

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ABS GLOBAL, INC.  
Petitioner,

v.

XY, LLC  
Patent Owner.

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Case IPR2018-01224  
Patent 9,365,822 B2

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Before ROBERT A. POLLOCK, MICHELLE N. ANKENBRAND, and  
DAVID COTTA, *Administrative Patent Judges*.

COTTA, *Administrative Patent Judge*.

DECISION  
Granting Institution of *Inter Partes* Review  
35 U.S.C. § 314(a)

## I. INTRODUCTION

ABS Global, Inc. (“Petitioner” or “ABS”) filed a Petition requesting an *inter partes* review of claim 11 of U.S. Patent No. 9,365,822 B2 (Ex. 1001, “the ’822 patent”).<sup>1</sup> Paper 1 (“Pet.”). XY, LLC (“Patent Owner” or “XY”) filed a Preliminary Response to the Petition. Paper 7 (Prelim. Resp.).<sup>2</sup>

Institution of an *inter partes* review is authorized by statute only when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314; *see* 37 C.F.R. §§ 42.4, 42.108. Upon considering the Petition, the Preliminary Response, and the cited evidence, we conclude that Petitioner has satisfied the burden under 35 U.S.C. § 314(a) to show that there is a reasonable likelihood that it would prevail with respect to at least one of the challenged claims.

### A. *Related Proceedings*

Petitioner and Patent Owner identify *Inguran, LLC d/b/a STGenetics v. ABS Global, Inc.* Civil Action No. 17-cv-00446 (W.D. Wis.), and *XY, LLC v. Trans Ova Genetics, LC*, Civil Action No. 1:17-cv-00944-WJM-NYW (D. Colo.), as litigations involving the ’822 patent. Pet. 1; Paper 5, 1.

### B. *The ’822 Patent (Ex. 1001)*

The ’822 patent issued June 14, 2016, identifying George E. Seidel, Lisa A. Herickhoff, and John L. Schenk as co-inventors. Ex. 1001. The

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<sup>1</sup> Petitioner identifies ABS Global, Inc., and Genus plc as real parties in interest. Pet. 1.

<sup>2</sup> Patent Owner identifies XY, LLC, and Inguran, LLC as real parties in interest. Paper 5, 1.

patent discloses “systems for sorting sperm via flow cytometry for sex-specific and low dose efforts at artificial insemination or the like.” *Id.* at 1:19–21.

The '822 patent teaches that “flow cytometry involves sorting items, such as cells, which are provided to the flow cytometer instrument through some type of cell source.” *Id.* at 5:48–50. Figure 1 of the '822 patent is reproduced below.

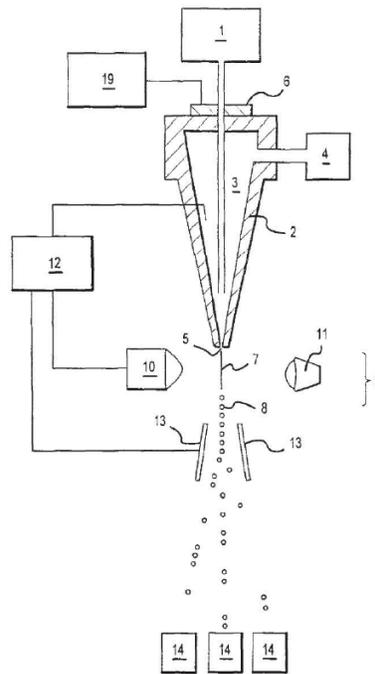


Figure 1 is a “schematic diagram of a sorter system according to [Patent Owner’s] invention.” *Id.* at 5:10–11.

As shown in Figure 1, the flow cytometer includes a “cell source (1)” that supplies cells to “nozzle (2) in a manner such that the cells are surrounded by a sheath fluid (3)” that is supplied by “sheath fluid source (4).” *Id.* at 5:51–56. An oscillator (6) acts upon the cells, which causes the stream of cells (7) exiting through “nozzle orifice (5)” to regularly form “drops (8).” *Id.* at 5:62–6:3. Because the drops contain isolated cells, “sensing system (9)” can “distinguish and separate droplets based upon

whether or not the appropriate cell or cells is/are contained within the drop.” *Id.* at 6:5–8. A “sorter discrimination system (**12**) . . . can differentially charge each drop (**8**) based upon whether it has decided that the desired cell does or does not exist within that drop (**8**).” *Id.* at 6:25–28. The sorter discrimination system then causes “electrostatic deflection plates (**13**) to deflect drops (**8**) based on whether or not they contain the appropriate cell.” *Id.* at 6:29–32. By sensing a property of the cells, the flow cytometer can discriminate between cells based on a particular characteristic of the cells and “place them in the appropriate collector (**14**).” *Id.* at 6:33–37.

The ’822 patent discloses that sperm are “extremely delicate cells.” *Id.* at 2:46–47. Because of their fragility, “processing through normal flow cytometer techniques may . . . be unacceptable for cytometric sorting of sperm cells in certain applications.” *Id.* at 2:54–56.

According to the ’822 patent, “[a]n object of the invention is . . . to achieve better sorting for substances such as sperm cells” and “minimize the impact the sorting function itself has on the cells.” *Id.* at 4:45–48. More particularly, the inventors of the ’822 patent sought to “minimize the impact the sheath fluid imposes upon the cells and to potentially provide a sheath fluid which affirmatively acts to assist the cells in handling the various stresses involved.” *Id.* at 4:48–52. A further goal is to “minimize the impacts that the collection phase (e.g., after sorting) has upon the cells and to minimize the physical impact as well as chemical impacts on such sex sorted sperm cells.” *Id.* at 4:56–59. The ’822 patent discloses that “[b]y selecting certain metabolic chemical compositions, most notably citrates or chemicals which are within the citric acid cycle, great advances appear possible.” *Id.* at 8:50–52.

### C. *Challenged Claims*

Petitioner challenges claim 11 of the '822 patent. Claim 11 is reproduced below:

11. A method of producing at least one sexed embryo comprising:
- producing a stream containing sperm cells, wherein the stream comprises sperm cells from a cell source surrounded by sheath fluid, wherein the sheath fluid surrounding the sperm cells includes a citric acid;
  - identifying X-chromosome bearing sperm cells and/or Y-chromosome bearing sperm cells in the stream;
  - collecting X-chromosome bearing sperm cells and/or Y-chromosome bearing sperm cells in at least one collector having a collector fluid which includes a citric acid; and
  - fertilizing at least one egg with the collected sperm cells to form at least one sexed embryo.

Ex. 1001, 30:22–35.

### D. *The Asserted Ground of Unpatentability*

Petitioner challenges the patentability of claim 11 as obvious over the combination of Johnson,<sup>3</sup> Salisbury,<sup>4</sup> and Garcia.<sup>5</sup> Petitioner submits the Declaration of Dr. Marvin M. Pace (Ex. 1003, “Pace Decl.”) in support of institution of an *inter partes* review.

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<sup>3</sup> Johnson, US Patent No. 5,135,759, issued Aug. 4, 1992 (Ex. 1005, “Johnson”).

<sup>4</sup> Salisbury et al., *Physiology of Reproduction and Artificial Insemination of Cattle*, 2d ed. (1978) (Ex. 1006, “Salisbury”).

<sup>5</sup> Garcia et al., *Development of a Buffer System for Dialysis of Bovine Spermatozoa Before Freezing*, 31(5) THERIOGENOLOGY, 1039–1048 (1989) (Ex. 1007, “Garcia”).

## II. ANALYSIS

### A. *Person of Ordinary Skill in the Art*

Factual indicators of the level of ordinary skill in the art include “the various prior art approaches employed, the types of problems encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field.” *Jacobson Bros., Inc. v. United States*, 512 F.2d 1065, 1071 (Ct. Cl. 1975); *see also Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1011 (Fed. Cir. 1983) (quoting with approval *Jacobson Bros.*).

Petitioner contends that the person of ordinary skill at the time of the ’822 patent would have been “someone with at least a bachelor’s degree in the biological sciences or a relevant field of engineering, and at least 3 years of experience in a field relating to sperm cell physiology.” Pet. 32.

At this stage in the proceeding, Patent Owner does not challenge Petitioner’s definition. Prelim. Resp. 9 (“For the sole purpose of this preliminary response, XY will use Petitioner’s interpretation of a POSA.”). Accordingly, for purposes of this Decision, we accept Petitioner’s definition, which Dr. Pace’s testimony supports (Ex. 1003 ¶ 17), and which is consistent with the level of skill reflected in the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art itself can reflect the appropriate level of ordinary skill in the art).

Moreover, we have reviewed Dr. Pace’s credentials (Ex. 1004) and, at this stage in the proceeding, applying Petitioner’s definition of the person of ordinary skill in the art, we consider Dr. Pace to be qualified to provide an opinion on the level of skill and the knowledge of a person of ordinary skill in the art at the time of the invention.

*B. Claim Construction*

Patent Owner represents that the '822 patent expired on December 31, 2017, and requests that the Board apply a district court-type claim construction like that provided in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), in this proceeding. Prelim. Resp. 10. The Board interprets claims of an expired patent using the principles set forth in *Phillips*. See *In re CSB-Sys. Int'l, Inc.*, 832 F.3d 1335, 1340–42 (Fed. Cir. 2016) (“[C]onsistent with our prior precedent and customary practice, we reaffirm that once a patent expires, the PTO should apply the *Phillips* standard for claim construction.”); *Black & Decker, Inc. v. Positec USA, Inc.*, 646 Fed. App’x 1019, 1024 (Fed. Cir. 2016); see also Amendments to the Rules of Practice for Trials before the Patent Trial and Appeal Board, 81 Fed. Reg. 18,750, 18,750 (Apr. 1, 2016) (amending 37 C.F.R. § 42.100(b) to allow a district court-style claim construction approach “for claims of patents that will expire before entry of a final written decision”). Accordingly, we grant Patent Owner’s request and, in this proceeding, we will give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *Phillips*, 415 F.3d at 1313. We also consider any extrinsic evidence presented. *Id.* at 1317.

Although Petitioner proposes several claim terms for construction (Pet. 26–31), at this stage of the proceeding, we determine that no explicit construction of any claim term is necessary to determine whether to institute a trial in this case. See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“we need only

construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)); *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’” (citation omitted)).

### C. *Obviousness*

Petitioner asserts that claim 11 would have been obvious over the combination of Johnson, Salisbury, and Garcia. *See* Pet. 41–67. Patent Owner asserts that Petitioner does not establish a reasonable likelihood of prevailing on its obviousness assertion. Prelim. Resp. 13–29. We have reviewed Petitioner’s assertions and supporting evidence and Patent Owner’s Preliminary Response, and, for the reasons discussed below, we conclude that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that claim 11 would have been obvious over the combination of the combination of Johnson, Salisbury, and Garcia.

#### i. *Disclosures of the Asserted Prior Art*

##### Johnson

Johnson discloses:

the separation, by flow sorting, of intact, viable X and Y chromosome-bearing rabbit and swine sperm populations based on relative DNA content; surgical insemination of the sorted sperm into does; and the subsequent birth of sexed offspring with a phenotypic sex ratio consistent with predictions based on the relative DNA content of the sorted sperm populations.

Ex. 1005, 2:64–3:3.

Johnson further discloses:

It is, of course, of critical importance to maintain high viability of the intact sperm during the sorting process and during storage after sorting but prior to insemination.

Of the factors involved in maintaining sperm viability, the method of staining, the sheath fluid, and the collecting fluid have been found to be especially important.

*Id.* at 4:19–26.

Johnson exemplifies sorting rabbit and swine sperm. *Id.* at 4:65–66; 7:1–41. With respect to the sheath fluid, Johnson teaches the use of “10 mM phosphate-buffered saline (PBS) containing 0.1% bovine serum albumin (BSA).” *Id.* at 6:38–41. With respect to the collecting fluid, Johnson teaches the use of an egg yolk extender comprising “N-tris(hydroxymethyl)-methyl-2-amino ethane sulfonic acid, 2.16 g; tris hydroxymethyl aminomethane, 0.51 g; dextrose 0.1 g; streptomycin sulfate, 0.13 g; penicillin G, 0.08 g; egg yolk, 12.5 ml; Equex STM . . . , 0.5%; and distilled water, 50 ml.” *Id.* at 6:42–47. Johnson “expected that the sperm of most mammals could be effectively sorted by following these procedures” but recognized that “minor modifications may be made in the procedure without departing from the spirit and scope of the invention.” *Id.* at 4:67–5:3.

### Salisbury

Salisbury discloses that adding an “extender” to sperm cells may “preserve the fertility of sperm cells and . . . increase the total volume so that the proper dose of cells for insemination can be conveniently packaged and used.” Ex. 1006, 442. According to Salisbury, “[t]here are countless recipes for media that will preserve bull spermatozoa.” *Id.* Salisbury reports that the “most widely used medium for artificial insemination in cattle” is the “yolk-citrate extender” which provides “equal fertility, higher spermatozoan motility during prolonged storage, and improved visibility” as compared to a

previously used extender comprising “equal volumes of egg yolk and phosphate buffer.” *Id.* at 443; *see also id.* at 448 (“In general, yolk-citrate has been the standard against which new extenders have been compared.”).

Salisbury discloses three extender formulations that comprise citric acid and egg yolk: the “standard” egg-yolk citrate formulation (*id.* at 447–448); the Cornell University extender (“CUE”) (*id.* at 450–455); and the TRIS-egg-yolk-citric acid formulation (*id.* at 455–457). The below table summarizes the composition of these three extenders.

Table 1. Most Commonly Used Bovine Extenders

<b>Bovine Extender</b>	<b>Components</b>	<b>Reference</b>
CUE	sodium citrate dihydrate 1.45g/100ml citric acid monohydrate 0.09g/100ml sodium bicarbonate 0.21g/100ml potassium chloride 0.0 g/100ml glucose 0.3g/100ml glycine 0.94g/100ml sulfanilamide 0.30g/ml 20 parts egg yolk	Salisbury-1978, 452.
Tris-egg yolk-citric acid	tris 3.028g citric acid monohydrate 1.675g fructose 1.25g egg-yolk 25ml glycerol 8.0ml Glass redistilled water 92.0ml	Salisbury-1978, 456.
Egg yolk-citrate	sodium citrate dihydrate 2.9% (w/v) egg yolk 20-25% (v/v)	Salisbury-1978, 447-448.

Pet. 53. Table 1 (above) is a summary Petitioner provides identifying the components of the three citric-acid containing bovine extenders Salisbury discloses. Patent Owner does not contest the accuracy of Table 1 in its Preliminary Response.

Garcia

Garcia reports the results of three experiments “conducted to study the effect of inorganic and organic acids on survival of dialyzed bovine

spermatozoa.” Ex. 1007, Abstract. The experiments analyze sperm motility in samples before and after thawing and record the ability of spermatozoa in post-thaw samples to pass through a Sephadex column. *Id.* Garcia concludes that:

post[-]thaw sperm motility in solutions containing 35% isosmotic Na citrate (V/V) in the extender and dialysate was statistically superior to any other buffer solution studied. Sperm motility of fresh and frozen thawed samples was high in potassium phosphate and was not different from motility in samples containing Na citrate. However, the evaluation of the number of cells that passed through the Sephadex column showed statistical differences between the use of phosphate containing dialysates and Na citrate. All data obtained for carbonate and chloride solutions were significantly lower ( $P < 0.05$ ) than the data obtained for phosphate buffers.

*Id.* at 1046.

*ii. Analysis*

Petitioner contends that Johnson discloses all of the elements of claim 11 except that the sheath fluid and the collection fluid do not include a citric acid. Pet. 41–46.

With respect to the requirement that the collection fluid include a citric acid, Petitioner contends that “[t]he ordinary artisan would have known that extender solutions can have different effects on different species of sperm, and that certain extenders were more effective in extending the viability of particular species of sperm.” *Id.* at 54 (citing Ex. 1003 ¶ 235). Petitioner further contends that “[t]he ordinary artisan also would have understood the importance of selecting an extender suitable for bull semen [because] . . . samples take several hours to be processed and once sorted, the cells remain in the collection fluid, heavily diluted by the sheath fluid, for many hours longer.” *Id.* (citing Ex. 1003 ¶ 238).

Based on the teachings of Salisbury, Petitioner contends that the skilled artisan would have understood that “the CUE, Tris-egg yolk-citric acid and egg yolk citrate extenders were the most effective and proven extenders being used in processing of bovine sperm.” *Id.* According to Petitioner, the ordinary artisan would have also known that “citrate and citric acid-based extenders provide better results than phosphate-based extenders for bovine sperm.” *Id.* at 54–55 (citing Salisbury and Garcia). Petitioner thus concludes that an ordinary artisan, considering how to adapt Johnson to sort bovine sperm, would have found it obvious to “use one of the well-known bovine semen extenders that contain a citric acid in the collection fluid when sex-sorting bovine sperm, such as CUE, Tris-egg-yolk-citric acid or egg yolk-citrate.” *Id.* at 55 (citing Ex. 1003 ¶¶ 239–241).

With respect to the requirement that the sheath fluid include a citric acid, Petitioner contends that “sheath fluid can affect sperm viability when it dilutes the collection fluid containing the sperm.” *Id.* at 60 (citing Johnson).<sup>6</sup> Petitioner further contends that

the ordinary artisan would have found it logical to not only select a sheath fluid that had been shown to maintain the viability of the type of sperm being sorted but also to use a sheath fluid that would be compatible with the constituents of the extender media being used in the collection fluid.

*Id.* at 61. As support, Petitioner cites the testimony of Dr. Pace (Ex. 1003 ¶¶ 248–49) and the disclosure of Leary,<sup>7</sup> which states:

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<sup>6</sup> Sheath fluid propels a sample through the flow cytometer, but does not mix with the sample layer until the sheath and collection fluids combine in the collection unit. Ex. 1003, ¶ 243.

<sup>7</sup> Leary, *Methods in Cell Biology Volume 42: Flow Cytometry* (2d Ed. 1994) (Ex. 1021, “Leary”).

Since the sorted sample will be highly diluted in sheath fluid, make certain that the cells can tolerate the sheath fluid. While phosphate-buffered saline (PBS) (and many cells dislike PBS!) is commonly used for sheath fluid in cell sorters other fluids can be used provided that they provide proper ion charges for cell sorting and do not disturb the viscosity for fluidic requirements or refractive index for optical requirements.

Ex. 1021, 350.

Petitioner contends that “although PBS was used as a sheath fluid in the rabbit and swine examples in Johnson[], it would have been recognized as not being the optimal buffer media to use for bovine sperm.” Pet. 62. Petitioner argues that the ordinary artisan, seeking to apply Johnson’s sorting method to bovine sperm, would have found it obvious to “select a buffer to use in the extender and sheath fluids that includes a citric acid, as it was known that such buffers would maintain the viability of bovine sperm.” *Id.* According to Petitioner, the ordinary artisan would have understood that “buffered solutions based on citric acid showed equivalent or better results with respect their effects on bovine sperm than buffered solution based on phosphates.” *Id.* at 63 (citing Pace Decl., Garcia, and Salisbury). Therefore, Petitioner argues, the ordinary artisan “would have found it obvious to use a buffer solution including a citric acid as the sheath fluid when using the Johnson technique to sort bovine sperm, particularly when the extender used in the collection fluid also included a citric acid.” *Id.*

Patent Owner’s Preliminary Response focuses on whether it would have been obvious to include citric acid in the sheath fluid and in the collection fluid. Prelim. Resp. 14–28. Patent Owner does not challenge Petitioner’s contention that Johnson discloses the remaining elements of claim 11. *Id.* Based on the information presented at this stage of the proceeding, we conclude that Petitioner has shown sufficiently that there is a

reasonable likelihood that it will prevail in showing the unpatentability of independent claim 11 over the combined disclosures of Johnson, Salisbury, and Garcia. We focus our analysis on Patent Owner's arguments in its Preliminary Response as to the challenged claim.

Patent Owner argues that none of the references on which Petitioner relies discloses a sheath or collector fluid that includes citric acid. Prelim. Resp. 14–15. We find this argument unpersuasive because it is the combination of Johnson, Salisbury, and Garcia, not any single reference alone, that Petitioner asserts renders the claims obvious. “Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Patent Owner argues that the ordinary artisan would have lacked a reason or motivation to use a citric acid as a sheath fluid because “nothing in Johnson indicates a sheath fluid that includes a citric acid would be an improvement over the sheath fluid in Johnson.” Prelim. Resp. 16. According to Patent Owner, the ordinary artisan would have lacked motivation to replace Johnson's sheath fluid to accommodate bovine sperm because Johnson states “it is expected that the sperm of most mammals could be effectively sorted by following these procedures.” *Id.* at 17. Patent Owner also points to statements made by the author of the Johnson reference in other articles suggesting that a phosphate-buffered saline (PBS) buffer may be effective with cattle as evidence that there would be no reason or motivation replace Johnson's sheath fluid. *Id.* at 17–18.

At this point in the proceeding, the evidence of record tends to suggest that even though sheath fluid does not interact with cells in the flow

cytometer, it was known that sheath fluid can affect sperm viability when it combines with and dilutes the collection fluid in the collection unit.

Ex. 1003 ¶¶ 76–82, 243–45. The evidence also suggests that the skilled artisan would have selected a sheath fluid that was known to maintain the viability of the type of sperm being sorted. *Id.* ¶¶ 248–49; *see also*

Ex. 1021, 350 (“Since the sorted sample will be highly diluted in sheath fluid, make certain that the cells can tolerate the sheath fluid.”); Ex. 1005, 4:23–26 (“Of the factors involved in maintaining sperm viability, the method of staining, the sheath fluid, and the collecting fluid have been found to be especially important.”); Ex. 1029, 19 (inventor testimony that it was known to select a sheath fluid that would interact well with the sperm).

The current record also suggests that it was known that different buffer solutions can have different effects on different species of sperm. Ex. 1003 ¶¶ 106, 235; Ex. 1021, 350 (disclosing that although PBS is “commonly used [as] sheath fluid in cell sorters,” “many cells dislike PBS!”). The current record further suggests that it was well known to use citric acid in buffers used with bovine sperm. *See, e.g.*, Ex. 1006, 443 (“The yolk-citrate extender, with various modifications, has been the most widely used medium for artificial insemination of cattle.”); Ex. 1029, 10 (inventor testimony that a medium including sodium citrate was “very well-known” to “keep sperm cells . . . happy”). In addition, the current record suggests that the skilled artisan would have known citrate and citric acid-based extenders provide equivalent or better results than phosphate-based extenders when used with bovine sperm. Ex. 1003 ¶ 240; Ex. 1007, 1046 (“post[-]thaw sperm motility in solutions containing 35% isosmotic Na citrate (V/V) in the extender and dialysate was statistically superior to any other buffer solution

studied”); Ex. 1006, 443 (“[B]y replacing the phosphate with sodium citrate, equal fertility, higher spermatozoan motility during prolonged storage, and improved visibility resulted.”). Accordingly, on the record before us, Petitioner has shown sufficiently for institution purposes that the ordinary artisan would have had a reason to use a solution containing citric acid as a sheath fluid.

We recognize that Johnson discloses that “the sperm of most mammals could be effectively sorted by following [its] procedures.” Ex. 1005, 4:67–5:1. However, Johnson also states that the skilled artisan would recognize that “minor modifications may be made in the procedure.” *Id.* at 5:1–2. At this stage of the proceeding and on the current record, the evidence supports Petitioner’s position that “[s]electing different reagents commonly used in handling other species of sperm is exactly the type of ‘minor modification’ envisioned in Johnson.” Pet. 3.

We also recognize that other references, including two with the same author as Johnson, state that the procedures described therein, which include the use of phosphate-buffered saline (PBS) buffer, may be effective with cattle. Ex. 1009, 203; Ex. 1010, 314. In our view, these disclosures do not diminish the teachings in the art that citric acid-based buffers provide equivalent or better results when used with bovine sperm in contexts similar to flow cytometry. Accordingly, the evidence at this stage of the proceeding suggests that the ordinary artisan would have had a reason to use citric acid-based buffers when sorting bovine sperm notwithstanding the potential that PBS may also be effective with cattle.

Patent Owner argues that Petitioner fails to address whether the extenders disclosed in Salisbury and Garcia “would exhibit the electrical

properties Johnson explains are required for the sheath fluid in his sorting method.” Prelim. Resp. 17. We are not persuaded. Although we agree that such information would have been helpful to Petitioner’s case, Patent Owner does not identify, and we do not find, anything in the current record to suggest that the skilled artisan would have been concerned that citric acid-based buffers lack the electrical properties that Johnson describes. Moreover, Dr. Pace testifies that “[b]uffer solutions including a citric acid would have been considered by the ordinary artisan to be a known and predictable equivalent[ of] the PBS sheath fluid used in the examples in Johnson[], particularly when sorting bovine sperm” and that the skilled artisan would reasonably have expected to successfully sort bovine sperm using fluids containing citric acid. Ex. 1003 ¶¶ 255, 260–65.

Patent Owner argues that “[b]ecause the disclosures of Johnson and Garcia are vastly different, a skilled artisan seeking to sort sperm cells according to Johnson’s method would not have had a reason to use the extenders discussed in Garcia.” Prelim. Resp. 18. We are not persuaded because, as Dr. Pace explains, “[i]n both [Garcia and Johnson], a buffered solution not containing egg yolk dilutes a sample of sperm extended with a semen extender containing egg yolk.” Ex. 1003 ¶ 163. In this regard, we note that nothing in the record suggests that the differences between flow cytometry (as disclosed in Johnson) and dialysis (as disclosed in Garcia) would have caused the ordinary artisan to consider Garcia’s teachings regarding buffer solutions for bull semen inapplicable to flow cytometry. Accordingly, on the current record, the evidence tends to support the Petitioner’s position that Garcia’s experimental setting was “analogous to

that which occurs when sheath fluid dilutes the collection fluid in the collection container in the Johnson technique.” Pet. 59.

Patent Owner argues that Johnson discloses that “the egg yolk extender helps overcome the problem of dilution that occurs during sorting,” and thus “Johnson would not have provided any motivation for a skilled artisan to replace the collector fluid in Johnson.” Prelim. Resp. 20. Patent Owner contends that “[a]t the time of the invention, a skilled artisan would have known that egg yolk, rather than compatible sheath and collector fluids, protects cells from the effects of dilution by the sheath fluid.” *Id.* at 22. We are not persuaded.

Salisbury discloses three extender formulations comprising citric acid and egg yolk that were known to be effective in extending bovine sperm: the “standard” egg-yolk citrate formulation (Ex. 1006, 447–48); the Cornell University extender (“CUE”) (*id.* at 450–55); and the TRIS-egg-yolk-citric acid formulation (*id.* at 455–57). The evidence currently of record tends to suggest that the ordinary artisan would have been motivated to use an extender containing citric acid and egg yolk — like one of the three disclosed in Salisbury — in place of the PBS egg yolk solution disclosed in Johnson because Salisbury teaches that extenders containing sodium citrate have “equal fertility, higher spermatozoan motility during prolonged storage, and improved visibility” as compared to a previously used extender comprising “equal volumes of egg yolk and phosphate buffer.” *Id.* at 443. Using one of the egg yolk citrate extenders disclosed in Salisbury is consistent with Johnson’s teaching that egg yolk helps to overcome the dilution problem (Ex. 1005, 4:51–57) because Salisbury’s extenders include egg yolk.

Patent Owner argues that Johnson teaches away from the claimed method because Johnson does not use the same buffers for its sheath and collection fluids, and because Johnson knew about, but did not use, pre-sort buffers containing citric acid. Prelim. Resp. 27. We are not persuaded because Patent Owner does identify any specific teaching in Johnson that discourages the use of citric acid buffers or of the same buffer in the sheath and collection fluids. *See DyStar Textilfarben GmbH & Co. Deutschland Kg v. C.H. Patrick Co.*, 464 F.3d 1356, 1364 (Fed. Cir. 2006) (“[M]ere failure to discuss immediate use of his leuco indigo *solution* for dyeing is not the same thing as Brochet stating in his article that . . . his leuco indigo solution may only be concentrated in paste form. We will not read into a reference a teaching away from a process where no such language exists.”); *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (“The prior art’s mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed . . .”).

Patent Owner argues that unexpected results demonstrate the non-obviousness of the claimed method. Prelim. Repts. 29. We are not persuaded because, for the reasons discussed above, the evidence currently of record suggests that the skilled artisan would have expected citric acid to provide improved performance with respect to bovine sperm. Moreover, Patent Owner does not provide a comparison to the closest prior art and does not demonstrate unexpected results over the full scope of the claims, which encompass performing the method on any species of sperm and using as sheath and collector fluids any fluid containing a citric acid. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991) (“[W]hen

unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared with the closest prior art.”); *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (“Evidence of secondary considerations must be reasonably commensurate with the scope of the claims.”).

For the reasons discussed above, we determine that the information presented in the Petition establishes a reasonable likelihood that Petitioner will prevail in showing that claim 11 of the ’822 patent is unpatentable over the combination of Johnson, Salisbury, and Garcia. Accordingly, we institute an *inter partes* review of claim 11.

### III. CONCLUSION

For the foregoing reasons, we conclude that the information presented in the Petition establishes a reasonable likelihood that Petitioner will prevail in showing that claim 11 of the ’822 patent is unpatentable. Accordingly, we institute an *inter partes* review of claim 11 of the ’822 patent.

### IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted as to claim 11 of the ’822 patent under 35 U.S.C. § 103(a) as obvious over Johnson, Salisbury, and Garcia.

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

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Patent 9,365,822 B2

PETITIONER:

Jeffrey P. Kushan  
Paul J. Zegger  
jkushan@sidley.com  
pzegger@sidley.com

PATENT OWNER:

Kirt S. O'Neill  
Daniel L. Moffett  
George Andrew Rosbrook  
Dorian Ojmen  
Rehan Safiullah  
koneill@akingump.com  
dmoffett@akingump.com  
arosbrook@akingump.com  
dojemen@akingump.com  
rsafiullah@akingump.com