

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLORADO  
Judge William J. Martínez**

Civil Action No. 13-cv-0876-WJM-BNB

XY, LLC,

Plaintiff / Counterclaim Defendant,

v.

TRANS OVA GENETICS, LC,

Defendant / Counterclaim Plaintiff,

v.

INGURAN, LLC,

Third Party Defendant.

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**ORDER ON CLAIM CONSTRUCTION**

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Plaintiff XY, LLC (“Plaintiff”) brings this action for patent infringement and breach of contract against Defendant Trans Ova Genetics, LC (“Defendant”). (ECF No. 113.) This matter is currently before the Court for construction of the disputed terms in eight of the eleven patents at issue in this case.

**I. LEGAL STANDARD**

The fundamental purpose of a patent is to give notice to others of that in which the inventor claims exclusive rights. *Oakley Inc. v. Sunglass Hut Int’l*, 316 F.3d 1331, 1340 (Fed. Cir. 2003). Thus, the focus of claim construction is ascertaining how a reasonable competitor would interpret the actual claim language, not what the inventor subjectively intended the language to claim. *Id.* at 1340-41. The words used in the

patent are evaluated by employing their “ordinary and customary meaning,” as would be understood by a person of ordinary skill in the art at the time of the invention.

*Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (*en banc*).

In attempting to give meaning to the inventor’s language, the Court “looks to those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.” *Id.* at 1314. Among those sources are: (i) the words of the claims themselves; (ii) the remainder of the patent’s specification; (iii) the prosecution history of the patent; (iv) extrinsic evidence concerning relevant scientific principles; (v) the common meanings of technical terms used; and (vi) the state of the art at the time of the invention. *Id.* Terms must be construed in light of the entirety of the patent, not just in the context of the particular claim(s) in which they appear. *Id.* at 1313. In other words, claim language must be read in conjunction with the more general and descriptive specification portion of the patent; indeed, the specification is often “the single best guide to the meaning of a disputed term.” *Id.* at 1315. Because the patent is examined as a whole, the Court assumes that claim terms will normally be used consistently throughout the patent, and thus, the meaning of a term used in one claim can illustrate the meaning of that same term used elsewhere in the patent. *Id.* at 1314.

## **II. BACKGROUND**

This case deals with Plaintiff’s patented technology for identifying and sorting sperm cells by X or Y chromosome for the purpose of sex selection in the animal breeding industry. (Second Amended Complaint (“SAC”) (ECF No. 113) ¶ 8.) Plaintiff

owns 11 patents relevant to this action, which can be categorized as follows:

Nozzle Patents:

1. No. 6,263,745 (“ ‘745 patent” or “ ‘745”) - Flow Cytometer Nozzle and Flow Cytometer Sample Handling Methods (ECF No. 151-6)
2. No. 6,357,307 (“ ‘307 patent” or “ ‘307”) - System and Method of Flow Cytometry and Sample Handling (ECF No. 151-5)
3. No. 6,604,435 (“ ‘435 patent” or “ ‘435”) - Low Acceleration Method of Flow Cytometry (ECF No. 151-7)
4. No. 6,782,768 (“ ‘768 patent” or “ ‘768”) - Flow Cytometer Nozzle (ECF No. 151-8)

Sheath Fluid Patents:

5. No. 6,149,867 (“ ‘867 patent” or “ ‘867”) - Sheath Fluids and Collection Systems for Sex-Specific Cytometer Sorting of Sperm (ECF No. 151-11)
6. No. 6,524,860 (“ ‘860 patent” or “ ‘860”) - Methods for Improving Sheath Fluids and Collection Systems for Sex-Specific Cytometer Sorting of Sperm (ECF No. 151-10)
7. No. 7,195,920 (“ ‘920 patent”, “ ‘920”, or “Cushioning” patent) - Collection Systems for Cytometer Sorting of Sperm (ECF No. 151-9)

Cryo-preservation Patents:

8. No. 7,713,687 (“ ‘687 patent” or “ ‘687”) - System to Separate Frozen-Thawed Spermatozoa into X-Chromosome Bearing and Y-Chromosome Bearing Populations (ECF Nos. 151-1 & 151-2)
9. No. 7,771,921 (“ ‘921 patent” or “ ‘921”) - Separation Systems of Frozen-Thawed Spermatozoa Into X-Chromosome Bearing and Y-Chromosome Bearing Populations (ECF No. 151-3)
10. No. 7,820,425 (“ ‘425 patent” or “ ‘425”) - Method of Cryopreserving Selected Sperm Cells (ECF No. 151-4)

In-Vitro Fertilization Patent:

11. No. 8,569,053 (“ ‘053 patent” or “ ‘053”) - In-Vitro Fertilization Systems with Spermatozoa Separated Into X-Chromosome and Y-Chromosome Bearing Populations (ECF No. 151-12)

Of the patents at issue here, the nozzle patents all share a specification and the sheath fluid patents share a specification.

The technology at issue involves a process of sorting non-human mammalian sperm cells by sex chromosome by passing them through a specialized flow cytometer. (ECF No. 151 at 2-6.) The sperm cells are stained with a fluorescent dye so that the

different lengths of X and Y chromosomes will result in different amounts of fluorescence emitted by each type of sperm cell. (*Id.* at 3.) The cells are deposited into a nozzle surrounded by a sheath fluid, the nozzle separates the cells into individual droplets that exit the nozzle separately, and a sensor applied to each droplet identifies the sex of the chromosome in each cell based on its fluorescence. (*Id.*) In order for the sensor to properly differentiate the sperm cells based on the light they emit, the flat-headed cells must all be aligned in the same orientation to prevent variations in fluorescence based on the angle or direction of the cell relative to the sensor. (*Id.* at 4.)

Stress on the sperm cells during the sorting process can decrease their fertility. (*Id.*) Plaintiff's patented technology aligns the cells without unnecessarily stressing them by using a "single torsional" orientation nozzle, which imparts a single twisting force on the cells, and as described in two of the patents, the nozzle is fitted with "axial motion surfaces" which slows motion of the cells while passing through the nozzle and reduces stress on them. (*Id.* at 5.) One patent also describes "cushioning" the cells from impact after exiting the nozzle, to further reduce stress. (*Id.*)

Plaintiff licensed its patented technology to Defendant through a Commercial License Agreement dated April 16, 2004, and modified on March 9, 2005 and May 17, 2005 (collectively the "Agreement"). (SAC ¶¶ 4, 10.) On November 20, 2007, Plaintiff sent a written Notice of Termination to Defendant alleging that Defendant had breached the Agreement, and purporting to terminate the Agreement pursuant to its terms. (*Id.* ¶ 12.) Defendant disagreed that the Agreement was terminated, and attempted to continue paying royalties to Plaintiff for the continued use of its technology. (*Id.* ¶ 13.)

Plaintiff declined all such payments. (*Id.*)

Plaintiff filed this action in the Western District of Texas on March 5, 2012. (ECF No. 1-1.) The case was subsequently transferred to this Court. (ECF No. 1.) The operative complaint—Plaintiff’s Second Amended Complaint—brings claims for infringement of each of the 11 patents, as well as for breach of contract, unjust enrichment, and constructive trust. (*Id.* pp. 6-21.) The Second Amended Complaint also seeks a declaratory judgment that the Agreement was validly terminated, or in the alternative, a declaratory judgment that the Agreement expired. (*Id.*) Defendant disputes that it was in breach of the Agreement, and brings Counterclaims against Plaintiff for a declaration of invalidity of the patents, inequitable conduct with respect to the patent applications, antitrust violations under the Sherman Act, 15 U.S.C. § 2, and contract claims based on the Agreement. (ECF No. 123 at 32-63.) Defendant also asserts its claims for inequitable conduct, antitrust, and breach of contract against Third-Party Defendant Inguran, LLC, Plaintiff’s parent company. (*Id.* at 54-63.)

On January 27, 2014, Plaintiff filed its Opening Claim Construction Brief (ECF No. 151), to which it attached a table of the parties’ Joint Proposed Claim Constructions. (ECF No. 151-14.) The parties have stipulated to the construction of the following terms and/or phrases:

No.	Claim Term/Phrase	Relevant Asserted Claims	Stipulated Construction
1	“sheath fluid port”	1 (‘745), 1 (‘768)	“inlet for sheath fluid”
2	“torsional”	1-4, 20-21, 40 (‘307), 1-3, 18-21, 36 (‘745), 13 (‘435), 13 (‘768)	“imparting a twisting or rotational force”
3	“hydrodynamic forces”	1 (‘307), 13 (‘435)	“forces generated by a liquid”
4	“axial motion”	5 (‘307), 4-5 (‘745), 1 (‘435), 1 (‘768)	“motion generally parallel to the axis of flow”
5	“laminar flow”	20-21 (‘745)	“generally parallel or non-turbulent flow”
6	“laminarily flowing”	22-23 (‘307)	“flowing generally parallel or non-turbulently”
7	“smoothly varying said ellipticity”	4, 20-21, 40 (‘307)	“gradually varying said ellipticity”

(*Id.* at 2.) All seven stipulated constructions apply to one or more of the nozzle patents.

The parties have also identified 15 terms or phrases whose construction they dispute.

(*Id.* at 3-6.)

On February 7, 2014, Defendant filed its Claim Construction Brief in response to Plaintiff’s proposed constructions. (ECF No. 156.) On February 14, 2014, Plaintiff filed its Reply Claim Construction Brief. (ECF No. 157.) The Court held a half-day *Markman* hearing on April 25, 2014. (ECF No. 189.)

### III. ANALYSIS

The disputed terms can be grouped into three categories, as follows: (A) whether

the “single torsional” twisting force must be “gradual”; (B) whether a nozzle with an interior surface of “an ellipse-shape or an oval shape” encompasses an interior surface that is “close to a rectangular-shape”; (C) whether a “sheath fluid environment” and “chemically coordinated” sheath fluid is limited to the specific exemplary fluids described in the patent specification. (ECF No. 151 at 7-8.) Issues (A) and (B) relate to Plaintiff’s four nozzle patents, while issue (C) relates to Plaintiff’s three sheath fluid patents. (ECF No. 156 at 1.) The Court will discuss each of these issues below.

**A. “Single Torsional” (nozzle patents)**

The parties’ first dispute centers on whether the “single torsional” language in the nozzle patents requires that the single twist be “gradual”.

<i>Claim Term</i>	<i>Claims</i>	<i>Plaintiff’s Construction</i>	<i>Defendant’s Construction</i>
“single torsional surface in a nozzle having a central axis around which a torque is applied”	1 (‘307)	“a surface which imparts a single twist within a nozzle having a central axis around which the twisting force is imparted”	“a single torsional surface in a nozzle having a central axis around which a single and gradual twist is applied”
“single torsional surface”	1-3 (‘307), 13 (‘435)	“a surface which applies a single twist”	“a surface which applies a single and gradual twist”
“single torsional hydrodynamic forces”	1 (‘307), 13 (‘435)	“force generated by a liquid that imparts a single twist”	“single and gradual twisting forces generated by a liquid”
“single torsional orientation nozzle”	1-2, 20-21 (‘745), 13 (‘768)	“nozzle which imparts a single twist”	“nozzle which applies a single and gradual twist”

(ECF No. 151-14 at 4.) The parties agree that “torsional” means “imparting a twisting or rotational force”. (*Id.* at 2.) However, while Defendant contends that a gradual modifier is implicit from the specification, Plaintiff argues for the more general construction

requiring only a single twist. (ECF Nos. 151 at 9-11; 156 at 7-9.) Plaintiff further points out that the phrase “single torsional” was used to distinguish the single twisting force created in the instant invention from a force that exerted multiple twists, and does not indicate the speed or character of the single twist. (ECF No. 151 at 11 (citing ‘745 patent at 4:1).)

Defendant defends its argument that “gradual” is implicit in the term “single torsional” by citing the specification, in which the torsional forces are described as “gentle”, and the shape of the interior surface of the nozzle, which produces the forces, is described as being “gradually tapered downstream”. (ECF No. 156 at 8; ‘745 patent at 6:65, 7:46.) Because the purpose of the nozzle patents is to reduce stress to sperm cells during sorting, Defendant contends that the gentleness of the twisting force produced by a gradually tapered nozzle is the “essence of the single torsional orientation nozzle invention.” (ECF No. 157 at 3 (quoting ECF No. 156 at 9).)

It is well-established that the specification is “the single best guide to the meaning of a disputed term.” *Phillips*, 415 F.3d at 1315. However, the Federal Circuit has held that a party confused the roles of the specification and the claims when it argued for limits on the claims based on the “essence” of an invention contained in the specification. *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957 (Fed. Cir. 1983) (“That claims are interpreted in light of the specification does not mean that everything expressed in the specification must be read into all the claims”). Thus, Defendant’s essence argument is not dispositive.

The parties’ disagreement here stems from a fundamental tension in claim construction: the language of a claim must be considered and construed in light of the



specification, yet the Court cannot read limitations into the claim language based on the specification. In *Libel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 904-05 (Fed. Cir. 2004), the Federal Circuit described this conundrum:

We have had many occasions to cite one or both of the twin axioms regarding the role of the specification in claim construction: On the one hand, claims “must be read in view of the specification, of which they are a part.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996). On the other hand, it is improper to read a limitation from the specification into the claims. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 345 F.3d 1318, 1327 (Fed. Cir. 2003); *Gart v. Logitech, Inc.*, 254 F.3d 1334, 1343 (Fed. Cir. 2001). Although parties frequently cite one or the other of these axioms to us as if the axiom were sufficient, standing alone, to resolve the claim construction issues we are called upon to decide, the axioms themselves seldom provide an answer, but instead merely frame the question to be resolved. We have recognized that “there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification.” *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186-87 (Fed. Cir. 1998); *accord Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1307 (Fed. Cir. 2003). As we have explained, “an inherent tension exists as to whether a statement is a clear lexicographic definition or a description of a preferred embodiment. The problem is to interpret claims ‘in view of the specification’ without unnecessarily importing limitations from the specification into the claims.” *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003); *accord Tex. Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1204-05 (Fed. Cir. 2002).

Defendant’s position is that, to interpret the claim language in light of the specification, the Court must find that “gradual” is a necessary component of the “single torsional” description. On the other hand, Plaintiff’s position is that the incorporation of “gradual” into the disputed language would improperly import limitations from the specification

into the claims.<sup>1</sup>

Defendant correctly states that it is the interior shape of the nozzle that produces the “single torsional” force at issue. (754 patent at 10:50.) While one of the disputed phrases refers to “single torsional hydrodynamic forces”, which is disconnected from any description of the nozzle’s tapered shape, two of the disputed phrases refer to the “single torsional surface” within the nozzle, and the final disputed phrase describes the “single torsional orientation nozzle”. (ECF No. 151-14 at 4.) Thus, it cannot be said that the disputed language is unrelated to the shape of the nozzle.

However, even where the disputed claim language is used as an adjective to describe the nozzle or its surfaces, “single torsional” refers to the force being exerted when a fluid moves along such surfaces and thus describes the effect that the shape of the nozzle will have on the fluid, not the physical shape of the nozzle itself. A gradually tapered shape that produces a twisting force on liquid flowing through it does not imply that the twisting force itself is necessarily gradual. Defendant’s reading imports the term “gradual” from a description of the product shape and attempts to apply it to a description of the force. Neither the plain language of the claims, nor the use of the “gradual” modifier to describe the nozzle shape in the specification, support

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<sup>1</sup> The parties also argue that the doctrine of claim differentiation supports their various positions. Claim differentiation establishes a rebuttable presumption that each claim has a different scope, such that a dependent claim that adds a particular limitation raises a presumption that the independent claim on which it is based does not contain that limitation. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004); *Kraft Foods, Inc. v. Int’l Trading Co.*, 203 F.3d 1362, 1368 (Fed. Cir. 2000). Plaintiff argues that the presumption holds true here, as “gradual” appears only in dependent claims, while Defendant argues that the presumption is rebutted by the language in the specification. Because the parties’ claim differentiation argument will ultimately be resolved by the same analysis with respect to the role of the specification in defining the disputed terms, the Court finds no need to discuss it further.

Defendant's construction.

Thus, having reviewed the claim language and the relevant portions of the specification, the Court adopts Plaintiff's proposed construction of the "single torsional" terms, and concludes that the proper construction of the phrase "single torsional" refers to a "single twist" without any "gradual" limitation.

**B. "Elliptical-like" (nozzle patents)**

The parties disagree on whether the terms "an ellipse-shape or an oval-shape", "elliptical-like", and "ellipse-like" should be construed as containing only ellipse or oval shapes (Plaintiff), or as also encompassing a shape that is "close to rectangular-shape" (Defendant). (ECF Nos. 151 at 11; 156 at 9.)

<i>Claim Term</i>	<i>Claims</i>	<i>Plaintiff's Construction</i>	<i>Defendant's Construction</i>
"an ellipse-shape or an oval-shape"	3 ('307), 3 ('745)	No construction necessary. This term should be given its plain and ordinary meaning.	"ellipse-shape, oval-shape or even close to rectangular-shape"
"elliptical-like" or "ellipse-like"	21, 40 ('307), 18-19, 36 ('745)	"an ellipse-shape or an oval-shape"	"elliptical, oval, or even close to rectangular-like"

(ECF No. 151-14 at 4.)

These disputed terms describe the interior shape of the nozzle. Defendant again relies on the specification to argue that "elliptical-like" can encompass "a rectangle-shape", despite the lack of that language in the claims. (ECF No. 156 at 10 (quoting '745 patent at 7:60).) The specification describes the interior shape of the nozzle as follows:

This elliptical-like, single torsional interior surface may include different shapes in its cross sections. For example, besides being ellipse-shaped, it may be oval-shaped, or even close to a rectangle-shape. . . . As should be understood, each of these shapes is intended to be encompassed by the term “elliptical-like” even though a true mathematical ellipse is not present at a given cross section.

(’745 patent at 7:64-8:8.) The specification then compares this variation in shape to the use of the term “circular”, which “need not be perfectly circular—or even circular at all. Again, it may be preferred to be circular, however, other shapes may be equivalent so long as the appropriate function is present.” (*Id.* at 8:8-11.) Based on these statements, Defendant argues that the specification defines the term “elliptical-like” under the applicant’s own peculiar lexicography to include “rectangle-shape”. (ECF No. 156 at 10 (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002).)

The Federal Circuit has held that, “[g]enerally speaking, we indulge a ‘heavy presumption’ that a claim term carries its ordinary and customary meaning.” *CCS Fitness*, 288 F.3d at 1366 (internal quotation omitted). In order to rebut that heavy presumption and find that the applicant “acted as his own lexicographer” in defining a term, as Defendant suggests here, the Court must find that the patentee “clearly set forth a definition of the disputed claim term in either the specification or prosecution history.” *Id.*

Plaintiff cites the prosecution history to explain why the “rectangle-shape” language was not included in the claims, despite its appearance in the specification. Plaintiff clarifies that claim 3 of the ’307 patent and claim 3 of the ’745 patent were each originally written with the language “tapered, elliptical-like, single torsional interior

surface element”. (ECF No. 151 at 11 (citing ‘745 prosecution history (ECF No. 151-15) at 2).) The patent examiner rejected the term “elliptical-like” in these claims, stating that it rendered the claim “indefinite, as the written specification suggests meanings that are contrary to a true ellipse,” so the applicant amended the claim in response to the examiner’s comment. (*Id.* (citing ECF No. 151-16 at 5).) However, Plaintiff admits that the applicant’s remarks to the amendment incorrectly stated that the shape description was amended to include “an ellipse-shape, an oval-shape, or a rectangle-shape,” when in fact the amendment contains only “an ellipse-shape or an oval-shape”, the language ultimately included in the final claims. (ECF No. 151 at 11 n.30; *compare* ECF No. 151-17 at 3 ¶ 3 (claim language, no mention of rectangle-shape); *with id.* at 4 (remarks, reference to rectangle-shape).)

“The claim language itself controls the bounds of the claim, not a facially inaccurate remark during prosecution.” *Rambus Inc. v. Infineon Tech. Ag*, 318 F.3d 1081, 1089-90 (Fed. Cir. 2003). Here, the claim language describes an ellipse-shape or oval-shape, and does not explicitly include a rectangle-shape. Defendant asks the Court to go beyond the plain language of the claims to the specification to find a definition of the disputed claim term that includes “rectangle-shape”. In response to Plaintiff’s argument citing the prosecution history, Defendant contends that when in conflict, the specification trumps the prosecution history, which “often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Phillips*, 415 F.3d at 1315, 1317.

The language Defendant cites from the specification explicitly sets forth a definition of the term “elliptical-like” as including shapes that are not true mathematical

ellipses. (See '745 patent at 8:5.) Indeed, the specification goes on to refer to “ellipticity” as “the ratio of major to minor axes—regardless of the shape involved”. (*Id.* at 8:34-35.) However, it is not clear that “elliptical-like” necessarily includes “close to rectangle-shape”, despite the inclusion of that term in a list of examples of different shapes that may appear in the cross-section of an elliptical-like surface in particular embodiments. (See *id.* at 7:64-68.) The prosecution history shows that the patentee altered the claim language in an attempt to resolve the patent examiner’s concern that the variable shapes included forms that were not true ellipses, and consequently explicitly discussed and considered the inclusion of “rectangle-shape” in the claim language. (See ECF Nos. 151-16 at 5; 151-17 at 3-4.) However, no reference to “rectangle-shape” appears in the final claims, which contain only “an ellipse-shape or an oval-shape”. This mixed history belies any “clearly set forth . . . definition of the disputed claim term” that would include “close to rectangle-shape”. See *CSS Fitness*, 288 F.3d at 1366. Thus, even if the patentee acted as his own lexicographer in defining “elliptical-like” to include shapes other than true ellipses, the Court cannot find that that definition necessarily includes a shape that is “close to rectangle-shape”, even though such shape is encompassed by some preferred embodiments.

Accordingly, the Court finds that the claim language itself governs the scope of the disputed claims here, and therefore adopts Plaintiff’s construction of “elliptical-like” as including “an ellipse-shape or an oval-shape”.

**C. “Chemically Coordinating a Sheath Fluid” (sheath fluid patents)**

Finally, the parties dispute whether the “sheath fluid” and “chemically coordinating” language requires any particular chemical composition. (ECF Nos. 151 at 12; 156 at 10.)

<i>Claim Term</i>	<i>Claims</i>	<i>Plaintiff’s Construction</i>	<i>Defendant’s Construction</i>
“chemically coordinating a sheath fluid to create a sheath fluid environment for said cells which is coordinated with both a pre-sort [and post-sort] fluid environment”	1 (’860)	“selecting a sheath fluid so that the cells are presented with pre-sort and post-sort and sheath fluid environments which lessen stress on the cells”	“chemically coordinating a sheath fluid to create a sheath fluid environment for said cells by presenting a 2.9% sodium citrate composition for the sorting of bovine sperm cells or presenting a HEPES buffered medium for the sorting of equine sperm cells which is coordinated with both a pre-sort [and post-sort] fluid environment”
“a chemically coordinated sheath fluid source which creates a sheath fluid environment for said cells which is selected to be coordinated with both a pre-sort and a post-sort fluid environment”	12 (’867)	“a sheath fluid that has been selected so that the cells are presented with pre-sort and post-sort and sheath fluid environments which lessens stress on the cells”	“a chemically coordinated sheath fluid which creates a sheath fluid environment for said cells by presenting a 2.9% sodium citrate composition for the sorting of bovine sperm cells or presenting a HEPES buffered medium for the sorting of equine sperm cells which is selected to be coordinated with both a pre-sort and a post-sort fluid environment”

<i>Claim Term</i>	<i>Claims</i>	<i>Plaintiff's Construction</i>	<i>Defendant's Construction</i>
"hyper-responsive chemical composition to which said cells are particularly responsive"	21-23 ('860); 13 ('867)	"chemical compositions to which cells are particularly responsive in terms of their functionality and/or the techniques by which they were handled"	"hyper-responsive chemical composition to which said cells are particularly responsive consisting of a citrate constancy for bovine sperm cells and HEPES buffer constancy for equine sperm cells"
"chemically coordinating said collector fluid with said sheath fluid"	32 ('860)	"selecting a collector fluid so that the cells are presented with pre-sort and post-sort and sheath fluid environments which lessens stress on the cells"	"chemically coordinating said collector fluid that contains citrate and about 6% egg yolk with said sheath fluid that consists of a 2.9% sodium citrate composition for the sorting of bovine sperm cells or a HEPES buffered medium for the sorting of equine sperm cells"
"establishing a cell source which supplies cells which are hyper-responsive to a chemical composition in a surrounding fluid environment"	38 ('860)	"supplying cells that are particularly responsive to the chemical composition of their surrounding sheath fluid environment in terms of their functionality and/or the techniques by which they were handled"	"establishing a cell source which supplies cells which are hyper-responsive to a chemical composition consisting of a 2.9% sodium citrate composition for the sorting of bovine sperm cells or a HEPES buffered medium for the sorting of equine sperm cells in a surrounding fluid environment"
"chemically coordinated sheath fluid source"	12, 13 ('867)	"a sheath fluid that has been selected so that the cells are presented with pre-sort and post-sort and sheath fluid environments which lessens stress on the cells"	"chemically coordinated sheath fluid source consisting of a 2.9% sodium citrate composition for the sorting of bovine sperm cells or a HEPES buffered medium for the sorting of equine sperm cells"



<i>Claim Term</i>	<i>Claims</i>	<i>Plaintiff's Construction</i>	<i>Defendant's Construction</i>
“said hyper-responsive chemical composition comprises a metabolic chemical composition”	14 ('867)	“a chemical composition of the surrounding sheath fluid environment, to which cells are particularly responsive in terms of their functionality and/or the techniques by which they were handled, which may include a chemical within the citric acid cycle”	“said hyper-responsive chemical composition comprises a metabolic chemical composition consisting of a citrate constancy for bovine sperm cells and HEPES buffer constancy for equine sperm cells”
“establishing a sheath fluid to create a sheath fluid environment for said cells”	1 ('920); 32 ('860)	“supplying a sheath fluid and surrounding the sperm cells with the sheath fluid”	“establishing a sheath fluid to create a sheath fluid environment for said cells by presenting a 2.9% sodium citrate composition for the sorting of bovine sperm cells or presenting a HEPES buffered medium for the sorting of equine sperm cells”

Defendant’s construction again imports information from the specification to limit the claims, arguing that “chemically coordinated sheath fluid”, “chemically coordinating sheath fluid”, “hyper-responsive chemical composition”, and “chemical composition . . . [to which cells] are hyper-responsive” should all be construed as including the particular chemical compositions referred to in the specification. (ECF No. 156 at 11.)

Defendant contends that these chemical compositions are the novel elements of the invention, and are therefore necessarily implied in these terms, because they are what distinguishes the inventions in Plaintiff’s patents from the prior art. (*Id.* at 11-13.) Defendant explains that the technology of using particular sheath fluids that were

formulated to support cell viability was already established from the prior art, which was referenced in the specification. (*Id.* (citing '867 patent at 1:66 (“This [sorting technique] was discussed early in U.S. Pat. No. 4,362,246 and significantly expanded upon through the techniques disclosed by Lawrence Johnson in U.S. Pat. No. 5,135,759.”)).) In the Johnson patent, the general properties of the sheath fluid were defined as necessarily “electrically conductive and isotonic” and “free of sugars and excess salts.” (Johnson patent (ECF No. 156-1) at 4:44.) Because the general concept of a chemically coordinated sheath fluid was already part of the then-existing state of the art, Defendant contends that Plaintiff’s sheath fluid patents must necessarily distinguish themselves by covering only a newly invented subject matter, namely the specific chemical compositions described in the patents, to which the cells have been found to be hyper-responsive. (ECF No. 156 at 12.)

In support of this argument, Defendant contends that the prosecution history of the sheath fluid patents reveals that the claims at issue were only allowed because of the specific chemical compositions as defined in the specification. (*Id.* at 13.) Defendant points out that the patent examiner initially rejected the relevant claims in the '867 patent for several reasons: the Johnson patent had already taught the use of a particular sheath fluid to support sperm cell viability during the sorting process, the applicants’ own prior patents had already disclosed the use of a HEPES buffered medium, and other prior art had already disclosed the use of 2.9% sodium citrate to increase sperm cell membrane integrity, which would have made it obvious to one of ordinary skill to use 2.9% sodium citrate in the sheath fluid. (ECF No. 156-2 at 4-6.) Defendant contends that the applicants then admitted in their request for

reconsideration that the sheath or collector fluids would cover only certain compositions, stating that “the claims set out the use of specific fluids” such as the 2.9% sodium citrate, but “use[] this substance in a different manner, namely as a sheath fluid in a cell sorting system. It is this new use which is one of the aspects that permits the new achievements of the present inventors. . . . To the extent [the prior patents] do reference certain fluids, they are applying those fluids for a different purpose and to achieve a result different from the uses set forth in the claims.” (ECF No. 156-3 at 11-12.)

Similarly, Defendant argues that the examiner rejected a claim in the ‘860 patent due to the “chemically coordinated” term being indefinite, and stated that “the chemical formulation and/or identity of the sheath fluid should be identified and recited in the instant claims (*i.e.* sodium citrate, HEPES, etc.).” (ECF No. 156-5 at 2.) The applicants responded that “it is appropriate to maintain the generic recitation . . . because the recitation is clearly defined by the description along with various examples of sheath fluid environments”. (ECF No. 156-6 at 15.) Thus, Defendant argues that the claims were accepted because, in the examiner’s view, the sheath fluid was chemically coordinated “so as to minimize chemical changes in the cells by presenting a 2.9% sodium citrate composition for the sorting of bovine sperm cells or presenting a HEPES buffered medium for the sorting of equine sperm cells.” (ECF No. 156-7 at 4.)

In response, Plaintiff argues that the novelty of the invention was in chemically coordinating the sheath fluids particularly for the purpose of reducing stress on the cells during the various stages of sorting through a flow cytometer, and that the specified chemical compositions—a 2.9% sodium citrate composition for bovine cells and a HEPES buffered medium for equine cells—were exemplary compositions found to

reduce stress for those cells, rather than specified compositions to which the claims should be restricted. (ECF Nos. 151 at 15, 157 at 7-8.) Plaintiff points out that the specification repeatedly discusses the citrate and HEPES buffered compositions as only examples of such chemically coordinated fluids, and explicitly refers to the possibility of variation in the chemical composition. (*Id.* (citing '867 patent at 7:53, 8:3, 8:51, 11:11).) With respect to “establishing a sheath fluid” term in the '920 patent specifically, Plaintiff argues that Defendant’s attempt to import particular chemical compositions into the claim is an even more egregious stretch, as Defendant’s construction of that claim requires reading details from the specification of one embodiment (sheath fluid composition) into a claim of a different embodiment (cushioning). (ECF No. 151 at 12-13.)

As to the patent prosecution history, Plaintiff interpretation differs from Defendant’s. Plaintiff argues that the ultimate general language included in the claims was the result of the applicants’ attempt to tread the line between an obvious application of the prior art and a broad enough definition of the claims to permit them to cover subsequently discovered chemical compositions. (See ECF Nos. 151 at 15-16; 157 at 8.) In the cited prosecution history from the '867 patent, the applicant argued that the invention was not obvious because the sheath fluid was chemically coordinated specifically to reduce stress on the cells during the sorting process, which differentiated them from the uses of such fluids in the prior art. (ECF No. 156-3 at 11-12.) Plaintiff contends that the applicant’s discussion of the specific fluid compositions was included by way of example. (*Id.* at 12.)

Similarly, regarding the prosecution history from the '860 patent, Plaintiff

interprets it as the applicants' attempt to avoid specifying chemical compositions and instead to maintain a generic description of the chemically coordinated sheath fluid, contending that the example fluids provided enough specificity to clarify the purpose and type of chemical coordination that would be covered by the claims. For example, the applicants' request for reconsideration noted that "[t]he examiner even indicates that the specific examples provided by the applicant in the description of using 2.9% sodium citrate and HEPES-buffered medium as sheath fluids *to illustrate the broader generic inventive concept*" were not covered by the prior art. (ECF No. 156-6 at 18 (emphasis added).) The applicant further argued that "the applicant fairly deserves the breadth of the independent claims as originally recited". (*Id.* at 19.) Plaintiff notes that "[i]t is well settled, however, that it is the applicant, not the examiner, who must give up or disclaim subject matter that would otherwise fall within the scope of the claims." *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1124 (Fed. Cir. 2004). Thus, Plaintiff argues, the examiner's initial statement that the claim required a recitation of specific chemical formulations does not limit the claim to those formulations when the applicant did not accept such limits and the claim was ultimately allowed without them. (ECF No. 157 at 9.)

Plaintiff also points out that the examiner's references to specific chemical compositions in stating reasons for allowing the claims (see ECF No. 156-4 at 2) can be explained by those compositions' overt appearances in the language of other claims, such as '867 claim 1(b) (2.9% sodium citrate), '867 claim 4(b) (HEPES buffered

medium), and '867 claim 6(g) (citrate and 6% egg yolk)<sup>2</sup>. (ECF No. 157 at 9.) The explicit appearance of these chemical compositions in other claim language suggests that the examiner's comments as to those specific compositions should not necessarily be imputed to the definitions of the "chemically coordinated" language in '867 claim 12.

The Court finds Plaintiff's reading of the prosecution history more compelling than Defendant's, because the patentee explicitly argued for the broader, generic terms that were ultimately allowed in the claims. (See ECF No. 156-6 at 18-19.) This distinguishes the instant case from those cases in which "the applicants may not have repeated the examiner's language *verbatim et literatim*, [but] it is clear that they were limiting their invention to what the examiner believed they enabled . . . ." *Biogen Idec, Inc. v. GlaxoSmithKline LLC*, 713 F.3d 1090, 1096 (Fed. Cir. 2013). While the patentee made reference to the fact that the general terms were "clearly defined by the description along with various examples of sheath fluid environments," those specified fluids were explicitly denominated "examples" that served to illustrate, not limit, the scope of the invention. (See ECF No. 156-6 at 15.) The prosecution history here fails to show that "the applicant clearly and unambiguously disclaimed or disavowed" an

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<sup>2</sup> Defendant also raises an argument with respect to the specific composition of 6% egg yolk in a citrate solution, arguing that the term "collector fluid" should be limited to that composition because the specification proposes such a composition and the patentee "acted as its own lexicographer" with respect to this term. (ECF No. 156 at 22.) Defendant contends that because the use of a collector fluid comprised of an egg yolk solution was taught by the Johnson patent, the term has no novel meaning in Plaintiff's patents unless it is restricted to the particular solution described in the specification. (*Id.*)

As the Court has previously discussed, in order to "act as its own lexicographer," the patentee must have clearly set forth a definition of the term. See *CSS Fitness*, 288 F.3d at 1366. Defendant has not presented any support for a finding that such a clear redefinition existed here. Accordingly, the Court finds that the "collector fluid" term should not be construed as limited to any specific composition.

interpretation of the claims that could cover chemical compositions other than 2.9% sodium citrate or HEPES buffered medium. See *Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1344 (Fed. Cir. 2005) (quoting *3M Innovative Props. Co. v. Avery Dennison Corp.*, 350 F.3d 1365, 1371 (Fed. Cir. 2003)).

As for Defendant's arguments that Plaintiff's broad construction contradicts the examiner's reasons for allowing the claim and would make the invention obvious from prior art, the Court finds Plaintiff's explanations satisfactory. The examiner's initial reticence to allow a very broad interpretation of the chemically coordinated sheath fluid was resolved by the inclusion of the example sheath fluid compositions in the specification. Here, Plaintiff's construction of "chemically coordinating" and the related terms includes a limitation to the particular purpose of "lessen[ing] stress on the cells", which serves to narrow the definition and helps distinguish it from the prior art. Given the need to consider the claim language, the specification language, and the prosecution history as a whole, the Court is persuaded that the patentee did not "clearly and unambiguously" disavow the broader interpretive scope of these terms, and that they should not be limited by the two chemical compositions provided as examples in the specification. See *Salazar*, 414 F.3d at 1344; *Phillips*, 415 F.3d at 1315 (the patent is examined as a whole).

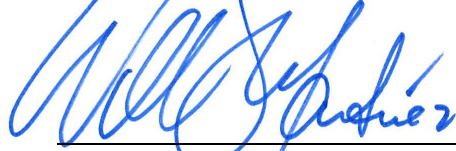
Accordingly, the Court adopts Plaintiff's construction of the disputed "chemically coordinating" and "sheath fluid" terms, and concludes that they should be construed without any limitation to specific chemical compositions.

#### IV. CONCLUSION

For the reasons discussed above, the Court hereby ADOPTS Plaintiff's constructions of the disputed terms and phrases.

Dated this 7<sup>th</sup> day of October, 2014.

BY THE COURT:



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William J. Martinez  
United States District Judge