IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CYTONOME/ST, LLC, Plaintiff, v. NANOCELLECT BIOMEDICAL, INC., Defendant.	)	C.A. No. 19-301 (RGA)

PLAINTIFF'S OPENING CLAIM CONSTRUCTION BRIEF

MORRIS, NICHOLS, ARSHT & TUNNELL LLP
Rodger D. Smith II (#3778)
Anthony D. Raucci (#5948)
1201 North Market Street
P.O. Box 1347
Wilmington, DE 19899
(302) 658-9200
rsmith@mnat.com
araucci@mnat.com

Attorneys for Plaintiff Cytonome/ST, LLC

OF COUNSEL:

Kirt S. O'Neill
Daniel L. Moffett
AKIN GUMP STRAUSS HAUER & FELD LLP
112 E. Pecan Street, Suite 1010
San Antonio, TX 78205
(210) 281-7000

Thomas W. Landers IV
AKIN GUMP STRAUSS HAUER & FELD LLP
1111 Louisiana Street, 44th Floor
Houston, TX 77002
(713) 220-5800

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I. PLAINTIFF'S INTRODUCTION

Cytonome/ST, LLC ("Cytonome") is a pioneer in developing high speed microfluidic devices or "chips" that accurately and gently sort biological cells based on their characteristics. These devices are highly useful in the study of cells and pharmaceuticals. *See, e.g.,* '528 Patent at 1:24–2:31; '850 Patent at 1:34–61. Generally, microfluidic chips include very small inlets and channels (less than half a millimeter wide) etched into stacked layers of a substrate material such as fused silica, glass, or plastic. *Id.; see also* '528 Patent at 6:55–7:10. When used as a cell sorter, a sheath or "carrier" fluid is flowed through the channels of the microfluidic chip, and then a cell sample is injected into the carrier fluid. *See* '850 Patent at 1:44–61. Due to the principles of microfluidics, the carrier fluid and sample flow in separate layers, and the cells are confined to the center of the channel, ideally in a single-file line. Once aligned, the cells pass by a detector, and a processor determines whether the cells have a selected characteristic. *Id.* Based on that determination, the sorter deflects desired cells into a separate outlet channel from the other cells. *Id.* If this sorting operation is successful—i.e., if it is accurate and does not damage cells—the sample can be collected as two distinct populations and studied.

Before the inventions of the patents-in-suit, traditional sorters were relatively inaccurate, damaging to cells, and expensive. *See, e.g.,* '528 Patent at 2:31–51; '850 Patent at 1:62–3:21. Many of these sorters used heating elements or electrodes to generate a "gas bubble" in the channel to increase pressure and divert cells from the sample stream. *Id.* These systems were inaccurate, however, because gas bubbles accumulated in the channels and caused pressure waves throughout the device, which created unwanted resistance and erroneously deflects non-selected particles. *Id.* Additionally, the generated bubbles contained oxygen, hydrogen, and/or ions (OH^- and H^+) that negatively affected cells as they passed by, in some cases completely destroying fragile cells. *Id.* Moreover, these systems were expensive to operate and manufacture

due to the power required to generate the gas bubbles, the complexity of the circuitry, and the difficulty of mounting electrodes/heaters at such small scales. *Id.*

In the early 2000s, Cytonome successfully addressed these problems when it developed devices with—among other novel features—a dual "reservoir" design that eliminates the need to use gas bubbles to divert cells. *See, e.g.,* '850 Patent at 3:25–4:49, 5:25–35, Figs. 1–7. This design incorporates an actuator at one reservoir and a "buffer" at an opposing reservoir, which together generate and absorb a pressure pulse *at the point of deflection*. *Id.* The pressure pulse therefore impacts only a single, selected cell, making the device extremely accurate. *Id.* By eliminating the gas bubble, Cytonome's inventions are gentler on cells and less expensive than traditional sorters. *Id.* Cytonome has secured a number of patents on these devices (and methods of using them), including the seven patents at issue in this case—all but one of them (namely, the '188 Patent) claiming priority to a single provisional application. Cytonome also uses the patented design in its own products, including the "GigaSort" cell sorter that is licensed and used by an international pharmaceutical company for the study of Parkinson's disease.

Many of NanoCellect's proposed constructions improperly limit the scope of Cytonome's claimed inventions. For example, for claims that include the word "buffer" or "reservoir," NanoCellect improperly invokes 35 U.S.C. § 112 ¶ 6 to restrict Cytonome's novel actuator-buffer reservoir system to a single, specific structure from one disclosed embodiment. Cytonome's proposed constructions, on the other hand, are drawn directly from the intrinsic record and do not improperly limit the scope of the claims.

Moreover, most of NanoCellect's proposed claim constructions do not relate to any material dispute in the case and simply replace straightforward claim language with synonyms and dictionary definitions. The jury will easily understand the meaning of those terms, and the

Court should not construe them. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms need to be construed that are in controversy, and only to the extent necessary to resolve the controversy."); *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe *every* limitation present in a patent's asserted claims.").

II. DISPUTED CONSTRUCTIONS

A. [1] "absorbing" and variants including "absorbs"

The claim term "absorbing" and its variants do not need to be construed, and the plain and ordinary meaning of these terms should apply. The general rule is that, unless the patentee clearly redefines a term in the patent or explicitly gives up claim scope, the ordinary meaning of a claim term should apply. *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). There is no reason to deviate from the general rule here. NanoCellect purports to identify intrinsic evidence to support its construction, but none of the identified evidence contains an explicit definition, nor does it explain "absorbing" in terms of the "recoil" or "echo" NanoCellect includes in its construction.

B. [2] "deflect" and variants "deflectable," "deflection," and "deflecting"

The claim term "deflect" and its variants do not need to be construed, and the plain and ordinary meaning of the terms should apply. The patentee did not act as its own lexicographer, nor did it disavow any claim scope related to these claim terms. *Thorner*, 669 F.3d at 1365. NanoCellect's proposed definition of "deflect"—"remove"—is inconsistent with both the common meaning of the term and how the patent specification uses the term. Generally, "deflect" means change the position or direction of something, which is consistent with the specification. *See* '528 Patent, Col. 12, ll. 14-21 (using "deflect" to describe causing a particle to follow one path instead of another, rather than the complete removal of said particle). Moreover,

NanoCellect's proposed definition makes little sense for '295 Patent, claim 17, which recites a "deflectable flexible membrane." Under NanoCellect's proposal, this would mean that the membrane itself is removable. But the claim language, when read in light of the specification, plainly refers to a flexible membrane can be moved—or deflected—in order to increase pressure.

C. [6] "carrier fluid"

The express definition from the '850 Patent should be adopted for the related '528 Patent claims, namely "a sheath of compatible liquid surrounding a particle for carrying one or more particles through a duct or channel." *See* '850 Patent at 5:56–58.

D. [7] "pressure pulse"

"Pressure pulse" needs no construction and should carry its plain and ordinary meaning. If the term is construed, however, it should be given a meaning consistent with how the patentee used the term during prosecution. For example, during prosecution of the '528 Patent, the patentee explained that pressure pulses "are ***transient*** increases in pressure." *See* D.I. 39-3, 9/22/2004 Applicant Remarks at 9 (emphasis added). And during the prosecution of the '263 Patent, the patentee explained that a pressure pulse is "a ***momentary*** flow disturbance." *See* D.I. 39-10, 6/6/2016 Applicant Remarks at 17 (emphasis added). NanoCellect's construction is inconsistent with the patentee's usage and should not be adopted.

E. [8] "from the stream of particles"

"From the stream of particles" should carry its plain and ordinary meaning, and NanoCellect's proposed construction—"from the continuous moving procession of fluid and particles"—should not be adopted. NanoCellect's construction serves only to complicate the claim language by replacing the readily-understood word "stream" with "continuous moving procession." NanoCellect also incorrectly expands the definition of "stream of particles" to encompass both the particles and the carrier fluid. This term appears in the context of a broader

phrase, namely "deflect a particle . . . from the stream of particles." Thus, when the claim is read using NanoCellect's proposed construction of both "deflect" (i.e., "remove") and "from the stream of particles," NanoCellect's proposals amount to requiring that the particle be removed from both the stream of particles AND the carrier fluid ("remove a particle . . . from the continuous moving procession of fluid and particles"). This is inconsistent with the specification's description of the invention, which plainly encompasses simply re-directing a particle without removing it from the carrier fluid. *See, e.g.*, '528 Patent, 12:14-21.

F. [10] "buffer" ('528 Patent, claims 18, 22, and 24)

1. The intrinsic record makes clear that a "buffer" is "a physical structure that contains fluid and receives a pressure pulse."

The intrinsic record demonstrates that a "buffer" in the '528 Patent claims is "a physical structure that contains fluid and receives a pressure pulse." For example, claim 22 of the '528 Patent recites two "side channels" that are "in communication with" a "primary channel for conveying a stream of particles in a carrier fluid" and "a buffer in communication with the second side channel for absorbing the pressure pulse." The phrase "in communication with" specifies that the fluid travels between the primary channel, the side channels, and the buffer—meaning the buffer must be capable of containing fluid. And the phrase "absorbing the pressure pulse" means that the buffer receives the pressure pulse so that it can be absorbed.

The specification further supports Cytonome's construction by linking the "buffer" in the claims to a "reservoir" structure in the figures that receives a pressure pulse. For example, Figure 17A closely tracks claim 22, depicting a second side channel 174b in communication with a primary channel 166 and a fluid-filled "reservoir" 70. *See* '528 Patent at Fig. 17A, 12:27–30. As indicated by the upward arrow in Figure 17A, this reservoir receives the pressure pulse

generated by actuator 176. The reservoir in Figure 17A is therefore a physical structure that contains fluid and receives a pressure pulse and is one example of the claimed "buffer."

The '528 Patent file history similarly equates the term "buffer" to a "reservoir" that receives a pressure pulse. For example, in response to an office action, the applicants explained that the "Dunaway" reference lacks a "***buffer*** for absorbing a pressure pulse" because the reference "teaches away from a second ***reservoir*** capable of absorbing a pressure variation of pressure pulse." *See* D.I. 39-3, 9/22/2004 Applicant Remarks at 9 (emphases added). For these same reasons, the term has a clear and precise scope and is not indefinite.

2. The "buffer" terms are not "means-plus-function" terms.

The "buffer" terms in the '528 Patent claims are not "means-plus-function" terms subject to 35 U.S.C. § 112 ¶ 6, as NanoCellect contends. As an initial matter, there is a presumption that the terms are not means-plus-function terms because they do not use the word "means." *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). And NanoCellect cannot overcome this presumption because "buffer" is not merely a "nonce word" tantamount to using the term "means." *See TEK Glob., S.R.L. v. Sealant Sys. Int'l*, 920 F.3d 777, 786 (Fed. Cir. 2019) (referring to "'mechanism,' 'element,' 'device'" as possible "nonce" words). Indeed, as shown above, "buffer" refers to a specific physical structure that contains fluid, receives a pressure pulse, and performs the claimed "absorbing." Additionally, dependent claim 24 removes any doubt that the buffer is a structure by reciting a particular structural feature—namely, "a flexible membrane"—that comprises the buffer. *See TEK,* 920 F.3d at 786 (holding that "conduits" in an independent claim is not a means-plus-function term where dependent claims recite "particular structural features"—e.g., "hoses"—that comprise the "conduits").

Even if the "buffer" terms are "means-plus-function" terms, NanoCellect incorrectly contends that there is no structure disclosed in the specification for carrying out the alleged function of "absorbing a pressure [pulse/variation]." For example, the specification explicitly discloses such a structure when it explains that the valve, side channels, and reservoir in Figure 16 "***absorb the transient pressure variations***" that are "induced via the actuator 176." *See* '528 Patent at 12:27–30 (emphasis added); *see also* Figs. 17a–c.

G. [11] "buffer" ('850 Patent, claims 1 and 11)

The above arguments for the term "buffer" in the '528 Patent apply to the "buffer" term in the related, later-issued '850 Patent. *See Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 980 (Fed. Cir. 1999). The '850 Patent specification further supports that "buffer" means "a physical structure that contains fluid and receives a pressure pulse." For example, regarding Figure 1, the specification explains that "[t]he second bubble valve 100a serves as ***a buffer*** for absorbing the pressure pulse." '850 Patent at 6:24–26 (emphasis added); *see also id.* at 9:35–56 (repeatedly referring to "100b" in Figure 6 as a "buffer"); 9:57–61 (referring to "valve 100" in Figure 7 as "a buffer"). As shown in the figures, these "buffer" structures contain fluid and receive a pressure pulse from an actuator (26) or pressure wave generator (260).

Moreover, NanoCellect cannot overcome the presumption that the "buffer" terms—which do not use the word "means"—are not means-plus-function claims because the term "buffer" itself provides the structure for performing the function of "absorbing or dampening the pressure pulse." Indeed, "buffer" must be a structural term because dependent claim 11 of the '850 Patent explicitly recites that the buffer can be comprised of a specific structure, namely "a non-flow-through chamber in fluid communication with the duct." *See TEK,* 920 F.3d at 786.

H. [12] "selectively applying"

"Selectively applying" in the claim term "selectively applying a pressure pulse" is not indefinite. "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). Here, as the specification describes, the pressure pulse is applied to selectively deflect particles with a predetermined characteristic in a different direction. *See* '528 Patent, 4:35-41. In this context, a person of skill in the art would readily understand that the pressure pulses are not applied randomly, but rather based on the characteristics of the particle to be deflected. Thus, the term "selectively applying" read in light of the specification reasonably informs a person of skill in the art about the scope of the invention, and is not indefinite.

I. [13] "an actuator connected to the first side channel"

"An actuator connected to the first side channel" is not indefinite. A person of skill in the art, reading the patent specification, would reasonably understand what "an actuator connected to the first side channel" means. NanoCellect claims that the prosecution history supports its assertion that the claim term is indefinite, but in the cited Office Action, the examiner did not raise or discuss indefiniteness, nor do the cited papers evidence any lack of definiteness.

J. [14] "in communication"

NanoCellect proposes two constructions of in communication—"fluidically connected," or "in fluidic communication," but the intrinsic evidence identified by NanoCellect does not provide a special definition of "in communication," nor does it use the phrase "fluidically connected" or "in fluidic communication." There is no issue in dispute for which a construction of "in communication" is necessary, nor can Cytonome discern how NanoCellect's proposed

construction would aid the jury. Accordingly, the Court should not adopt NanoCellect's proposed construction and the plain and ordinary meaning should apply.

K. [19] "a first reservoir operatively associated with the flow channel and adapted for dampening or absorbing a pressure pulse propagated across the flow channel"

1. The intrinsic record makes clear that a "reservoir" is "a physical structure that contains fluid."

NanoCellect's own alternative construction demonstrates that a "reservoir" in the '295 Patent claims is "a physical structure that contains fluid." In particular, NanoCellect proposes construing the "reservoir" term in claim 1 of the '295 Patent as "***the physical structure of a reservoir*** operatively associated with the flow channel and structurally designed for dampening or absorbing a pressure pulse propagated across the flow channel." D.I. 29-1 at 12 (emphasis added). Accordingly, NanoCellect acknowledges that a reservoir connotes a "physical structure."

The claim language and specification also demonstrate that a "reservoir" is a physical structure that contains fluid. For example, claim 1 of the '295 Patent describes "apertures" connecting a main flow channel to a first and second "reservoir." The apertures allow a "suspension medium" fluid to flow from the flow channel into the claimed reservoirs, meaning that the reservoir contain fluid. The specification further explains that the two structural components labeled 70 in Figures 16–17C—which are shown to contain fluid—are examples of "reservoirs." *See* '295 Patent at Figs. 16–17C, 12:9–18.

The remaining language identified by NanoCellect—"operatively associated with the flow channel and adapted for dampening or absorbing a pressure pulse propagated across the flow channel"—includes only ordinary English words that are easily understood by a jury and do not hold any special meaning. Accordingly, the plain and ordinary meaning of this language should apply. For the same reasons, the term has a clear and precise scope and is not indefinite.

2. The "reservoir" terms are not "means-plus-function" terms.

The "reservoir" terms in the '295 Patent claims are not "means-plus-function" terms subject to 35 U.S.C. § 112 ¶ 6, as NanoCellect contends. The terms do not use the word "means," and thus there is a presumption that § 112 ¶ 6 does not apply. *See Williamson*, 792 F.3d at 1349. NanoCellect cannot overcome this presumption because, as explained above, "reservoir" refers to an actual structural component and is not merely a "nonce word" tantamount to using the word "means." *See TEK*, 920 F.3d at 786. Dependent claims 9 and 17 remove any doubt that a "reservoir" is a structure by reciting particular structural features—i.e., "a resilient wall" and "a deflectable flexible membrane"—that can be included in the reservoirs. *See id.*

L. [20] "dampening or absorbing the pressure pulse using a first reservoir in fluid communication with the microfluidic flow channel"

The above arguments for the term "reservoir" in the '295 Patent apply to the "reservoir" term in the related, later-issued '797 Patent. *See Elkay*, 192 F.3d at 980. In both patents, "reservoir" means "a physical structure that contains fluid." Moreover, the claim language other than "reservoir" identified by NanoCellect includes only ordinary English words that are easily understood by a jury and do not hold any special meaning. Accordingly, the plain and ordinary meaning should apply, and no further construction is needed. For the same reasons, the term also has a clear and precise scope and is not indefinite.

M. [21] "operatively associated with"

The term "operatively associated with" needs no construction and should carry its plain and ordinary meaning. NanoCellect's proposed construction—"functionally connected to exert a force on"—will do little, if anything, to explain the claim term to a jury. Moreover, the fact that NanoCellect's proposal closely tracks the dictionary definitions of "operative" and "associated" strongly indicates that the claim term "operatively associated" carries an ordinary, non-technical

meaning and that no construction is necessary. *See* Ex. A, Merriam-Webster definitions of "operative" and "associated."

N. [22] "dampen" and variants "dampening"

"Dampen" and "dampening" are not indefinite. NanoCellect demonstrates in its own proposed construction that it understands "dampening" a pressure pulse to mean "dissipating" that pressure pulse. This is consistent with claim language that uses "dampening" and "absorbing" in the same context. *See* '295 Patent, claim 1 (". . . adapted for dampening or absorbing a pressure pulse . . ."). NanoCellect's proposed construction also introduces unnecessary ambiguity to its definition by adding the word "meaningfully," without explaining how to distinguish between meaningful and non-meaningful dissipation. The Court should not adopt NanoCellect's construction and the plain and ordinary meaning should apply.

O. [23] "propagated" and variants "propagating"

"Propagated" and "propagating" should not be construed and should carry their plain and ordinary meaning. NanoCellect's proposed construction will do little, if anything, to explain the claim term to a jury. Moreover, the fact that NanoCellect's proposal—that "propagate" means "transmit"—closely tracks the dictionary definition of "propagate" strongly indicates that the term carries its ordinary meaning and that no construction is necessary. *See* Ex. B, Merriam-Webster definition of "propagate."

P. [24] "pressurizer"

NanoCellect's proposed construction of the term "pressurizer" is improper because it would render other claim language superfluous. *Elekta Instrument S.A. v. O.U.R. Sci. Int'l, Inc.*, 214 F.3d 1302, 1307 (Fed. Cir. 2000) (refusing to adopt construction that rendered a "30 degree" claim limitation superfluous). Here, both of the claims containing the term "pressurizer" use it as part of the larger phrase "pressurizer or actuator." By making pressurizers and actuators

identical, NanoCellect's proposed construction essentially makes the pressurizer language superfluous. The Court should not do so. Instead, the plain and ordinary meaning of "pressurizer" should apply.

Q. [25] "first reservoir include(s) a resilient wall"

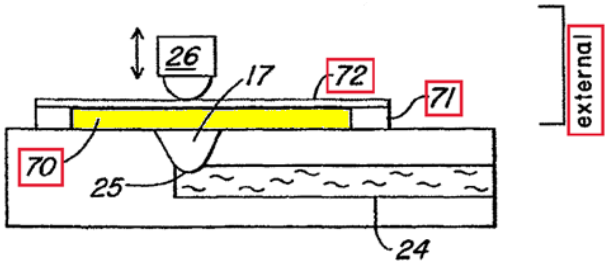
As explained above regarding claim 1 of the '295 Patent, "reservoir" has a clear and precise meaning in the '295 Patent, namely "a physical structure that contains fluid." It is not indefinite. "Resilient wall" also has a clear meaning. Both "resilient" and "wall" are ordinary English words that any person of skill, and the jury, can understand. Accordingly, the terms are not indefinite, and no construction is needed.

Moreover, NanoCellect's alternate construction—"a first reservoir including a flexible physical structure to allow flow of liquid into the second side passage"—improperly imports limitations from the specification. To be sure, the '295 Patent states that "resilient properties allow the flow of liquid from the measurement duct into the second side passage," but that does not provide any special definition or disclaimer for the term "resilient." *See* '295 Patent at 12:18–22. Indeed, it *confirms* that the plain and ordinary meaning of "resilient" applies, as such properties may allow the reservoir to stretch and facilitate the flow of liquid. The prosecution history cited by NanoCellect also does not provide any special definition or disclaimer for "resilient wall." *See* D.I. 39-8 at 2–14, 24–42 ('797 Prosecution History, Oct. 23, 2013 Non-Final Rejection and Feb. 24, 2014 Response). And it certainly never mentions or suggests limiting "resilient wall" solely to a structure that "allow[s] the flow of liquid from the measurement duct into the second side passage." *See id.*

R. [26] "otherwise sealed"

NanoCellect's construction of "otherwise sealed [from]"—"otherwise closed off from fluid connection"—ignores the intrinsic record and is too limiting because it would preclude fluid connections between the chamber and other *internal* components.

The claim language, the specification, and the file history demonstrate that "otherwise sealed" and variants "otherwise sealed from" in the '283 and '797 Patent claims means "not open to an exterior environment." Claim 1 of the '283 Patent recites a "first chamber in fluid communication with [a] duct via a first side opening and otherwise sealed" and an "actuator configured to increase a pressure within the first chamber." The phrase "otherwise sealed" means that, despite having an "opening" internal to the system, the chamber is "sealed" from the *exterior* environment so that the first chamber can be pressurized. This is consistent with the specification, particularly Figure 7, which shows that the seal 71 and membrane 72 form the compression chamber 70 by sealing the chamber from the *external* environment:



Id. at Fig. 7; *see also id.* at 10:3–21 (explaining Figure 7).

The prosecution history further supports Cytonome's interpretation by using the term "sealed," "otherwise sealed," and "otherwise sealed from an exterior environment" interchangeably to mean that the chamber is sealed from the external environment, not internal fluid connections. For example, during prosecution of a related patent that issued before the '283 and '797 Patents, the applicants explained that "apertures" in the "Dunaway" reference are not "sealed" because "the apertures of Dunaway ***must be open and exposed to the environment***

in order for the amplifier of Dunaway to operate, ***which expressly teaches away from the claimed invention***." D.I. 39-5, U.S. Pat. App. 11/433,781, June 25, 2007 Applicant Remarks at 10 (emphasis added); *see also id.*, Nov. 10, 2011 Applicant Remarks at 10–12 (explaining that the "chamber" in a "Glezer" reference is "***very different***" from the claimed chamber because "[t]he internal chamber 14 of Glezer is ***not sealed, but is rather open to the external environment*** through the orifice 16[.]") (emphasis added). The prosecution history also confirms that "sealing" serves to increase the internal pressure of the actuation chamber. *Id.* Similarly, when presented with different prior art during prosecution of the '797 Patent, the applicants expressly stated that "***a person of ordinary skill in the art would clearly understand the term 'sealed' as referring to the reservoir being <u>otherwise</u> sealed from an external environment***." D.I. 39-8, Sept. 17, 2014 Applicant Remarks at 7 (emphasis added); *see also id.*, Nov. 17, 2014 Applicant Remarks at 7 (explaining that claim was amended to recite "otherwise sealed from an exterior environment" only to "clarify" the meaning of the term "sealed").

S. [28] "configured to fluidically co-operate with the actuator"

The plain and ordinary meaning of the term "configured to fluidically co-operate with the actuator" should apply. NanoCellect's proposed construction simply replaces the word "co-operate" with the words "react together." But laypersons readily understand the meaning of the word "co-operate" and no special definition need be given. Moreover, NanoCellect purports to identify intrinsic evidence that supports its claim construction, but neither the cited office action nor the cited response address this claim term or define "co-operate" to mean "react together." The Court should therefore reject NanoCellect's proposed construction.

T. [31] "operatively coupled"

"Operatively coupled" should not be construed and should carry its plain and ordinary meaning. NanoCellect's proposed construction—"linked to exert a force on"—does not make

sense in the context of the '263 Patent's claims or specification. The words "operatively coupled" are part of a larger phrase, namely "the switching device *operatively coupled* to the first microfluidic flow channel to deliver a transient pressure pulse." NanoCellect's proposed claim construction would require the switching device to exert a force on the flow channel itself. But NanoCellect does not identify any support in the patent's specification or prosecution history for such a requirement. Instead, the phrase "operatively coupled," as used here, simply requires that the switching device is connected to the flow channel in a way that allows the switching device to operate as claimed.

U. [32] "from the fluidic stream of particles"

The claim term "from the fluidic stream of particles" is readily understandable by a lay jury and NanoCellect's proposed construction—"from the stream of fluid carrying the particles"—does nothing to further clarify the term. Accordingly, no construction is warranted.

V. [36] "pressure wave"

"Pressure wave" in claim 15 of the '263 Patent needs no construction and should carry its plain and ordinary meaning. The Court also should not adopt NanoCellect's proposal to construe "pressure wave" to mean "a unidirectional flow to the supply duct." First, NanoCellect's construction adds a structural element that is not a part of the claims, namely "the supply duct." Second, the phrase "unidirectional flow" does not account for or explain either the "pressure" or "wave" portions of the term "pressure wave." Third, while NanoCellect points to portions of the specification and prosecution history that purport to support its construction, those portions do not explain the term "pressure wave," and no part of the '263 patent specification or cited prosecution history uses the phrase "unidirectional flow to the supply duct."

W. [37] "microsorter having a switching region and a microfluidic channel formed in the microfluidic chip fluidically coupled to a sample input a keep output, a waste output, and the switching region"

This claim term is not indefinite, and NanoCellect has not identified any specific part of this claim term where the claim scope is not described with reasonable certainty. NanoCellect purports to identify office actions and responses in the prosecution history to support its argument for indefiniteness. But in the office action, the Examiner issued an indefiniteness rejection based on different language, namely the phrase "a microfluidic chip including at least one microsorter having fluid contact surfaces including a microfluidic channel having a sample input, a switching region, a keep output and a waste output." The examiner's rejection was premised on the specific structure of this sentence. Specifically, the examiner could not determine whether the "sample input, switching region, keep output, and waste output" are part of the microfluidic channel, the fluid contact surfaces, or the microsorter. In response, the patentee amended the claims to the current language. This resolved the examiner's concern and the patent issued. Thus, the portions of the prosecution history NanoCellect identifies as evidence of indefiniteness demonstrate that, in fact, all PTO concerns regarding the definiteness of the claim language were resolved prior to the patent issuing.

X. [38] "the microfluidic chip including at least one microsorter having a switching region, and a microfluidic channel formed in the microfluidic chip fluidically coupled to a sample input a keep output, a waste output, the switching region"

NanoCellect's proposed construction merely swaps the claim term "coupled" with the word "linked." This does nothing to clarify the term. There is no issue in dispute for which NanoCellect's proposed construction is necessary, nor can Cytonome discern how NanoCellect's proposed construction would aid the jury. Accordingly, no construction is warranted.

Y. [39] "actuator external to the microfluidic chip" and variants "actuator is external to the particle processing assembly," "pressure pulse generator external to the microfluidic particle sorting component"

"Actuator external to the microfluidic chip" and its variants do not require construction and they should carry their plain and ordinary meaning. NanoCellect's proposed construction merely adds the word "completely" to the claim language, without clarifying or explaining the term. There is no issue in dispute for which NanoCellect's proposed construction is necessary, nor can Cytonome discern how NanoCellect's proposed construction would aid the jury. Accordingly, no construction is warranted.

Z. [40] "operatively interfacing"

"Operatively interfacing" should not be construed and should carry its plain and ordinary meaning. The words "operatively interfacing" are part of a larger phrase, namely "operatively interfacing the microfluidic particle sorting component with an operating machine." '188 Patent, claim 17. NanoCellect's proposed claim construction—"interfacing to exert a force on"—would require the microfluidic particle sorting component to exert a force on the operating machine. But NanoCellect does not identify any support in the patent's specification or prosecution history for such a requirement. Instead, the word "operatively," as used here, simply requires the microfluidic particle sorting component and the operating machine to be interfaced in a manner that allows them to operate.

AA. [41e] "a first reservoir . . . adapted for dampening or absorbing a pressure pulse"

The arguments above for the "reservoir" terms from '295 Patent claim 1 apply here.

BB. [41f] "a second reservoir . . . adapted for generating the pressure pulse"

The arguments above for the "reservoir" terms from '295 Patent claim 1 also apply here. Furthermore, the term needs no construction beyond "reservoir" because the parties agreed on a

construction for the word "generating," and the phrase "pressure pulse" needs no construction for the reasons explained above. Moreover, even if "a second reservoir . . . adapted for generating the pressure pulse" is a "means-plus-function" term (it's not), NanoCellect is wrong to contend that there is no structure disclosed in the specification that is "adapted for generating the pressure pulse." The specification repeatedly explains that the volume of a reservoir can be varied to generate a "pressure pulse" (e.g., "a transient discharge of liquid"), for example by coupling a wall of the reservoir to an actuator. '295 Patent at 12:24–28 (regarding Figures 17a–17c, "[u]pon activation of the actuator, the pressure within the reservoir of the first bubble valve 10a is increased, causing a transient discharge of liquid from the first side passage 174a as indicated by the arrow"); *see also id.* at 3:4–24, 7:14–17, 12:9–15.

CC. [41g] "dampening or absorbing the pressure pulse using [a/the] first reservoir"

The arguments above regarding "dampening or absorbing the pressure pulse using a first reservoir in fluid communication with the microfluidic flow channel" from '797 Patent, claim 1 apply here.

DD. [41i] "a reservoir adapted for dampening or absorbing the transient pressure pulse"

The arguments above regarding the "reservoir" terms for the '797, '850, and '295 Patents also apply to the later-issued '263 Patent. *See Elkay*, 192 F.3d at 980. Additionally, the '263 Patent specification is consistent with the prior patents and intrinsic record, as it labels components 70a and 70b in Figures 1–7 as "reservoirs." *See* '263 Patent at 9:17–21, 10:18–63. These components are the same as those labeled "reservoir" in the preceding patents and are clearly "physical structures that contain fluid." *Id.*

EE. [41j] "a reservoir . . . adapted for originating the transient pressure pulse"

The arguments above for the term "reservoir" in claim 1 of the '263 Patent applies to claim 5 of the '263 Patent. Moreover, as explained above and in the specification, a "reservoir" can either originate or receive a pressure pulse. *See* '263 Patent, Figs. 1–7 (depicting 70a and 70b as "reservoirs" that receive and produce pressure pulses); *see also* 9:17–21, 10:18–63.

FF. [41k] "a reservoir . . . to dampen or absorb a transient pressure pulse"

The arguments above regarding the "reservoir" terms in claims 1 and 5 of the '263 Patent apply to claim 15 of the '263 Patent.

GG. [41l] "a reservoir . . . to originate the transient pressure pulse"

The arguments above regarding the "reservoir" terms in claims 5 and 15 of the '263 Patent apply to claim 16 of the '263 Patent.

HH. [42a] "a buffer . . . for absorbing the pressure pulse"

The arguments above regarding the term "buffer" from '528 Patent, claims 18, 22, and 24 apply here. Moreover, the remaining language identified by NanoCellect—"for absorbing the pressure pulse"—needs no construction for the reasons explained above for the terms "absorbing" and "pressure pulse."

II. [42b] "a buffer . . . for absorbing or dampening the pressure pulse"

The arguments above regarding "buffer" from '850 Patent, claims 1 and 11 apply here.

JJ. [43] "fluid"

NanoCellect's construction of "fluid" is scientifically incorrect and too limiting because it excludes gases from the definition. The patent specifications explicitly refer to "gas" as a "fluid," and so "gas" should be included in the construction. *See, e.g.*, '850 Patent: 6:17–19 ("The meniscus defines an interface between the carrier liquid and ***another fluid, such as a gas***

. . ."). In fact, it is common parlance in the scientific community to "call both liquids and gases fluids." Robert A. Granger, Fluid Mechanics § 2.2 (*What Is a Fluid?*) at 41 (2d ed. 1995).

KK. [44] "chamber"

The Court should expressly construe the term "chamber" because it will likely be a critical term in the dispute. The claim language and specifications demonstrate that "chamber" in the '850 and '283 Patents—which have a common ancestry and share a specification—means "a physical structure that contains fluid." For example, claim 1 of the '283 Patent recites a "duct" with a "first chamber in fluid communication with the duct via a first side opening," and dependent claim 5 recites "a second chamber in fluid communication with the duct via a second side opening." Because they are in fluid communication with the duct via side openings, the claimed chambers are structures that contain fluid. The specification provides examples of these "chambers," such as components 70, 70a, and 70b in Figures 1–7, which show a fluid-filled physical structure that produces or receives a pressure pulse. *See* '283 Patent at Figs. 1–7, 9:25–35, 6:44–62, 7:39–46, 9:63–10:21 (identifying 70b as a "compression" or "actuator" chamber and 70a as a "buffer" chamber); *see also* 4:35–50, 8:19–31. Notably, the '797, '850, and '295 Patents contain the same drawings as the '283 and '850 Patents but identify these "chamber" components as "reservoirs." *See, e.g.,* '295 Patent at Fig. 16. This supports Cytonome's position that "chamber" and "reservoir" have the same meaning.

LL. [45] "unique identifier"

The term "unique identifier" in the '188 Patent claims means "a unique label, such as a barcode, that renders an object fully traceable." This definition is consistent with the specification, which explains that "[e]ach cartridge . . . can be given a barcode or other unique identification, making all of the parts that represent possible sources of product contamination fully traceable." '188 Patent at 11:25–29.

MORRIS, NICHOLS, ARSHT & TUNNELL LLP

/s/ Anthony D. Raucci

Rodger D. Smith II (#3778)
Anthony D. Raucci (#5948)
1201 North Market Street
P.O. Box 1347
Wilmington, DE 19899
(302) 658-9200
rsmith@mnat.com
araucci@mnat.com

Attorneys for Plaintiff Cytonome/ST, LLC

OF COUNSEL:

Kirt S. O'Neill
Daniel L. Moffett
AKIN GUMP STRAUSS HAUER & FELD LLP
112 E. Pecan Street, Suite 1010
San Antonio, TX 78205
(210) 281-7000

Thomas W. Landers IV
AKIN GUMP STRAUSS HAUER & FELD LLP
1111 Louisiana Street, 44th Floor
Houston, TX 77002
(713) 220-5800

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CERTIFICATE OF SERVICE

I hereby certify that I caused copies of the foregoing document to be served on December 9, 2019, upon the following in the manner indicated:

Ian R. Liston, Esquire — *VIA ELECTRONIC MAIL*
WILSON SONSINI GOODRICH & ROSATI, P.C.
222 Delaware Avenue, Suite 800
Wilmington, DE 19801
Attorneys for Defendant
NanoCellect Biomedical, Inc.

Douglas H. Carsten, Esquire — *VIA ELECTRONIC MAIL*
Taylor Dimler, Esquire
WILSON SONSINI GOODRICH & ROSATI, P.C.
12235 El Camino Real
San Diego, CA 92130
Attorneys for Defendant
NanoCellect Biomedical, Inc.

Adam Burrowbridge, Esquire — *VIA ELECTRONIC MAIL*
WILSON SONSINI GOODRICH & ROSATI, P.C.
1700 K Street NW, Fifth Floor
Washington, DC 20006
Attorneys for Defendant
NanoCellect Biomedical, Inc.

/s/ Anthony D. Raucci

Anthony D. Raucci (#5948)