

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

RAINDANCE TECHNOLOGIES, INC. and)	
THE UNIVERSITY OF CHICAGO,)	
)	
Plaintiffs,)	
)	C.A. No. 15-152 (RGA)
v.)	
)	DEMAND FOR JURY TRIAL
10X GENOMICS, INC.,)	
)	
Defendant.)	

THIRD AMENDED COMPLAINT

RainDance Technologies, Inc. (“RainDance”) and the University of Chicago (collectively, “Plaintiffs”) hereby allege for their THIRD Amended Complaint (“Complaint”) against Defendant 10X Genomics, Inc. (“10X,” or “Defendant”), on personal knowledge as to their own actions and on information and belief as to the actions of others, as follows:

NATURE OF THE ACTION

1. This is an action for patent infringement arising under the United States Patent Act 35 U.S.C. §§1 *et seq.*, including 35 U.S.C. § 271.
2. RainDance and the University of Chicago bring this action to halt 10X’s infringement of Plaintiff’s rights under the Patent Laws of the United States 35 U.S.C. §1, *et. seq.*, which arise under U.S. Patent Nos. 7,129,091 (“the ’091 patent”); 8,304,193 (“the ’193 patent”); 8,329,407 (“the ’407 Patent”); 8,822,148 (“the ’148 patent”); and 8,889,083 (“the ’083 patent”) (collectively, the “Ismagilov patents”).
3. RainDance by itself brings this action to halt 10X’s infringement of RainDance’s rights under the Patent Laws of the United States 35 U.S.C. §1, *et. seq.*, which arise under U.S. Patent No. 8,658,430 (“the ’430 patent”).

THE PARTIES

4. RainDance is a corporation organized and existing under the laws of Delaware, with its principal place of business at 749 Middlesex Turnpike, Billerica, MA 01821.

5. The University of Chicago is an Illinois not-for profit institution with a principal place of business at 5801 S. Ellis Ave, Chicago, Illinois 60637. Chicago is the patent owner and licensor for the '091, '193, '407, '148, and '083, patents.

6. 10X is a company organized and existing under the laws of Delaware, with its principal place of business at 7068 Koll Center Parkway, Suite 401, Pleasanton, CA, 94566.

JURISDICTION AND VENUE

7. This action for patent infringement arises under the patent laws of the United States, Title 35 of the United States Code.

8. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

9. This Court has personal jurisdiction over defendant 10X. 10X has substantial contacts with the forum as a consequence of conducting business in Delaware, and has purposefully availed itself of the benefits and protections of Delaware state law by incorporating under Delaware law.

10. Venue is proper in this District under 28 U.S.C. §§ 1391(b) and (c), and 1400(b) because RainDance and 10X are both Delaware corporations and Delaware is a convenient forum for resolution of the parties' disputes set forth herein.

BACKGROUND

11. Since its founding, RainDance has led the transformation in disease research by making innovative tools using its proprietary technologies that simplify complex genetic

analysis. RainDance's patented and proven RainDrop®, ThunderStorm®, and ThunderBolts™ microfluidic droplet systems fundamentally enhance the way researchers and scientists study cell-based and cell-free biomarkers in cancer, infectious disease, and inherited disorders.

12. 10X and RainDance are close competitors in the emerging field of using microfluidic devices to deliver biological reagents so that complex genetic analysis may be simplified and scaled. In particular, both 10X and RainDance provide microfluidic systems in which a nucleic acid sample (such as a DNA sample) is partitioned into hundreds of thousands of tiny microfluidic droplets having volume on the nanoliter scale, such that each droplet contains only a small number of individual nucleic acid molecules. In both companies' products, the nucleic acid molecules within each droplet are subject to an enzymatic amplification reaction within the droplet, which creates new copies of the nucleic acid molecules and may also introduce modifications that are useful in subsequent analytical procedures.

13. The nucleic acid molecules in the droplets are then collected and subject to an analytical procedure, such as DNA sequencing. Thus, both 10X and RainDance provide products that generate "libraries" of DNA molecules for DNA sequencing. For instance, as 10X states on the "TECHNOLOGY" tab of its website, "[t]he GemCode reagent delivery system partitions cells or arbitrarily long DNA molecules (including >100 kb) and prepares sequencing libraries in parallel such that all fragments produced within a partition share a common barcode."

Exhibit 1.¹

14. Prior to January 2015, 10X had been operating in "stealth mode." In or around January 2015, however, 10X emerged from stealth mode and began offering to sell a commercial genetic analysis tool, which it referred to as the "10X Genomics platform." On January 14,

¹ The exhibits filed with the Second Amended Complaint (D.I. 32-36) are incorporated herein by reference and, therefore, are not attached hereto.

2015, 10X presented details regarding its 10X Genomics platform at the JP Morgan Healthcare Conference. At that conference, 10X priced two components of its system: an instrument offered at \$75,000 and consumables priced by application.

15. In February 2015, 10X began marketing the commercial genetic analysis tool as the “GemCode platform.” At the time, the GemCode platform was 10X’s sole product, and included as components the GemCode Instrument and GemCode Reagents. The GemCode Instrument partitions DNA into microfluidic droplets as described above in paragraph 12, and the GemCode Reagents are the chemical reagents that are used with the GemCode Instrument.

16. On February 27, 2015, 10X presented its GemCode platform at the Advances in Genome Biology and Technology (AGBT) meeting in Marco Island, Florida. *See* Exhibit 2. During that presentation, 10X provided an image of an exemplary microfluidic channel in the GemCode Instrument along with a schematic of this microfluidic channel. The schematic described the reagents that are used in the GemCode Instrument along with the process for forming droplets:

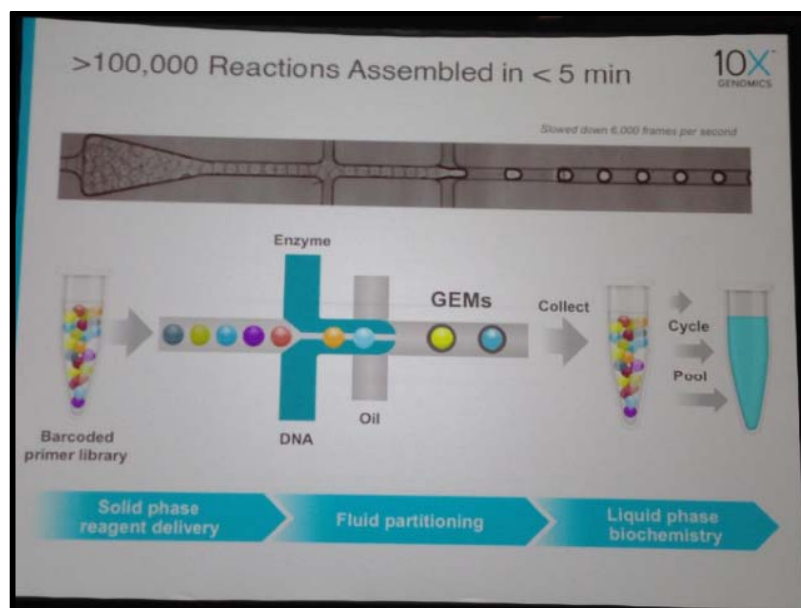


Exhibit 2 at 2. At the AGBT conference, 10X stated that the GemCode Platform was “available” and that 10X was “accepting orders.” 10X priced the GemCode Instrument at \$75,000 and the GemCode Reagents at \$500 per sample:

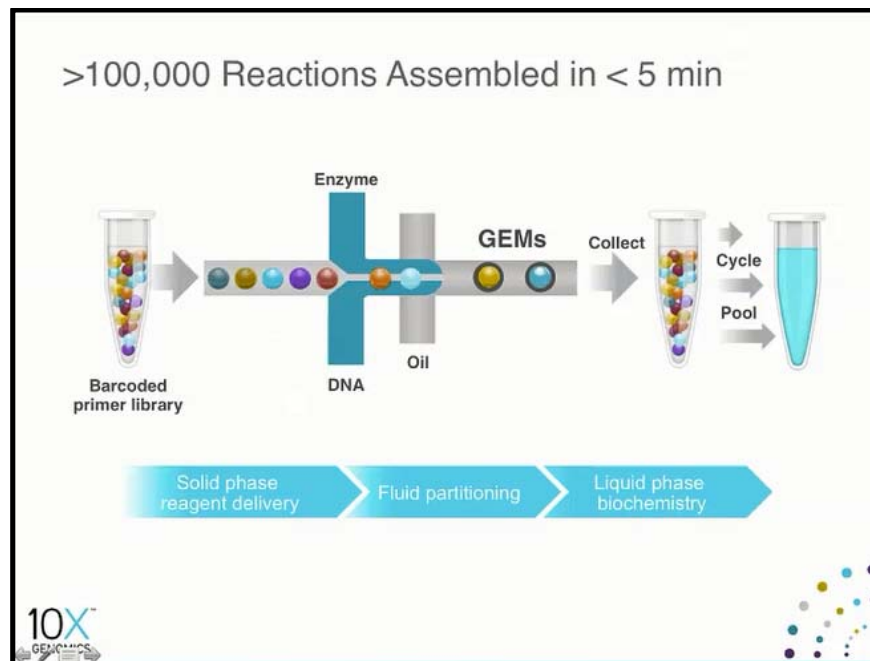


Exhibit 2 at 3. Also, at the AGBT meeting, 10X customers from institutions including the Broad Institute, the Dana Farber Cancer Institute, and multiple major research universities presented data based on the use of the GemCode platform.

17. On June 30, 2015, 10X announced that it was commencing shipments of the GemCode platform to customers. *See* Exhibit 3 (“10x Genomics announces the full commercial release and availability of the GemCode Platform with instrument shipments and installations actively underway.”).

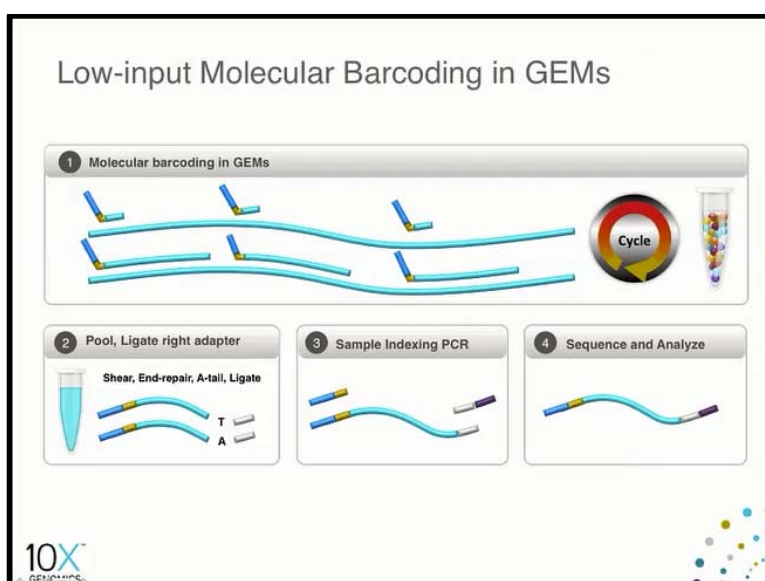
18. On August 5, 2015, Dr. Michael Schnall-Levin, 10X’s Vice President of Computational Biology and Applications, presented a webinar “about the Gemcode platform” during which he described in detail how 10X’s GemCode Instrument generated aqueous microfluidic droplets that contain DNA, barcoded gel beads, and other biological reagents. Dr.

Schnall-Levin explained that the picture below is “a cross-section of one of the channels in our microfluidic chip.” Exhibit 4 at 9:33-39. This figure is nearly identical to the figure that 10X used at the AGBT conference. As Dr. Schanll-Levin explained, if “you look starting from left to right what you see is the channels that are from three different input wells. On the first input well the user puts in the barcoded gel beads. This is a reagent delivered by 10X. On the second input well the user mixes our biochemical reagents with their DNA. And on the third input well the user puts in the oil provided again by 10X. There’s a flow from left to right and the gel beads first flow through the mix of biochemical reagents and DNA mixing with them uniformly. They then flow through a second cross of oil which pinches off droplets each of which contains a small portion of the DNA from the user and a gel bead.” *Id.* at 9:48-10:39.



19. Dr. Schnall-Levin went on to describe a DNA amplification reaction that takes place between the DNA and other biological reagents in 10X’s droplets by reference to the figure below. As he explained, the “biochemistry is divided into two major stages. The first happens inside of the droplets and the second happens after you’ve broken the droplets and put everything

back together in bulk. First you can concentrate on the top panel showing the biochemistry that's happening inside the droplets. The droplets after coming off the instrument are placed in a standard 96-well plate and put on a thermal cycler for a thermal cycling protocol. During this thermal cycling protocol, oligos, which have been released as the gel bead fall apart, prime off of the genome and do a low-level of copying. The result is that you form molecules which contain one-half of the Illumina sequencing machinery containing the 10X barcode and a copy of the genomic template.” *Id.* at 13:00-53.



20. On or about February 1, 2016, 10X Genomics published an article in *Nature Biotechnology* that presents data based on the use of 10X's GemCode platform. Exhibit 5 at 10 ("Sequencing library construction using the GemCode platform. **A GemCode instrument (10X Genomics) was used for sample preparation.**"). In that article, 10X Genomics further described droplet formation, and the DNA amplification reaction that occurs between the DNA and other biological reagents within each microfluidic droplet, in 10X's GemCode platform. The relevant text and figure from 10X's *Nature Biotechnology* article are shown below:

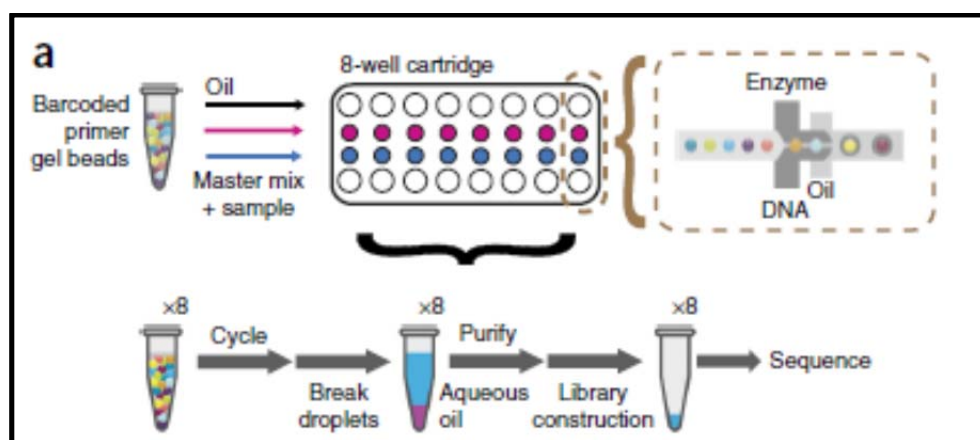
Cartridge reservoirs are loaded with gel beads, the sample and reagent mixture and an oil-surfactant solution. Reagents are delivered from the reservoirs via a

network of microfluidic channels to a microfluidic ‘double-cross’ junction (Fig. 1a). The first junction combines a close-packed aqueous slurry of gel beads with the sample and reagent mixture, and the second junction delivers the oil-surfactant solution. Droplet generation occurs at a rate of ~1 kHz at the second junction, resulting in more than 100,000 droplets loaded with >85% single occupancy per droplet partition. The droplets flow to a collection reservoir, where they are then transferred to a conventional 96-well plate. A chemical reducing agent in the reaction mix dissolves the gel beads, triggering the release of the barcoded oligonucleotides from the gel matrix.

Id. at 2.

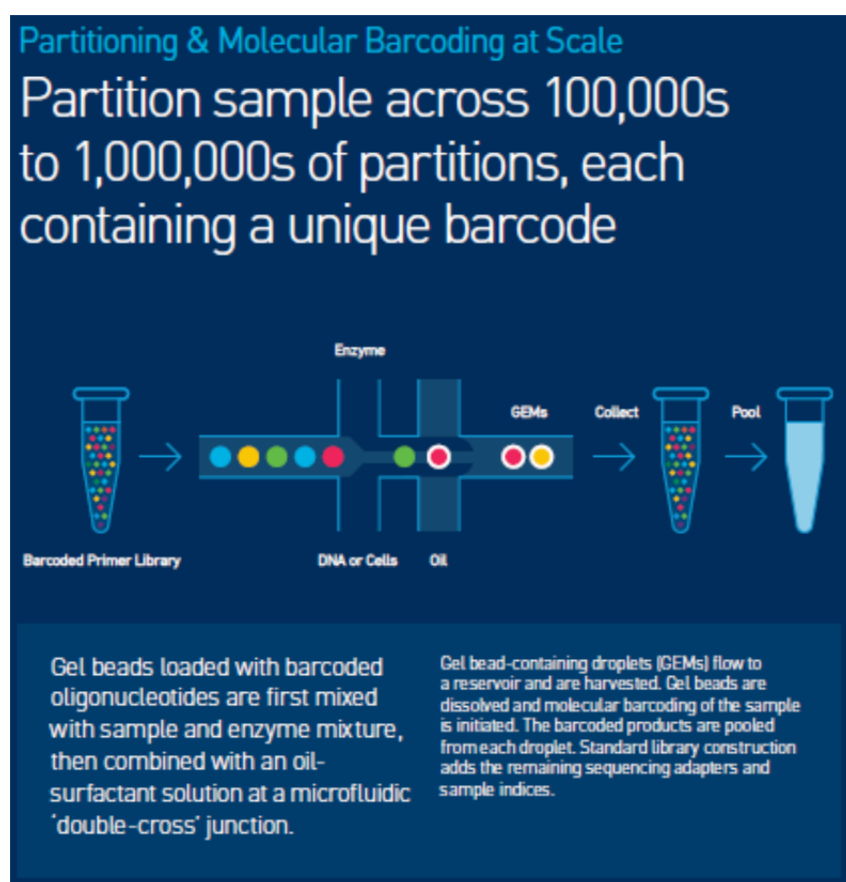
To create barcoded DNA molecules for sequencing, we perform an optimized droplet-based assay that introduces a barcode-containing sequencing adapter into new fragments (Online Methods). HMW DNA templates, ranging from ten to several hundred kilobases in size, are randomly distributed in picoliter reaction volumes across >100,000 droplets. Within an individual droplet, gel bead dissolution releases the amplification primer into the partitioned solution. The primer contains the following components: (i) an Illumina P5 flow cell primer sequence, (ii) a 14-bp barcode, (iii) an Illumina R1 sequence (read 1 sequencing primer) and (iv) a 10-bp random primer sequence (Supplementary Fig. 1). Amplification is nonprocessive, and the length of molecules produced range from a few to several hundred kilobases. After thermocycling of the droplets, the emulsion is broken, the pooled aqueous fractions are recovered, and the library preparation is completed with the addition of other adapter components (additional details of library preparation and metrics of DNA loading are noted in Online Methods).

Id.



Id.

21. On or about February 11, 2016, 10X Genomics released an instrument branded as the “Chromium Controller,” which is priced at \$125,000. The Chromium Controller is an upgraded version of the original GemCode Instrument that operates according to the same principles as the original GemCode Instrument, as set forth above in paragraphs 18-20. Indeed, the product brochure for 10X’s Chromium system describes the Chromium Controller using a schematic nearly identical to the schematic used by Dr Schnall-Levin in August 2015 to describe 10X’s original GemCode Instrument. *See* Exhibit 6. This figure is shown below.



Id. at 7.

22. Also on or about February 11, 2016, 10X Genomics began offering three new reagent kits for use with the Chromium Controller instrument: the Chromium Single Cell 3’ kit, the Chromium Genome kit, and the Chromium Exome kit. *See* Exhibit 7. These reagent kits

include a collection of reagents intended specifically for use with 10X's Chromium Controller instrument and allow researchers to use 10X's products for additional sequencing applications, including gene profiling, targeted sequencing, analysis of copy number and structural rearrangements, and variant analysis. As 10X states on the "APPLICATIONS" tab of its website, "10x's products enable a diverse set of sequencing applications." Exhibit 8; *see also id.* ("Enabling a wide array of applications with the GemCode™ Platform."). 10X also continues to sell the original reagent kits for use with the original GemCode Instrument. *See* Exhibit 7.

23. Although 10X has introduced the Chromium brand name, 10X continues to use the umbrella terms "GemCode Technology Platform" and "GemCode Platform" to describe its family of products, including the new Chromium-branded products. *See* Exhibit 8 ("Enabling a wide array of applications with the GemCode™ Platform."); Exhibit 9 (referring to the "GemCode™ Technology Platform."). Accordingly, as used herein, the term "GemCode platform" shall refer to the combination of either 10X's original GemCode Instrument or the Chromium Controller with any of 10X's reagent kits.

24. On information and belief, 10X monitors RainDance's business and technical activities closely. For instance, representatives from 10X have frequently attended scientific meetings and seminars (such as the JP Morgan Healthcare Conference, the Advances in Genome Biology and Technology conference, and the American Association for Cancer Research conference) at which RainDance has presented its most recent technical developments. Representatives from 10X regularly interact directly with representatives from RainDance at such meetings regarding RainDance's technology and research and development. In fact, on information and belief, 10X has described its technology as purportedly being the "next generation" of RainDance's proprietary technology.

25. On information and belief, and as will likely have evidentiary support after a reasonable opportunity for further investigation or discovery, 10X has monitored and continues to monitor patents, published applications, and other publications relating to genetic analysis and genome sequencing, including the patents, published applications, and other publications of its competitors in the microfluidics and genetic analysis fields, such as RainDance. For instance, at least one 10X executive, Kevin Ness, expressly informed RainDance's co-founder and chief technology officer at scientific meetings that he has followed his technical work. Likewise, 10X's general counsel and vice president of intellectual property "specializes in building and defending dominant intellectual property portfolios in the life science space" and thus, on information and belief, monitors intellectual property as part of his job duties. Exhibit 10. Furthermore, as set forth below, 10X has had knowledge of the Ismagilov Patents since well before the filing of this action.

26. On information and belief, 10X infringes, literally or under the doctrine of equivalents, the '091, '193, '407, '148, '083, and '430 patents through its activities connected to the GemCode platform and/or the individual components of the GemCode platform. As examples, attached as Exhibits 17–22 are preliminary and exemplary claim charts detailing 10X's infringement of multiple claims of each of these patents. These charts are not intended to limit Plaintiffs' right to modify these charts or any other claim chart or allege that other activities of 10X infringe the identified claims or any other claims of these patents or any other patents. Exhibits 17–22 are hereby incorporated by reference in their entirety. Each claim element in Exhibits 17–22 that is mapped to 10X's GemCode platform shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

COUNT I (By RainDance and the University of Chicago)
(Infringement of U.S. Patent No. 7,129,091)

27. Plaintiffs re-allege and incorporate by reference the allegations contained in paragraphs 1 through 26 above as relevant to this count.

28. On October 31, 2006, the United States Patent and Trademark Office duly and legally issued the '091 patent, entitled "Device and Method for Pressure-Driven Plug Transport and Reaction." A copy of the '091 patent is attached to the Complaint as Exhibit 11.

29. Rustem F. Ismagilov, Joshua David Tice, and Helen Song, are the sole and true inventors of the '091 patent. By operation of law and as a result of written assignment agreements, the University of Chicago obtained the entire right, title and interest to and in the '091 patent.

30. Pursuant to license agreements RainDance entered into with the University of Chicago, RainDance obtained an exclusive license to the '091 patent in the field of microfluidic systems, kits and chips.

31. On information and belief, 10X has infringed and continues to infringe at least claims 1-3, 5-6, 11, 23, 27, 29, 31, 33, 35-39, 43, 53, and 56-58 of the '091 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by using within the United States without authority the GemCode platform. As an example, attached as Exhibit 17 is a preliminary and exemplary claim chart detailing 10X's infringement of multiple claims of the '091 patent. This chart is not intended to limit Plaintiffs' right to modify this chart or any other claim chart or allege that other activities of 10X infringe the identified claims or any other claims of the '091 patent or any other patents. Exhibit 17 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 17 that is mapped to 10X's GemCode platform shall be considered an

allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

32. 10X has acknowledged in discovery that it has had knowledge of the '091 patent since at least April 18, 2013. Specifically, 10X has acknowledged that its CEO (Serge Saxonov), COO (Kevin Ness), and CSO (Ben Hindson) have had knowledge of the '091 patent and at least four other related patents or applications since at least April 18, 2013. These three individuals are 10X's top-most executives and had responsibility for the development and launch of 10X's infringing products. 10X's long-standing knowledge of the '091 patent was confirmed in April 4, 2014 when it cited the '407 patent and U.S. Patent No. 8,273,573 ("the '573 patent") in an IDS filed in United States Patent Application Serial Nos. 14/104650, entitled "Methods and Systems for Processing Polynucleotides"; 14/175935, entitled "Partitioning and Processing of Analytes and Other Species"; 14/175973, entitled "Polynucleotide Barcode Generation"; and 13/966150, entitled "Capsule Array Devices and Methods of Use." Copies of the IDSs are attached as Exhibits 23–26. The '091, '407, and '573 patents share substantially overlapping specifications and each claim priority to United States Provisional Application No. 60/379,927. In addition, 10X has had knowledge of and notice of the '091 patent and its infringement since at least, and through, the filing and service of Plaintiff's original Complaint on February 12, 2015 and despite this knowledge continues to commit the aforementioned infringing acts.

33. 10X actively, knowingly, and intentionally has induced, or has threatened to induce, infringement of at least claims 1-3, 5-6, 11, 23, 27, 29, 31, 33, 35-39, 43, 53, and 56-58 of the '091 patent through a range of activities. First, on information and belief, 10X has induced infringement by controlling the design and manufacture of, offering for sale, and selling the GemCode platform and/or its individual components with the knowledge and specific intent

that its customers (*e.g.*, the Broad Institute, *see* Exhibit 3, the Wellcome Trust Sanger Institute, *see* Exhibit 27, HudsonAlpha, *see* Exhibit 28 , and Macrogen, *see id.*) will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting a reaction in plugs in a microchannel.

34. Second, on information and belief, 10X has induced infringement by its customers through the dissemination of promotional and marketing materials relating to the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting a reaction in plugs in a microchannel. For instance, 10X promotes the GemCode platform on its website. As 10X states on the “APPLICATIONS” tab of its website, “10X’s products enable a diverse set of sequencing applications.” Exhibit 8; *see also id.* (“Enabling a wide array of applications with the GemCode™ Platform.”). Likewise, 10X has disseminated a brochure for the GemCode platform, promoting the GemCode platform as offering “[o]ne system, one workflow, powerful new sequencing applications.” Exhibit 6.

35. Third, on information and belief, 10X has induced infringement by its customers through the creation of distribution channels for the GemCode platform and/or its individual components in the United States with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting a reaction in plugs in a microchannel. For instance, 10X has entered into co-marketing relationships and collaborations with multiple companies, including Illumina, Inc., Qiagen, N.V., and Agilent, pursuant to which 10X’s GemCode platform and/or its individual components will be marketed and distributed to customers. *See* Exhibit 29 (“The companies will each be co-marketing to their respective

customers the 10x Chromium products along with QIAGEN's sample handling and preparation technologies, including the MagAttract HMW DNA kits, and informatics solutions."); Ex. 30 ("The Companies will each be co-marketing the 10x GemCode technology and Illumina sequencing solutions to their respective customers."); Ex. 31 ("The two companies will each create products that provide a streamlined workflow for 10X Genomics' Chromium platform using Agilent's market-leading SureSelect target enrichment technology.").

36. Fourth, on information and belief, 10X has induced infringement by its customers through the open-source distribution of software for the analysis of data that results from the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting a reaction in plugs in a microchannel. For instance, 10X's website allows individuals to download software for use with the GemCode platform, and further provides instructions for the installation of this software. *See* Exhibits 32–33. 10X's website has asserted that the software for use with the GemCode platform uses "barcodes provided by the reagent delivery system," and that "the platform and tools used to build the GemCode Software are open-source." Exhibit 34. 10X induces infringement by, for instance, stating that it "encourage[s] others to contribute to the project and to use it to build their own informatics pipelines." Exhibit 35. 10X's website continues to announce that its software is open-sourced. *See* Exhibit 36.

37. Fifth, on information and belief, 10X has induced infringement through the distribution of other instructional materials, product manuals, and technical materials with the knowledge and the specific intent to encourage and facilitate its customer's infringing (either

literally or under the doctrine of equivalents) use of the GemCode platform. 10X is liable for its induced infringement of the '091 patent pursuant to 35 U.S.C. § 271 (b).

38. 10X has contributed to, or has threatened to contribute to, the infringement by its customers of the '091 patent by, without authority, selling and offering to sell within the United States materials and apparatuses for practicing the claimed invention of the '091 patent, including at least the GemCode platform as a whole and/or the individual components of the GemCode platform. When, for example, the GemCode platform is used by 10X's customers for partitioning a nucleic acid sample, the claimed method for conducting a reaction in plugs in a microchannel is performed, thereby infringing, literally or under the doctrine of equivalents, at least claims 1-3, 5-6, 11, 23, 27, 29, 31, 33, 35-39, 43, 53, and 56-58 of the '091 patent. The GemCode platform and/or its individual components, supplied by 10X, constitute a material part of the claimed invention of the '091 patent.

39. On information and belief, 10X knows that the GemCode platform and/or its individual components constitute a material part of the inventions of the '091 patent and that they are not a staple article or commodity of commerce suitable for substantial noninfringing use. As documented above, the GemCode platform consists of a specialized microfluidic device along with specialized reagents for conducting reactions in microfluidic droplets. *See supra* ¶¶ 14-20. As such, none of the GemCode Instrument, the Chromium Controller, or 10X's reagent kits is a staple article of commerce suitable for substantial non-infringing use. 10X knows that the GemCode platform and its individual components are not staple articles or commodities of commerce suitable for substantial non-infringing use because the GemCode platform and its individual components have no use apart from infringing the '091 patent. 10X is liable for its contributory infringement of the '091 patent pursuant to 35 U.S.C. § 271(c).

40. 10X's infringement of the '091 patent has injured Plaintiffs in their business and property rights. 10X's infringement of the '091 patent has been and is deliberate and willful and constitutes egregious misconduct. Despite actual knowledge of the '091 patent and numerous related patents and applications since at least April 18, 2013, 10X continued to develop and launch its infringing products. As set forth in Exhibit 17, when customers use 10X's GemCode platform, they practice every element of multiple claims of the '091 patent. In developing and launching its product, 10X has been willfully blind to this ongoing infringement. Following the initiation of this lawsuit, and following its failed efforts to invalidate the '091 patent in *inter partes* review, 10X has continued to infringe the '091 patent, further confirming that its conduct has been egregious. Plaintiffs are entitled to recover monetary damages the injuries arising from 10X's willful infringement pursuant to 35 U.S.C. § 284 in an amount to be determined at trial. 10X's infringement of the '091 patent has caused irreparable harm to Plaintiffs and will continue to cause such harm unless and until 10X's infringing activities are enjoined by this Court.

COUNT II (By RainDance and the University of Chicago)
(Infringement of U.S. Patent No. 8,304,193)

41. Plaintiffs re-allege and incorporate by reference the allegations contained in paragraphs 1 through 26 above as relevant to this count.

42. On November 6, 2012, the United States Patent and Trademark Office duly and legally issued the '193 patent, entitled "Method for Conducting an Autocatalytic Reaction in Plugs in a Microfluidic System." A copy of the '193 patent is attached to the Complaint as Exhibit 12.

43. Rustem F. Ismagilov, Joshua David Tice, Cory John Gerdts, and Bo Zheng, are the sole and true inventors of the '193 patent. By operation of law and as a result of written

assignment agreements, the University of Chicago obtained the entire right, title and interest to and in the '193 patent.

44. Pursuant to license agreements RainDance entered into with the University of Chicago, RainDance obtained an exclusive license to the '193 patent in the field of microfluidic systems, kits and chips.

45. On information and belief, 10X has infringed and continues to infringe at least claims 1-8 and 11 of the '193 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by using within the United States without authority the GemCode platform. As an example, attached as Exhibit 18 is a preliminary and exemplary claim chart detailing 10X's infringement of multiple claims of the '193 patent. This chart is not intended to limit Plaintiffs' right to modify this chart or any other claim chart or allege that other activities of 10X infringe the identified claims or any other claims of the '193 patent or any other patents. Exhibit 18 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 18 that is mapped to 10X's GemCode platform shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

46. 10X has acknowledged in discovery that it has had knowledge of the '193 patent since at least April 18, 2013. Specifically, 10X has acknowledged that its CEO (Serge Saxonov), COO (Kevin Ness), and CSO (Ben Hindson) have had knowledge of the '193 patent and at least four other related patents or applications since at least April 18, 2013. These three individuals are 10X's top-most executives and had responsibility for the development and launch of 10X's infringing products. 10X's long-standing knowledge of the '193 patent was confirmed in April 4, 2014 when it cited the '407 patent and the '537 patent in an IDS filed in United States Patent Application Serial Nos. 14/104650, entitled "Methods and Systems for Processing

Polynucleotides”; 14/175935, entitled “Partitioning and Processing of Analytes and Other Species”; 14/175973, entitled “Polynucleotide Barcode Generation”; and 13/966150, entitled “Capsule Array Devices and Methods of Use.” Copies of the IDSs are attached as Exhibits 23–26. The ’193, ’407, and ’573 patents share substantially overlapping specifications and each claim priority to United States Provisional Application No. 60/379,927. In addition, 10X has had knowledge of and notice of the ’193 patent and its infringement since at least, and through, the filing and service of Plaintiff’s original Complaint on February 12, 2015 and despite this knowledge continues to commit the aforementioned infringing acts.

47. 10X actively, knowingly, and intentionally has induced, or has threatened to induce, infringement of at least claims 1-8 and 11 of the ’193 patent through a range of activities. First, on information and belief, 10X has induced infringement by controlling the design and manufacture of, offering for sale, and selling the GemCode platform and/or its individual components with the knowledge and specific intent that its customers (*e.g.*, the Broad Institute, *see* Exhibit 3, the Wellcome Trust Sanger Institute, *see* Exhibit 27, HudsonAlpha, *see* Exhibit 28, and Macrogen, *see id.*) will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting an autocatalytic reaction in plugs.

48. Second, on information and belief, 10X has induced infringement by its customers through the dissemination of promotional and marketing materials relating to the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting an autocatalytic reaction in plugs. For instance, 10X promotes the GemCode platform on its website. As 10X states on the “APPLICATIONS” tab of its

website, “10x’s products enable a diverse set of sequencing applications.” Exhibit 8; *see also id.* (“Enabling a wide array of applications with the GemCode™ Platform.”). Likewise, 10X has disseminated a brochure for the GemCode platform, promoting the GemCode platform as offering “[o]ne system, one workflow, powerful new sequencing applications.” Ex. 6.

49. Third, on information and belief, 10X has induced infringement by its customers through the creation of distribution channels for the GemCode platform and/or its individual components in the United States with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting an autocatalytic reaction in plugs. For instance, 10X has entered into co-marketing relationships and collaborations with multiple companies, including Illumina, Inc., Qiagen, N.V., and Agilent, pursuant to which 10X’s GemCode platform and/or its individual components will be marketed and distributed to customers. *See* Exhibit 29 (“The companies will each be co-marketing to their respective customers the 10x Chromium products along with QIAGEN’s sample handling and preparation technologies, including the MagAttract HMW DNA kits, and informatics solutions.”); Exhibit 30 (“The Companies will each be co-marketing the 10x GemCode technology and Illumina sequencing solutions to their respective customers.”); Exhibit 31 (“The two companies will each create products that provide a streamlined workflow for 10x Genomics’ Chromium platform using Agilent’s market-leading SureSelect target enrichment technology.”).

50. Fourth, on information and belief, 10X has induced infringement by its customers through the open-source distribution of software for the analysis of data that results from the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the

claimed method for conducting an autocatalytic reaction in plugs. For instance, 10X's website allows individuals to download software for use with the GemCode platform, and further provides instructions for the installation of this software. *See* Exhibits 32–33. 10X's website has asserted that the software for use with the GemCode platform uses “barcodes provided by the reagent delivery system,” and that “the platform and tools used to build the GemCode Software are open-source.” Exhibit 34. 10X induces infringement by, for instance, stating that it “encourage[s] others to contribute to the project and to use it to build their own informatics pipelines.” Exhibit 35. 10X's website continues to announce that its software is open-sourced. *See* Exhibit 36.

51. Fifth, on information and belief, 10X has induced infringement through the distribution of other instructional materials, product manuals, and technical materials with the knowledge and the specific intent to encourage and facilitate its customer's infringing (either literally or under the doctrine of equivalents) use of the GemCode platform. 10X is liable for its induced infringement of the '193 patent pursuant to 35 U.S.C. § 271 (b).

52. 10X has contributed to, or has threatened to contribute to, the infringement by its customers of the '193 patent by, without authority, selling and offering to sell within the United States materials and apparatuses for practicing the claimed invention of the '193 patent, including at least the GemCode platform as a whole and/or the individual components of the GemCode platform. When, for example, the GemCode platform is used by 10X's customers for partitioning a nucleic acid sample into droplets and then amplifying the nucleic acid in the droplets, the claimed method for conducting an autocatalytic reaction in plugs is performed, thereby infringing, literally or under the doctrine of equivalents, at least claims 1-8 and 11 of the

'193 patent. The GemCode platform and/or its individual components, supplied by 10X, constitute a material part of the claimed invention of the '193 patent.

53. On information and belief, 10X knows that the GemCode platform and/or its individual components constitute a material part of the inventions of the '193 patent and that they are not a staple article or commodity of commerce suitable for substantial noninfringing use. As documented above, the GemCode platform consists of a specialized microfluidic device along with specialized reagents for conducting reactions in microfluidic droplets. *See supra* ¶¶ 14-20. As such, none of the GemCode Instrument, the Chromium Controller, or 10X's reagent kits is a staple article of commerce suitable for substantial non-infringing use. 10X knows that the GemCode platform and its individual components are not staple articles or commodities of commerce suitable for substantial non-infringing use because the GemCode platform and its individual components have no use apart from infringing the '193 patent. 10X is liable for its contributory infringement of the '193 patent pursuant to 35 U.S.C. § 271(c).

54. 10X's infringement of the '193 patent has injured Plaintiffs in their business and property rights. 10X's infringement of the '193 patent has been and is deliberate and willful and constitutes egregious misconduct. Despite actual knowledge of the '193 patent and numerous related patents and applications since at least April 18, 2013, 10X continued to develop and launch its infringing products. As set forth in Exhibit 18, when customers use 10X's GemCode platform, they practice every element of multiple claims of the '193 patent. In developing and launching its product, 10X has been willfully blind to this ongoing infringement. Following the initiation of this lawsuit, and following its failed efforts to invalidate the '193 patent in *inter partes* review, 10X has continued to infringe the '193 patent, further confirming that its conduct has been egregious. Plaintiffs are entitled to recover monetary damages for injuries arising from

10X's willful infringement pursuant to 35 U.S.C. § 284 in an amount to be determined at trial. 10X's infringement of the '193 patent has caused irreparable harm to Plaintiffs and will continue to cause such harm unless and until 10X's infringing activities are enjoined by this Court.

COUNT III (By RainDance and the University of Chicago)
(Infringement of U.S. Patent No. 8,329,407)

55. Plaintiffs re-allege and incorporate by reference the allegations contained in paragraphs 1 through 26 above as relevant to this count.

56. On December 11, 2012 the United States Patent and Trademark Office duly and legally issued the '407 patent, entitled "Method for Conducting Reactions Involving Biological Molecules in Plugs in a Microfluidic System." A copy of the '407 patent is attached to the Complaint as Exhibit 13.

57. Rustem F. Ismagilov, Joshua David Tice, Cory John Gerdts, and Bo Zheng, are the sole and true inventors of the '407 patent. By operation of law and as a result of written assignment agreements, the University of Chicago obtained the entire right, title and interest to and in the '407 patent.

58. Pursuant to license agreements RainDance entered into with the University of Chicago, RainDance obtained an exclusive license to the '407 patent in the field of microfluidic systems, kits and chips.

59. On information and belief, 10X has infringed and continues to infringe at least claims 1-5, 8-11, and 13 of the '407 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by using within the United States without authority the GemCode platform. As an example, attached as Exhibit 19 is a preliminary and exemplary claim chart detailing 10X's infringement of multiple claims of the '407 patent. This chart is not intended to limit Plaintiffs' right to modify this chart or any other claim chart or allege that other activities of

10X infringe the identified claims or any other claims of the '407 patent or any other patents. Exhibit 19 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 19 that is mapped to 10X's GemCode platform shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

60. 10X has acknowledged in discovery that it has had knowledge of the '407 patent since at least April 18, 2013. Specifically, 10X has acknowledged that its CEO (Serge Saxonov), COO (Kevin Ness), and CSO (Ben Hindson) have had knowledge of the '407 patent and at least four other related patents or applications since at least April 18, 2013. These three individuals are 10X's top-most executives and had responsibility for the development and launch of 10X's infringing products. 10X's long-standing knowledge of the '407 patent was confirmed on April 4, 2014, when it cited the '407 patent in an IDS filed in United States Patent Application Serial Nos. 14/104650, entitled "Methods and Systems for Processing Polynucleotides"; 14/175935, entitled "Partitioning and Processing of Analytes and Other Species"; 14/175973, entitled "Polynucleotide Barcode Generation"; and 13/966150, entitled "Capsule Array Devices and Methods of Use." Copies of the IDSs are attached as Exhibits 23–26. In addition, 10X has had knowledge of and notice of the '407 patent and its infringement since at least, and through, the filing and service of Plaintiff's original Complaint on February 12, 2015 and despite this knowledge continues to commit the aforementioned infringing acts.

61. 10X actively, knowingly, and intentionally has induced, or has threatened to induce, infringement of at least claims 1-5, 8-11, and 13 of the '407 patent through a range of activities. First, on information and belief, 10X has induced infringement by controlling the design and manufacture of, offering for sale, and selling the GemCode platform and/or its individual components with the knowledge and specific intent that its customers (*e.g.*, the Broad

Institute, *see* Exhibit 3, the Wellcome Trust Sanger Institute, *see* Exhibit 27 , HudsonAlpha, *see* Exhibit 28 , and Macrogen, *see id.*) will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting a reaction in plugs in a microfluidic system.

62. Second, on information and belief, 10X has induced infringement by its customers through the dissemination of promotional and marketing materials relating to the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting a reaction in plugs in a microfluidic system. For instance, 10X promotes the GemCode platform on its website. As 10X states on the “APPLICATIONS” tab of its website, “10x’s products enable a diverse set of sequencing applications.” Exhibit 8; *see also id.* (“Enabling a wide array of applications with the GemCode™ Platform.”). Likewise, 10X has disseminated a brochure for the GemCode platform, promoting the GemCode platform as offering “[o]ne system, one workflow, powerful new sequencing applications.” Exhibit 6.

63. Third, on information and belief, 10X has induced infringement by its customers through the creation of distribution channels for the GemCode platform and/or its individual components in the United States with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting a reaction in plugs in a microfluidic system. For instance, 10X has entered into co-marketing relationships and collaborations with multiple companies, including Illumina, Inc., Qiagen, N.V., and Agilent, pursuant to which 10X’s GemCode platform and/or its individual components will be marketed and distributed to customers. *See* Exhibit 29 (“The companies will each be co-marketing to their respective

customers the 10x Chromium products along with QIAGEN's sample handling and preparation technologies, including the MagAttract HMW DNA kits, and informatics solutions."); Exhibit 30 ("The Companies will each be co-marketing the 10x GemCode technology and Illumina sequencing solutions to their respective customers."); Exhibit 31 ("The two companies will each create products that provide a streamlined workflow for 10x Genomics' Chromium platform using Agilent's market-leading SureSelect target enrichment technology.").

64. Fourth, on information and belief, 10X has induced infringement by its customers through the open-source distribution of software for the analysis of data that results from the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for conducting a reaction in plugs in a microfluidic system. For instance, 10X's website allows individuals to download software for use with the GemCode platform, and further provides instructions for the installation of this software. *See* Exhibits 32–33. 10X's website has asserted that the software for use with the GemCode platform uses "barcodes provided by the reagent delivery system," and that "the platform and tools used to build the GemCode Software are open-source." Exhibit 34. 10X induces infringement by, for instance, stating that it "encourage[s] others to contribute to the project and to use it to build their own informatics pipelines." Exhibit 35. 10X's website continues to announce that its software is open-sourced. *See* Exhibit 36.

65. Fifth, on information and belief, 10X has induced infringement through the distribution of other instructional materials, product manuals, and technical materials with the knowledge and the specific intent to encourage and facilitate its customer's infringing (either

literally or under the doctrine of equivalents) use of the GemCode platform. 10X is liable for its induced infringement of the '407 patent pursuant to 35 U.S.C. § 271 (b).

66. 10X has contributed to, or has threatened to contribute to, the infringement by its customers of the '407 patent by, without authority, selling and offering to sell within the United States materials and apparatuses for practicing the claimed invention of the '407 patent, including at least the GemCode platform as a whole and/or the individual components of the GemCode platform. When, for example, the GemCode platform is used by 10X's customers for partitioning a nucleic acid sample into droplets and then amplifying the nucleic acid in the droplets, the claimed method for conducting a reaction in plugs in a microfluidic system is performed, thereby infringing, literally or under the doctrine of equivalents, at least claims 1-5, 8-11, and 13 of the '407 patent. The GemCode platform and/or its individual components, supplied by 10X, constitute a material part of the claimed invention of the '407 patent.

67. On information and belief, 10X knows that the GemCode platform and/or its individual components constitute a material part of the inventions of the '407 patent and that they are not a staple article or commodity of commerce suitable for substantial noninfringing use. As documented above, the GemCode platform consists of a specialized microfluidic device along with specialized reagents for conducting reactions in microfluidic droplets. *See supra* ¶¶ 14-20. As such, none of the GemCode Instrument, the Chromium Controller, or 10X's reagent kits is a staple article of commerce suitable for substantial non-infringing use. 10X knows that the GemCode platform and its individual components are not staple articles or commodities of commerce suitable for substantial non-infringing use because the GemCode platform and its individual components have no use apart from infringing the '407 patent. 10X is liable for its contributory infringement of the '407 patent pursuant to 35 U.S.C. § 271(c).

68. 10X's infringement of the '407 patent has injured Plaintiffs in their business and property rights. 10X's infringement of the '407 patent has been and is deliberate and willful and constitutes egregious misconduct. Despite actual knowledge of the '407 patent and numerous related patents and applications since at least April 18, 2013, 10X continued to develop and launch its infringing products. As set forth in Exhibit 19, when customers use 10X's GemCode platform, they practice every element of multiple claims of the '407 patent. In developing and launching its product, 10X has been willfully blind to this ongoing infringement. Following the initiation of this lawsuit, and following its failed efforts to invalidate the '407 patent in *inter partes* review, 10X has continued to infringe the '407 patent, further confirming that its conduct has been egregious. Plaintiffs are entitled to recover monetary damages for injuries arising from 10X's willful infringement pursuant to 35 U.S.C. § 284 in an amount to be determined at trial. 10X's infringement of the '407 patent has caused irreparable harm to Plaintiffs and will continue to cause such harm unless and until 10X's infringing activities are enjoined by this Court.

COUNT IV (By RainDance and the University of Chicago)
(Infringement of U.S. Patent No. 8,822,148)

69. Plaintiffs re-allege and incorporate by reference the allegations contained in paragraphs 1 through 26 above as relevant to this count.

70. On September 2, 2014 the United States Patent and Trademark Office duly and legally issued the '148 patent, entitled "Method of Performing PCR Reaction in Continuously Flowing Microfluidic Plugs." A copy of the '148 patent is attached to the Complaint as Exhibit 14.

71. Rustem F. Ismagilov, Joshua David Tice, Cory John Gerdts, and Bo Zheng, are the sole and true inventors of the '148 patent. By operation of law and as a result of written

assignment agreements, the University of Chicago obtained the entire right, title and interest to and in the '148 patent.

72. Pursuant to license agreements RainDance entered into with the University of Chicago, RainDance obtained an exclusive license to the '148 patent in the field of microfluidic systems, kits and chips.

73. On information and belief, 10X has infringed and continues to infringe at least claims 1-3 and 6-8 of the '148 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by using within the United States without authority the GemCode platform. As an example, attached as Exhibit 20 is a preliminary and exemplary claim chart detailing 10X's infringement of multiple claims of the '148 patent. This chart is not intended to limit Plaintiffs' right to modify this chart or any other claim chart or allege that other activities of 10X infringe the identified claims or any other claims of the '148 patent or any other patents. Exhibit 20 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 20 that is mapped to 10X's GemCode platform shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

74. 10X has had knowledge of the '148 patent at least as early as April 4, 2014 when it cited the '407 patent and the '537 patent in an IDS filed in United States Patent Application Serial Nos. 14/104650, entitled "Methods and Systems for Processing Polynucleotides"; 14/175935, entitled "Partitioning and Processing of Analytes and Other Species"; 14/175973, entitled "Polynucleotide Barcode Generation"; and 13/966150, entitled "Capsule Array Devices and Methods of Use." Copies of the IDSs are attached as Exhibits 23-26. The '148, '407, and '573 patents share substantially overlapping specifications and each claim priority to United States Provisional Application No. 60/379,927. 10X has acknowledged in discovery that it has

had knowledge of the '148 patent since at least October 23, 2014. Specifically, 10X has acknowledged that its General Counsel and Vice President of Intellectual Property (Matt Murphy), has had knowledge of the '148 patent since at least October 23, 2014. In addition, 10X has had knowledge of and notice of the '148 patent and its infringement since at least, and through, the filing and service of Plaintiff's original Complaint on February 12, 2015 and despite this knowledge continues to commit the aforementioned infringing acts.

75. 10X actively, knowingly, and intentionally has induced, or has threatened to induce, infringement of at least claims 1-3 and 6-8 of the '148 patent through a range of activities. First, on information and belief, 10X has induced infringement by controlling the design and manufacture of, offering for sale, and selling the GemCode platform and/or its individual components with the knowledge and specific intent that its customers (*e.g.*, the Broad Institute, *see* Exhibit 3, the Wellcome Trust Sanger Institute, *see* Exhibit 27, HudsonAlpha, *see* Exhibit 28, and Macrogen, *see id.*) will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for amplifying DNA or RNA by providing conditions suitable for performing a PCR reaction in microfluidic plugs.

76. Second, on information and belief, 10X has induced infringement by its customers through the dissemination of promotional and marketing materials relating to the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for amplifying DNA or RNA by providing conditions suitable for performing a PCR reaction in microfluidic plugs. For instance, 10X promotes the GemCode platform on its website. As 10X states on the "APPLICATIONS" tab of its website, "10x's products enable a diverse set of sequencing applications." Exhibit 8; *see also id.* ("Enabling a wide array of

applications with the GemCode™ Platform.”). Likewise, 10X has disseminated a brochure for the GemCode platform, promoting the GemCode platform as offering “[o]ne system, one workflow, powerful new sequencing applications.” Exhibit 6.

77. Third, on information and belief, 10X has induced infringement by its customers through the creation of distribution channels for the GemCode platform and/or its individual components in the United States with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for amplifying DNA or RNA by providing conditions suitable for performing a PCR reaction in microfluidic plugs. For instance, 10X has entered into co-marketing relationships and collaborations with multiple companies, including Illumina, Inc., Qiagen, N.V., and Agilent, pursuant to which 10X’s GemCode platform and/or its individual components will be marketed and distributed to customers. *See* Exhibit 29 (“The companies will each be co-marketing to their respective customers the 10x Chromium products along with QIAGEN’s sample handling and preparation technologies, including the MagAttract HMW DNA kits, and informatics solutions.”); Exhibit 30 (“The Companies will each be co-marketing the 10x GemCode technology and Illumina sequencing solutions to their respective customers.”); Exhibit 31 (“The two companies will each create products that provide a streamlined workflow for 10x Genomics’ Chromium platform using Agilent’s market-leading SureSelect target enrichment technology.”).

78. Fourth, on information and belief, 10X has induced infringement by its customers through the open-source distribution of software for the analysis of data that results from the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the

claimed method for amplifying DNA or RNA by providing conditions suitable for performing a PCR reaction in microfluidic plugs. For instance, 10X's website allows individuals to download software for use with the GemCode platform, and further provides instructions for the installation of this software. *See* Exhibits 32–33. 10X's website has asserted that the software for use with the GemCode platform uses “barcodes provided by the reagent delivery system,” and that “the platform and tools used to build the GemCode Software are open-source.” Exhibit 34. 10X induces infringement by, for instance, stating that it “encourage[s] others to contribute to the project and to use it to build their own informatics pipelines.” Exhibit 35. 10X's website continues to announce that its software is open-sourced. *See* Exhibit 36.

79. Fifth, on information and belief, 10X has induced infringement through the distribution of other instructional materials, product manuals, and technical materials with the knowledge and the specific intent to encourage and facilitate its customer's infringing (either literally or under the doctrine of equivalents) use of the GemCode platform. 10X is liable for its induced infringement of the '148 patent pursuant to 35 U.S.C. § 271 (b).

80. 10X has contributed to, or has threatened to contribute to, the infringement by its customers of the '193 patent by, without authority, selling and offering to sell within the United States materials and apparatuses for practicing the claimed invention of the '148 patent, including at least the GemCode platform as a whole and/or the individual components of the GemCode platform. When, for example, the GemCode platform is used by 10X's customers for partitioning a nucleic acid sample into droplets and then amplifying the nucleic acid in the droplets, the claimed method for amplifying DNA or RNA by providing conditions suitable for performing a PCR reaction in microfluidic plugs is performed, thereby infringing, literally or under the doctrine of equivalents, at least claims 1-3 and 6-8 of the '148 patent. The GemCode

platform and/or its individual components, supplied by 10X, constitute a material part of the claimed invention of the '148 patent.

81. On information and belief, 10X knows that the GemCode platform and/or its individual components constitute a material part of the inventions of the '148 patent and that they are not a staple article or commodity of commerce suitable for substantial noninfringing use. As documented above, the GemCode platform consists of a specialized microfluidic device along with specialized reagents for conducting reactions in microfluidic droplets. *See supra* ¶¶ 14-20. As such, none of the GemCode Instrument, the Chromium Controller, or 10X's reagent kits is a staple article of commerce suitable for substantial non-infringing use. 10X knows that the GemCode platform and its individual components are not staple articles or commodities of commerce suitable for substantial non-infringing use because the GemCode platform and its individual components have no use apart from infringing the '148 patent. 10X is liable for its contributory infringement of the '148 patent pursuant to 35 U.S.C. § 271(c).

82. 10X's infringement of the '148 patent has injured Plaintiffs in their business and property rights. 10X's infringement of the '148 patent has been and is deliberate and willful and constitutes egregious misconduct. Despite actual knowledge of the '148 patent since at least October 23, 2014 by 10X's Vice President of Intellectual Property, who would have recognized 10X's infringement of the '148 patent, 10X continued to develop and launch its infringing products. As set forth in Exhibit 20, when customers use 10X's GemCode platform, they practice every element of multiple claims of the '148 patent. In developing and launching its product, 10X has been willfully blind to this ongoing infringement. Following the initiation of this lawsuit, and following its failed efforts to invalidate the '148 patent in *inter partes* review, 10X has continued to infringe the '148 patent, further confirming that its conduct has been

egregious. Plaintiffs are entitled to recover monetary damages for injuries arising from 10X's willful infringement pursuant to 35 U.S.C. § 284 in an amount to be determined at trial. 10X's infringement of the '148 patent has caused irreparable harm to Plaintiffs and will continue to cause such harm unless and until 10X's infringing activities are enjoined by this Court.

COUNT V (By RainDance and the University of Chicago)
(Infringement of U.S. Patent No. 8,889,083)

83. Plaintiffs re-allege and incorporate by reference the allegations contained in paragraphs 1 through 26 above as relevant to this count.

84. On November 18, 2014 the United States Patent and Trademark Office duly and legally issued the '083 patent, entitled "Device and Method for Pressure-Driven Plug Transport and Reaction." A copy of the '083 patent is attached to the Complaint as Exhibit 15.

85. Rustem F. Ismagilov, Joshua David Tice, Helen Song, and Lewis Spencer Roach, Jr., are the sole and true inventors of the '083 patent. By operation of law and as a result of written assignment agreements, the University of Chicago obtained the entire right, title and interest to and in the '083 patent.

86. Pursuant to license agreements RainDance entered into with the University of Chicago, RainDance obtained an exclusive license to the '083 patent in the field of microfluidic systems, kits and chips.

87. On information and belief, 10X has infringed and continues to infringe at least claims 20-22 and 26 of the '083 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by using within the United States without authority the GemCode platform. Further, on information and belief, 10X has infringed and continues to infringe at least claims 1-2, 10-13, and 31 of the '083 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, selling, and/or offering to sell within the United States

without authority the GemCode platform. As an example, attached as Exhibit 21 is a preliminary and exemplary claim chart detailing 10X's infringement of multiple claims of the '083 patent. This chart is not intended to limit Plaintiffs' right to modify this chart or any other claim chart or allege that other activities of 10X infringe the identified claims or any other claims of the '083 patent or any other patents. Exhibit 21 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 21 that is mapped to 10X's GemCode platform shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

88. 10X has had knowledge of the '083 patent at least as early as April 4, 2014 when it cited the '407 patent and the '537 patent in an IDS filed in United States Patent Application Serial Nos. 14/104650, entitled "Methods and Systems for Processing Polynucleotides"; 14/175935, entitled "Partitioning and Processing of Analytes and Other Species"; 14/175973, entitled "Polynucleotide Barcode Generation"; and 13/966150, entitled "Capsule Array Devices and Methods of Use." Copies of the IDSs are attached as Exhibits 23–26. The '083, '407, and '573 patents share substantially overlapping specifications and each claim priority to United States Provisional Application No. 60/379,927. 10X has acknowledged in discovery that it has had knowledge of the '083 patent since at least February 6, 2015. Specifically, 10X has acknowledged that its General Counsel and Vice President of Intellectual Property (Matt Murphy), has had knowledge of the '148 patent since at least February 6, 2015. In addition, 10X has had knowledge of and notice of the '083 patent and its infringement since at least, and through, the filing and service of Plaintiff's original Complaint on February 12, 2015 and despite this knowledge continues to commit the aforementioned infringing acts.

89. 10X actively, knowingly, and intentionally has induced, or has threatened to induce, infringement of at least claims 1-2, 10-13, 20-22, 26, and 31 of the '083 patent through a range of activities. First, on information and belief, 10X has induced infringement by controlling the design and manufacture of, offering for sale, and selling the GemCode platform and/or its individual components with the knowledge and specific intent that its customers (*e.g.*, the Broad Institute, *see* Exhibit 3, the Wellcome Trust Sanger Institute, *see* Exhibit 27, HudsonAlpha, *see* Exhibit 28, and Macrogen, *id.*) will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the methods of claims 20-22 and 26 for conducting a reaction in plugs in a microchannel. Likewise, 10X has induced infringement by offering for sale and selling the GemCode platform and/or its individual components with the knowledge and specific intent that its customers will use 10X's reagent kits with either the original GemCode Instrument or the Chromium Controller, thereby assembling an apparatus that infringes, literally or under the doctrine of equivalents, claims 1-2, 10-13, and 31 of the '083 patent.

90. Second, on information and belief, 10X has induced infringement by its customers through the dissemination of promotional and marketing materials relating to the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the methods of claims 20-22 and 26 for conducting a reaction in plugs in a microchannel. For instance, 10X promotes the GemCode platform on its website. As 10X states on the "APPLICATIONS" tab of its website, "10x's products enable a diverse set of sequencing applications." Exhibit 8; *see also id.* ("Enabling a wide array of applications with the GemCode™ Platform."). Likewise, 10X has disseminated a brochure for the GemCode platform, promoting the GemCode platform as offering "[o]ne system, one workflow, powerful

new sequencing applications.” Exhibit 6. 10X’s dissemination of these promotional and marketing materials further induces infringement because it encourages 10X’s its customers to use 10X’s reagent kits with either the original GemCode Instrument or the Chromium Controller, thereby leading 10X’s customers to assemble an apparatus that infringes, literally or under the doctrine of equivalents, claims 1-2, 10-13, and 31 of the ’083 patent.

91. Third, on information and belief, 10X has induced infringement by its customers through the creation of distribution channels for the GemCode platform and/or its individual components in the United States with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the methods of claims 20-22 and 26 for conducting a reaction in plugs in a microchannel. For instance, 10X has entered into co-marketing relationships and collaborations with multiple companies, including Illumina, Inc., Qiagen, N.V., and Agilent, pursuant to which 10X’s GemCode platform and/or its individual components will be marketed and distributed to customers. *See* Exhibit 29 (“The companies will each be co-marketing to their respective customers the 10x Chromium products along with QIAGEN’s sample handling and preparation technologies, including the MagAttract HMW DNA kits, and informatics solutions.”); Exhibit 30 (“The Companies will each be co-marketing the 10x GemCode technology and Illumina sequencing solutions to their respective customers.”); Exhibit 31 (“The two companies will each create products that provide a streamlined workflow for 10x Genomics’ Chromium platform using Agilent’s market-leading SureSelect target enrichment technology.”). Likewise, 10X has induced infringement by creating these distribution channels for the GemCode platform and/or its individual components with the knowledge and specific intent that its customers will use 10X’s reagent kits with either the original GemCode Instrument or the Chromium Controller,

thereby leading 10X's customers to assemble an apparatus that infringes, literally or under the doctrine of equivalents, claims 1-2, 10-13, and 31 of the '083 patent.

92. Fourth, on information and belief, 10X has induced infringement by its customers through the open-source distribution of software for the analysis of data that results from the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the methods of claims 20-22 and 26 for conducting a reaction in plugs in a microchannel. For instance, 10X's website allows individuals to download software for use with the GemCode platform, and further provides instructions for the installation of this software. *See* Exhibits 32–33. 10X's website has asserted that the software for use with the GemCode platform uses “barcodes provided by the reagent delivery system,” and that “the platform and tools used to build the GemCode Software are open-source.” Exhibit 34. 10X induces infringement by, for instance, stating that it “encourage[s] others to contribute to the project and to use it to build their own informatics pipelines.” Exhibit 35. 10x's website continues to announce that its software is open-sourced. *See* Exhibit 36. Likewise, 10X has induced infringement by distributing software for use with the GemCode platform and/or its individual components with the knowledge and specific intent that this will encourage 10X's customers to use 10X's reagent kits with either the original GemCode Instrument or the Chromium Controller, thereby leading 10X's customers to assemble an apparatus that infringes, literally or under the doctrine of equivalents, claims 1-2, 10-13, and 31 of the '083 patent.

93. Fifth, on information and belief, 10X has induced infringement by its customers through the distribution of other instructional materials, product manuals, and technical materials with the knowledge and the specific intent to encourage and facilitate its customer's infringing

(either literally or under the doctrine of equivalents) use of the GemCode platform. On information and belief, the instructional materials, manuals, and technical materials that 10X provides to its customers guide customers to use 10X's reagent kits with either the original GemCode Instrument or the Chromium Controller, thereby inducing 10X's customers to assemble an apparatus that infringes, literally or under the doctrine of equivalents, claims 1-2, 10-13, and 31 of the '083 patent. 10X is liable for its induced infringement of the '083 patent pursuant to 35 U.S.C. § 271 (b).

94. 10X has contributed to, or has threatened to contribute to, the infringement by its customers of the '083 patent by, without authority, selling and offering to sell within the United States materials and apparatuses for practicing the claimed invention of the '083 patent, including at least the GemCode platform as a whole and/or the individual components of the GemCode platform. When, for example, the GemCode platform is used by 10X's customers for partitioning a nucleic acid sample into droplets and then amplifying the nucleic acid in the droplets, the methods of claims 20-22 and 26 for conducting a reaction in plugs in a microchannel is performed, thereby infringing, literally or under the doctrine of equivalents, at least claims 20-22 and 26 of the '083 patent.

95. 10X has further contributed to, or has threatened to contribute to, the infringement by its customers of the '083 patent by, without authority, selling and offering to sell within the United States materials and apparatuses, including at least the GemCode platform as a whole and/or the individual components of the GemCode platform, that customers may use to assemble an apparatus that infringes, literally or under the doctrine of equivalents, the invention of the '083 patent. When, for example, 10X's customers use 10X's reagent kits with either the original GemCode Instrument or the Chromium Controller, 10X's customers assemble an apparatus that

infringes, literally or under the doctrine of equivalents, claims 1-2, 10-13, and 31 of the '083 patent.

96. On information and belief, 10X knows that the GemCode platform and/or its individual components constitute a material part of the inventions of the '083 patent and that they are not a staple article or commodity of commerce suitable for substantial noninfringing use. As documented above, the GemCode platform consists of a specialized microfluidic device along with specialized reagents for conducting reactions in microfluidic droplets. *See supra* ¶¶ 14-20. As such, none of the GemCode Instrument, the Chromium Controller, or 10X's reagent kits is a staple article of commerce suitable for substantial non-infringing use. 10X knows that the GemCode platform and its individual components are not staple articles or commodities of commerce suitable for substantial non-infringing use because the GemCode platform and its individual components have no use apart from infringing the '083 patent. 10X is liable for its contributory infringement of the '083 patent pursuant to 35 U.S.C. § 271(c).

97. 10X's infringement of the '083 patent has injured Plaintiffs in their business and property rights. 10X's infringement of the '083 patent has been and is deliberate and willful and constitutes egregious misconduct. Despite actual knowledge since at least February 6, 2015 of the '083 patent by 10X's Vice President of Intellectual Property, who would have recognized 10X's infringement of the '083 patent, 10X continued to develop and launch its infringing products. As set forth in Exhibit 21, when customers use 10X's GemCode platform, they practice every element of multiple claims of the '083 patent. Likewise, when 10X's manufactures, sells, and offers to sell the '083 patent, it infringes multiple claims of the '083 patent. In developing and launching its product, 10X has been willfully blind to this ongoing infringement. Following the initiation of this lawsuit, 10X has continued to infringe the '083

patent, further confirming that its conduct has been egregious. Plaintiffs are entitled to recover monetary damages for injuries arising from 10X's willful infringement pursuant to 35 U.S.C. § 284 in an amount to be determined at trial. 10X's infringement of the '083 patent has caused irreparable harm to Plaintiffs and will continue to cause such harm unless and until 10X's infringing activities are enjoined by this Court.

COUNT VI (By RainDance)
(Infringement of U.S. Patent No. 8,658,430)

98. Plaintiffs re-allege and incorporate by reference the allegations contained in paragraphs 1 through 26 above as relevant to this count.

99. On February 25, 2014, the United States Patent and Trademark Office duly and legally issued the '430 patent, entitled "Manipulating Droplet Size." A copy of the '430 patent is attached to the Complaint as Exhibit 16.

100. Benjamin J. Miller, Qun Zhong, and Darren Roy Link, are the sole and true inventors of the '430 patent. By operation of law and as a result of written assignment agreements, RainDance obtained the entire right, title and interest to and in the '430 patent.

101. On information and belief, 10X has infringed and continues to infringe at least claims 1, 5, and 12-16 of the '430 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by using within the United States without authority the GemCode platform. As an example, attached as Exhibit 22 is a preliminary and exemplary claim chart detailing 10X's infringement of multiple claims of the '430 patent. This chart is not intended to limit Plaintiffs' right to modify this chart or any other claim chart or allege that other activities of 10X infringe the identified claims or any other claims of the '430 patent or any other patents. Exhibit 22 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 22

that is mapped to 10X's GemCode platform shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

102. 10X has acknowledged in discovery that it has had knowledge of the '430 patent since at least June 6, 2014. Specifically, 10X has acknowledged that its General Counsel and Vice President of Intellectual Property (Matt Murphy), has had knowledge of the '430 patent since at least June 6, 2014. On information and belief, and as will likely have evidentiary support after a reasonable opportunity for further investigation or discovery, 10X has had knowledge of the '430 patent by virtue of its efforts to monitor RainDance's patent applications and publications. For instance, at least one 10X executive, Kevin Ness, has expressly informed RainDance's co-founder and chief technology officer at scientific meetings that he has followed his technical work. 10X has also publicly described its technology as purportedly the "next generation" of RainDance's proprietary technology. Likewise, 10X's general counsel and vice president of intellectual property "specializes in building and defending dominant intellectual property portfolios in the life science space" and thus, on information and belief, monitors intellectual property as part of his job duties. In addition, 10X has had knowledge of and notice of the '430 patent and its infringement since at least, and through, the filing and service of the First Amended Complaint in this action. Despite this knowledge 10X continues to commit the aforementioned infringing acts.

103. 10X actively, knowingly, and intentionally has induced, or has threatened to induce, infringement of at least claims 1, 5, and 12-16 of the '430 patent through a range of activities. First, on information and belief, 10X has induced infringement by controlling the design and manufacture of, offering for sale, and selling the GemCode platform and/or its individual components with the knowledge and specific intent that its customers (*e.g.*, the Broad

Institute, *see* Exhibit 3 , the Wellcome Trust Sanger Institute, *see* Exhibit 27, HudsonAlpha, *see* Exhibit 28, and Macrogen, *see id.*) will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method of droplet formation.

104. Second, on information and belief, 10X has induced infringement by its customers through the dissemination of promotional and marketing materials relating to the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for droplet formation. For instance, 10X promotes the GemCode platform on its website. As 10X states on the “APPLICATIONS” tab of its website, “10x’s products enable a diverse set of sequencing applications.” Exhibit 8; *see also id.* (“Enabling a wide array of applications with the GemCode™ Platform.”). Likewise, 10X has disseminated a brochure for the GemCode platform, promoting the GemCode platform as offering “[o]ne system, one workflow, powerful new sequencing applications.” Exhibit 6.

105. Third, on information and belief, 10X has induced infringement by its customers through the creation of distribution channels for the GemCode platform and/or its individual components in the United States with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for droplet formation. For instance, 10X has entered into co-marketing relationships and collaborations with multiple companies, including Illumina, Inc., Qiagen, N.V., and Agilent, pursuant to which 10X’s GemCode platform and/or its individual components will be marketed and distributed to customers. *See* Exhibit 29 (“The companies will each be co-marketing to their respective customers the 10x Chromium products along with QIAGEN’s sample handling and preparation technologies, including the MagAttract HMW

DNA kits, and informatics solutions.”); Exhibit 30 (“The Companies will each be co-marketing the 10x GemCode technology and Illumina sequencing solutions to their respective customers.”); Exhibit 31 (“The two companies will each create products that provide a streamlined workflow for 10x Genomics’ Chromium platform using Agilent’s market-leading SureSelect target enrichment technology.”).

106. Fourth, on information and belief, 10X has induced infringement by its customers through the open-source distribution of software for the analysis of data that results from the GemCode platform with the knowledge and specific intent that its customers will use the GemCode platform to infringe, literally or under the doctrine of equivalents, by performing the claimed method for droplet formation. For instance, 10X’s website allows individuals to download software for use with the GemCode platform, and further provides instructions for the installation of this software. *See* Exhibits 32–33. 10X’s website has asserted that the software for use with the GemCode platform uses “barcodes provided by the reagent delivery system,” and that “the platform and tools used to build the GemCode Software are open-source.” Exhibit 34. 10X induces infringement by, for instance, stating that it “encourage[s] others to contribute to the project and to use it to build their own informatics pipelines.” Exhibit 35. 10X’s website continues to announce that its software is open-sourced. *See* Exhibit 36.

107. Fifth, on information and belief, 10X has induced infringement through the distribution of other instructional materials, product manuals, and technical materials with the knowledge and the specific intent to encourage and facilitate its customer’s infringing (either literally or under the doctrine of equivalents) use of the GemCode platform. 10X is liable for its induced infringement of the ’430 patent pursuant to 35 U.S.C. § 271 (b).

108. 10X has contributed to, or has threatened to contribute to, the infringement by its customers of the '430 patent by, without authority, selling and offering to sell within the United States materials and apparatuses for practicing the claimed invention of the '430 patent, including at least the GemCode platform as a whole and/or the individual components of the GemCode platform. When, for example, the GemCode platform is used by 10X's customers for partitioning a nucleic acid sample into droplets, the claimed method for droplet formation is performed, thereby infringing, literally or under the doctrine of equivalents, at least claims 1, 5, and 12-16 of the '430 patent. The GemCode platform and/or its individual components, supplied by 10X, constitute a material part of the claimed invention of the '430 patent.

109. On information and belief, 10X knows that the GemCode platform and/or its individual components constitute a material part of the inventions of the '430 patent and that they are not a staple article or commodity of commerce suitable for substantial noninfringing use. As documented above, the GemCode platform consists of a specialized microfluidic device along with specialized reagents for conducting reactions in microfluidic droplets. *See supra* ¶¶ 14-20. As such, none of the GemCode Instrument, the Chromium Controller, or 10X's reagent kits is a staple article of commerce suitable for substantial non-infringing use. 10X knows that the GemCode platform and its individual components are not staple articles or commodities of commerce suitable for substantial non-infringing use because the GemCode platform and its individual components have no use apart from infringing the '430 patent. 10X is liable for its contributory infringement of the '430 patent pursuant to 35 U.S.C. § 271(c).

110. 10X's infringement of the '430 patent has injured Plaintiffs in their business and property rights. 10X's infringement of the '430 patent has been and is deliberate and willful and constitutes egregious misconduct. Despite actual knowledge of the '430 patent since at least

June 6, 2014 by 10X's Vice President of Intellectual Property, who would have recognized 10X's infringement of the '430 patent, 10X continued to develop and launch its infringing products. As set forth in Exhibit 22, when customers use 10X's GemCode platform, they practice every element of multiple claims of the '430 patent. In developing and launching its product, 10X has been willfully blind to this ongoing infringement. Following the initiation of this lawsuit, 10X has continued to infringe the '430 patent, further confirming that its conduct has been egregious. Plaintiffs are entitled to recover monetary damages for injuries arising from 10X's willful infringement pursuant to 35 U.S.C. § 284 in an amount to be determined at trial. 10X's infringement of the '430 patent has caused irreparable harm to Plaintiffs and will continue to cause such harm unless and until 10X's infringing activities are enjoined by this Court.

PRAYER FOR RELIEF

WHEREFORE, RainDance and the University of Chicago pray for relief as follows:

RainDance and the University of Chicago:

- A. Judgment that 10X has infringed one or more claims of the '091 patent;
- B. Judgment that 10X has infringed one or more claims of the '193 patent;
- C. Judgment that 10X has infringed one or more claims of the '407 patent;
- D. Judgment that 10X has infringed one or more claims of the '148 patent;
- E. Judgment that 10X has infringed one or more claims of the '083 patent;
- F. An order permanently enjoining 10X from further infringement of the Ismagilov patents;
- G. An award of damages pursuant to 35 U.S.C. § 284;

H. A determination that 10X's infringement of the '091, '193, '407, '148, and '083 patents has been and is willful, and an award of enhanced damages, up to and including trebling of the damages awarded to RainDance and Chicago;

I. An award to RainDance and the University of Chicago of their costs and reasonable expenses to the fullest extent permitted by law;

J. A declaration that this case is exceptional pursuant to 35 U.S.C. § 285, and an award of attorneys' fees and costs; and

K. An award of such other and further relief as the Court may deem just and proper.

RainDance only:

A. Judgment that 10X has infringed one or more claims of the '430 patent;

B. An order permanently enjoining 10X from further infringement of the '430 patent;

C. An award of damages pursuant to 35 U.S.C. § 284;

D. An order for an accounting of damages from 10X's infringement;

E. A determination that 10X's infringement of the '430 patent has been and is willful, and an award of enhanced damages, up to and including trebling of the damages awarded to RainDance;

F. An award to RainDance of its costs and reasonable expenses to the fullest extent permitted by law;

G. A declaration that this case is exceptional pursuant to 35 U.S.C. § 285, and an award of attorneys' fees and costs; and

H. An award of such other and further relief as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Federal Rule of Civil Procedure 38(b), RainDance and the University of Chicago hereby demand a trial by jury on all issues so triable.

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/s/ Jack B. Blumenfeld

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