the government starting on or around May 2009, including the promise to make the fruits of government-funded biotechnology research available on reasonable, "open and non-exclusive" terms in exchange for government funding. *See e.g.*, Vizgen's Counterclaims, *infra*, Paragraphs 21–26. Although such promises were a condition of the government funding, Plaintiffs thereafter have reneged on those promises, and instead engaged in self-dealing in the commercialization of the intellectual property resulting from this government-funded research. The Asserted Patents Plaintiffs now seek to enforce against Vizgen are each a result of this self-dealing. *Id.*, Paragraphs 27–35.

Yet, as mentioned above and as further detailed in Vizgen's Counterclaims, [redacted] However, having executed the agreement and [redacted], Harvard then aligned itself with 10x, working to prosecute and target other intellectual property it had licensed to 10x on a purportedly exclusive basis in an effort to manufacture infringement claims against Vizgen. As further detailed in Vizgen's Counterclaims, Harvard stands to profit from this misconduct, including without limitation by receiving of a substantial portion of any funds recovered from Vizgen.

On or about March 16, 2023, in reliance upon the promises to the government Plaintiffs were bound by, Vizgen requested from Plaintiffs "the terms for a reasonable non-exclusive license to the asserted patents." *See* Vizgen's Counterclaims, *infra*, Paragraph 129. On March 30, 2023,

Harvard and 10x refused to provide such terms, stating "the asserted patents have been exclusively licensed to 10x." *Id.* Plaintiffs' refusal to offer Vizgen an open, non-exclusive license stands in direct conflict with the promises made to the government, and Plaintiffs' claims must be precluded as a result of the doctrine of license.

Therefore, as one example, Plaintiffs are thus estopped from pursuing their claims relating to the Asserted Patents. At a minimum, Plaintiffs are estopped from pursuing claims or damages relating to the Asserted Patents insofar as such claims or damages rely on or relate to Vizgen's conduct post-dating its discovery of Plaintiffs' promises made to the government, as Plaintiffs have relied on such promises and continue to rely on such promises.

Accordingly, as a result of the doctrine of license, laches, consent, waiver, estoppel, acquiescence, payment, and/or release, Plaintiffs' claims are barred in whole or in part.

**SEVENTH DEFENSE – JUDICIAL ESTOPPEL**

Plaintiffs' claims are barred in whole or in part, based on the doctrine of judicial estoppel, to the extent that Plaintiffs make arguments in this proceeding that are inconsistent with an argument made in a prior or currently pending proceeding, where Plaintiffs have benefited from that argument in the other proceeding.

**EIGHTH DEFENSE – PATENT MISUSE**

Plaintiffs' claims are barred in whole or in part, based on the doctrine of patent misuse, through Plaintiffs' assertion of patents against Vizgen inconsistent with their promises in the Grant Application listed on each Asserted Patent and through Plaintiffs' institution of anticompetitive litigation against Vizgen, all as further detailed in Vizgen's Counterclaims.

As explained above, Plaintiffs were bound by promises made to the government starting on or around May 2009, including the promise to make the fruits of government-funded biotechnology research available on reasonable, "open and non-exclusive" terms in exchange for

government funding. *See e.g.*, Vizgen's Counterclaims, *infra*, Paragraphs 21–26. Although such promises were an express condition of the government funding, Plaintiffs thereafter reneged on those promises and instead engaged in self-dealing in the commercialization of the intellectual property resulting from this government-funded research. The asserted patents Plaintiffs now seek to enforce against Vizgen result from this self-dealing. *Id.*, Paragraphs 27–35.

Meanwhile, as further detailed in Vizgen's Counterclaims, on [redacted] However, having executed the agreement and received compensation and confidential information from Vizgen, Harvard then aligned itself with 10x, working to prosecute and target other intellectual property it had licensed to 10x on a purportedly exclusive basis in an effort to manufacture infringement claims against Vizgen. As further detailed in Vizgen's Counterclaims, Harvard stands to profit from this misconduct, including without limitation by receiving of a substantial portion of any funds recovered from Vizgen.

Moreover, on or about March 30, 2023, in direct conflict with the promises made to the government and in continuation of its self-dealing efforts and misconduct, Harvard and 10x refused to provide Vizgen with "terms for a reasonable non-exclusive license to the asserted patents." *See* Vizgen's Counterclaims, *infra*, Paragraph 129.

In addition, Plaintiffs' actions as described above and in further detail below in Vizgen's counterclaims (*see, e.g.*, *infra* Sections C-G) constitute, among other things, patent misuse and

consequently Plaintiffs' claims are barred in whole or in part and Plaintiffs are precluded from enforcing any of the asserted patents against Vizgen.

**NINTH DEFENSE – UNCLEAN HANDS**

Plaintiffs' claims are barred in whole or in part based on the doctrine of unclean hands. and the doctrine of unclean hands precludes Plaintiffs from enforcing the Asserted Patents against Vizgen.

Plaintiffs have engaged in conduct involving deceit, unconscionability and/or bad faith. Such conduct is directly and immediately related to and affects the matters and claims at issue in this case. Such conduct has injured and continues to injure Vizgen and affects the balance of equities between the parties.

As alleged above in support of Vizgen's Sixth and Eighth Defenses and as further detailed in Vizgen's Counterclaims, Plaintiffs have engaged in various unconscionable business misconduct which has an immediate and necessary relation to this litigation. Plaintiffs' misconduct includes at least Harvard's misrepresentations to Vizgen in connection with Vizgen's License Agreement; Harvard's and 10x's collusion over strategic patent prosecution to foreclose Vizgen's ability to participate in the market; and their recent refusal to offer Vizgen a reasonable, open, non-exclusive license to the asserted patents despite the promises to do so. For example, Plaintiffs were bound by certain licensing promises made to the government in May 2009, including the promise to make the fruits of government-funded biotechnology research available on reasonable, "open and non-exclusive" terms in exchange for government funding. *See e.g.*, Vizgen's Counterclaims, *infra*, Paragraphs 21–26. As further detailed in Vizgen's Counterclaims, Plaintiffs deliberately kept such promises secret, including by creating misleading, truncated versions of the grant application that excised the key pages, by seeking to deter Vizgen's discovery of the promises, and through other acts. *Id.*, Paragraphs 125–27. Although such promises were

an express condition of the government funding, Plaintiffs thereafter engaged in self-dealing in the commercialization of the intellectual property resulting from this government-funded research. The Asserted Patents Plaintiffs now seek to enforce against Vizgen are each a result of this self-dealing. *Id.*, Paragraphs 27–35.

Meanwhile, as further detailed in Vizgen's Counterclaims, on [redacted]. However, having executed the agreement and received compensation and confidential information from Vizgen, Harvard then aligned itself with 10x, working to prosecute and target other intellectual property it had licensed to 10x on a purportedly exclusive basis in an effort to manufacture infringement claims against Vizgen. As further detailed in Vizgen's Counterclaims, Harvard stands to profit from this misconduct, including without limitation by receiving of a substantial portion of any funds recovered from Vizgen.

Moreover, on or about March 30, 2023, in direct conflict with the promises made to the government and in further continuance of its self-dealing efforts and misconduct, Harvard and 10x refused to provide Vizgen with "terms for a reasonable non-exclusive license to the asserted patents." *See* Vizgen's Counterclaims, *infra*, Paragraph 129. To be sure, separate and apart from any question as to the enforceability of such promises, Plaintiffs' conduct constitutes unclean hands in light of, *inter alia*, the false statements in the NIH grant and subsequent denial of such statements, as well as their refusal to offer Vizgen a license.

Accordingly, as a result of the doctrine of unclean hands, Plaintiffs' claims are barred in whole or in part and Plaintiffs are precluded from enforcing any of the Asserted Patents against Vizgen.

**RESERVATION OF ALL DEFENSES**

Vizgen reserves the right to offer any other and additional defense that is now or may become available or appear during, or as a result of, discovery proceedings in this action.

**COUNTERCLAIMS**

For its counterclaims, Defendant-Counterclaim Plaintiff Vizgen alleges against Plaintiff-Counterclaim Defendants 10x and Harvard as follows.

**NATURE OF THE ACTION**

1. This is an action for breach of the implied covenant of good faith and fair dealing, breach of warranty, negligent misrepresentation against Harvard, tortious interference with contractual and advantageous business relations against 10x, unfair and deceptive trade practices in violation of Mass. Gen. Law. Ch. 93A §§ 2 and 11 against Harvard and 10x, conspiracy to monopolize against Harvard and 10x in violation of the Sherman Act and the Cartwright Act, attempted monopolization against 10x in violation of the Sherman Act, and breach of contract as to a third-party beneficiary against Harvard and 10x.

2. [redacted]

However, as described in more detail below, having executed the agreement and received compensation and confidential information from Vizgen about its business plans, Harvard then

aligned itself with 10x, working to prosecute and target other intellectual property it had licensed to 10x at Vizgen's expense, and to deprive Vizgen of the ability to utilize the technology it licensed from Harvard.

3. As discovery in this case has since shown, however, Harvard and 10x's scheme goes deeper than simply trying to frustrate Vizgen's agreement with Harvard—they have worked together to stamp out competition in the market for single-cell spatial transcriptomics, which Vizgen entered first and 10x (with Harvard's assistance) now hopes to dominate, despite its later entry. In essence, Harvard engaged in a competitive bait-and-switch; *i.e.*, a scheme whereby it lured Vizgen in and convinced it to utilize certain technology, but then subsequently used that knowledge in concert with 10x to try to eliminate Vizgen and other competitors from the market, to 10x and Harvard's mutual gain.

4. As Vizgen now knows from documents recently obtained from 10x and Harvard, as well as in response to a FOIA request, George Church and Harvard applied for a research grant from the National Institutes of Health ("NIH") a little over thirteen years ago. In that application (the "Grant Application"), Dr. Church and Harvard committed to licensing the fruits of any NIH grant-funded research on reasonable and non-exclusive terms. Consistent with this promise (which Harvard endorsed and the government established as an express condition to awarding the requested research grant), Harvard indicated by its words and actions that it would promote and encourage open competition for that technology. So, too, did Dr. Church. These licensing commitments, however, were hidden from public view—and, until recently, from Vizgen as well—by at least Harvard and Dr. Church.

5. Nevertheless, it is now clear that, behind the scenes, Dr. Church and Harvard instead engaged in self-dealing in the commercialization of his NIH-funded research; and that 10x

(who stepped into Dr. Church's shoes regarding the patents-in-suit) is now trying to claim for itself technology it is obligated to share. And the record further shows that Harvard joined with 10x to close down competition in the fledgling single-cell spatial transcriptomics market due to plain old-fashioned greed, violating its indications to Vizgen about the latter's freedom to operate in this promising new area of science, and by weaponizing Vizgen's commitment to utilize the technology Harvard (and 10x) now allege were only partially licensed to it.

6. For these reasons, in addition to the counterclaims the Court previously upheld, it is now clear that 10x and Harvard violated the antitrust laws, have unclean hands, and have committed serious patent misuse by their conduct. In antitrust terms, 10x and Harvard's lawsuit can be viewed as either a sham (because they baselessly brought suit with unclean hands and without first offering reasonable licensing terms to Vizgen—as they must—and then refused to offer such terms when asked), and/or, in the alternative, as an example of an anticompetitive "open early, closed late" scheme (otherwise known as a bait-and-switch). Such improper tactics cannot stand, and Vizgen therefore brings these counterclaims to vindicate its right to compete in this space on the same terms as 10x and any other company.

7. Furthermore, by failing to honor and instead violating their promises to NIH to license the fruits of government-funded biotechnology research on reasonable, open, and non-exclusive terms—including without limitation by failing to offer any such terms to Vizgen when requested—Plaintiffs breached a promise to which Vizgen is a clearly-intended third-party beneficiary. Accordingly, as alleged herein, Vizgen is entitled to a license to the Asserted Patents under this alternative theory as well.

8. Vizgen additionally seeks herein declaratory judgments of non-infringement and invalidity of U.S. Patent Nos. 11,021,737, 11,293,051, 11,293,052, 11,549,136 and 11,299,767 against Harvard and 10x.

9. Finally, this is also an action for injunctive relief for 10x's past, current, and ongoing infringement of one or more claims of U.S. Patent No. 11,098,303 (the "Zhuang '303 Patent"). Vizgen is the exclusive licensee of the Zhuang '303 Patent.

## THE PARTIES

10. Vizgen is an early-stage company dedicated to pioneering the next generation of genomics, providing tools that allow single-cell spatial transcriptomics ("SST") to be studied. Vizgen is one of the first companies to offer a commercial product that provides single-cell transcript information combined with spatial information. Vizgen's innovative tools leverage advanced imaging and patented error-correction technology that enable researchers to gain new insights into many aspects of biological systems, including those relevant to human health and disease.

11. Vizgen, Inc. is a Delaware corporation with its principal place of business at 61 Moulton Street, Cambridge, MA 02138.

12. 10x Genomics, Inc. is a Delaware corporation with its principal place of business at 6230 Stoneridge Mall Road, Pleasanton, CA 94588.

13. As alleged in Plaintiffs' SAC ¶ 4, the President and Fellows of Harvard College is a Massachusetts educational institution with a principal place of business in Cambridge, MA. Harvard is the owner and licensor of the Zhuang '303 Patent.

## JURISDICTION AND VENUE

14. These Counterclaims arise under the Patent Act, and this Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338, the Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202, and the Patent Laws of the United States, 35 U.S.C. § 1, *et seq.*

15. The Court also has subject matter jurisdiction over Vizgen's antitrust Counterclaims pursuant to 15 U.S.C. §§ 15(a) and 26, as well as pursuant to 28 U.S.C. §§ 1331 and 1337(a).

16. The Court has subject matter jurisdiction over all other counterclaims pursuant to 28 U.S.C. § 1367.

17. This Court has personal jurisdiction over 10x and Harvard at least because they invoked the jurisdiction of this Court through the filing of their Complaint against Vizgen in this action, *10x Genomics, Inc. v. Vizgen, Inc.*, C.A. No. 22-cv-595 (D. Del.) and that suit and its continued enforcement here give rise to the asserted antitrust counterclaims. Additionally, 10x has previously availed itself of the protections of the District of Delaware as, e.g., it has brought suit in this District and filed counterclaims. *10x Genomics, Inc. v. Parse Biosciences, Inc.*, C.A. No. 22-1117 (D. Del.); *10x Genomics, Inc. v. NanoString Techs., Inc.*, C.A. No. 22-261 (D. Del.); *10x Genomics, Inc. v. NanoString Techs., Inc.*, C.A. No. 21-653 (D. Del.); *10x Genomics, Inc. v. Celsee, Inc.*, C.A. No. 19-862 (D. Del.); *Raindance Techs., Inc. v. 10x Genomics, Inc.*, C.A. No. 15-cv-152 (D. Del.).

18. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391(b), (c) and 1400(b). Venue is also proper in this Court pursuant to 15 U.S.C. §§ 15(a) and 22 because the Defendants transact business in this District.

## BACKGROUND

### A. Harvard's Church Lab Enters The Single-Cell Spatial Transcriptomics Field

19. The function of many biological systems depends on the location (*i.e.* the spatial organization) of their constituent cells. Measurements of gene expression can, in turn, distinguish different types and states of cells. Thus, to study the spatial patterns of cells within biological systems such as tissues, high-throughput technologies have been developed to quantify the expression of messenger ribonucleic acid ("mRNA") transcripts (also referred to as transcriptomes) in space, and computational methods have been developed that leverage single-cell spatial gene expression to identify spatial gene patterns and to delineate cellular neighborhoods within tissues.[1] These approaches were dubbed the "Method of the Year" in 2021.[2]

20. While the origin of spatial transcriptomics dates back several decades and stems from various technologies, including *in situ* hybridization ("ISH"), microarrays, and tissue microdissection,[3] as explained further *infra* (Section B), it was not until recently—through technologies Vizgen invented and pioneered—that the spatial information could be accurately captured at the single-cell level in a massively multiplexed, error-robust manner. As discussed in more detail below, the potential research applications of this new technology are virtually unlimited.

21. By the late 2000s and early 2010s, the study of cellular transcriptomes, including the spatial analysis thereof (*i.e.*, SST), was active and expanding. New applications were becoming available to the interested researcher. One such researcher who decided to explore technologies relevant to single-cell spatial transcriptomics was Dr. George Church of Harvard University.

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[1] Moses & Pachter, *Museum of spatial transcriptomics*, 19 Nature Methods 534 (2022) ("Moses"), Abstract.

[2] Marx, Method of the Year: spatially resolved transcriptomics, 18 Nature Methods 9-14 (2021).

[3] Reviewed in Moses (Figure 1).

22. As part of his entrance into the field, Dr. Church, through his lab and Harvard University, applied for grant funding from the Federal Government. In particular, in May 2009, Dr. Church applied for a grant under the "Centers of Excellence in Genomics Science" announced in Program Announcement Number PAR-08-094, released on February 22, 2008.[4] Consistent with established NIH policy, this grant program mandated that applicants promise that their technology would be readily available to the broader scientific community. In the "Resource Sharing Plans" section, the NIH makes clear that ***"[w]hen resources have been developed with NIH funds and the associated research findings published or provided to NIH, it is important that they be made readily available for research purposes to qualified individuals within the scientific community."***[5] In the same vein, the NIH states it "is interested in ensuring that the information about new methods, technologies, computer software, and as many data developed through federally-sponsored research as possible ***become readily available to the research community as the basis for further research and development***."[6]

23. In Dr. Church and Harvard's May 2009 application (the "Grant Application"), he asked for over $20 million in funding from the period April 1, 2010 through March 31, 2015.[7] Of that amount, he sought $337,428 for his own personal salary. To comply with the NIH policy of making technology created with government grant money widely available, Dr. Church and Harvard made such a promise—*i.e.*, an ***offer***—to induce the NIH to fund Dr. Church's research. Specifically, Dr. Church committed to making the innovations developed at his proposed research

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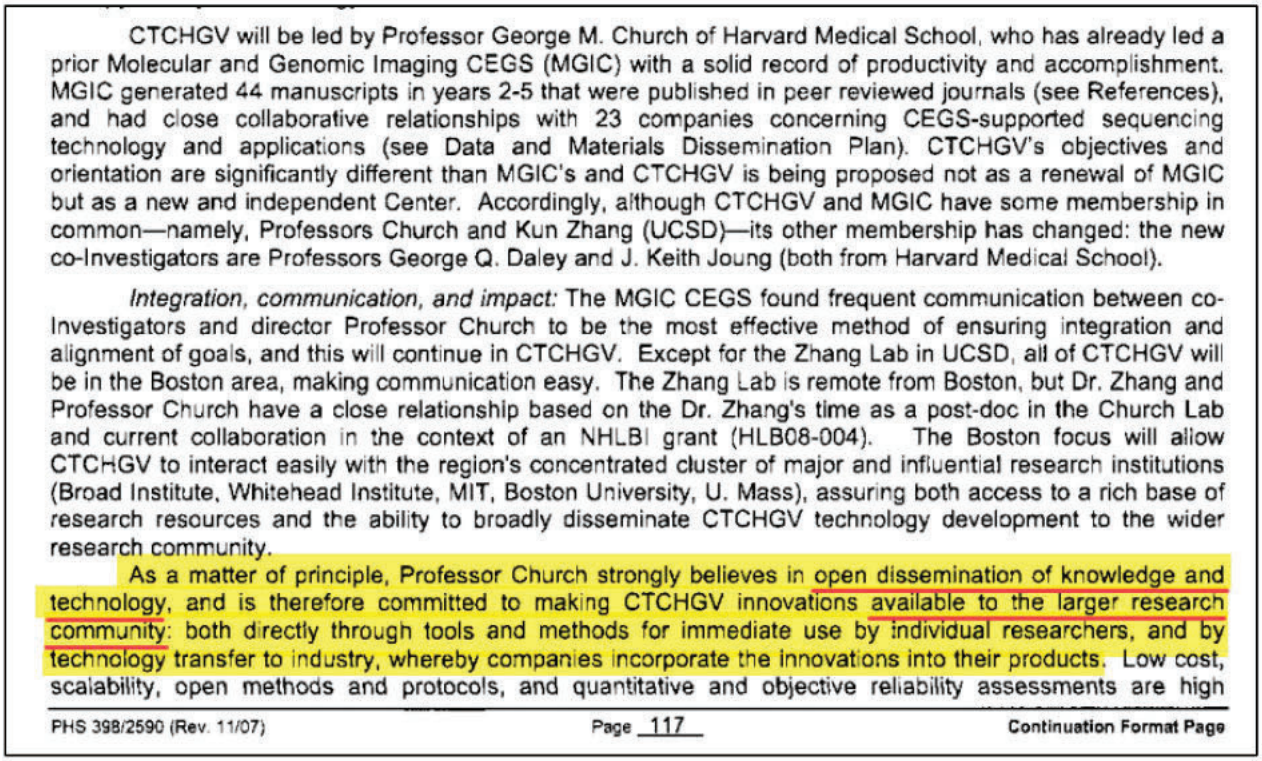
[4] *NIH Program Announcement,* February 22, 2008, https://grants.nih.gov/grants/guide/pa-files/par-08-094.html.

[5] *Id.*

[6] *Id.*

[7] Ex. 1, May 19, 2009, Grant Application for PAR-08-094 at 1 (hereinafter, "Grant Application").

center, the Center for Transcriptional Consequences of Human Genetic Variation ("CTCHGV"), "available to the larger research community" because—according to the Grant Application itself —"as a matter of principle" he "strongly believes in open dissemination of knowledge and technology":[8]



CTCHGV will be led by Professor George M. Church of Harvard Medical School, who has already led a prior Molecular and Genomic Imaging CEGS (MGIC) with a solid record of productivity and accomplishment. MGIC generated 44 manuscripts in years 2-5 that were published in peer reviewed journals (see References), and had close collaborative relationships with 23 companies concerning CEGS-supported sequencing technology and applications (see Data and Materials Dissemination Plan). CTCHGV's objectives and orientation are significantly different than MGIC's and CTCHGV is being proposed not as a renewal of MGIC but as a new and independent Center. Accordingly, although CTCHGV and MGIC have some membership in common—namely, Professors Church and Kun Zhang (UCSD)—its other membership has changed: the new co-Investigators are Professors George Q. Daley and J. Keith Joung (both from Harvard Medical School).

*Integration, communication, and impact:* The MGIC CEGS found frequent communication between co-Investigators and director Professor Church to be the most effective method of ensuring integration and alignment of goals, and this will continue in CTCHGV. Except for the Zhang Lab in UCSD, all of CTCHGV will be in the Boston area, making communication easy. The Zhang Lab is remote from Boston, but Dr. Zhang and Professor Church have a close relationship based on the Dr. Zhang's time as a post-doc in the Church Lab and current collaboration in the context of an NHLBI grant (HLB08-004). The Boston focus will allow CTCHGV to interact easily with the region's concentrated cluster of major and influential research institutions (Broad Institute, Whitehead Institute, MIT, Boston University, U. Mass), assuring both access to a rich base of research resources and the ability to broadly disseminate CTCHGV technology development to the wider research community.

As a matter of principle, Professor Church strongly believes in open dissemination of knowledge and technology, and is therefore committed to making CTCHGV innovations available to the larger research community: both directly through tools and methods for immediate use by individual researchers, and by technology transfer to industry, whereby companies incorporate the innovations into their products. Low cost, scalability, open methods and protocols, and quantitative and objective reliability assessments are high

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24. Dr. Church, on behalf of Harvard, similarly touted their commitment to resource sharing and "***open-source standards*** … for technology generally," and stated they would pursue that open policy via the "Data and Materials Dissemination Plan" (or "DMDP"), which was

[8] *Id.* at 117.

included in full in the application:[9]

**Resource Sharing Plan**

Our proposed CTCHGV CEGS will generate several resources of potentially great value to the research community which we plan to make available to the community to the extent possible. We have described these plans and resources in our Data and Materials Dissemination Plan (DMDP) and briefly summarize them here.

**Open-source policy**: The Church Lab adheres to open-source standards to the extent possible as a matter of policy, for software, data, materials, and technology generally. Please refer to the DMDP for additional details.

25. In the DMDP portion of the Grant Application. Dr. Church and Harvard explained that, in line with "long-standing Church Lab commitments, ***we continue to champion concepts that we helped establish for the genome sequencing community*** that encourage rapid data deposition and technology transfer." These include "Open Source Biology" ("OSB"), the goal of which is encourage "technology transfer" to "***prevent exclusive licenses***" by either "mov[ing] our technology into the public domain or non-exclusive licensing mechanisms":[10]

**Data and Materials Dissemination Plan**

**Software, protocol, and data sharing.** Following principles also followed in the prior MGI CEGS, CTCHGV will openly share software, protocols and data. Programs and data will be distributed from Church Lab website (http://arep.med.harvard.edu/), with data related to human subjects distributed as described below. Programs will be generally available as documented source code with a Harvard and/or UCSD copyright, distributed freely to academics, and with a Harvard and/or UCSD license for commercial use. In line with long-standing Church Lab commitments, we continue to champion concepts that we helped establish for the genome sequencing community that encourage rapid data deposition and technology transfer, such as "Open Source Biology" (OSB) which determines procedures and technologies to aid the distribution of complex reagents more effectively. The related goal of OSB is to prevent exclusive licenses from potentially interfering with technology transfer. In this regard, we will try to move our technology either into the public domain or non-exclusive licensing mechanisms well before they would be normally publishable. Just as genomics has made laudable the publication of loads of "hypothesis neutral" or "negative" results by way of comprehensiveness and data mining/post-experiment hypotheses, so, too, do we hope OSB will encourage a similar process for technology development and transfer. Our current policy for software sharing is closest to ISCB Level 2: "Source code is available for research use to educational institutions, non-profit research institutes, government research laboratories, and individuals, without the right to redistribute". Examples of software that we have shared at Level 2 are available from the Church lab website (see above). In addition to software, the investigators of the proposed center will make many other resources available with a similar level of access. Indeed, the Church Lab is heavily involved with other research institutions in efforts to actively promote ways to make biological resources more 'shareable', such as the synthetic biology Registry of Standard Biological Parts.

[9] *Id.* at 133.

[10] *Id.* at 130.

26. In a subsection of the Data and Materials Dissemination Plan, entitled "Commercialization," Dr. Church and Harvard expanded on these points by promising that technology developed under the grant would be made "widely available" to interested parties, including "commercial entities," through "open and non-exclusive licensing agreements":[11]

> **Commercialization:** As described above, CTCHGV will pursue open and non-exclusive licensing agreements that encourage innovations to be made widely available to researchers and commercial entities. Professor Church has been on the Harvard-wide Copyright and Patent Committee (CPC) for years, a recipient of numerous successful patents, and is in constant contact with the HMS Office of Technology Licensing (OTL). More generally, we will encourage close relationships with companies who can promote broad usage of innovations by incorporating them with other technology into readily usable packages and applications. Professor Church is currently on Scientific Advisory Boards of fifteen companies and has maintained close relationships with many others. He will use these close relationships to encourage companies to adapt CTCHGV innovations into their products, as he did in the prior MGI CEGS.

27. Dr. Church and Harvard further repeated these promises throughout the Grant, stating that "the Church Lab will work with the Harvard Medical School Office of Technology Licensing to obtain ***open and non-exclusive licenses*** that will encourage commercialization of these innovations":[12]

> **Commercialization:** To broaden the availability to the research community of innovations developed by CTCHGV, the Church Lab will work with the Harvard Medical School Office of Technology Licensing to obtain open and non-exclusive licenses that will encourage commercialization of these innovations. Please refer to the DMDP for additional details.
>
> **Consortium/Contractual Agreements**
>
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28. Harvard reviewed and approved of the various promises in the Grant Application, which was jointly submitted by Harvard as the "Applicant Organization" and by Dr. Church as the "Program Director/Principal Investigator."[13] Indeed, a representative of Harvard signed the Grant Application on Harvard's behalf, affirming that "the statements herein are true, complete and

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[11] *Id.* at 131.

[12] *Id.* at 133.

[13] *Id.* at 1.

accurate" and accepting "the obligation to comply with Public Health Services terms and conditions if a grant is awarded as a result of this application."[14]

29. On September 12, 2010, the NIH accepted Dr. Church and Harvard's offer and awarded the Church Lab over $19 million dollars pursuant to Grant # 1P50HG005550 on September 12, 2010 (hereinafter, the "Grant"), including $337,428 dollars for Dr. Church's salary.[15] This generous award was not provided unconditionally, however. The NIH expressly relied on and accepted Dr. Church and Harvard's general representations about the openness of their approach to licensing their technology, as well as their specific promises about making technology developed under the grant available to the interested public, including commercial entities and conditioned the award on Dr. Church's compliance with his prior promises on behalf of Harvard to keep developed technology open for the research community at large.[16]

30. In fact, in the NIH's Notice of Award, the NIH expressly cited to the very pages where Dr. Church and Harvard made their commitments to broadly license the technology on "open and non-exclusive" terms. That is, the NIH cited to pages 117 and 131, where Dr. Church and Harvard unequivocally made their promises to license any resulting technology on open and non-exclusive terms, making clear that such promises were material to the NIH's acceptance of Dr. Church and Harvard's offer:[17]

> 4. Compliance with the data and materials sharing and release plans, described on pages 117-118 and 130-133 of the grant application is a condition of this award. Failure to comply with these plans may result in termination of the award.

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[14] *Id.*

[15] Ex. 2, NIH Notice of Award, Grant No. 1P50HG005550-01, Sept. 12, 2010 at 3 (hereinafter "Notice of Award").

[16] *Id.* at 4.

[17] *Id.*

31. Two months later, on November 3, 2010, when the NIH issued a Revised Notice of Award to Harvard and Dr. Church, it repeated this statement yet again:

> 3. Compliance with the data and materials sharing and release plans, described on pages 117-118 and 130-133 of the grant application is a condition of this award. Failure to comply with these plans may result in termination of the award.

32. In fact, ***time and time again*** for the duration of the Grant, the NIH repeated this statement in regular Notices of Award, reminding Harvard and Dr. Church that their compliance with the promises made in the Grant Application were material conditions to the funding.

33. Harvard and Dr. Church (and thereafter ReadCoor/10x) then ***hid*** the promises made to the NIH. For example, the version of the Grant Application publicly posted on CTCHGV's website intentionally omitted the pages containing Harvard and Dr. Church's promises regarding "open and non-exclusive" licenses, as well as their stated commitment to "open-source standards," to "prevent[ing] exclusive licenses," and to making the innovations funded by the Grant "widely available" to researchers and commercial entities. Indeed, the Grant Application made available by CTCHGV conveniently ***cut off*** at page 116, just prior to page 117 where the first of these promises appears.[18] Harvard and Dr. Church submitted only this truncated version of the Grant Application to the Patent Office, thereby concealing the key promises that were an express condition of NIH funding.[19]

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[18] The CTCHGV website (https://arep.med.harvard.edu/ctchgv/) includes a link to a filed named "CEGS09_Complete_Proposal_minus_Admin_Sections.09May21.final.pdf" under the heading "Text of our grant proposal." This version of the grant application is 64 pages long and cuts off at page 116. *See also* https://arep.med.harvard.edu/ctchgv/center_goal.htm (omitting reference to NIH grant application, including its licensing promises).

[19] The same truncated version of the Grant Application was submitted to the Patent Office several times during prosecution of the Church patents, including after 10x became involved in the prosecution—*e.g.*, in a February 5, 2021 Information Disclosure Statement (IDS).

34. In addition, as further detailed below in Paragraphs 125-127, Harvard then actively discouraged Vizgen from pursuing its FOIA request for the Grant materials, in a continued effort to conceal its promises.

35. Vizgen—as a member of the "larger research community"[20] and as a "commercial entit[y]"[21] which has sought access to the "innovations developed by CTCHGV"[22]—is a clear and definite third-party beneficiary of the promises made by Dr. Church (and thus 10x) and Harvard to the NIH.

36. Not long after Dr. Church and Harvard obtained the Grant and funding that went along with it, they began filing patent applications directed at the work the Grant covered. The first provisional application developed pursuant to the grant—U.S. Provisional Application No. 61/579,265—was filed on December 22, 2011, giving rise to a series of applications that generally relate to methods for introducing detection reagents to samples and then identifying each analyte through detection of a temporal order of signal signatures from the detection reagent bound to that analyte. These methods are referred to herein as the "TOSS" approach.[23] In the 2011 provisional, Dr. Church described the TOSS approach itself as a "simple workaround" to prior art methods of decoding analytes, including methods that used "immobilized" microspheres (microarrays).[24]

37. A subsequent provisional application also developed pursuant to the grant—U.S. Provisional Application No. 61/777,383—was filed more than 15 months later on March 12, 2013,

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[20] Ex. 1, Grant Application at 117.

[21] *Id.* at 133.

[22] *Id.*

[23] U.S. Provisional No. 61/579,265, claim 1 (excerpt).

[24] U.S. Prov. '265, [0006], [0034].

giving rise to a second series of applications that generally relate to methods for making a "3D matrix" of nucleic acids within a sample."[25] The '767 patent asserted against Vizgen issued from a continuation application filed on June 30, 2021 that purports to claim priority to this 2013 provisional application.

38. The December 22, 2011 provisional directed to the TOSS approach does not disclose making a 3D matrix of nucleic acids, while the March 12, 2013 provisional does not disclose the TOSS approach for identifying analytes. Consistent with this focus on differing subject matters, until 2020 when 10x acquired George Church's spin-out company ReadCoor and its patent portfolio, these two patent families were prosecuted as separate, independent familial lines covering different alleged inventions and claim scopes. Between 2012 and 2019, multiple continuation (CON) applications were filed in each family.

39. When 10x then acquired ReadCoor and its patent portfolio in 2020, Dr. Church received 10x stock valued at approximately ***$13 million*** (82,019 Class A shares) and Harvard also received 10x stock valued at approximately ***$13 million*** (85,365 Class A Shares)—a huge payout only made possible by their serial violations of the promises made in the NIH grant.[26] Notably, the prosecution strategy for the Church patents abruptly changed. Plaintiffs sought to combine the disclosures of these two different sets of applications into a single, all-encompassing continuation-in-part (CIP) application. This CIP application, U.S. Application No. 16/941,585, was filed on July 29, 2020, claiming priority through a chain of application back to the 2011 provisional. In the 2020 CIP application's specification, Plaintiffs deleted admissions regarding the simplicity of

[25] U.S. Provisional No. 61/777,383, claim 1.

[26] 10x Genomics, Inc., Registration Statement (Form S-3) (Oct. 16, 2020), https://www.sec.gov/Archives/edgar/data/1770787/000119312520271199/d49065ds3asr.htm at 7 (reflecting shares received by Dr. Church and Harvard).

the "TOSS" approach and, ***through a verbatim copy-and-paste***, added virtually all of the disclosure of the "3D matrix" CON application.

40. Despite the breadth of claim scope added by the CIP application, the applicant did not identify the '585 application's claims' priority date as July 29, 2020. Instead, the applicant continued to assert to the Patent Office that the claims in the '585 application were entitled to claim priority to the earliest priority date of *both* families—the December 22, 2011 TOSS provisional filing. The patent which ultimately issued from the 2020 CIP application—the '737 Patent asserted against Vizgen in this litigation—in fact purports to claim priority to *both* the 2011 provisional and the 2013 provisional in the 3D matrix family. These priority claims are false, however, as (for example) 10x, Harvard, and/or Dr. Church are aware that the named inventors of the '737 Patent did not conceive of the full scope of the claimed inventions in 2011 or 2013. Accordingly, despite its duties of disclosure, candor, and good faith to the Patent Office, Plaintiffs did not revise the priority claim on the face of the 2020 CIP application to reflect that the claims were not entitled to the 2011 or 2013 provisional filing dates. This was a knowingly false omission on a critically material point.

41. The '051, '052, and '136 Patents asserted against Vizgen all issued from later-filed CIP applications that stem from (and claim priority through) the '737 Patent CIP application from July 2020. They thus all include the same merged subject matter from the 3D matrix CON application. In addition, like the '737 Patent itself, all three purport to claim priority all the way back through a chain of applications to the 2011 and 2013 Provisionals. As for the '737 Patent, however, the decision by Plaintiffs to claim priority for the '737, '051, '052, and '136 Patents to more than eight years before July 29, 2020—the date of the first CIP application—was deliberate

and served to improperly lay claim to an earlier priority date than that to which the Asserted Patents are entitled.

42. Each of the Church patents in this case thus originates from one of two patent families (TOSS or 3D matrix) that were developed by Church and Harvard under grant number 1P50HG005550. As such, each of the Asserted Patents is a direct result of the funding that Church and Harvard obtained from the NIH and is subject to the promises and conditions enumerated and expressed in the grant process.

43. The connection between the patents and the NIH grant is made express on the patents themselves. In particular, ***each of the patents asserted against Vizgen*** states that they were developed with the funding that the NIH provided based on Church's and Harvard's promises to make such technology openly and non-exclusively available. For example, the '737 Patent includes a section entitled "STATEMENT OF GOVERNMENT INTERESTS" in its first column, and therein states: "This invention was made with Government support under grant number 1P50HG005550 awarded by NHGRI."[27]

> STATEMENT OF GOVERNMENT INTERESTS
>
> This invention was made with Government support under grant number 1P50HG005550 awarded by NHGRI. The Government has certain rights in the invention.

44. The same representation that the technology claimed in the patents was made with government support under the same grant number, 1P50HG005550/HG005550, is present in all the other Asserted Patents as well.[28]

**B. Vizgen's MERFISH and MERSCOPE Technology**

[27] '737 Patent at 1:32-35.

[28] '051 Patent at 1:35-37; '052 Patent at 1:35-37; '136 Patent at 1:37-39; '767 Patent at 1:21-24.

45. One of Vizgen's founders, Dr. Xiaowei Zhuang (who is also a Harvard professor) and her collaborators were also early entrants into the single-cell spatial transcriptome field. By 2014, she and her colleagues were working on a way to significantly increase the number of transcripts that could be visualized with a limited number of detection probes. The technique was called "MERFISH" and it relied on, among other things, a sophisticated method for correcting errors that allowed for the increased number of identifiable transcripts. The methodology was published to wide acclaim in 2015 in the leading journal SCIENCE.[29] This research represented a critical step forward for single-cell spatial transcriptomics, and the corresponding research paper has been cited over 1,000 times.[30]

46. Dr. Zhuang herself received the 2019 National Academy of Sciences Award for Scientific Discovery,[31] the 2019 Breakthrough Prize in Life Sciences,[32] the 2020 Vilcek Prize in Biomedical Science,[33] the 2021 Carnegie Great Immigrants Award,[34] and the 2021 Lurie Prize in Biomedical Sciences.[35] Dr. Zhuang's technical accomplishments and those of her lab have also

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[29] Chen et al., Spatially resolved, highly multiplexed RNA profiling in single cells, 384 Science aaa6090 (2015).

[30] According to Google Scholar, as of August 30, 2022, the Chen (2015) paper has been cited nearly 1300 times.

[31] *2019 NAS Award for Scientific Discovery: Xiaowei Zhuang*, Harvard University, http://www.nasonline.org/programs/awards/2019-nas-awards/Zhuang.html.

[32] *Xiaowei Zhuang*, https://breakthroughprize.org/Laureates/2/L3847.

[33] Vilcek & Nair, Profile of Xiaowei Zhuang, winner of the 2020 Vilcek Prize in Biomedical Science, 117 PNAS 9660-9664 (2020).

[34] *Xiaowei Zhuang*, https://www.carnegie.org/awards/honoree/xiaowei-zhuang/.

[35] *Lurie Prize in Biomedical Sciences Recipients* (Foundation for the National Institutes of Health), https://fnih.org/our-programs/lurie-prize-biomedical-sciences-recipients.

been widely recognized and praised by others in the field.[36] Harvard also filed a provisional patent application relating to the MERFISH methodology on July 30, 2014, with Dr. Zhuang and others as named inventors. That application culminated in the Zhuang '303 Patent asserted here against 10x by Vizgen.

47. While the Church Lab's own "in situ" detection technology—fluorescent *in situ* sequencing, or FISSEQ—was failing to gain acceptance in the research community and marketplace via Dr. Church's ReadCoor spin-off discussed below, it quickly became clear that Dr. Zhuang and her collaborators had struck gold. MERFISH distinguishes itself from prior methods, including because it uses a methodology for detecting and correcting detection errors that enables greater numbers of cells (and RNA transcripts) to be visualized with much greater accuracy. Dr. Zhuang's MERFISH technology represented a quantum leap forward for single-cell spatial transcript visualization that opened up new frontiers of scientific research, the full promise of which is only just beginning to be fully understood.

48. In particular, Dr. Zhuang's MERFISH technology allows each of the imaged RNA transcripts to be located and identified through a combinatorial labeling approach that encodes each transcript with a unique barcode. Multiple types of barcodes can be used. For example, the presence or absence of a fluorescence signal in a given smFISH image could represent a value of '0' or '1' in binary barcodes. Significantly, the number of relevant transcripts is not limited by the

[36] E.g., Moor & Izkovitz, *Spatial transcriptomics: paving the way for tissue-level systems biology*, 46 Curr. Op. Biotech. 126, 129 (2017) ("Chen et al. developed an elegant barcode assignment scheme termed 'MERFISH', which ensures that the sequence of barcodes for different genes is far enough so that only multiple readout errors would cause miss-assignments . . . [and] both the cost of fluorescent probe synthesis and time-consuming hybridization rounds were addressed by MERFISH through a clever two-stage hybridization scheme."); Van Horn & Morris, *Next-Generation Lineage Tracing and Fate Mapping to Interrogate Development*, 56 Developmental Cell 7, 15 (2021) ("MERFISH deploys elegant multiplexing and encoding to overcome the limited number of fluorophores that can be imaged by previous smFISH approaches[.]").

barcoding approach, as increasing the length of the barcodes—e.g., more bits in a binary barcode—increases the number of transcripts that can be identified.

49. Moreover, unlike predecessor technologies, MERFISH leverages barcoding schemes that are error-tolerant to improve measurements' accuracy and provides a scheme for correcting errors to provide improved accuracy. For example, a researcher could assign only a particular subset of all possible barcodes to particular transcripts such that if a measurement produces a signal from an unassigned barcode it indicates an error has occurred, and the signal can be ignored.

50. In the 2015 SCIENCE publication, Dr. Zhuang and her team demonstrated that MERFISH could detect more than 100 RNA species simultaneously in individual cells, with accuracy and efficiency very similar to that shown for smFISH. In that pioneering work, Dr. Zhuang and her collaborators showed a wide range of barcoding schemes with different error-tolerance properties and lengths that could target larger numbers of RNAs and tune the error-tolerance level as desired. Highlighting this barcoding versatility, in this same proof-of-principle study, nearly 1,000 RNA species were simultaneously identified within single cells using a 14-bit barcoding scheme. Dr. Zhuang's laboratory later demonstrated that MERFISH can be used to identify over 10,000 RNAs within single cells using error-robust barcoding schemes with barcodes of increased length.[37]

51. Dr. Zhuang's lab has used MERFISH to identify more than 100 transcriptionally distinct cell populations and generate a molecularly defined and spatially resolved cell atlas of the

[37] Xia et al., Spatial transcriptome profiling by MERFISH reveals subcellular RNA compartmentalization and cell cycle-dependent gene expression, 116 Proc. Nat'l Acad. Scis. 19490–19499 (2019).

human middle and superior temporal gyrus, permitting identification of cell type-specific association patterns that differ between mouse and human brains.[38] This group also used MERFISH to create a spatially resolved cell atlas of the preoptic region of the mouse hypothalamus.[39] Still others have used MERFISH to obtain a comprehensive picture and bioinformatic foundation for the spatial regulation of hematopoietic stem cells in fetal liver[40] or to map cell types within the mouse gut.[41]

52. MERFISH has also been successfully used in high-profile research endeavors to advance collective knowledge and understanding of cellular and tissue organization. As one example, the Brain Initiative Cell Census Network (BICCN)—a collaborative project involving many different laboratories and funded by the U.S. National Institutes of Health—recently chose MERFISH technology to create an atlas of the mouse primary motor cortex. Using MERFISH, Dr. Zhuang's lab and the BICCN mapped the spatial organization of more than 300,000 cells from the mouse's primary motor cortex by transcriptomic cell type, a massive step forward in understanding mouse neural cell populations.[42]

### C. Dr. Church Engages In Self-Dealing to Address the MERFISH Threat

[38] Fang et al., Conservation and divergence of cortical cell organization in human and mouse revealed by MERFISH, 377 Science 56-62 (2022).

[39] Moffitt et al., Molecular, Spatial and Functional Single-Cell Profiling of the Hypothalamic Preoptic Region, 362 Science eaau5324 (2018).

[40] Lu et al., Spatial transcriptome profiling by MERFISH reveals fetal liver hematopoietic stem cell niche architecture, 7 Cell Discovery 1-17 (2021).

[41] Petukhov et al., Cell segmentation in imaging-based spatial transcriptomics, 40 Nat. Biotechnol. 345-54 (2022).

[42] Marx at 13-14; Zhang et al., Spatially resolved cell atlas of the mouse primary motor cortex by MERFISH, 598 Nature 137-143 (2021).

53. After the publication of Dr. Zhuang's seminal paper in April 2015, Dr. Church realized his FISSEQ technology was losing and other technologies (such as MERFISH) were gaining in the battle for the hearts and minds of geneticists around the globe. Thus, after the NIH had finished funding his research in 2015, and thus there was no risk that the NIH could cut off funding prospectively, Dr. Church sprang into action. He made preparations to launch a startup to commercially exploit the NIH-funded technology on an exclusively-licensed basis—violating Harvard's promises to the NIH, and shutting out potential non-exclusive licensees.

54. As part of those preparations, Dr. Church facilitated a license agreement, effective September 9, 2016, between Harvard and his company, ReadCoor (the "ReadCoor License Agreement")—mere months after Harvard and Dr. Church's final Notice of Award from the NIH relating to the Grant, which reminded Harvard and Dr. Church ***yet again*** of their obligations to adhere to the promises made in the Grant Application to make the technology developed thereunder widely available" to interested parties, including "commercial entities," through "open and non-exclusive" licensing agreements.[43]

55. That agreement [redacted].[44]

56. Additionally, the ReadCoor License Agreement in [redacted]:

[redacted]

[43] *See* Ex. 1, Grant Application at 131.

[44] Ex. 3, Harvard-ReadCoor License Agreement at 1.

57. The ReadCoor License Agreement [redacted]

[redacted]

58. ReadCoor also [redacted]:

[redacted]

59. The ReadCoor License Agreement further [redacted]

[redacted].

60. [redacted]

[redacted]

[redacted]:

[redacted]).

61. [redacted]

[redacted].

62. [redacted]

63. [redacted]

64. [redacted]

65. [redacted].

66. Having executed the ReadCoor License Agreement, ReadCoor was announced on September 28, 2016 in a press release that confirmed its "exclusive right to market FISSEQ technology."[45] Absent from the ReadCoor launch announcement was any mention of how the Federal Government had funded the underlying technology, or how Harvard and Church had promised to share that technology on open and non-exclusive terms with the broader research community, or how the NIH had expressly conditioned the grant funds on complying with those promises, or of how these promises had been breached. Instead, on October 4, 2016, ReadCoor

[45] *Wyss Institute launches ReadCoor to commercialize 3D in situ gene sequencing technology*, Wyss Institute (Sept. 28, 2016), https://wyss.harvard.edu/news/wyss-institute-launches-readcoor-to-commercialize-3d-in-situ-gene-sequencing-technology/.

announced that it executed a ***worldwide exclusive*** intellectual property license to FISSEQ technology,[46] which included the applications that gave rise to the Asserted Patents and many others (collectively, the "Asserted Patent Rights").

67. Harvard's exclusive license with ReadCoor was at odds with the promises both Dr. Church and Harvard had made to the NIH to secure an award of over $19 million in grant funding. Harvard committed as a condition of funding to an "open" licensing policy with respect to the ReadCoor patents and the other Church Lab technology (as it represented to the NIH), and should have put a stop to any notion that there could *ever* be an exclusive intellectual property license to that technology. Harvard, however, made no mention of this licensing commitment in September 2019, when Harvard negotiated a commercial agreement with Vizgen and assured it of an open lane for commercialization of the MERSCOPE technology.

68. The grant of an exclusive license from Harvard to Dr. Church's ReadCoor constituted anticompetitive self-dealing, between Harvard and Dr. Church as a Harvard employee and Dr. Church as a ReadCoor co-founder, and furthermore constituted a breach of the promises made to the NIH to which Harvard, ReadCoor, and 10x were bound. Dr. Church and Harvard agreed to grant Dr. Church's company an exclusive license over technology covered by the Asserted Patent Rights, which it had previously and expressly committed to make available open and non-exclusive licenses.

69. Harvard's Office of Technology Development ("OTD"), the department responsible for licensing university technology, boasts of its "highest ethical standards in all

[46] *ReadCoor spins from Harvard after pulling in $23 million in first round of funding*, Healthcare IT News (Oct. 4, 2016), https://www.healthcareitnews.com/news/readcoor-spins-harvard-after-pulling-23-million-first-round-funding.

dealings and relationships" pertaining to its licensing activities, including with respect to ensuring no conflicts of interests exist among its licensing agreements.[47] As Harvard's Office of Technology Development's website explains, in 2006, Harvard joined various other institutions in crafting "a set of considerations intended to guide the thoughtful and effective licensing of technologies."[48] One of the key guidelines Harvard purports to follow is that "[u]niversities should ***anticipate and help to manage technology transfer related conflicts of interest***," and that "[t]echnology transfer offices ***should be particularly conscious and sensitive about their roles in the identification, review and management of conflicts of interest."***[49]

### D. Zhuang Co-Founds Vizgen In 2019 To Broaden the Impact of MERFISH Technology

70. Given the promising results of MERFISH, and its wide recognition in the research community, Dr. Zhuang co-founded Vizgen in 2019 to help improve the reach and impact of this highly-promising technology. Because Dr. Zhuang was a Harvard employee at the time MERFISH was invented, Harvard was the official owner (assignee) of the patent rights invented by Dr. Zhuang and others that later issued as U.S. 11,098,303. Thus, Vizgen entered into negotiations with Harvard to license the technology from which the '303 Patent arose (among other patent rights).

71. During discussions with Harvard, at Harvard's insistence, Vizgen's agents described in detail its business plans and how it planned to commercialize the MERFISH technology. Harvard indicated its approval of Vizgen's plans and keen interest in a deal. Harvard

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47 Harvard OTD, *Our Values*, https://otd.harvard.edu/about-otd/our-values/

48 *Id*.

49 In the Public Interest: Nine Points to Consider in Licensing University Technology (March 6, 2007), http://www.autm.net/AUTMMain/media/Advocacy/Documents/Points_to_Consider.pdf (hyperlinked on Harvard OTD, *Our Values*, https://otd.harvard.edu/about-otd/our-values/).

would license the relevant intellectual property to Vizgen [redacted] The plan was for Vizgen to be able to proceed with commercializing its MERFISH technology with the necessary rights from Harvard.

72. Nonetheless, during the negotiations, Vizgen repeatedly informed Harvard that it was seeking the intellectual property necessary for freedom to operate when implementing Vizgen's planned scope of operations—a scope of operations that Vizgen had described in detail to Harvard, at Harvard's request. Harvard reviewed and discussed with Vizgen the detailed information Vizgen had provided regarding its intended operations and business plans.

73. Harvard assured Vizgen that the particular set of intellectual property it proposed for Vizgen to license, which included four exclusive patent rights and one non-exclusive patent right, encompassed all that Vizgen needed from Harvard from an intellectual property standpoint to commence and develop its operations. In other words, Harvard provided assurances that any necessary technology would be openly available to Vizgen, consistent with Harvard's earlier promises to the NIH and the broader research community. At the time of these negotiations, Vizgen was led to believe that Harvard was openly making the technology available to Vizgen – *i.e.*, that Harvard's policy was "open." Acting in reliance on that understanding, Vizgen negotiated a contract that would allow it to commercialize MERFISH.

74. At no point during Harvard and Vizgen's discussions about Vizgen's intended scope of operations or Vizgen's need or lack of need for particular intellectual property did Harvard claim that Vizgen's business plans would require additional intellectual property owned by Harvard—intellectual property Harvard had already licensed to a third-party, ReadCoor, Inc. In fact, Harvard told Vizgen exactly the opposite—that Vizgen was acquiring the intellectual

property it needed to execute its business plan, and further that the agreement to commercialize this technology was not in conflict with any of Harvard's third-party agreement and instead carved Vizgen a clear path to commercialization vis-à-vis Harvard and its intellectual property. [redacted]

75. However, [redacted], Harvard had already been engaged in an exclusive licensing agreement with ReadCoor for roughly ***three years*** regarding [redacted] a fact it did not disclose to Vizgen (or, to Vizgen's knowledge, any other SST competitor). Harvard had actual knowledge of the ReadCoor agreement and cannot plausibly claim it did not. [redacted]:

[redacted]

[redacted]

76. [redacted]. It is not possible that Harvard's [redacted] was unaware of either the ReadCoor licensing agreement he executed roughly three years earlier or this October 2018 amendment when he negotiated with Vizgen. The only explanation is that Harvard provided an implied license to the ReadCoor technology, consistent with the representations it made to Vizgen at the time. If Harvard's policy was instead "closed" at the time of the Vizgen agreement—*i.e.*, [redacted]. But Harvard did exactly that, giving Vizgen a false sense of security that the platform it was developing to commercialize its licensed MERFISH technology—[redacted]—was not in conflict with any intellectual property agreements between Harvard and other parties and would not later be alleged to infringe any Harvard intellectual property. Harvard thus acted in bad faith by [redacted] from it while having knowledge of its conflicting patent agreements with ReadCoor/10x—and moreover of 10x's intent to sue Vizgen on Harvard patents.

77. Given the rapid success of MERFISH technology in the genomics community, and relying on the license and representations that Dr. Zhuang and her colleagues received in the License Agreement from Harvard, Vizgen moved forward with its business and meeting its

obligations under the Agreement. Among other things, Vizgen raised millions of dollars in funding and devoted significant resources to turning the MERFISH technology into a commercial platform.

78. Harvard knew it was inducing Vizgen's reliance on the License Agreement. [redacted]

79. More generally, Harvard ***required*** Vizgen to, among other things, [redacted]

80. [redacted] The implications of these requirements and Harvard's various representations throughout the negotiation process were clear: Harvard was

[50] Ex. 4, Harvard-Vizgen License Agreement at 1.

[51] *Id.* at § 3.1.1.

[52] *Id.* at Schedule I.

[53] *Id.* at Schedule II; [redacted]

[54] *Id.* at Schedule I.

representing that Vizgen would be free to utilize all of Harvard's relevant intellectual property to compete in the Single-Cell Spatial Transcriptomics market.

81. Vizgen has since fulfilled all applicable milestones at great time and expense, [redacted]. Furthermore, throughout the negotiations, Vizgen shared the details of its technology and its business plans with Harvard. Indeed, as noted herein, [redacted]

82. Following the execution of the License Agreement, [redacted]

83. Vizgen provided detailed annual updates to Harvard regarding its business plans and milestones. These updates included comprehensive, confidential reports [redacted] about Vizgen's operations and utilization of the licensed intellectual

[55] *Id.* at Schedule II.

[56] Vizgen, Inc. Financial Statements for the Year Ended December 31, 2021 at p. 5.

[57] Vizgen, Inc. Finance Summary for Board of Directors (July 14, 2022), at p. 4.

property, and communications between Vizgen and Harvard's agents, which further detailed Vizgen's business plans and commercial and scientific activities.

84. After executing the licensing agreement, Vizgen developed the MERSCOPE platform into a high-resolution, high-accuracy, all-in-one platform for spatially profiling RNA transcripts using MERFISH. MERSCOPE offers combinatorial labeling, sequential imaging, and barcoding, and enables hundreds of genes, or more, to be profiled within single cells without the need for sequencing.

85. Over the next several years, Vizgen continued to update Harvard regarding Vizgen's exact plans for commercialization of the MERSCOPE/MERFISH technology and its progress. Indeed, the License Agreement from Harvard ***required*** Vizgen [redacted]

86. Vizgen publicly announced commercial launch plans for the MERSCOPE platform in March 2021.

87. Although it has been only less than two years since the MERSCOPE platform's commercial release, it has already enabled scientists to make tremendous steps forward in understanding the architecture, development, function, and diseases of diverse organ systems. Future work with MERFISH promises to unlock even more scientific discoveries and have even greater impact on this understanding.

88. Following the execution of the License Agreement, Harvard and Vizgen [redacted].

[58] Ex. 4, Harvard-Vizgen License Agreement at Schedule I-II; *see generally id.* § 3.1.

89. During this same timeframe, just days before the acquisition of ReadCoor by 10x was announced on Oct. 5, 2020, [redacted] Shortly thereafter, when the 10x/ReadCoor deal closed on October 13, 2020, Dr. Church received 10x stock valued at approximately $13 million (82,019 Class A shares) and Harvard ***also*** received 10x stock valued at ***$13 million*** (85,365 Class A Shares).[59]

90. At no point during any of its interactions with Vizgen or during the process of drafting amendments did Harvard ever indicate to Vizgen that Vizgen's commercial activities may conflict with Harvard's ongoing exclusive license with ReadCoor. Nor did Harvard correct or attempt to qualify its prior promises that it was unaware of any conflicting licensing agreements.

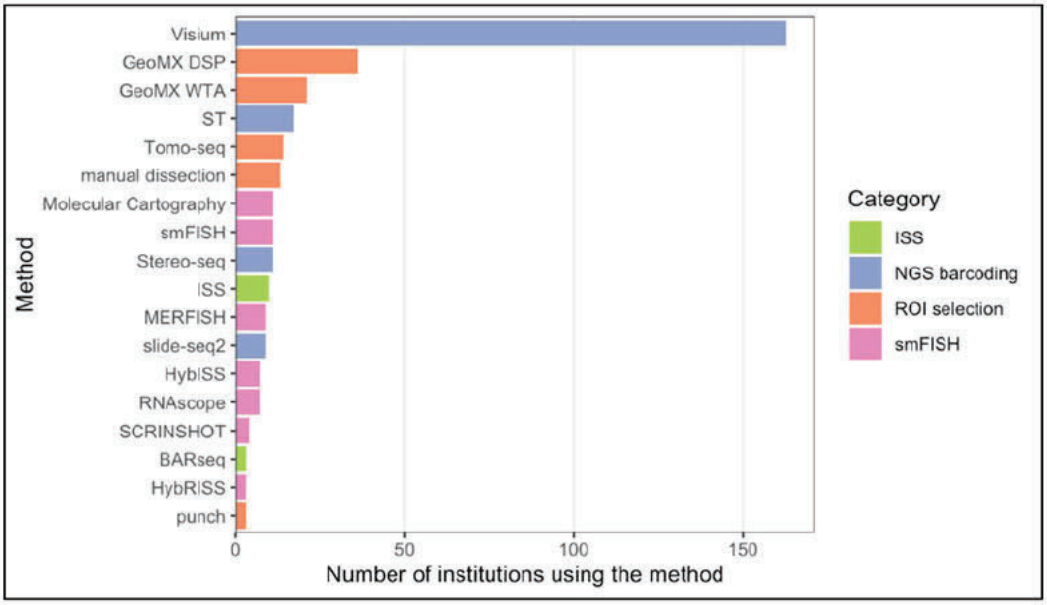
**E. 10x Sets Its Sights on Single-Cell Spatial Transcriptomics**

91. Vizgen's founding in 2019, and its plan to commercialize the MERFISH technology, was seen by 10x as a threat to its business. At that time, 10x held a leading position in the single-cell analysis market. It had been the first to market in 2016 with a non-spatial single-cell analysis tool, Chromium. 10x was also a leader in the market for spatial gene expression analysis with its Visium offering, which first launched in 2019. One industry publication said that the single-cell landscape is expected to reach $1.5 billion in 2023, and "10x Genomics Dominates

[59] 10x Genomics, Inc., Registration Statement (Form S-3) (Oct. 16, 2020), https://www.sec.gov/Archives/edgar/data/1770787/000119312520271199/d49065ds3asr.htm at 7 (reflecting shares received by Dr. Church and Harvard).

the Single-Cell Landscape While Competitors Look for a Niche."[60] Industry commentators concluded that 10x has become "entrenched in the research community"[61] and is the "market leader in single-cell."[62]

92. 10x CEO Serge Saxonov has bragged that "just about every paper you see now within tissues makes use of Chromium Visium [*sic*] data."[63] In one study of the various methods used by geneticists in the industry, Visium holds the number one slot:[64]




93. Unsurprisingly, 10x was worried that Vizgen's commercial applications of MERFISH might eventually displace both of these tools. [redacted]

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[60] DeciBio, *10x Genomics Dominates the Single-Cell Landscape While Competitors Look for a Niche*, available at https://www.decibio.com/insights/10x-genomics-dominates-the-single-cell-landscape-while-competitors-look-for-a-niche.

[61] Kyle Mikson and Alex Vukasin, *Canaccord Initiation of Coverage* (July 25, 2022), at 1.

[62] Kyle Mikson and Alex Vukasin, *Canaccord Initiation of Coverage* (July 25, 2022), at 5.

[63] Comments by 10x CEO Serge Saxonov, 10x Genomics, Inc. (TXG) CEO Serge Saxonov on Q1 2022 Results – Earnings Call Transcript (May 4, 2022), at 20.

[64] *See* Moses, *supra*, at Fig. 4.7.

[redacted] Thus 10x engaged in a variation of a well-recognized monopolistic strategy—copy, acquire, and kill.[66] 10x acquired ReadCoor and CartaNA in 2020 to enter the SST market like Vizgen, and now seeks to kill Vizgen with this lawsuit (and competition in general with similar tactics).

94. 10x's acquisitions were intended to buy its way into the emerging SST market. CartaNA was a Swedish company based in Stockholm with a nascent SST product. So, too, was ReadCoor, the self-dealing startup Dr. Church created. Prior to its acquisition, ReadCoor had struggled to create a commercially viable offering. After initially stating that it would release a commercial platform based on FISSEQ within two years of its 2016 founding, ReadCoor finally announced in February 2020 that their FISSEQ platform, RC2, would come to market later that year. Researchers waited for the launch of the RC2 platform, but it never came.

95. Instead, on October 5, 2020, 10x announced that it had acquired ReadCoor for over $400 million, and with it, exclusive rights to the Church patents under ReadCoor's September 9, 2016 agreement with Harvard.[67] Customers planning to purchase the RC2 platform expected 10x to quickly follow-up with a commercial release announcement—but no news was forthcoming about a commercial launch timeline. While 10x did not acquire a commercially viable offering,

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[65] Ex. 5, March 6-8, 2021 10x internal email correspondence, 10X595-00062362 (emphasis added).

[66] *See, e.g., In Antitrust Hearing, Zuckerberg Admits Facebook has Copied its Competition, TechCrunch* (Jul. 29, 2020), https://techcrunch.com/2020/07/29/in-antitrust-hearing-zuckerberg-admits-facebook-has-copied-its-competition/.

[67] 10x Genomics, Inc., Annual Report (Form 10-K) (Feb. 26, 2021), https://www.annualreports.com/HostedData/AnnualReportArchive/1/NASDAQ_TXG_2020.pdf, at 72 ("[10x] purchased all of the outstanding shares of ReadCoor, a privately held company based in Cambridge, Massachusetts, for $407.4 million."). The acquisition agreement ("Plan of Merger") between 10x and ReadCoor attached as Exhibit 10.1 thereto defines "Harvard License" as "that certain license agreement, dated as of September 9, 2016" between ReadCoor and Harvard (at p. 9).

what it did buy was the Church patents encumbered by Harvard's earlier promises to the NIH and the broader research community. 10x then worked with Harvard to weaponize these patents through further patent prosecution that conflicted with its promises to offer open and non-exclusive licenses for the patents.

96. Harvard's efforts on behalf of 10x to draft claims purporting to cover MERFISH technology and/or the MERSCOPE were blatant bad-faith violations of Harvard's License Agreement with Vizgen, as well as a dramatic departure from the licensing commitments it made to the NIH to the same effect. Harvard worked with 10x to draft such claims while continuing to receive royalty payments and receiving confidential updates from Vizgen regarding its products and commercialization and scientific efforts. This targeting of Vizgen with Harvard's patent portfolio unfairly threatens to deny Vizgen the fruits of the Harvard-Vizgen License Agreement, which was intended by both Harvard and Vizgen to pave the way for commercialization of MERFISH, and it threatens to eliminate competition in the SST market.

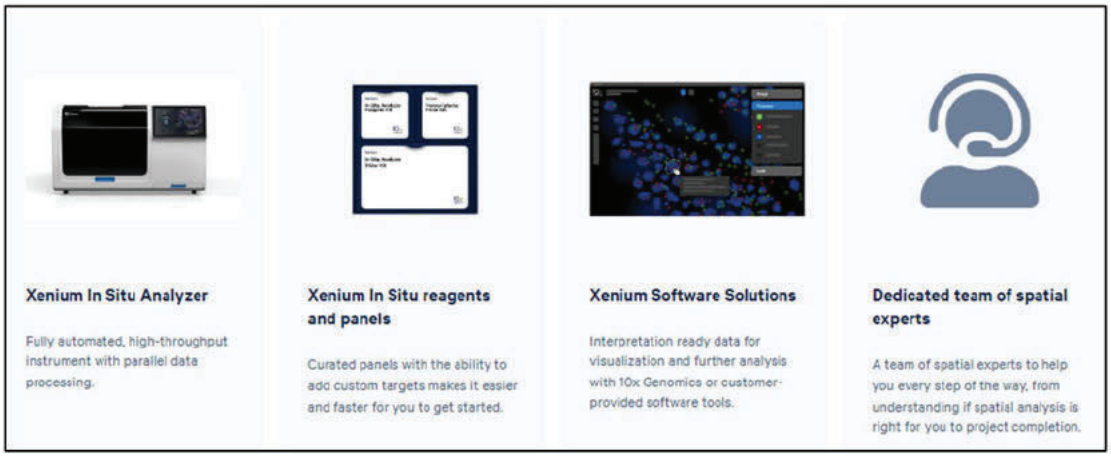
97. Even though Harvard had an ongoing business licensing relationship with Vizgen, Harvard kept these anti-Vizgen, anti-SST competition efforts secret. Harvard did not disclose the effort by 10x to attempt to obtain patent coverage of Vizgen's technology, and, jointly with Harvard, to apply for new patent claims purportedly covering Vizgen technology while falsely claiming priority back to the early 2010s. Behind the scenes, Harvard assisted 10x in 2020 and thereafter in applying for new patent claims from two separate and standalone patent families licensed to 10x—patent families 10x sought to combine in order to claim ownership over Vizgen's MERFISH technology while falsely claiming that the claims of the combined applications (the '585 CIP application and its progeny) were entitled to priority date(s) of 2011 and/or 2013. While attempting to re-align its patent scope in the shadows, Harvard continued to engage with Vizgen,

encouraging Vizgen to meet [redacted]

98. At all relevant times, Harvard and 10x acted in conjunction with each other in obtaining the patent claims asserted now.

99. Having armed itself to take over the SST market, 10x then put into action its plan to copy Vizgen and enter that market. 10x first announced its intention to enter the space on October 5, 2020, which was followed by a campaign of spreading awareness about its forthcoming "Xenium In Situ" platform. That platform was commercially launched on or around December 8, 2022 during the pendency of this litigation.

100. The Xenium In Situ platform comprises, *inter alia*, the Xenium In Situ Analyzer, Xenium Software Solutions, and Xenium In Situ reagents and panels (collectively, the "Xenium In Situ Analysis Technology") as shown in an excerpt below from the Xenium Website.




101. According to the Xenium Website, 10x's Xenium In Situ Analyzer is a "[f]ully automated, high-throughput instrument with parallel data processing," the "Xenium Software Solutions" provides "[i]nterpretation ready data for visualization and further analysis with 10x Genomics or customer-provided software tools," and the "Xenium In Situ reagents and panels"

are "[c]urated panels with the ability to add custom targets" that "makes it easier and faster for you to get started."

102. Since the beginning of 2022, 10x has been actively advertising and promoting its Xenium In Situ Analysis Technology to consumers at conferences, trade shows, and industry events. In February 2022, 10x promoted the Xenium In Situ Analysis Technology to customers at its virtual Xperience 2022 event, which provided "the first-ever look at the forthcoming Xenium Analyzer."[68] At the Advances in Genome Biology and Technology (AGBT) General Meeting in Orlando, Florida, on June 9, 2022, 10x "host[ed] a workshop . . . to share the latest data across its three platforms, including Xenium."[69] Thus, by at least this date, the Xenium In Situ Analyzer was being used to develop outward-facing data.

103. 10x recently described the Xenium In Situ Analyzer and its capabilities in a video by the Rutgers New Jersey Medical School Genomics Center titled "TSS: 10x Genomics presents its single cell and spatial multiomics platforms" and uploaded to YouTube on or about June 16, 2022.[70] (Excerpt below from about the 56 minute mark.) The accompanying voiceover states (at about the 54-55 minute mark), for example, that "using our In Situ Xenium platform we can do targeted and focused measurements of genes that are of interest, and we can obtain subcellular molecular resolution with high sensitivity and high throughput."

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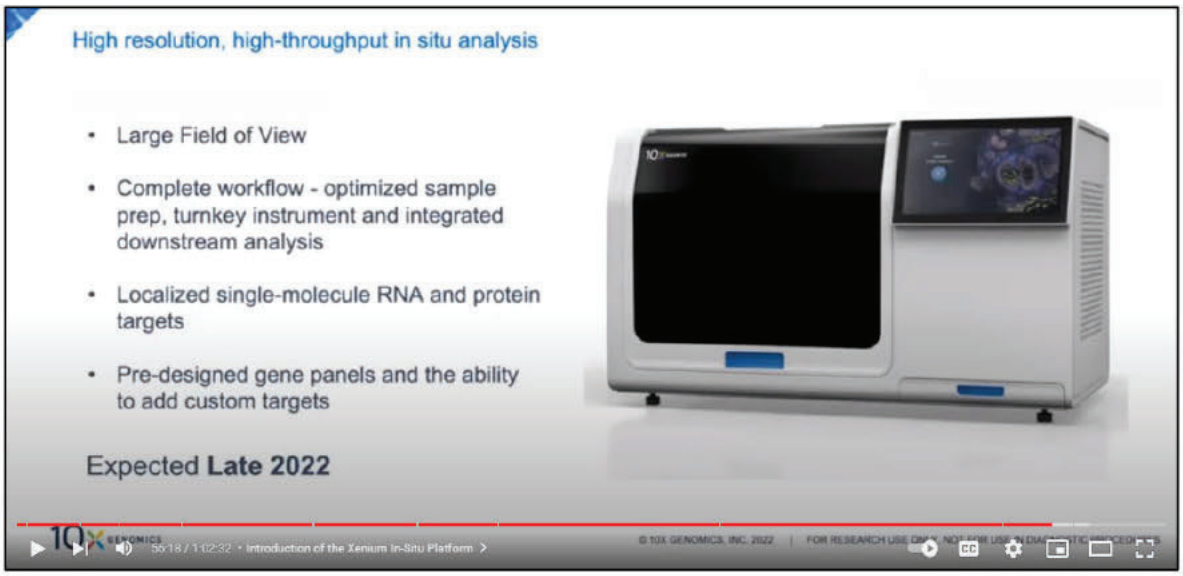
[68] Xperience Press Release, Feb. 22, 2022, https://www.prnewswire.com/news-releases/10x-genomics-showcases-robust-innovation-pipeline-at-xperience-2022-event-301487919.html.

[69] AGBT Press Release, June 7, 2022, https://www.prnewswire.com/news-releases/10x-genomics-advances-leadership-and-innovation-in-single-cell-and-spatial-technologies-at-2022-agbt-general-meeting-301562442.html.

[70] *TSS: 10x Genomics Presents its Single Cell and Spatial Multiomics Platforms*, YOUTUBE (Jun. 16, 2022), https://www.youtube.com/watch?v=wt8R70Pp8JE (*see, e.g.*, 53:40 minute mark onwards).




104. In August 2022, 10x promoted the Xenium In Situ Analysis Technology to customers at the Alzheimer's Association International Conference (AAIC) in Amsterdam, the Netherlands, and on its Twitter page (excerpt below).[71] As shown below, 10x's promotion involved demonstrating what appears to be a fully functioning commercial version of the Xenium Analyzer.

[71] https://twitter.com/10xGenomics (Aug. 1, 2022).


105. The final stage of 10x's plan is to kill Vizgen and SST competition, thereby securing 10x's monopoly power. That is why 10x and Harvard teamed up to work against Vizgen behind the scenes and to file this litigation—because it threatens Vizgen with bet-the-company litigation that could cause it to be removed from the market, thus eliminating a nascent but potent threat to its monopolistic plans. By suing Vizgen, 10x also hoped to slow Vizgen's significant momentum and the increasing commercial threat Vizgen posed so that 10x could extend its monopoly power to the SST market and dominate that new field just as 10x previously dominated non-spatial single cell analysis.

106. In 2021, 10x had grown its revenue by over 63% from the prior year—but for 2022, 10x's estimates for revenue growth have come to a near standstill, at about 4%. Only by developing its Xenium product to compete with MERFISH's capabilities using technology gained

by buying up its competitors—and which infringes on technology that was exclusively licensed to Vizgen, e.g., the '303 Patent—could 10x hope to successfully launch its product on time and to obtain growth by anticompetitive means, given it was behind its competitors in the SST market.

107. On May 3, 2022, Harvard and 10x filed the instant suit against Vizgen, alleging that the exact scope of operations Harvard had ***required*** Vizgen to undertake, and which it conveyed through the parties' communications that Vizgen ***could*** undertake without consequence—the same operations and commercialization efforts Harvard had closely monitored and encouraged for years, and the same operations and commercialization activities that Harvard had already licensed—were supposedly in conflict with an agreement that Harvard had entered with a third party—namely, the exclusive license agreement Harvard entered with ReadCoor that 10x subsequently acquired and performed under.

108. The filing of the lawsuit confirms Harvard's reversal of its previous "open" policy towards Vizgen. Harvard induced Vizgen's reliance during contract negotiations by purporting to maintain an "open" policy, but it is clear that Harvard ultimately reversed course behind the scenes, once Vizgen committed to commercializing with technology that Harvard believed it could attack via the Church patents. While Harvard had initially promised the open dissemination of the ReadCoor intellectual property to the NIH, and led Vizgen to believe the same leading up to the September 2019 Vizgen negotiations, Harvard changed its mind and pulled the rug out from Vizgen and the broader market, once it decided that it would make more money by choosing to place 10x as the dominant SST provider going forward.

109. Harvard knew in advance of the filing of this lawsuit that 10x planned to allege infringement against Vizgen but said nothing. Harvard's licensing agreement with 10x expressly mandates that 10x will provide such notice to Harvard.

110. Harvard stands to profit handsomely from this course of conduct, including receipt of a substantial portion of any funds recovered from Vizgen by virtue of 10x's infringement claims.[72] Harvard and 10x also stand to profit from this course of conduct, if successful, by consolidating and monopolizing the SST market, and therefore obtaining the ability to extract monopoly rents far above the competitive level, whereas the current state of active competition prevents them from doing so and lowers the amounts Harvard can obtain from licensees. Harvard stands to benefit regardless of the outcome of this lawsuit, but it will benefit most if its chosen monopolist, 10x, is the ultimate victor.

**F. The SST Market for Antitrust Analysis**

111. A relevant antitrust market exists for Single-Cell Spatial Transcriptomics (the "SST Market"). This is because the products offered within the SST Market are not reasonably interchangeable with products outside the SST Market. The products within the SST Market have differing features and functionalities relative to other RNA analysis products, including single-cell analysis tools. SST products, like the MERSCOPE platform, are specially designed to achieve the spatial analysis of single-cell gene expression information (e.g. within a cell) in a way that other kinds of RNA analysis products do not (and cannot). For example, although droplet-based single cell products such as 10x's Chromium may allow for the quantification of a cell's RNA transcripts, these products provide no information about the physical location of the transcripts within the cell. Thus, a scientist wanting information about the spatial context of a transcript, in addition to the

[72] *See* Harvard OTD, Sample License Agreement § 7.2, https://otd.harvard.edu/uploads/Files/Sample_Basic_Patent_Rights_Exclusive_License_Agreement.pdf (providing that Harvard shall receive a percentage of funds recovered in infringement suit by licensee).

copy numbers and identities of the transcripts in the cell, would not find the Chromium or similar products to be a reasonable substitute for an SST product such as the MERSCOPE.

112. Several practical indicia further demonstrate that the SST Market is distinct from other types of single cell analysis, including: (1) industry or public recognition of the market as a separate economic entity; (2) the product's peculiar characteristics and uses; (3) unique production facilities; (4) distinct customers; (5) distinct prices; and (6) specialized vendors.

113. ***Industry or Public Recognition of the SST Market.*** Today, there is broad recognition in the industry that SST exists as a distinct relevant market. The leading scientific publication Nature awarded spatially resolved transcriptomics the "Method of the Year 2020." Recent developments in SST, including Dr. Zhuang's innovations, represent a major evolution in the understanding of gene expression patterns in tissues and at the single-cell level. For example, researchers in 2021 recognized that "[s]patial analysis blossomed into a field in the past year or two," "in part due to the way the single-cell field has matured and technologies have been turned into commercially viable instruments with broad usage."[73]

114. ***The SST Market Includes Products with Peculiar Characteristics and Uses.*** Products in the SST Market have unique characteristics and uses that cannot be replicated by other types of RNA analysis tools. For example, although 10x's Chromium platform can provide information about gene expression inside single cells, it does not provide spatial information about the location of RNA transcripts within a single cell or spatial patterns of gene expression in a cell relative to expression in other cells. Although 10x's Visium platform can provide certain spatial gene expression information from tissues, this information is captured in spots on a slide, rather than based on the location of RNA transcripts inside a cell. In contrast, using SST, a researcher

[73] Marx (2021) at 12-13, *supra* (reviewing 10x's Visium and NanoString's GeoMx).

can obtain valuable information about spatial gene expression based on the physical location of mRNA transcripts inside cells and tissues. Vizgen's MERSCOPE is a leading example of a product with the capability to provide this information.

115. As explained above, for example, MERFISH has been used to generate brain atlases which permit observation of "correlated changes in the gene expression and cortical depth of IT neurons, revealing a molecular and spatial gradient of cells spanning nearly the entire cortical depth."[74] Such "[u]nderstanding [of] how different cell types contribute to brain function" "requires knowledge of their spatial organization and connectivity, which is not preserved in sequencing-based methods that involve cell dissociation."[75]

116. ***Products in the SST Market Are Made by Specialized Vendors and Production Facilities.*** Given the cutting-edge nature of the SST Market, only three companies have commercialized an SST product: Vizgen (MERSCOPE), 10x (Xenium), and NanoString (CosMx). As recognized in the industry in 2021, for example, turning technologies "into commercially viable instruments" "is still one of the challenges," and "[m]any of the most exciting [spatial methods to date] are still somewhat bespoke and really only operational in one or a few labs."[76]

117. ***Distinct Customers and Distinct Prices.*** As SST is in the nascent stages, the customers in the SST Market are primarily academic scientists.[77] Given the niche SST market, on information and belief, tools in the SST Market are often sold at higher prices to the few institutions willing to pay a premium for technology able to achieve the desired goal (e.g., highly-multiplexed, high-resolution, highly accurate spatial gene expression information at the subcellular level).

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74 Zhang (2021), *supra*, at 142.

75 Zhang (2021), *supra*, at 137.

76 Marx (2021), *supra*, at 12.

77 *See*, *e.g.*, n. 2 (*supra*).

118. Furthermore, in light of SST tools' unique capabilities, the prices of SST devices track independently of the prices for devices capable of performing other kinds of RNA analysis, such as non-spatial single-cell analysis. For example, 10x CEO Serge Saxonov recognizes that SST products, including 10x's Xenium platform, are distinct from but complementary to the Chromium platform: "we don't see any cannibalization [of Chromium sales with Xenium sales]. In fact, it's just the opposite because the two platforms are incredibly complementary and the use cases tend to be very complementary what people use – kind of generate single cell data sets using Chromium and then follow-up, characterize their samples with in situ given in Xenium."[78]

119. These factors indicate a hypothetical monopolist in the SST Market could profitably impose a small but significant and non-transitory increase relative to a prevailing competitive price. Given the unique features offered by SST products, and the relatively nascent stage of development in the industry, the leading academic and research institutions that form the customer base of the SST Market would be unlikely to switch away to alternative products outside the SST Market.

### G. Harvard and 10x Have Conspired to Monopolize the Single-Cell Spatial Transcriptomics Market

120. As detailed herein, Harvard and 10x have conspired to dominate the emerging SST Market with a take-no-prisoners approach. Rather than compete in the market, 10x has attempted to eliminate or acquire every competitor that might offer an alternative to its Xenium In Situ offering. To do so, Harvard and 10x have engaged in objectively baseless sham litigation against

[78] Comments by 10x CEO Serge Saxonov, 10x Genomics, Inc. (TXG) CEO Serge Saxonov on Q4 2021 Results – Earnings Call Transcript (Feb. 16, 2022), at 18, available at https://seekingalpha.com/article/4487718-10x-genomics-inc-txg-ceo-serge-saxonov-on-q4-2021-results-earnings-call-transcript.

Vizgen meant to spread fear, uncertainty, and delay in the marketplace, and harm, if not outright eliminate, Vizgen's commercial relationships with existing and potential clients.

121. Harvard and 10x's baseless lawsuit is part of an "Open Early, Closed Late" scheme in which Harvard first promised the Church Lab intellectual property would be Open technology available for licensing on open and non-exclusive terms. Harvard appeared to stand by its "Open Early" policy through at least September 2019, when it induced Vizgen's reliance on Harvard's "Open Early" licensing policy. Later, however, Harvard worked with 10x to Close the technology, suing entities that built commercial offerings potentially touching upon the Asserted Patents. This "Open Early, Closed Late" anticompetitive scheme evinces Harvard's intent to gain a shared monopoly with 10x in the SST market. It also blatantly violates Harvard's promises to the NIH and the scientific community at large, as well as the conditions of its grant funding.

122. Indeed, Harvard and 10x filed this action against Vizgen even though Vizgen is a beneficiary of Harvard's promise to keep the technology available to all with reasonable, open, ***non-exclusive*** licensing terms. Harvard did not make that promise for the NIH's benefit, as the NIH has rights to use the technology developed under the grant under the Bayh Dole Act, 35 U.S.C. § 200-212.

123. Rather, the promises Dr. Church and Harvard made to make the technology available on a non-exclusive basis could only reasonably have been directed for the benefit of non-U.S. government entities, such as technology companies like Vizgen and academics. Yet, despite Harvard's express promises in the NIH grant application, neither Harvard nor 10x offered Vizgen (or any other company) an open, non-exclusive license on reasonable terms or any terms before bringing suit, creating an intentional breach of Harvard's promises. Nor did they make an offer after Vizgen requested a reasonable, open, non-exclusive license once it formally became aware

of Dr. Church's and Harvard's promises during the pendency of the litigation, constituting a second breach. Harvard's initial grant of exclusivity to ReadCoor, and then 10x by virtue of its purchase of ReadCoor, constitutes a third breach. Thus Harvard has breached its promises made to the scientific community in at least three different ways.

124. As the beneficiary of Harvard's promises to the NIH and the broader community, Vizgen has the right to a license on the Asserted Patents which is a complete defense to infringement, and no reasonable litigant could realistically expect success in asserting infringement claims under these facts.

125. After failing to abide by its promise to offer the technology covered in the asserted patents on an open and non-exclusive basis before instituting this case, Harvard and 10x then attempted to conceal that these promises existed. While the Asserted Patents themselves listed the Grant number pursuant to the requirements of the Bayh-Dole Act, Harvard never made the full Grant Application public even after filing this lawsuit. *See supra* Paragraph 33. Moreover, on numerous occasions Harvard attempted to get Vizgen to withdraw its September 22, 2022 FOIA request to obtain access to the full version of the Grant Application. Then, when Harvard finally produced the Grant identified on each and every one of the Asserted Patents eight months into this litigation, it designated the portions of the Grant—***indeed the exact pages***—where it made the promises to license with the highest confidentiality level——"OUTSIDE ATTORNEYS' EYES ONLY"—so that Vizgen's counsel could not communicate its contents (and potential implications) to its client.

126. Harvard and 10X maintained this level of confidentiality even after Vizgen's counsel objected and requested that it be withdrawn. On February 8, 2023, Vizgen's FOIA request was granted and the public Grant Application was made available to Vizgen. Only then did

Harvard finally offer to remove the "OUTSIDE ATTORNEYS' EYES ONLY" designation from the version of the Grant Application it produced, so that Vizgen's counsel could show Vizgen the highly material promises Dr. Church and Harvard had made to license the Asserted Patents on an open and non-exclusive basis. Even so, in a last-ditch attempt to keep the Grant materials out of the public eye, Harvard ***still*** insisted on maintaining a "CONFIDENTIAL" designation.[79]

127. There is no reasonable basis for claiming confidentiality to a portion of a grant submitted to the U.S. Government which contains a promise to inure to the benefit third parties such as Vizgen, other than to conceal Harvard's now-broken promises and to pursue an anticompetitive course of conduct.

128. As referenced above, once it had the public grant application in hand, Vizgen put Harvard's promises to the test. As mentioned, Vizgen acted in reliance on Harvard's "Open Early" licensing policy that continued through at least September 2019. Vizgen thus set out to confirm Harvard had pulled the rug out from under Vizgen, as the lawsuit seemed to confirm. Harvard's response unequivocally shows Harvard has completely reversed course and is now in the "Closed Late" portion of the scheme.

129. Specifically, after Vizgen learned of the promises that Harvard and 10x's predecessor made to the NIH to obtain the grant funding that led to the technology claimed in the Asserted Patents, Vizgen sent a formal request to Harvard and 10x for the terms of a non-exclusive license to license the asserted patents as Dr. Church and Harvard had expressly promised to do. In

[79] The Grant materials attached hereto as Exhibits 1-2 were produced by the NIH pursuant to Vizgen's FOIA request. Harvard's designation of its own version of the Grant Application as "OUTSIDE ATTORNEYS' EYES ONLY" or "CONFIDENTIAL" has no bearing on the public nature of the FOIA production and does not subject any part of that production to the Protective Order in this case.

particular, on March 16, 2023, Vizgen wrote: "Pursuant to the promise made at pages 117, 131, and 133 of the application resulting in grant number 1 P50 HG005550, please provide Vizgen, within ten business days, the terms for a reasonable non-exclusive license to the asserted patents."[80] On March 30, 2023, Harvard and 10x refused to provide such terms, stating "the asserted patents have been exclusively licensed to 10x."[81] Their actions, including the refusal to abide by these promises and the conditions of the grant application, as well as by the "open" policy they conveyed to Vizgen, reveal that this lawsuit is nothing more than the enforcement mechanism of a calculated bait-and-switch scheme to eliminate Vizgen from the SST market, so 10x can extend its current dominance in other types of cell analysis into the SST market as well.

130. This lawsuit is already having its intended effects in the marketplace, with customers expressing concerns about dealing with Vizgen due to the ongoing lawsuit. 10x salespeople have amplified these concerns, questioning Vizgen's future viability in light of the lawsuit, and more generally spreading fear, uncertainty and doubt in the market. 10x and Harvard are therefore using this lawsuit as a means to interfere directly with the business relationships of Vizgen and ensure Vizgen—one of 10x's most formidable competitors in the SST Market—is eliminated.

131. Moreover, this lawsuit is only one of many baseless claims 10x is asserting against competitors. Industry publications recognize 10x is "aggressively" asserting its IP in the "burgeoning spatial genomics technology market."[82] Consistent with this "aggressive[]" strategy,

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[80] Ex. 6, Email from A. Chen to R. Rodrigues *et al.*, March 16, 2023.

[81] *Id.*, Email from R. Rodrigues *et al.* to A. Chen, March 30, 2023.

[82] Genomeweb, *10x Genomics Sues NanoString, Vizgen Over Spatial Gene Expression Analysis Technologies*, available at https://www.genomeweb.com/business-news/10x-genomics-sues-nanostring-vizgen-over-spatial-gene-expression-analysis#.Y9A29HbMKUk.

10x has also instituted baseless litigation against NanoString, which offers the competitive CosMx spectral molecular imager—one of the three SST products on the market. By eliminating Vizgen and NanoString, 10x will obtain unquestioned dominance in the SST market.

132. More generally, 10x has a long history of using litigation to bully rivals and force them off the market. 10x also sued Parse, an emerging company that could develop competitive products to threaten 10x. Parse is a startup company in its infancy, only recently raising its first $50 million in February last year.[83] Upon learning of Parse's potential growth, 10x promptly sued Parse a few months later, alleging that Parse "made clear that it intends nothing less than to copy 10x's complete lineup of single-cell products wholesale."[84] 10x's sprawling litigation campaign shows its true purpose is to eliminate all rivals and achieve monopoly power in the nascent SST market.

133. This course of conduct reveals Harvard and 10x's "open early, closed late" tactics. Harvard started off as "open," assuring Vizgen during licensing negotiations there was no Harvard intellectual property that could foil Vizgen's commercial operations. But then, after Vizgen entered into the license with Harvard, Harvard "closed" its approach to intellectual property after it luring Vizgen in—claiming (after it caused Vizgen and others to commit to Harvard's alleged technology) that virtually all SST technology was covered by other patents it had not licensed and thus off limits to Vizgen and any other potential competitors. Vizgen and others face, at best, a

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[83] *Parse Biosciences Raises $41.5M Series B Round to Scale Single-Cell Sequencing Products and Expand Product Portfolio*, available at https://www.businesswire.com/news/home/20220215005525/en/Parse-Biosciences-Raises-41.5M-Series-B-Round-to-Scale-Single-Cell-Sequencing-Products-and-Expand-Product-Portfolio.

[84] Reuters, *10x Genomics lawsuit says startup copied gene-analysis technology*, available at https://www.reuters.com/legal/litigation/10x-genomics-lawsuit-says-startup-copied-gene-analysis-technology-2022-08-25/.

Hobson's choice: pay extortionate fees to 10x (thereby enriching Harvard and 10x at the expense of competition) or exit the SST market.

134. This lawsuit is one enforcement mechanism of the scheme. 10x is well aware that if it succeeds in its lawsuit and shuts down Vizgen's MERSCOPE® ("MERSCOPE") product, its Xenium In Situ product will have one less competitor in the market, helping to cement the dominance of Xenium In Situ.

135. 10x is a recent entrant in the SST Market, but it is nonetheless on the verge of monopolizing it. To finish off the Harvard-10x "Open Early, Closed Late" scheme, 10x has engaged in a campaign to systematically take all products competitive to its Xenium In Situ product off of the market through litigation or acquisition. If successful, 10x will be the last man standing in the market, achieving monopoly power.

136. As noted above, there are only three companies with commercially viable SST instruments in the marketplace today: Vizgen, 10x, and Nanostring. If 10x is successful in this lawsuit, it will be on the verge of achieving a monopoly in the emerging SST market.

137. Moreover, 10x is cementing its future power in the SST Market by integrating its new Xenium In Situ product with its other products where 10x enjoys market power. For example, 10x has advertised that its SST product [redacted]

[85] Ex. 7, *Spatial Product Positioning Training*, 10x595-00035528 at Slide 26.

138. Indeed, 10x has advertised that it wants to create an "end-to-end ecosystem" that will lock-in researchers to using 10x products.[86] Creating these anticompetitive lock-in effects has been described by 10x executives as a "critical component of TXG's business model":[87]

> We believe it is important to also *evaluate 10x's three main product lines and markets in the context of one another* (i.e., as an "ecosystem"). Indeed, the company's cloud-based analysis platform and other bioinformatics solutions should increase cohesion among its different products (and among users). TXG's Chromium single-cell and Visium spatial products offer high-plex measurement of the entire transcriptome, whereas the company's Xenium in situ offering will provide targeted measurement with subcellular resolution, high sensitivity and high throughput. Overall, 10x's different workflows can help address its customers' needs from discovery applications to focused use cases. *Importantly, the company believes there are many use cases in which customers will utilize information from all three platforms. Interestingly, users have already asked 10x for guidance transitioning between experiments on its different platforms. In our opinion, this comprehensive nature is a critical component of TXG's business model."*

139. 10x and Harvard's anticompetitive scheme will devastate research centers, hospitals, and ultimately patients across the nation. Research efforts to create innovative new medicines will be more expensive as researchers are forced to pay monopoly rents to 10x just to undertake the work needed to bring new medicines and techniques to market. These impacts directly undermine Harvard's earlier promise to ensure "open dissemination of knowledge and technology" relating to the research underlying the 10x asserted patents.[88]

140. Furthermore, consumers in the SST Market will ultimately be forced to pay quality-adjusted supracompetitive prices to 10x for its Xenium In Situ product. That will likewise reduce output, causing less innovative research to take place across the globe, and ultimately cause fewer medicines to reach patients.

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[86] Kyle Mikson and Alex Vukasin, *Canaccord Initiation of Coverage* (July 25, 2022), at 1.

[87] Kyle Mikson and Alex Vukasin, *Canaccord Initiation of Coverage* (July 25, 2022), at 12 (emphasis added).

[88] Ex. 1, Grant Application at 117.

141. Thus, no matter whether Vizgen and other competitors succumb by paying extortionate licensing fees or exit the market due to Harvard and 10x's anticompetitive conduct, consumers will suffer. That consumer harm will involve lower consumer choice, as well as more mundane harms related to price and quality, since the price for non-10x SST options will be artificially high and the continued innovation artificially low.

## COUNTERCLAIM I[89]

**Breach of the Implied Covenant of Good Faith and Fair Dealing**

*(Against Plaintiff Harvard)*

142. Vizgen incorporates by reference the allegations in the above Paragraphs.

143. A covenant of good faith and fair dealing is implied in every contract. The covenant requires the parties to remain faithful to their intended and agreed upon expectations concerning contractual performance and prohibits one party from injuring the other's right to reap the benefits prescribed by the terms of the contract or from attempting to unfairly leverage an undue advantage.

144. The License Agreement is a valid contract between Vizgen and Harvard and thus a covenant of good faith and fair dealing is implied therein.

145. Harvard breached the implied covenant of good faith and fair dealing, including by failing to remain faithful to the intended and agreed expectations of Harvard and Vizgen in their respective performance, undertaking actions with 10x that would have the effect of destroying or injuring the rights of Vizgen to receive the fruits of the contract, and by unfairly attempting to secure an undue economic advantage at Vizgen's expense.

146. As Harvard was made aware, the express purpose of the License Agreement was for Vizgen to obtain the requisite intellectual property to commence its commercial operations to

[89] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim I. Dkt. 114.

market the MERSCOPE/MERFISH technology—commercial operations that were disclosed in detail to Harvard. The License Agreement establishes this objective: [redacted]

147. Indeed, Schedule II discloses exactly what Vizgen planned to do with the intellectual property it was licensing: [redacted]

148. Harvard approved the commercialization plans Vizgen submitted, licensed Vizgen to undertake those commercial activities, and [redacted] after reviewing detailed reports on those commercialization efforts.

149. Harvard also informed Vizgen, both orally and in the License Agreement itself, [redacted] In particular, Harvard assured Vizgen that it had no other third-party licenses that conflicted with the License Agreement, including the operational

goals that the Vizgen-Harvard license exists to further, and the operational plans Harvard required from Vizgen, and reviewed, approved, and monitored for years.

150. Harvard's conduct and communications after entering into the License Agreement—including its negotiations with Vizgen of [redacted]—never indicated that Vizgen's commercial activities infringed on any of Harvard's other intellectual property in any manner whatsoever. Harvard never corrected or attempted to qualify its prior representations to Vizgen and instead [redacted] from Vizgen and treated Vizgen's products as fulfilling Vizgen's commercialization obligations under the License Agreement.

151. Unbeknownst to Vizgen at the time, and as described above, Harvard was working with 10x to obtain patent claims within the Harvard patent portfolio purporting to cover Vizgen's commercial activities, using a series of new and amended patent applications after Vizgen disclosed information on its operations to Harvard paired with knowingly false priority claims—all as part of an attempt to manufacture infringement claims against Vizgen, injuring Vizgen's right to reap the benefits of the License Agreement and attempting to unfairly leverage an undue advantage.

152. By way of non-limiting example, within the past several years, through its patent prosecution counsel, Harvard has adopted a new patenting strategy regarding the patent families that issued as the patents that Harvard and 10x now assert against Vizgen. This strategy is reflected in the approach to patenting the asserted '737, '051, '052, and '136 patents, among other patent-related rights, which purport to claim priority to U.S. Provisional Application No. 61/579,265, purportedly filed on December 22, 2011 (collectively, the "'265 Provisional Family")—a false

claim as explained *supra*.[90] Between 2011 and 2020—a period of nearly ten years—Harvard filed only four applications in the '265 Provisional Family: International Application No. PCT/US12/71398 and U.S. Application Nos. 14/366,486, 16/255,920, and 16/393,215. Between 2020 and the present—*less than three years*—Harvard filed *ten* applications in the '265 Provisional Family: U.S. Application Nos. 16/941,585, 17/238,642, 17/122,168, 17/366,127, 17/238,682, 17/584,959, 17/366,151, 17/664,095, 17/498,829, and 17/671,803. Multiple of these recently-filed applications are designated "Track One" applications, which receive prioritized examination at the U.S. Patent & Trademark Office. On information and belief, Harvard rapidly accelerated its efforts to obtain issued patents in the '265 Provisional Family with 10x.

153. As explained further *supra*, as part of the recent aggressive patenting strategy regarding the '265 Provisional Family, Harvard filed multiple CIP applications within this family, including the applications that issued as the '737, '051, '052, and '136 patents. In pursuing these CIP applications, on information and belief, Harvard and/or 10x recognized that the specification of the earlier-filed applications of the '265 Provisional Family did not adequately disclose or enable, *inter alia*, *in situ* technology. In a deliberate and intentional effort to overcome these deficiencies and obtain patent claims purporting to cover MERFISH and Vizgen's MERSCOPE platform (yet failing in such goals), Harvard attempted to add matter from another patent family (the "3D Matrix Family") to the '265 Provisional Family. The first such CIP application, U.S. Application No. 16/941,585, which issued as the '737 patent, was purportedly filed on July 29, 2020.

[90] Patents and applications which purport to claim priority to the '265 Provisional are referred to as the "'265 Provisional Family" only for ease of reference herein, as one or more of these applications is not entitled to the priority date of the '265 Provisional.

154. On information and belief, as part of the recent aggressive patenting strategy regarding the '265 Provisional Family, Harvard prosecuted members of this family with 10x as part of a strategy to elicit infringement by Vizgen's technology of one or more members of this patent family. To this end, Harvard drafted and prosecuted patent claims purporting to cover MERFISH and Vizgen's MERSCOPE platform. As a result, such recently-filed claims differ in scope from claims Harvard earlier sought to obtain for members of the '265 Provisional Family. For example, U.S. Patent No. 10,227,639,[91] an earlier-filed member of the '265 Provisional Family which is not asserted against Vizgen, recites claims purportedly covering, *inter alia*, "analytes immobilized in [a] sample" via methods other than a 3D matrix, such as to a solid substrate, multi-well plate, or microspheres, as the use of a 3D matrix is not disclosed in the '639 patent specification.

155. On information and belief, Harvard undertook the recent aggressive and preferential patenting strategy regarding the '265 Provisional Family with 10x at the expense of Vizgen, which had developed and commercialized *in situ* technology before 10x.

156. Harvard's actions after executing the License Agreement, including its work with 10x to reverse-engineer Vizgen's technology, its allowance of and participation in 10x's efforts to manufacture patent claims purportedly covering Vizgen technology, and now its present claims against Vizgen, all frustrate the License Agreement's objectives. Harvard's actions strip Vizgen of the fruits of the contract, render the intellectual property Vizgen licensed from Harvard worthless to Vizgen, and secure an undue economic advantage at Vizgen's expense. Harvard has breached the implied covenant of good faith and fair dealing by virtue of this bait-and-switch

[91] The '639 patent purportedly issued on March 12, 2019 from U.S. Application No. 14/366,486, which purportedly has a §371(c) date of June 18, 2014.

approach—[redacted] and then later seeking damages for those exact efforts and proclaiming that Vizgen is prohibited from continuing them.

157. As a result of Harvard's breaches of the implied covenant of good faith and fair dealings, Vizgen has suffered and continues to suffer pecuniary loss.

## COUNTERCLAIM II[92]

**Breach of Warranty**

*(Against Plaintiff Harvard)*

158. Vizgen incorporates by reference the allegations in the above Paragraphs.

159. In the License Agreement, [redacted] As detailed herein, this warranty was specifically requested and negotiated by Vizgen.

160. Privity exists between Vizgen and Harvard, and this warranty formed a basis of the bargain between Vizgen and Harvard.

161. At the time Harvard executed its License Agreement with Vizgen in 2019, it was well aware that Harvard had an exclusive licensing agreement with ReadCoor relating to SST technology as of 2016. In fact, [redacted]. Harvard thus blatantly violated [redacted] from the day it executed the Vizgen License Agreement.

[92] Vizgen understands and respects the court's order dismissing Counterclaim II (*see* Dkt. 114), but continues to plead it to preserve the record for any potential appeal following entry of a final judgment in this matter.

162. Vizgen relied on Harvard's warranty, and this warranty induced Vizgen to enter the License Agreement, and the amendments thereto, invest in its business operations, and develop and launch the products and services accused of infringement in the SAC.

163. On the theory of infringement stated in the SAC (which Harvard joined as a co-plaintiff and which Vizgen disputes), Harvard breached [redacted] of the License Agreement.

164. Specifically, the SAC claims Vizgen's commercialization plans, and Harvard and Vizgen's agreed-on plan for those commercialization efforts, conflict with intellectual property Harvard licensed to a third party. The SAC also seeks a permanent injunction, and thus claims that Harvard gave exclusive rights to a third party that overlap with the patent rights Harvard licensed to Vizgen, and that prohibit Vizgen's use of the licensed patent rights in the licensed field of use. The SAC [redacted]

165. As a direct and proximate result of Harvard's breaches of express warranty, Vizgen has suffered and continues to suffer pecuniary loss.

**COUNTERCLAIM III**[93]

**Negligent Misrepresentation**

*(Against Plaintiff Harvard)*

166. Vizgen incorporates by reference the allegations in the above Paragraphs.

167. As detailed herein, in the course of its business and transactions, Harvard supplied incorrect and/or incomplete information to Vizgen and failed to inform Vizgen of material facts related to its ongoing business and transactions with Vizgen. These misstatements and omissions

[93] Vizgen understands and respects the court's order dismissing Counterclaim III (*see* Dkt. 114), but continues to plead it to preserve the record for any potential appeal following entry of a final judgment in this matter.

occurred without Harvard exercising reasonable care in obtaining or communicating accurate information. Vizgen justifiably relied on Harvard's incorrect and/or incomplete statements and, as a result of Vizgen's justifiable reliance on that information, Vizgen has suffered and continues to suffer pecuniary loss.

168. As described above, Harvard approved the commercialization plans Vizgen submitted, licensed Vizgen to undertake those commercial activities, and [redacted] after reviewing detailed reports on those commercialization efforts—never once indicating that Vizgen's commercial activities infringed on any Harvard intellectual property licensed to another party in any manner whatsoever.

169. Harvard also informed Vizgen both orally [redacted] that the License Agreement was not in conflict with any other intellectual property agreement between Harvard and any third party. [redacted] Harvard assured Vizgen that it had no other third-party licenses that conflicted with the License Agreement, including the operational goals that the Vizgen-Harvard license exists to further, and the operational plans Harvard required from Vizgen, and reviewed, approved, and monitored for years.

170. Prior to contracting with Vizgen, Harvard approved Vizgen's business plan and established [redacted]

171. In reliance on these misrepresentations, Vizgen entered into the License Agreement with Harvard.

172. In further reliance on Harvard's negligent misrepresentations, Vizgen signed [redacted].

173. At least by the time of the [redacted], unbeknownst to Vizgen, on information and belief, Harvard and 10x were working to redirect Harvard's patent portfolio to target Vizgen's commercial activities through a series of reverse-engineered patent applications and amendments, designed to target MERFISH technology and Vizgen activities.

174. Harvard failed to exercise reasonable care of competence regarding the information it provided to Vizgen, and failed to convey material information to Vizgen during the parties' ongoing business dealings.

175. Even after discovering the clear conflict between the Harvard-10x license and the Harvard-Vizgen license, Harvard did not disclose or discuss that conflict with Vizgen. Instead, Harvard continued its commercial relationship with Vizgen as if no conflict were present.

176. As described above, Harvard's actions were in disregard of its own guidelines and principles regarding its licensing agreements with third parties, thus falling below the level of care Harvard itself advocates for its Office of Technology Development and those of other universities.

177. Vizgen justifiably relied on Harvard's statements, including by entering into the License Agreement, the [redacted]

178. As a result of Vizgen's justifiable reliance on inaccurate and/or incomplete information from Harvard, Vizgen has suffered and continues to suffer pecuniary loss.

## COUNTERCLAIM IV[94]

**Tortious Interference with Contractual and Advantageous Business Relations**

*(Against Plaintiff 10x)*

179. Vizgen incorporates by reference the allegations in the above Paragraphs.

180. A valid contract, namely the License Agreement, exists between Vizgen and Harvard. That contract includes express and implied terms, including that the intellectual property Vizgen licensed from Harvard does not conflict with any other intellectual property agreement between Harvard and any third party, and that Vizgen had the freedom to operate.

181. 10x's Complaint makes clear that it was well aware of the Vizgen-Harvard connection. *See* SAC ¶¶ 37, 45, 46, 53, 54, 61, 62, 69, 70 (citing various Vizgen materials which state that Vizgen's technology was developed in the lab of Harvard professors). Moreover, on information and belief, 10x had knowledge of the contract and between Harvard and Vizgen, as well as its express and implied terms.

182. On information and belief, 10x was aware that the contract and other business relationship between Vizgen and Harvard gave rise to, at a minimum, implied licenses to Harvard's other intellectual property, as 10x has taken this same position regarding Harvard's licensing agreements in *Bio-Rad Laboratories Inc.*, v. *10x Genomics, Inc*., 19-01699-RGA (D. Del. 2019). Alternatively and at a minimum, 10x should have known of the existence and nature of the contractual relationship and the implied licenses granted to Vizgen from the facts and circumstances of which 10x was aware. Harvard's standard license agreements, and, on information and belief, Harvard's license agreement with ReadCoor/10x, require that the licensee

[94] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim IV. Dkt. 114.

disclose its "Development Plans" to Harvard for approval and further require that the licensee meet its "Development Milestones." *See* Harvard OTD, Sample License Agreement, § 3.1 (detailing "Development and Commercialization" requirements) & pp. 29-30 ("Development Milestones" and "Development Plan" placeholders) https://otd.harvard.edu/uploads/Files/Sample_Basic_Patent_Rights_Exclusive_License_Agreement.pdf).

183. On information and belief, 10x knowingly induced Harvard to breach its contract and implied covenant of good faith and fair dealing with Vizgen, including by taking positions in the SAC that would contrast Harvard's repeated assurances to Vizgen during years of discussions, royalty payments, and commercial updates to Harvard on progress undertaking the very development efforts Harvard had encouraged and required Vizgen to undertake.

184. Moreover, as noted *supra*, on information and belief, 10x induced Harvard to alter its patent portfolio licensed to ReadCoor to target Vizgen's commercial activities by filing the '585 CIP application in an effort to obtain claims covering TOSS using a 3D matrix in cells, all the while falsely maintaining that such claims were entitled to a priority date in the early 2010's. The CIP application and its progeny were crafted to target Vizgen activities that Vizgen had disclosed to Harvard, in an effort by 10x to manufacture infringement claims against Vizgen.

185. On information and belief, 10x encouraged this prosecution activity, and encouraged Harvard to approve this activity, thus causing Harvard to breach its contract and the covenant of good faith and fair dealing owed to Vizgen. 10x knowingly engaged in an effort to interfere with the Vizgen-Harvard License Agreement and to frustrate the commitments Harvard made to Vizgen and to deprive Vizgen of the benefits of its business relations with Harvard.

186. On information and belief, 10x knowingly worked in bad faith to cause Harvard to shift its patent prosecution efforts towards Vizgen's activities and to join the instant suit and its stated intent to interfere with Vizgen's business, and thereby induced Harvard to breach its contract with Vizgen and the implied covenant of good faith and fair dealing, included with that contract.

187. 10x has also tortiously interfered with Vizgen's business relationships with its clients, of which 10x is fully aware.

188. 10x's interference, in addition to being intentional, is improper in motive or means.

189. Vizgen has suffered damages as a result of 10x's willful, malicious, and unfair conduct.

190. As a direct and proximate result of 10x's tortious interference, Vizgen has suffered and continues to suffer pecuniary loss.

**COUNTERCLAIM V[95]**

**Mass. Gen. Law. Ch. 93A §§ 2 and 11 (Related to Ongoing Prosecution)**

*(Against Plaintiffs 10x and Harvard)*

191. Vizgen incorporates by reference the allegations in the above Paragraphs.

192. At all times relevant to this action, 10x and Harvard have been engaged in trade or commerce within the Commonwealth of Massachusetts and within the meaning of M.G.L. c. 93A, § 11 and § 2.

193. 10x and Harvard's unfair and deceptive practices occurred primarily and substantially in the Commonwealth of Massachusetts. Additionally, 10x and Harvard's unfair and deceptive practices caused harm that was primarily and substantially felt by Vizgen in the

[95] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim V. Dkt. 114.

Commonwealth of Massachusetts, where Vizgen was founded and where it is headquartered. Furthermore, on information and belief, the patent prosecution activity that was manipulated by 10x and Harvard to target Vizgen was controlled and conducted in Massachusetts.

194. As detailed herein, 10x and Harvard engaged in a pattern of conduct, with an improper motive, aimed at destroying and injuring Vizgen's right to receive the fruits of the License Agreement, in disregard of known contractual arrangements, and with the intent to secure commercial benefits for 10x and Harvard.

195. Harvard's unfair and deceptive conduct included soliciting confidential information regarding Vizgen's business plans and assuring Vizgen that the intellectual property Harvard licensed to Vizgen included all the necessary rights and approvals required for Vizgen's commercial plans. Harvard never corrected or attempted to qualify its prior representations to Vizgen and instead continued to accept royalty payments from Vizgen and treated Vizgen's products as fulfilling Vizgen's commercialization obligations under the License Agreement.

196. Meanwhile, as detailed herein, Harvard and 10x were working together to file new patents and amend existing ones in an attempt to reverse engineer patent coverage for Vizgen's activities (as disclosed to Harvard), to manufacture infringement claims against Vizgen, and to thwart Vizgen's business. Harvard and 10x have worked together to continue to shift the Harvard patent prosecution focus towards Vizgen's commercial activities via the filing of the CIP application and, for example, by seeking to obtain claims covering TOSS using a 3D matrix in cells. Harvard and 10x (and Dr. Church) were aware that such claims would be entitled to a priority date no earlier than 2020, yet falsely took the position in this litigation and before the Patent Office that such claims were entitled to a priority date in the early 2010's.

197. If Harvard's position in this lawsuit is correct, Harvard also grossly misrepresented to Vizgen that [redacted] At no point during the parties' relationship did Harvard inform Vizgen that its intended scope of operations was supposedly in conflict with other Harvard intellectual property that Harvard had never licensed to Vizgen, offered to Vizgen, nor informed Vizgen that Vizgen would supposedly need, nor did Harvard correct its prior material misrepresentations and omissions regarding Vizgen's freedom to operate vis-à-vis Harvard's patent portfolio.

198. Upon information and belief, 10x knew that Harvard made such representations to Vizgen. Moreover, 10x was aware, including from its own licensing agreements with Harvard, that Vizgen would have provided Harvard with various details regarding its scope of commercial operations and use of the licensed intellectual property.

199. Harvard, having decided to align itself with 10x, intentionally strung along Vizgen, encouraging it to build and invest in its business, all the while continuing to reap [redacted] and working in concert with 10x to drift their patent prosecution focus towards Vizgen's activities, e.g., by filing the '585 CIP application as detailed herein.

200. Harvard engaged in this pattern of unfair and deceptive conduct with respect to Vizgen knowingly and willfully: [redacted]

[redacted]

201. Harvard and 10x both violated Mass. Gen. Law. Ch. 93A §§ 2 and 11, including by virtue of commencing this sham litigation against Vizgen and tortiously interfering with Vizgen's contractual and advantageous business relationships with improper motive and means, and by using unfair practices to do so. On information and belief, 10x with the participation of Harvard, commenced this litigation to slow the market uptake of Vizgen's MERSCOPE/MERFISH technology and products and to damage Vizgen. As stated herein, Harvard had already licensed Vizgen's activities. 10x and Harvard also had knowledge, as evidenced by 10x's own position taken in *Bio-Rad Laboratories Inc. and President and Fellows of Harvard College v. 10x Genomics, Inc. and President and Fellows of Harvard College*, 19-01699-RGA (D. Del. 2019), that the license agreement between Vizgen and Harvard gave rise to, at a minimum, an implied license to Harvard's other intellectual property.

202. 10x and Harvard filed the instant suit with knowledge that, in light of the foregoing, there exists no reasonable factual support for their allegations. In violation of Mass. Gen. Law. Ch. 93A §§ 2 and 11, 10x and Harvard brought their claims notwithstanding the knowledge that such claims are objectively baseless. Alternatively, and at a minimum, 10x and Harvard filed the suit with reckless disregard as to whether any reasonable factual support for their claims exists.

203. 10x and Harvard filed the instant lawsuit for the purpose of causing Vizgen, a small start-up, to incur damages.

204. 10x and Harvard's conduct has been, and continues to be repugnant to the norms, environment, and culture of the commercial marketplace.

205. The unfair acts and practices of 10x include, at a minimum, 10x's filing of meritless litigation against Vizgen, 10x's tortious interference with Vizgen's contractual and advantageous business relationships with Harvard, 10x's bad faith effort to manipulate the Harvard patent portfolio to try to target Vizgen and its products and services, and 10x effort to use all of these tactics, and more, to try to avoid competing fairly in the marketplace and instead seek to damage Vizgen.

206. The unfair and deceptive acts and practices of Harvard include, at a minimum, Harvard's bad faith breach of the implied covenant of good faith and fair dealing in working with 10x to target Vizgen, Harvard's misrepresentations to Vizgen, Harvard's breach of express warranty, and Harvard's filing, in concert with 10x, of sham litigation against Vizgen.

207. As a result of 10x and Harvard's unfair conduct, Vizgen has suffered and continues to suffer pecuniary loss.

208. Moreover, as alleged herein, 10x and Harvard's unfair and deceptive acts and practices were intentional, willful, and knowing.

209. Vizgen is entitled to treble damages, reasonable attorneys' fees, costs, and interest in an amount to be determined at trial.

## COUNTERCLAIM VI[96]

**Declaratory Judgment of Non-Infringement of U.S. Patent No. 11,021,737**

*(Against Plaintiffs 10x and Harvard)*

210. Vizgen incorporates by reference the allegations in the above Paragraphs.

211. Plaintiffs have brought an action asserting the '737 patent against Vizgen.

[96] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim VI. Dkt. 114.

212. Plaintiff Harvard has alleged that it is the legal owner by assignment of the '737 patent.

213. Plaintiff 10x has alleged that it is the exclusive licensee of the '737 patent.

214. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the '737 patent.

215. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the '737 patent.

216. Vizgen's products are not infringing directly or in any other manner any valid and enforceable claim of the '737 patent.

217. Additionally, each of the claims of the '737 patent are invalid as set forth below in Vizgen's Counterclaim VII. An invalid claim cannot be infringed.

218. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the '737 patent.

219. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

**COUNTERCLAIM VII**[97]

**Declaratory Judgment of Invalidity of U.S. Patent No. 11,021,737**

*(Against Plaintiffs 10x and Harvard)*

220. Vizgen incorporates by reference the allegations in the above Paragraphs.

221. Plaintiffs have brought an action asserting the '737 patent against Vizgen.

[97] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim VII. Dkt. 114.

222. Plaintiff Harvard has alleged that it is the legal owner by assignment of the '737 patent.

223. Plaintiff 10x has alleged that it is the exclusive licensee of the '737 patent.

224. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the '737 patent.

225. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the '737 patent.

226. The claims of the '737 patent are invalid for failing to comply with the provisions of the Patent Laws, Title 35 of the United States Code, including without limitation one or more of 35 U.S.C. §§ 101, 102, 103, 112, and/or the rules, regulations and law pertaining thereto.

227. For example, early forms of ISH were used to visualize gene expression—that is, the presence of mRNA transcripts of genes—in three-dimensional space. Researchers first developed one such technique, fluorescence ISH ("FISH"), several decades ago.[98] FISH involves hybridizing fluorescently labelled nucleic acid probes to complementary nucleic acid sequences that can be fixed on a slide or are found within fixed cells or tissues. The fluorescence from such probes is then detected to provide the location and identity of a sequence of interest, such as an mRNA transcript of a particular gene.

228. In one FISH application called single-molecule FISH ("smFISH"), individual RNAs are labeled with fluorescent probes and imaged in their native cellular and tissue context. This technique provides the spatial context of RNAs but has been limited in the number of different RNA species that can be measured simultaneously.

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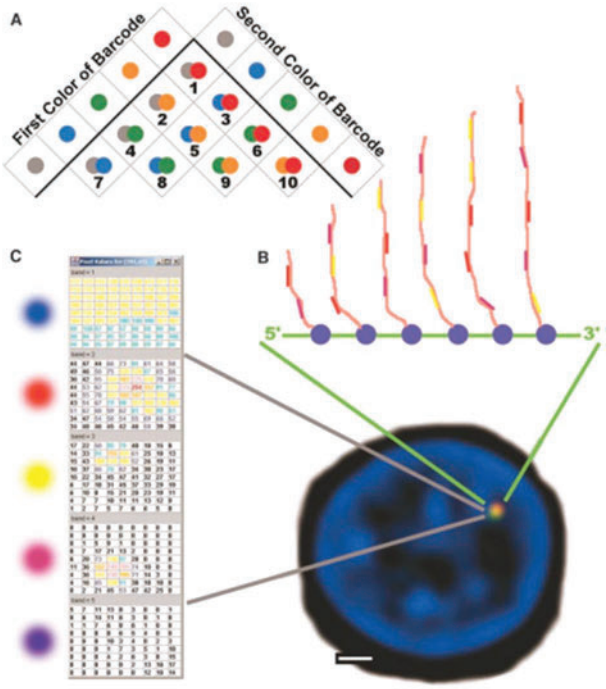
[98] Moses at 534-36.

229. By the early 2000s, combining fluorescence microscopy with multiplex probe design, for example, it was feasible to visualize the expression of different genes simultaneously inside single cells with (for the time) relatively high spatial resolution. As shown in an early report of this "combinatorial barcoding" approach to identifying RNA transcripts,[99] combinations of oligomer DNA probes—each tagged with a single fluorophore (source of fluorescent light)—provide a large number of virtual "colors" for distinguishing between many transcripts. The resulting color combinations—sometimes referred to as "spectral barcodes"—can be used to define the identity of the targeted transcripts. *See* Figures 1(A)-(C) of Levsky (2002), excerpted below.

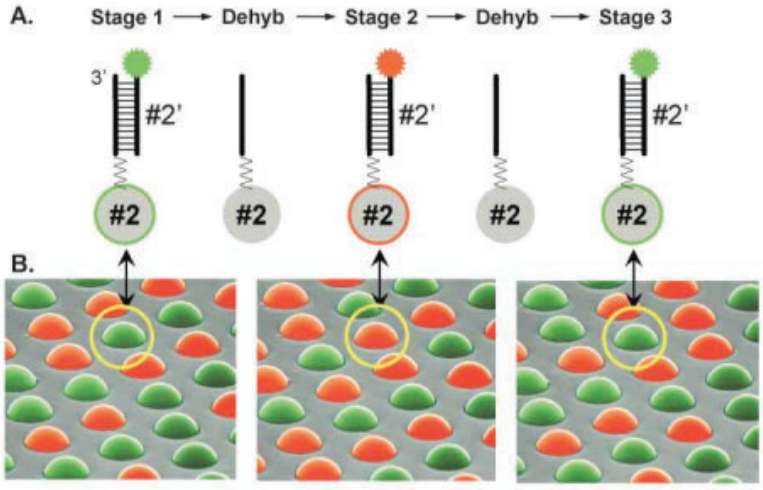



230. In Levsky (2002) Figure 1(A), for instance, the combination of first detecting red fluorescent light and then detecting green fluorescent light identifies a specific gene transcript of interest. Here, that specific combination is denoted with the number 6.

[99] Moses at 536.

231. Around the same time, other researchers were developing other similar techniques to decode bead-based DNA arrays.[100] In one such approach, published in 2004 by Gunderson *et al.*, dye-labeled oligonucleotides are hybridized to arrays and then detected in stages. In each stage, the labeled "decoder" oligos bind to the beads on the array and give off either green or red light. As depicted in the Figure below, the color signature detected over the course of the hybridization stages is then converted to a code, which can be subsequently decoded to identify the bead type at each location:

[100] *E.g.*, Gunderson *et al*., *Decoding Randomly Ordered DNA Arrays*, 14 Genome Res. 870-877 (2004).




C.

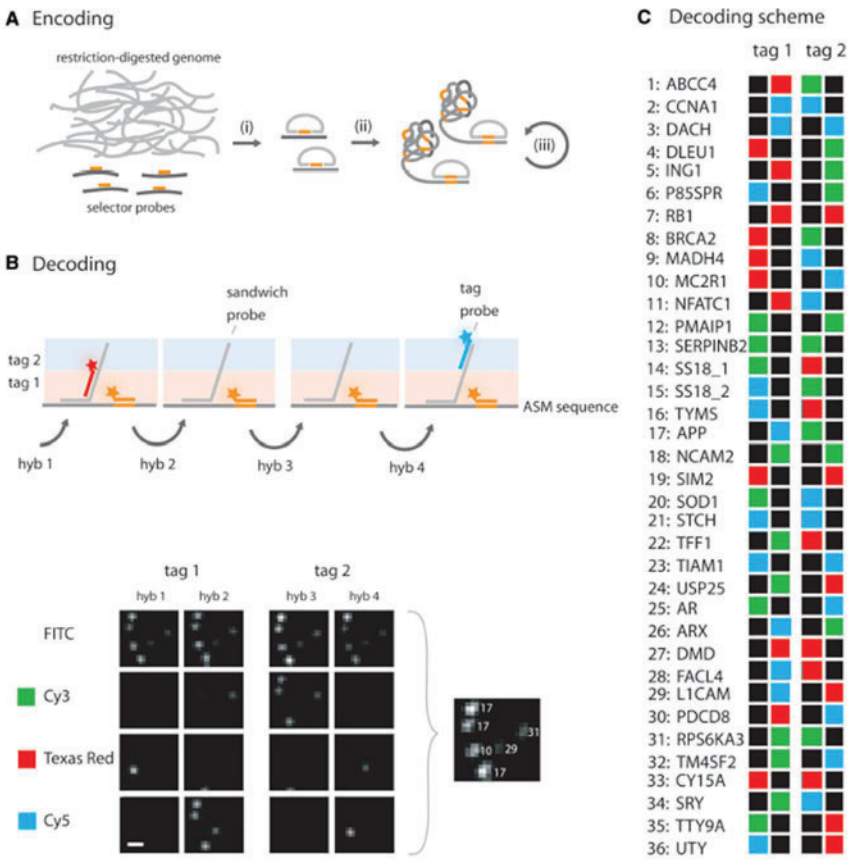
| | | Stage 1 | Stage 2 | Stage 3 | Signature | Code | Parity Code |
|---|---|---|---|---|---|---|---|
| Sequences | 0 | | | | GGG | 000 | 0000 |
| | 1 | | | | GGR | 001 | 0011 |
| | 2 | | | | GRG | 010 | 0101 |
| | 3 | | | | GRR | 011 | 0110 |
| | 4 | | | | RGG | 100 | 1001 |
| | 5 | | | | RGR | 101 | 1010 |
| | 6 | | | | RRG | 110 | 1100 |
| | 7 | | | | RRR | 111 | 1111 |

**Figure 2** Decoding process. (*A*) The sequential hybridization process is illustrated for a single bead, of bead type 2. In stage 1, a complementary decoder hybridizes to the oligonucleotide probe that is attached to the bead (for details of the procedure, see Methods). The decoder is labeled with a fluorophore (green in stage 1, red in stage 2, and green in stage 3). The fluorescent signal is read by imaging the entire array. The array is then dehybridized, and the process is repeated for two more stages. (*B*) A scanning electron micrograph of an array of beads, artificially colored to represent three sequential hybridization stages. The images, taken collectively, reveal a combinatorial code for each bead. Note that the bead circled in yellow has the color signature GRG or code 010. (*C*) Colors, or states, are assigned to individual decoder sequences in each stage to produce a unique combination across stages. This signature, or code, identifies each bead type. As indicated in the parity code column, an extra decoding stage (data not shown) can be performed to provide an error checking parity bit. After three stages of decoding, all the beads are uniquely identified by their color.

232. Gunderson *et al.* observed that their decoding approach could be applied to spatially fixed collection of molecules that are associated with specific DNA sequences. For example, they wrote: "FISH with combinatorically labeled oligonucleotide probes has been used to measure transcription from 10 genes in a single cell (Levsky et al. 2002). The decoding strategy we describe could potentially allow transcription to be measured for all genes in a single cell."[101]

[101] Gunderson (2004) at 875.

233. Accordingly, for example, the asserted claims of the '737 patent are invalid under 35 U.S.C. §§ 102 and/or 103 at least in view of Göransson (2009), which discloses and/or renders obvious all elements of the claims of the '737 patent.[102] For example, Göransson (2009) discloses "[i]terative hybridizations to arrayed ASMs" consisting of genomic (cellular) DNA, and the "[a]rrayed ASMs are decoded by sequential hybridizations" using sandwich probes (e.g., a detection reagent comprising a probe that binds an analyte and one or more pre-determined subsequences) and tag probes (e.g., labeled probes), "enab[ling] identification of 36 . . . different genomic loci."[103] *See also* Göransson (2009) Figure 3, excerpted below.




[102] Göransson et al., *A Single Molecule Array for Digital Targeted Molecular Analyses*, 37 NUCLEIC ACIDS RSCH. 1 (2009) ("Göransson (2009)").

[103] Göransson (2009) at 5, 7-8, Figs. 1 & 3.

234. The asserted claims of the '737 patent are also invalid in view of, e.g., U.S. Patent No. 10,961,566 ("Chee"), U.S. Patent App. Pub. No. 2005/0064435 ("Su"), or U.S. Patent No. 8,741,566 ("Winther"), which disclose and/or render obvious all elements of the claims of the '737 patent.

235. All claims of the '737 patent are further invalid for failure to satisfy the requirements of 35 U.S.C. § 112. For instance, the '737 patent does not adequately describe how to perform highly multiplexed imaging or how to accurately identify target analytes *in situ* (e.g., in cells or tissues) using such an approach. The patent's sole Example purportedly discloses detection of only 8 targets and is not performed *in situ*. Accordingly, the specification of the '737 patent fails to adequately describe the full scope of the claims. Additionally, the specification of the '737 patent fails to enable a person of ordinary skill in the art to practice the full scope of the claims without undue experimentation.

236. Moreover, at least for similar reasons, the '737 patent is not entitled to a priority date earlier than the filing of the application that issued as the '737 patent (U.S. Application No. 16/941,585, filed July 29, 2020). Accordingly, the '737 patent is invalid as anticipated by or obvious over, e.g., publications of MERFISH technology such as Chen (2015) to the extent such technology would be infringing as alleged by Plaintiffs.

237. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the '737 patent.

238. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

## COUNTERCLAIM VIII[104]

**Declaratory Judgment of Non-Infringement of U.S. Patent No. 11,293,051**

*(Against Plaintiffs 10x and Harvard)*

239. Vizgen incorporates by reference the allegations in the above Paragraphs.

240. Plaintiffs have brought an action asserting the '051 patent against Vizgen.

241. Plaintiff Harvard has alleged that it is the legal owner by assignment of the '051 patent.

242. Plaintiff 10x has alleged that it is the exclusive licensee of the '051 patent.

243. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the '051 patent.

244. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the '051 patent.

245. Vizgen's products are not infringing directly or in any other manner any valid and enforceable claim of the '051 patent.

246. Additionally, each of the claims of the '051 patent are invalid as set forth below in Vizgen's Counterclaim IX. An invalid claim cannot be infringed.

247. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the '051 patent.

248. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

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[104] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim VIII. Dkt. 114.

## COUNTERCLAIM IX[105]

**Declaratory Judgment of Invalidity of U.S. Patent No. 11,293,051**

*(Against Plaintiffs 10x and Harvard)*

249. Vizgen incorporates by reference the allegations in the above Paragraphs.

250. Plaintiffs have brought an action asserting the '051 patent against Vizgen.

251. Plaintiff Harvard has alleged that it is the legal owner by assignment of the '051 patent.

252. Plaintiff 10x has alleged that it is the exclusive licensee of the '051 patent.

253. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the '051 patent.

254. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the '051 patent.

255. The claims of the '051 patent are invalid for failing to comply with the provisions of the Patent Laws, Title 35 of the United States Code, including without limitation one or more of 35 U.S.C. §§ 101, 102, 103, 112, and/or the rules, regulations and law pertaining thereto.

256. For example, the asserted claims of the '051 patent are invalid under 35 U.S.C. §§ 102 and/or 103 at least in view of, e.g., Göransson (2009), Chee, Su, and/or Winther. As explained further above with respect to the '737 patent, for example, Göransson (2009) discloses and/or renders obvious all elements of the claims of the '051 patent.

[105] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim IX. Dkt. 114.

257. All claims of the '051 patent are further invalid for failure to satisfy the requirements of 35 U.S.C. § 112. For example, as explained further above with respect to the '737 patent, the specification of the '051 patent fails to adequately describe the full scope of the claims or provide sufficient information to enable a person of ordinary skill in the art to practice the full scope of the claims without undue experimentation.

258. Moreover, at least for similar reasons, the '051 patent is not entitled to a priority date earlier than the filing of the application that issued as the '051 patent (U.S. Application No. 17/238,642, filed April 23, 2021). Accordingly, the '051 patent is invalid as anticipated by or obvious over, e.g., publications of MERFISH technology such as Chen (2015) to the extent such technology would be infringing as alleged by Plaintiffs.

259. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the '051 patent.

260. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

**COUNTERCLAIM X[106]**

**Declaratory Judgment of Non-Infringement of U.S. Patent No. 11,293,052**

*(Against Plaintiffs 10x and Harvard)*

261. Vizgen incorporates by reference the allegations in the above Paragraphs.

262. Plaintiffs have brought an action asserting the '052 patent against Vizgen.

263. Plaintiff Harvard has alleged that it is the legal owner by assignment of the '052 patent.

[106] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim X. Dkt. 114.

264. Plaintiff 10x has alleged that it is the exclusive licensee of the ’052 patent.

265. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the ’052 patent.

266. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the ’052 patent.

267. Vizgen’s products are not infringing directly or in any other manner any valid and enforceable claim of the ’052 patent.

268. Additionally, each of the claims of the ’052 patent are invalid as set forth below in Vizgen’s Counterclaim XI. An invalid claim cannot be infringed.

269. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the ’052 patent.

270. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

**COUNTERCLAIM XI**[107]

**Declaratory Judgment of Invalidity of U.S. Patent No. 11,293,052**

*(Against Plaintiffs 10x and Harvard)*

271. Vizgen incorporates by reference the allegations in the above Paragraphs.

272. Plaintiffs have brought an action asserting the ’052 patent against Vizgen.

273. Plaintiff Harvard has alleged that it is the legal owner by assignment of the ’052 patent.

[107] The Court previously denied Plaintiffs’ motion to dismiss regarding Counterclaim XI. Dkt. 114.

274. Plaintiff 10x has alleged that it is the exclusive licensee of the ’052 patent.

275. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the ’052 patent.

276. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the ’052 patent.

277. The claims of the ’052 patent are invalid for failing to comply with the provisions of the Patent Laws, Title 35 of the United States Code, including without limitation one or more of 35 U.S.C. §§ 101, 102, 103, 112, and/or the rules, regulations and law pertaining thereto.

278. For example, the asserted claims of the ’052 patent are invalid under 35 U.S.C. §§ 102 and/or 103 at least in view of, e.g., Göransson (2009), Chee, Su, and/or Winther. As explained further above with respect to the ’737 patent, Göransson (2009) discloses and/or renders obvious all elements of the claims of the ’052 patent.

279. All claims of the ’052 patent are further invalid for failure to satisfy the requirements of 35 U.S.C. § 112. For example, as explained further above with respect to the ’737 patent, the specification of the ’052 patent fails to adequately describe the full scope of the claims or provide sufficient information to enable a person of ordinary skill in the art to practice the full scope of the claims without undue experimentation.

280. Moreover, at least for similar reasons, the ’052 patent is not entitled to a priority date earlier than the filing of the application that issued as the ’052 patent (U.S. Application No. 17/238,682, filed April 23, 2021). Accordingly, the ’052 patent is invalid as anticipated by or obvious over, e.g., publications of MERFISH technology such as Chen (2015) to the extent such technology would be infringing as alleged by Plaintiffs.

281. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the ’052 patent.

282. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

**COUNTERCLAIM XII[108]**

**Declaratory Judgment of Non-Infringement of U.S. Patent No. 11,549,136**

*(Against Plaintiffs 10x and Harvard)*

283. Vizgen incorporates by reference the allegations in the above Paragraphs.

284. Plaintiffs have brought an action asserting the ’136 patent against Vizgen.

285. Plaintiff Harvard has alleged that it is the legal owner by assignment of the ’136 patent.

286. Plaintiff 10x has alleged that it is the exclusive licensee of the ’136 patent.

287. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the ’136 patent.

288. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the ’136 patent.

289. Vizgen’s products are not infringing directly or in any other manner any valid and enforceable claim of the ’136 patent.

290. Additionally, each of the claims of the ’136 patent are invalid as set forth below in Vizgen’s Counterclaim XIII. An invalid claim cannot be infringed.

[108] The Court previously denied Plaintiffs’ motion to dismiss regarding Counterclaim XII. Dkt. 114.

291. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the '136 patent.

292. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

**COUNTERCLAIM XIII[109]**

**Declaratory Judgment of Invalidity of U.S. Patent No. 11,549,136**

*(Against Plaintiffs 10x and Harvard)*

293. Vizgen incorporates by reference the allegations in the above Paragraphs.

294. Plaintiffs have brought an action asserting the '136 patent against Vizgen.

295. Plaintiff Harvard has alleged that it is the legal owner by assignment of the '136 patent.

296. Plaintiff 10x has alleged that it is the exclusive licensee of the '136 patent.

297. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the '136 patent.

298. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the '136 patent.

299. The claims of the '136 patent are invalid for failing to comply with the provisions of the Patent Laws, Title 35 of the United States Code, including without limitation one or more of 35 U.S.C. §§ 101, 102, 103, 112, and/or the rules, regulations and law pertaining thereto.

[109] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim XIII. Dkt. 114.

300. For example, the asserted claims of the '136 patent are invalid under 35 U.S.C. §§ 102 and/or 103 at least in view of, e.g., Göransson (2009), Chee, Su, and/or Winther. As explained further above with respect to the '737 patent, Göransson (2009) discloses and/or renders obvious all elements of the claims of the '136 patent.

301. All claims of the '136 patent are further invalid for failure to satisfy the requirements of 35 U.S.C. § 112. For example, as explained further above with respect to the '737 patent, the specification of the '136 patent fails to adequately describe the full scope of the claims or provide sufficient information to enable a person of ordinary skill in the art to practice the full scope of the claims without undue experimentation.

302. Moreover, at least for similar reasons, the '136 patent is not entitled to a priority date earlier than the filing of the application that issued as the '136 patent (U.S. Application No. 17/366,127, filed July 2, 2021). Accordingly, the '136 patent is invalid as anticipated by or obvious over, e.g., publications of MERFISH technology such as Chen (2015) to the extent such technology would be infringing as alleged by Plaintiffs.

303. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the '136 patent.

304. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

## COUNTERCLAIM XIV[110]

**Declaratory Judgment of Non-Infringement of U.S. Patent No. 11,299,767**

*(Against Plaintiffs 10x and Harvard)*

305. Vizgen incorporates by reference the allegations in the above Paragraphs.

[110] The Court previously upheld Counterclaim XIV. Dkt. 114.

306. Plaintiffs have brought an action asserting the '767 patent against Vizgen.

307. Plaintiff Harvard has alleged that it is the legal owner by assignment of the '767 patent.

308. Plaintiff 10x has alleged that it is the exclusive licensee of the '767 patent.

309. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the '767 patent.

310. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the '767 patent.

311. Vizgen's products are not infringing directly or in any other manner any valid and enforceable claim of the '767 patent.

312. Additionally, each of the claims of the '767 patent are invalid as set forth below in Vizgen's Counterclaim XV. An invalid claim cannot be infringed.

313. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the '767 patent.

314. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

## COUNTERCLAIM XV[111]

**Declaratory Judgment of Invalidity of U.S. Patent No. 11,299,767**

*(Against Plaintiffs 10x and Harvard)*

315. Vizgen incorporates by reference the allegations in the above Paragraphs.

[111] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim XV. Dkt. 114.

316. Plaintiffs have brought an action asserting the '767 patent against Vizgen.

317. Plaintiff Harvard has alleged that it is the legal owner by assignment of the '767 patent.

318. Plaintiff 10x has alleged that it is the exclusive licensee of the '767 patent.

319. Plaintiffs have alleged and continue to allege that Vizgen has infringed and continues to infringe one or more claims of the '767 patent.

320. An actual controversy under 28 U.S.C. §§ 2201 and 2202 has arisen and exists between Plaintiffs and Vizgen regarding whether Vizgen has infringed and is infringing any valid and enforceable claim of the '767 patent.

321. The claims of the '767 patent are invalid for failing to comply with the provisions of the Patent Laws, Title 35 of the United States Code, including without limitation one or more of 35 U.S.C. §§ 101, 102, 103, 112, and/or the rules, regulations and law pertaining thereto.

322. For example, in parallel with the advancement of the aforementioned combinatorial technologies for being able to identify multiple transcripts with a limited number of probes, improved methods of fixing tissues, cells, and their contents (e.g., nucleic acids) were also being developed, all of which facilitated studying the spatial locations of genetic material within those samples. By the late 1990s, researchers recognized that linking nucleic acids to a polyacrylamide gel support structure using nucleic acid modifications that included groups such as methacrylates (Acrydite) was convenient and resulted in an advantageously stable linkage that could be useful for many applications.[112] Others developed methods for detecting the presence of sequences using PCR in an acrylamide gel, the advantage being that acrylamide would restrict the diffusion

[112] Rehman et al., Immobilization of acrylamide-modified oligonucleotides by co-polymerization, 27 Nucleic Acids Res. 649-655 (1999).

of PCR amplification products.[113] Additionally, researchers observed that cross-linking the 5' phosphate of RNA to the protein matrix inside cells improved RNA retention within tissues, leading to better visualization of the RNA.[114] These techniques, among others, made it possible to preserve the relative positioning of cellular contents, including mRNA transcripts.

323. Accordingly, for example, the asserted claims of the '767 patent are invalid under 35 U.S.C. §§ 102 and/or 103 at least in view of, e.g., U.S. Patent Pub. No. 2009/0105082 ("Chetverin"), published on April 23, 2009. Chetverin discloses, e.g., "in situ assay methods . . . in which cells either as individual cells or tissue fragments, are embedded and immobilized in a thin layer of a suitable gel matrix, lysed in place within the gel, and washed with a water-miscible organic solvent to remove components that might interfere with nucleic acid amplification . . ." Chetverin discloses that such "in situ assays . . . can be performed at sub-cellular level . . . [in which] the internal cell content (cytoplasm) should also be gelled, and this should be done with the native intracellular distribution of DNA and RNA molecules being preserved." Additionally, "the cell membranes can be made permeable for acrylamide . . . during the above disclosed embedment procedure." Chetverin further discloses that, "[f]or some applications, the gel matrix may be modified with certain substances, such as oligonucleotides," including Acrydite™ "that can function, for example, as . . . as capture probes or as hybridization probes . . . At least one primer can be tethered to the matrix, in which case at least one amplification product strand will be covalently immobilized." In addition, "[f]or screening, the arrayed cells can be fluorescently

[113] Mitra *et al.*, *Fluorescent* in situ *sequencing on polymerase colonies*, 320 Analytical Biochem. 55 (2003).

[114] Pena et al., *miRNA* in situ *hybridization in formaldehyde and EDC-fixed tissues*, 6 Nature Methods 139-141 (2009).

labeled . . . by any of the various homogeneous fluorescent reporter systems discussed in this application that binds with a nucleic acid within the cell, such as by a molecular beacon probe)."[115]

324. All claims of the '767 patent are further invalid for failure to satisfy the requirements of 35 U.S.C. § 112. For example, the patent does not define the broad genus of materials within the "3D matrix" limitation and provides only a small number of exemplary embodiments with different structural features. Moreover, the patent's Examples utilize only one working embodiment (BS(PEG)9). Accordingly, at least for this reason, the specification of the '767 patent fails to contain an adequate written description of the full scope of the claims or sufficient information to enable a person of ordinary skill in the art to practice the full scope of the claims without undue experimentation.

325. Moreover, at least for similar reasons, the '767 patent is not entitled to a priority date earlier than the filing of the application that issued as the '767 patent (U.S. Application No. 17/363,097, filed June 30, 2021). Accordingly, the '767 patent is invalid as anticipated by or obvious over, e.g., publications of MERFISH technology such as Chen (2015) to the extent such technology would be infringing as alleged by Plaintiffs.

326. By virtue of the foregoing, Vizgen desires a judicial determination of its rights and duties with respect to any alleged infringement of the '767 patent.

327. A judicial declaration is necessary and appropriate at this time so that the parties may proceed in accordance with their respective rights and duties determined by the Court.

[115] Chetverin ¶¶ [0055], [0111], [0113], [0115].

## COUNTERCLAIM XVI[116]

**Infringement of the Zhuang '303 Patent**

*(Against Plaintiff 10x)*

328. Vizgen incorporates by reference the allegations in the above Paragraphs.

329. On August 24, 2021, the United States Patent and Trademark Office ("Patent Office") duly and legally issued the Zhuang '303 Patent, entitled "Systems and Methods for Determining Nucleic Acids." The Zhuang '303 Patent issued from U.S. Application No. 15/329,683, which entered the national stage on January 27, 2017 from International Application No. PCT/US2015/042556, filed July 29, 2015, and claims priority to (for example) U.S. Provisional No. 62/031,062, filed July 30, 2014. Xiaowei Zhuang, Kok-Hao Chen, Alistair Boettiger, Jeffrey R. Moffitt, and Siyuan Wang are the true and sole co-inventors of the Zhuang '303 Patent. A copy of the Zhuang '303 Patent is attached as Exhibit 8.

330. The Zhuang '303 Patent is valid and enforceable under the United States Patent Laws.

331. By operation of law and as a result of written assignment agreements, Harvard obtained the entire right, title, and interest to and in the Zhuang '303 Patent.

332. Pursuant to the License Agreement, Vizgen obtained an exclusive license to the Zhuang '303 Patent (among other rights). Vizgen is exclusively licensed under the Zhuang '303 Patent with the full and exclusive right to bring suit to enforce the patent.

333. The Zhuang '303 Patent discloses, among other things, systems and methods for imaging or determining nucleic acids in cells, including the transcriptome of a cell. The patent

[116] The Court previously denied Plaintiffs' motion to dismiss regarding Counterclaim XVI. Dkt. 114.

describes application of multiple nucleic acid probes to targets located within cells and tissue, and the binding of these probes may be determined with fluorescence. Codewords based on probe binding can define an error-correcting code to reduce or prevent misidentification of the nucleic acids. As described in the patent, a relatively large number of different targets may be identified using a relatively small number of labels, for example, by using combinatorial approaches.

334. 10x has infringed and continues to infringe at least claim 1 of the Zhuang '303 Patent in violation of 35 U.S.C. § 271(a), either literally or under the doctrine of equivalents, at least by making and/or using within the United States without authority the Xenium In Situ Analysis Technology. On or about December 8, 2022, 10x began selling the Xenium In Situ Analysis Technology in the United States.[117] 10x has made and used the Xenium In Situ Analysis Technology as a part of its preparations to enter the United States market, specifically in connection with research, development, testing, and/or promotional activities relating to this technology, and including activities performed at 10x's facilities located within the United States. To the extent 10x has not already offered to sell and/or sold the Xenium In Situ Analysis Technology in the United States, it is imminently planning to do so. 10x is currently promoting its Xenium In Situ Analysis Technology on its website[118] as a product available for purchase, e.g. by including a link for partners, collaborators, customers and/or end-users to request pricing for

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[117] *10x Genomics Commercially Launches Xenium Platform for* In Situ *Analysis* (Dec. 8, 2022), https://www.prnewswire.com/news-releases/10x-genomics-commercially-launches-xenium-platform-for-in-situ-analysis-301698748.html.

[118] *See* Xenium Analyzer - 10x Genomics, https://www.10xgenomics.com/instruments/xenium-analyzer (last visited on November 17, 2022); Product Catalog - 10x Genomics, https://www.10xgenomics.com/product-catalog?indices%5Bfilters%5D%5Bmenu%5D%5BproductsNames%5D=Single%20Cell%20Gene%20Expression&indices%5Bsidebar%5D%5Bmenu%5D%5BproductsNames%5D=In%20Situ%20Gene%20Expression&indices%5Bsidebar%5D%5Bpage%5D=1&configure%5BhitsPerPage%5D=500 (last visited on November 17, 2022).

the Xenium In Situ Analysis Technology, as well as the reagents and consumables used for the technology.

335. As an example of 10x's infringing activities concerning the Xenium In Situ Analysis Technology, attached as Exhibit 9 is a preliminary claim chart detailing with particularity 10x's infringement of at least claim 1 of the Zhuang '303 Patent. Exhibit 9 is incorporated herein by reference in its entirety. Exhibit 9 is based on information and belief that Vizgen has at this stage. The evidence set forth therein is merely exemplary, detailing how each element of the claims may be found in the Xenium In Situ Analysis Technology. This chart is not intended to limit Vizgen's right to modify this chart or any other claim chart or allege that any other activities of 10x infringe any claims of the Zhuang '303 Patent.

336. 10x's infringement of the Zhuang '303 Patent has been knowing and willful. Dr. Zhuang's research group and others have published widely on MERFISH technology at least since 2015. As stated herein, for example, Dr. Zhuang's pioneering work on MERFISH, including the original 2015 paper, has been extensively cited and these accomplishments have been widely recognized by others in the field. On information and belief, 10x monitors technical literature and reports in related fields and became aware of MERFISH technology at least as of 2015.

337. On information and belief, 10x is a sophisticated company that regularly monitors and/or tracks patent issuance in related fields and became aware of the Zhuang '303 Patent upon issuance or shortly thereafter. The Zhuang '303 Patent issued on August 24, 2021. 10x became aware of MERFISH and the Zhuang '303 patent at least as of September 15, 2021, the filing date of the application that published as U.S. Patent Pub. No. 2022/0084628, titled "Methods and Systems for Barcode Error Correction," assigned to 10x Genomics, Inc. ("Shah"). Shah states that, *inter alia*, "MERFISH (multiplexed error-robust fluorescence in situ hybridization) scheme

comprising 16 cycles of decoding was performed (see, e.g., Chen, et al. (2015) 'Spatially Resolved, Highly Multiplexed RNA Profiling in Single Cells', Science 348(6233):aaa6090; see also, e.g., ***U.S. Pat. No. 11,098,303*** . . . for an exemplary description of the MERFISH probes, encoding schemes, and methodologies) . . ." (emphasis added.)[119]

338. Moreover, 10x has been aware of the issued claims of the Zhuang '303 Patent at least as of November 24, 2021, as, for example, during prosecution of its U.S. Application No. 17/476,400, 10x cited U.S. Patent No. 11,098,303 to the Patent Office in an Information Disclosure Statement ("IDS") dated November 24, 2021. Additionally, 10x cited U.S. Patent Publication No. 2017/0220733, the publication of the Zhuang '303 Patent application, to the Patent Office during the prosecution of multiple patent applications. For example, after the Zhuang '303 Patent issued, 10x cited the '733 publication in the prosecution of U.S. Application No. 17/180,325 in an IDS dated February 10, 2022, and the prosecution of U.S. Application No. 17/547,925 in an IDS dated February 16, 2022. The '733 publication is also identified on the face of 10x-assigned patents U.S. Patent Nos. 11,332,790, which issued on May 17, 2022, and 11,352,667, which issued on June 7, 2022.

339. Moreover, at least since May 2, 2022, the date of the Notice Letter from 10x to Vizgen wherein 10x alleges that Vizgen's MERFISH technology infringes certain 10x patents, 10x had notice of the Zhuang '303 Patent at least because Vizgen's public website expressly states that the Zhuang '303 Patent covers MERFISH technology[120] and, on information and belief, 10x in preparing its Complaint reviewed and relied on the publicly available information from Vizgen's website.

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[119] Shah [0158].

[120] *See* https://vizgen.com/patents/, providing "US Patent Number: 11,098,303" below "MERFISH method."

340. In addition to directly infringing the Zhuang '303 Patent, 10x actively, knowingly, and intentionally encourages and aids its partners, collaborators, customers, and/or end users of the Xenium In Situ Analysis Technology to directly infringe at least claim 1 of the Zhuang '303 Patent under 35 U.S.C. § 271(b). 10x has and is actively, knowingly, and intentionally inducing infringement of at least claim 1 of the Zhuang '303 Patent through a range of activities relating to the Xenium In Situ Analysis Technology in the United States. For example, 10x has induced infringement by controlling the design, manufacture, and supply of the Xenium In Situ Analysis Technology with the knowledge and specific intent that consumers have and will use that technology to infringe by performing the patented method of at least claim 1 of the Zhuang '303 Patent. 10x has induced infringement by controlling the selection and design of analytical methods and error correction technology used in the Xenium Analyzer, with the knowledge and specific intent that users have and will use this technology to infringe by performing the patented methods of the Zhuang '303 patent. As discussed above, on information and belief, 10x had actual knowledge of the Zhuang '303 Patent, regularly monitors Vizgen's patent portfolio, and has been aware of the Zhuang '303 Patent, for example, because 10x cited the issued patent and publication of the Zhuang '303 Patent during the prosecution of multiple of its own patent applications. These actions collectively demonstrate that 10x has the specific intent to induce, or was willfully blind to inducing, infringement of the Zhuang '303 Patent.

341. 10x also actively induces infringement by its partners, collaborators, customers, and/or end users by promoting the Xenium In Situ Analysis Technology, encouraging its infringing use, and threatening to sell and selling this technology in the United States. 10x has induced infringement by disseminating or distributing promotional and marketing materials relating to the Xenium In Situ Analysis Technology, including via web pages describing this technology on 10x's

website and via press releases. For example, on the Xenium Website, 10x provides and will provide information, promotional videos, and instructions to customers that direct and will direct customers to use the Xenium In Situ technology in an infringing manner. 10x has promoted and demonstrated the Xenium In Situ Analysis Technology at multiple trade shows and conventions in the United States and online. 10x has provided and/or made available the Xenium In Situ Analysis Technology in the United States to its partners, collaborators, customers, and/or end users who have and will use this technology in a manner that directly infringes at least claim 1 of the Zhuang '303 patent, e.g., to generate initial results for publication and/or presentation. 10x has and will encourage and support the sale of the Xenium In Situ Analysis Technology in the United States.

342. 10x contributes to the infringement of one or more claims of the Zhuang '303 Patent, including at least claim 1, under 35 U.S.C. § 271(c). 10x contributes to infringement by supplying in the United States products designed for use in practicing at least claim 1 of the Zhuang '303 Patent, including the Xenium In Situ Analysis Technology, and has and will offer to sell and sell such technology in the United States. 10x has and will provide its partners, collaborators, customers, and/or end users with the Xenium In Situ Analysis Technology, which is specially made or adapted to infringe at least claim 1 of the Zhuang '303 Patent. The Xenium In Situ Analysis Technology is not staple article(s) of commerce suitable for substantial non-infringing use. For example, the Xenium Analyzer is a material part of the claimed invention of at least claim 1 of the Zhuang '303 Patent that, when used, has and will result in infringement. Indeed, 10x knows that Xenium In Situ Analysis Technology is especially made or especially adapted for use in an infringement of the Zhuang '303 Patent. As discussed above, 10x has had actual knowledge

of the Zhuang '303 Patent, regularly monitors Vizgen's patent portfolio, and has been aware of the Zhuang '303 Patent.

343. 10x has committed and continues to commit these acts of infringement without license or authorization.

344. The infringement of the Zhuang '303 Patent by 10x is intentional, willful, wanton, deliberate, and egregious. On information and belief, at least prior to the filing of the Complaint, 10x knew or should have known that its making, using, selling, offering to sell, and/or importing the Xenium In Situ technology has and will constitute an unjustifiably high risk of infringement of at least claim 1 of the Zhuang '303 Patent. Such conduct constitutes, at minimum, willful infringement of the Zhuang '303 Patent, justifying an award of treble damages pursuant to 35 U.S.C. § 284 and a finding that this case is exceptional under 35 U.S.C. §285.

345. On information and belief, 10x has profited from and will continue to profit from its infringing activities. Vizgen has been and will continue to be damaged by 10x's infringing activities. As a result, Vizgen is entitled to injunctive relief and damages adequate to compensate it for such infringement, in no event less than a reasonable royalty, in accordance with 35 U.S.C. §§ 271, 281, 283, and 284. The harm to Vizgen from 10x's ongoing infringing activity is irreparable, continuing, and not fully compensable by money damages, and will continue unless 10x's infringing activities are enjoined.

## COUNTERCLAIM XVII

### Conspiracy to Monopolize in Violation of 15 U.S.C. § 2

*(Against Plaintiffs 10x and Harvard)*

346. Vizgen incorporates by reference the allegations in the above Paragraphs.

347. Plaintiffs 10x and Harvard have engaged in an illegal conspiracy to monopolize the emerging market for single-cell spatial transcriptomics.

348. 10x and Harvard had the specific intent to monopolize the emerging market for single-cell spatial transcriptomics.

349. 10x and Harvard's anticompetitive conduct is properly construed in one of two alternative ways. First is that 10x and Harvard have engaged in baseless sham litigation against Vizgen. This lawsuit is objectively baseless, in that no reasonable litigant could realistically expect success on the merits, given 10x (as the party that stepped into Dr. Church's shoes) and Harvard obligated themselves to offer an open and non-exclusive license to the asserted patents and they neither offered such terms before filing suit nor, when asked, provided such terms at all. 10x and Harvard's claims are also precluded by their unclean hands: as detailed herein, 10x and Harvard's conduct involved deceit, unconscionability and/or bad faith. Moreover, such conduct is directly and immediately related to and affects the matters and claims at issue in this case, has injured and continues to injure Vizgen, and affects the balance of equities between the parties. Accordingly, the lawsuit is objectively baseless due to Vizgen's robust defenses, and it conceals 10x and Harvard's attempt to eliminate competition and interfere directly with the business relationships of Vizgen in the market for single-cell spatial transcriptomics.

350. In the alternative, 10x and Harvard have engaged in a broader "open early, closed late" scheme, whereby Harvard, via its actions and statements, induced Vizgen to enter into a license agreement with Harvard in reliance on promises and representations that Vizgen would be "open" and free with respect to Harvard's IP, including patents, to commercialize its MERFISH single-cell spatial transcriptomics technology. [redacted] and did so in reliance on Harvard's promises and representations. But, once it lured Vizgen in, Harvard engaged in an about face at 10x's insistence and chose to "close" its previously-open policy by exploiting Vizgen's (and other

competitors') reliance on the technology Harvard convinced it to use. In this manner, Harvard conspired with 10x due to the monopolistic benefits Harvard will obtain (as discussed above) from helping 10x dominate over all other single-cell spatial transcriptomic competitors. This scheme includes anticompetitive acquisitions, spreading fear, uncertainty and doubt in the market, illegally broadening the asserted patents by not disclosing material information to the Patent Office, and secretly working with 10x to nullify Harvard's prior promises to, and representations that it did, openly disseminate the relevant technology.

351. Even if this Court were to find that 10x and Harvard's litigation is somehow not baseless, as the court recognized in *Bio-Rad Laboratories, Inc. v. 10x Genomics, Inc.*, 483. F.Supp.3d 38, 55 (D. Mass. 2020), "the institution of [litigation] against the Sherman Act plaintiff…could furnish the source of the antitrust injury…even if it could not provide a basis for a Sherman Act violation under the Noerr-Pennington doctrine" (internal citations omitted).[121] As described *supra*, 10x's scheme – including its FUD strategy, its strategic patent prosecution, and its bad-faith licensing arrangement with Harvard – collectively constitutes an independent antitrust harm. This litigation is intended to give further effect to that improper scheme, and Vizgen is injured in having to defend against it.

352. 10x has a dangerous probability of success in monopolizing the single-cell spatial transcriptomics market. Through this lawsuit and others, 10x is seeking to eliminate all viable rivals to its single-cell spatial transcriptomics product Xenium In Situ.

353. The Plaintiffs' conduct has had an anticompetitive effect in the single-cell spatial transcriptomics market.

[121] Citing to *Amphastar Pharms. Inc. v. Momenta Pharms., Inc.*, 850 F.3d 52, 57 (1st Cir. 2017)

354. The Plaintiffs' conduct has no legitimate business purpose or procompetitive effect but is instead designed to yield a monopoly in the single-cell spatial transcriptomics market.

355. The Plaintiffs' conduct has had a substantial effect on interstate commerce.

356. Vizgen has been or will be injured in its business and property as a result of the conduct, as there is an imminent threat to Vizgen's primary commercial offering, MERSCOPE.

357. The Plaintiffs' conduct has also caused market-wide antitrust injury, as the Plaintiffs seek to eliminate *all* competitors in the relevant market and grant 10x a monopoly. Once their scheme is fully implemented, consumers in the SST market will be forced to pay supracompetitive prices to 10x and Harvard.

## COUNTERCLAIM XVIII

**Attempted Monopolization in Violation of 15 U.S.C. § 2**

*(Against Plaintiff 10x)*

358. Vizgen incorporates by reference the allegations in the above Paragraphs.

359. Plaintiff 10x is attempting to monopolize the emerging market for single-cell spatial transcriptomics. 10x has the specific intent to monopolize this market.

360. 10x's anticompetitive conduct is properly construed in one of two alternative ways. First is that 10x is engaged in baseless sham litigation against Vizgen. This lawsuit is objectively baseless, in that no reasonable litigant could realistically expect success on the merits, given 10x obligated itself (as the party that stepped into Dr. Church's shoes) to offer open and non-exclusive license terms to the asserted patents and it neither offered such terms before filing suit nor, when asked, provided such terms at all. 10x's claims are also precluded by its unclean hands: as detailed herein, 10x's conduct involved deceit, unconscionability and/or bad faith. Moreover, such conduct is directly and immediately related to and affects the matters and claims at issue in this case, has injured and continues to injure Vizgen, and affects the balance of equities between the parties.

Accordingly, the lawsuit is therefore objectively baseless due to Vizgen's robust defenses, and it conceals 10x's attempt to eliminate competition and interfere directly with the business relationships of Vizgen in the market for single-cell spatial transcriptomics.

361. In the alternative, 10x has engaged in a broader "open early, closed late" scheme, whereby whereby Harvard, via its actions and statements, induced Vizgen to enter into a license agreement with Harvard in reliance on promises and representations that Vizgen would be "open" and free with respect to Harvard's IP, including patents, to commercialize its MERFISH single-cell spatial transcriptomics technology. [redacted] and did so in reliance on Harvard's promises and representations. But, once it lured Vizgen in, Harvard engaged in an about face at 10x's insistence and chose to "close" its previously-open policy by exploiting Vizgen's (and other competitors') reliance on the technology Harvard convinced it to use. In this manner, Harvard worked with 10x due to the monopolistic benefits Harvard will obtain (as discussed above) from helping 10x dominate over all other single-cell spatial transcriptomic competitors. This scheme includes anticompetitive acquisitions, spreading fear, uncertainty and doubt in the market, illegally broadening the asserted patents by not disclosing material information to the Patent Office, and secretly working with 10x to nullify Harvard's prior promises to, and representations that it did, openly disseminate the relevant technology.

362. Even if this Court were to find that 10x's litigation is somehow not baseless, as the court recognized in *Bio-Rad Laboratories, Inc. v. 10x Genomics, Inc.*, 483. F.Supp.3d 38, 55 (D. Mass. 2020), "the institution of [litigation] against the Sherman Act plaintiff…could furnish the source of the antitrust injury…even if it could not provide a basis for a Sherman Act violation

under the Noerr-Pennington doctrine" (internal citations omitted).[122] As described *supra*, 10x's scheme – including its FUD strategy, its strategic patent prosecution, and its bad-faith licensing arrangement with Harvard – collectively constitute an independent antitrust harm. This litigation is intended to give further effect to that improper scheme, and Vizgen is injured in having to defend against it.

363. 10x has a dangerous probability of success in monopolizing the single-cell spatial transcriptomics market. Through this lawsuit and others, 10x is seeking to eliminate all viable rivals to its single-cell spatial transcriptomics product Xenium In Situ ("Xenium").

364. 10x's conduct has had an anticompetitive effect in the single-cell spatial transcriptomics market.

365. 10x's conduct has no legitimate business purpose or procompetitive effect but is instead designed to yield a monopoly in the single-cell spatial transcriptomics market.

366. 10x's conduct has had a substantial effect on interstate commerce.

367. Vizgen has been or will be injured in its business and property as a result of the conduct, as there is an imminent threat to Vizgen's primary commercial offering, MERSCOPE.

368. 10x's conduct has also caused market-wide antitrust injury, as 10x seeks to eliminate *all* competitors in the relevant market and achieve a monopoly. Once 10x achieves a monopoly, consumers in the SST market will be forced to pay supercompetitive prices to 10x.

## COUNTERCLAIM XIX

**Violation of the Cartwright Act, Cal. Bus. & Prof. Code §§ 16720 *et seq*.**

*(Against Plaintiffs 10x and Harvard)*

369. Vizgen incorporates by reference the allegations in the above Paragraphs.

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[122] Citing to *Amphastar Pharms. Inc. v. Momenta Pharms., Inc.*, 850 F.3d 52, 57 (1st Cir. 2017)

370. 10x and its co-conspirator Harvard's contract, combination, trust or conspiracy was substantially carried out and effectuated within the State of California.

371. Beginning in at least October 2020 and continuing thereafter at least up to and including April 2023, 10x and Harvard entered into and engaged in a continuing unlawful trust for the purpose of unreasonably restraining trade in violation of Section 16720 of the California Business and Professions Code.

372. These violations of Section 16720 of the California Business and Professions Code consisted, without limitation, of a continuing unlawful trust and concert of action among 10x and Harvard, the substantial terms of which were to create and carry out restrictions on commerce in eliminating alternatives to 10x's Xenium single-cell spatial transcriptomics product, including Vizgen's MERSCOPE.

373. For the purpose of forming and effectuating the unlawful trust, 10x and Harvard conspired to:

a. Create an "open early, closed late" scheme under which Harvard first promised Vizgen it rights to the Harvard IP necessary to commercialize single-cell spatial transcriptomics technology, but later entered into a closed, exclusive commercial arrangement with 10x.

b. Engage in baseless sham litigation against Vizgen to force it to stop marketing its MERSCOPE product and exit the single-cell spatial transcriptomics market.

374. The combination and conspiracy has had, among other things, the following effects:

a. Created fear, uncertainty, and doubt, surrounding Vizgen's commercial prospects and viability.

b. Discouraged potential purchasers of Vizgen's MERSCOPE product.

c. Discouraged other competitors from introducing single-cell spatial transcriptomics products in California.

375. As a direct and proximate cause of 10x's violations of Section 16720 of the California Business and Professions Code,

a. Vizgen has been or will be injured in its business and property as a result of 10x's and Harvard's conduct with California, as there is an imminent threat to Vizgen's primary commercial offering, MERSCOPE, and Vizgen may be prevented from marketing MERSCOPE in California.

b. Natural persons residing in the State of California have been or will be injured in their business and property in that they will be deprived of competition between 10x and other providers (including Vizgen) of single-cell spatial transcriptomics products, and will be forced to pay supracompetitive prices for 10x's Xenium product.

## COUNTERCLAIM XX

**Violation of the Unfair Competition Law, Cal. Bus. & Prof. Code §§ 17200 *et seq*.**

*(Against Plaintiffs 10x and Harvard)*

376. Vizgen incorporates by reference the allegations in the above Paragraphs.

377. Beginning at least in or around October 5, 2020, and continuing thereafter at least up to and including February 2023, 10x and Harvard committed acts of unfair competition, as defined by Sections 17200, *et seq*. of the California Business and Professions Code.

378. The acts, omissions, misrepresentations, practices, and non-disclosures of 10x, as alleged herein, constituted unfair competition by means of unfair, unlawful and/or fraudulent business acts or practices within the meaning of California Business and Professions Code, Sections 17200, *et seq*., including, but not limited to, the following:

a. The violations of Sections 16720, *et seq*., of the California Business and Professions Code, thus constituting unlawful acts within the meaning of section 17200 of the California Business and Professions Code;

b. Conspiracy to monopolize in violation of 15 U.S.C. § 2; and

c. Attempted monopolization in violation of 15 U.S.C. § 2.

**COUNTERCLAIM XXI**

**Mass. Gen. Law. Ch. 93A §§ 2 and 11 (Related to Misrepresentations)**

(*Against Plaintiffs 10x and Harvard*)

379. Vizgen incorporates by reference the allegations in the above Paragraphs.

380. At all times relevant to this action, 10x and Harvard have been engaged in trade or commerce within the Commonwealth of Massachusetts and within the meaning of M.G.L. c. 93A, § 11 and § 2.

381. 10x and Harvard's unfair and deceptive practices occurred primarily and substantially in the Commonwealth of Massachusetts. Additionally, 10x and Harvard's unfair and deceptive practices caused harm that was primarily and substantially felt by Vizgen in the Commonwealth of Massachusetts, where Vizgen was founded and where it is headquartered. Furthermore, as alleged herein, Dr. Church, through his lab and Harvard University located in the Commonwealth of Massachusetts and with the approval of Harvard, unlawfully made false statements to the NIH to secure an award of over $19 million in public funds.

382. Specifically, starting on or about May 2009, ReadCoor's founder, Dr. Church, and Harvard applied for grant funding from the NIH. To comply with the NIH policy of making technology created with government grant money widely available, Dr. Church and Harvard made false statements to induce the NIH to fund Dr. Church's research.

383. In particular, Harvard and Dr. Church misstated that the innovations developed at CTCHGV would be "available to the larger research community," stating that "as a matter of principle" Dr. Church "strongly believes in open dissemination of knowledge and technology."

384. Harvard and Dr. Church also misstated that technology developed under the Grant would be available to interested parties, including commercial entities, through "open and non-exclusive licensing agreements," and that "the Church Lab will work with the Harvard Medical School Office of Technology Licensing to obtain open and non-exclusive licenses that will encourage commercialization of these innovations."

385. On information and belief, Dr. Church and Harvard knew these statements were false when made.

386. On information and belief, Dr. Church and Harvard knew these statements were false and that they were not complying with the terms of the Grant Application when they received the NIH funds throughout the period of the Grant.

387. Harvard and Dr. Church jointly submitted the Grant Application, with Harvard as the "Applicant Organization" and Dr. Church as the "Program Director/Principal Investigator." Indeed, a representative of Harvard signed the Grant Application on Harvard's behalf, affirming that "the statements herein are true, complete and accurate" and accepting "the obligation to comply with Public Health Services terms and conditions if a grant is awarded as a result of this application.

388. The NIH, apparently believing Harvard and Dr. Church's false statements and in material reliance on them, issued the over $19 million funding award expressly conditioned on these statements being true. Throughout the duration of the Grant, the NIH reminded Harvard and

Dr. Church in regular Notices of Award that compliance with the promises made in the Grant Application were material conditions to the funding.

389. As detailed above, not long after Dr. Church and Harvard obtained the Grant and funding that went along with it, they began filing patent applications directed at the work the Grant covered, which would ensure that, instead of being open to the larger research community as promised, Dr. Church and Harvard could exclusively control and profit from the technology.

390. To further exercise exclusive control over the technology, Dr. Church founded ReadCoor. In turn, on or about September 9, 2016, in direct violation of the express promises made in the grant application, Harvard exclusively licensed the patents on technology developed under the Grant to ReadCoor.

391. 10x acquired ReadCoor and its patent portfolio in 2020 and stepped into ReadCoor's (and thus Dr. Church's) shoes. Moreover, on information and belief, 10x was aware of the promises made to the government in connection with the Grant. Despite Harvard's express promises in the NIH grant application, to stifle competition, neither Harvard nor 10x offered Vizgen (or any other company) an open or non-exclusive license on reasonable terms or any terms. Instead, Harvard and 10x weaponized the exclusive patents they had obtained, having made false statements to the NIH, to try to drive Vizgen out of business.

392. In an attempt to cover up its misdeeds, as described above, Harvard and 10x then took numerous steps in an attempt to conceal the misrepresentations to the NIH from Vizgen and other competitors, including before and during this litigation.

393. In furtherance of Harvard and 10x's pattern of unfair and deceptive conduct, on or about March 30, 2023, in direct conflict with the promises made to the government and in further

continuance of its self-dealing efforts and misconduct, Harvard and 10x refused to provide Vizgen with "terms for a reasonable non-exclusive license to the asserted patents."

394. 10x and Harvard's conduct has been, and continues to be repugnant to the norms, environment, and culture of the commercial marketplace.

395. As a result of 10x and Harvard's unfair and deceptive conduct, Vizgen has suffered and continues to suffer pecuniary loss.

396. Harvard and 10x engaged in this pattern of unfair and deceptive conduct with respect to Vizgen knowingly and willfully.

397. Vizgen is entitled to treble damages, reasonable attorneys' fees, costs, and interest in an amount to be determined at trial.

## COUNTERCLAIM XXII

**Breach of Contract – Third-Party Beneficiary**

*(Against Plaintiffs 10x and Harvard)*

398. Vizgen incorporates by reference the allegations in the above Paragraphs.

399. As alleged herein, on or about May 2009, ReadCoor's founder, Dr. Church, and Harvard applied for grant funding from the NIH. To comply with the NIH policy of making technology created with government grant money widely available, Dr. Church and Harvard made such promises to induce the NIH to fund Dr. Church's research.

400. In particular, Harvard and Dr. Church promised to make the innovations developed at CTCHGV "available to the larger research community," stating that "as a matter of principle" Dr. Church "strongly believes in open dissemination of knowledge and technology."

401. Harvard and Dr. Church also promised that technology developed under the Grant would be open and available to interested parties, including commercial entities, through "open and non-exclusive licensing agreements," and that "the Church Lab will work with the Harvard

Medical School Office of Technology Licensing to obtain open and non-exclusive licenses that will encourage commercialization of these innovations."

402. Harvard and Dr. Church jointly submitted the Grant Application (*i.e.*, an ***offer***), with Harvard as the "Applicant Organization" and Dr. Church as the "Program Director/Principal Investigator." Indeed, a representative of Harvard signed the Grant Application on Harvard's behalf.

403. The NIH accepted Harvard and Dr. Church's offer and promises by issuing the Grant expressly conditioned on these promises.

404. The intent to benefit the larger research community and other commercial entities that may seek access to CTCHGV's innovations was material to the grant, the benefit was intended as a gift or in satisfaction of a pre-existing obligation, and the third parties were direct and intended beneficiaries of the agreement.

405. Vizgen, a commercial entity with ties to Harvard which is alleged to be using CTCHGV's alleged innovations and a member of the scientific and research community at large, clearly and definitely falls within the class intended by the parties to benefit from this agreement and thus is a third-party beneficiary to such agreement.

406. 10x—which stepped into ReadCoor and Dr. Church's shoes when it acquired ReadCoor, and when ReadCoor assigned to it the patent rights related to the NIH grant at issue—and Harvard both breached this agreement by refusing to grant open and non-exclusive licensing agreements and by failing to make innovations developed at CTCHGV to be available to commercial entities and the larger research community.

407. Indeed, as alleged herein, contrary to the terms of the agreement with NIH, Harvard and 10x have granted exclusive licenses to the Asserted Patents and expressly refused to grant

Vizgen a reasonable open and non-exclusive license to the same. As a third-party beneficiary, however, Vizgen is entitled to specific performance: *i.e.*, a license to the Asserted Patents.

408. In addition, as a direct and proximate result of 10x and Harvard's breach of the agreement with the NIH, Vizgen has suffered and continues to suffer pecuniary loss..

## JURY DEMAND

409. Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Vizgen demands a trial by jury on all issues properly triable to a jury.

## PRAYER FOR RELIEF

Defendant and Counterclaim-Plaintiff Vizgen respectfully requests that the Court find in its favor and grant the following relief:

a) That Plaintiffs' Complaint be dismissed with prejudice, and that Plaintiffs take nothing as a result of the Complaint;

b) That this Court enter judgment on Plaintiffs' Complaint and Vizgen's Counterclaims in favor of Defendant Vizgen, against Plaintiffs Harvard and 10x, with Plaintiffs Harvard and 10x being awarded no relief of any kind in this action;

c) That this Court enter judgment and/or declarations that Defendant Vizgen does not infringe the Asserted Patents and that the Asserted Patents are invalid;

d) That this Court order Plaintiffs Harvard and 10x to specifically perform their obligations related to the Grant, including by granting Defendant Vizgen a license to the Asserted Patents;

e) An award of all legal and equitable relief, including all available measures of damages in favor of Defendant Vizgen against Plaintiffs Harvard and 10x for all damages sustained as a result of Harvard and 10x's wrongdoing, in an amount to be proven at trial, including interest thereon;

f) An award of treble damages against Plaintiffs Harvard and 10x for their intentional, willful, and knowing acts in violation of Mass. Gen. Law. Ch. 93A §§ 2 and 11;

g) An award of treble damages against Plaintiffs Harvard and 10x for their intentional, willful, and knowing acts in violation of the Cartwright Act and Cal. Bus. & Prof. Code §§ 17200;

h) That this Court enter judgment that the Zhuang '303 Patent has been and continues to be infringed, directly and/or indirectly, by 10x, either literally or under the doctrine of equivalents;

i) An award of all monetary relief adequate to compensate for damages resulting from 10x's infringement of the Zhuang '303 Patent, including lost profits but in no event less than a reasonable royalty under 35 U.S.C. § 284 for 10x's infringement, including all prejudgment and post-judgment interest and costs at the maximum rate allowed by law;

j) An order awarding treble damages for willful infringement of the Zhuang '303 Patent by 10x pursuant to 35 U.S.C. § 284;

k) An award of Defendant Vizgen's reasonable costs and expenses incurred in this action, including attorneys' fees, expert fees, and costs;

l) That this Court enter a judgment declaring this case exceptional, and for an award of all costs, disbursements, prejudgment and post-judgment interest, and attorneys' fees pursuant to under 35 U.S.C. § 285;

m) That this Court grant such other and further legal and/or equitable relief as the Court shall deem just and proper.

Dated: April 17, 2023

Respectfully submitted,

/s/ *Pilar G. Kraman*

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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that on April 25, 2023, a copy of the foregoing document was served on the counsel listed below in the manner indicated:

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