

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

STEMCELLS, INC., *et al.*,

Plaintiffs,

v.

NEURALSTEM, INC., *et al.*,

Defendants.

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Case No. 06-cv-1877-RWT

MEMORANDUM OPINION

Three scientists walk into a lab. They emerge with an important scientific discovery but, as is frequently the case, a contentious patent dispute later arises. After nearly a decade of litigation that has spanned two federal judges, and produced enough pages of memoranda to clear a forest, Plaintiffs still have not officially unlocked the doors to the courthouse. The discovery by Defendants of a terse, one-page document threw a monkey wrench into this high-stakes litigation, as it called into question whether Plaintiffs had standing to bring their patent infringement claims. The Court held a bench trial to determine the issue of standing, and as more fully explained below, concludes that Plaintiffs lack standing to bring their patent infringement claims. Accordingly, the Complaint will be dismissed.

Background¹

A. Drs. Tetzlaff, Weiss, Reynolds, and the Initial Discovery

In July of 1989, Dr. Wolfram Tetzlaff, a specialist in spinal cord injuries who is a Ph.D. and a licensed physician, was offered a position as a faculty member at the University of

¹ This portion of the Court's Opinion, supplemented in the discussion below, constitutes the findings of fact required by Fed. R. Civ. P. 52(a)(1).

Calgary, and began setting up his laboratory. ECF No. 476 at 41-43, Dec. 12, 2014 Tr. Trans. 41:8-43:4. Brent Reynolds, then a Ph.D. candidate, was hired to work in Dr. Tetzlaff's lab.² ECF No. 474 at 48-49, Dec. 9, 2014 Tr. Trans. 48:24-49:2.

Dr. Reynolds' work was supported by a studentship funded by the Pharmaceutical Manufacturer's Association of Canada and the Medical Research Council of Canada. ECF No. 478-11 at 4; ECF No. 476 at 55-56, Dec. 9, 2014 Tr. Trans. 55:19-56:7. Dr. Reynolds asserted that Dr. Tetzlaff initially paid his salary from the budget he received to start his lab. ECF No. 474 at 62, Dec. 9, 2014 Tr. Trans. 62:11-22. However, there is no evidence that Dr. Reynolds' salary was ever paid by Dr. Tetzlaff personally, and Dr. Reynolds admitted on cross-examination that he was unaware of the specific details of how his work was funded. *Id.* at 139-142, Dec. 9, 2014 Tr. Trans. 139:7-142:8.

Next door to Dr. Tetzlaff's lab was the lab of Dr. Samuel Weiss, another young professor who was working with tissue culture. ECF No. 476 at 43-44, Dec. 12, 2014 Tr. Trans. 43:25-44:24; ECF No. 474 at 51, Dec. 9, 2014 Tr. Trans. 51:16-19. Although Dr. Reynolds had been hired to work under Dr. Tetzlaff, he eventually began working in Dr. Weiss' lab; Dr. Reynolds had developed an increasingly severe animal allergy, and unlike Dr. Tetzlaff, Dr. Weiss did not work with live animals. ECF No. 474 at 51, Dec. 9, 2014 Tr. Trans. 51:1-25. However, because of the proximity of their labs, and due to the fact that they were essentially the only faculty in their wing of the building, the three scientists encountered each other frequently and collaborated on projects. ECF No. 476 at 44-45, Dec. 12, 2014 Tr. Trans. 44:8-45:5.

Dr. Reynolds came into possession of gangliocytes, a naturally occurring chemical compound in the body, that he obtained from a company in Italy. ECF No. 474 at 50,

² Although Dr. Reynolds did not have his Ph.D for a portion of the events described in this Opinion, for the sake of consistency he will be referred to as Dr. Reynolds throughout.

Dec. 9, 2014 Tr. Trans. 50:15-25. He decided to put the gangliocytes, along with an epidermal growth factor, into a tissue culture with neurons to see if the combination resulted in more neurons surviving. ECF No. 474 at 52, Dec. 9, 2014 Tr. Trans. 52: 2-10. The results were unexpected. Not only did the combination result in more neurons surviving, but also it resulted in the massive proliferation of neurons. ECF No. 474 at 53, Dec. 9, 2014 Tr. Trans. 53:8-10.

B. Collaboration and Agreement

All three scientists, including Dr. Tetzlaff, collaborated to confirm and refine the discovery. Dr. Tetzlaff provided key assistance in confirming that proliferation of cells was in fact taking place, in determining what type of cells were being proliferated, in designing and executing the first human experiments, and in demonstrating the potential utility of the technology in the human adult brain. ECF No. 474 at 126, Dec. 9, 2014 Tr. Trans. 126:1-127:8 (Dr. Reynolds testifying that Dr. Weiss assisted with identifying a method to confirm proliferation of cells); ECF No. 476 at 52, Dec. 12, 2014 Tr. Trans. 52:3-53:3; ECF No. 478-9 at 2, 5-7.

The collaboration of all three scientists is strongly corroborated by a number of contemporaneous documents. One is a grant application jointly submitted by Drs. Weiss and Tetzlaff in 1990 detailing the extent of their collaborative efforts with regard to the discovery (the “1990 Grant Application”). ECF No. 478-11. This grant application states that Dr. Tetzlaff will be a “co-ordinator of all phases of molecular biology experiments.” *Id.* at 32. The others

are various abstracts and articles on which all three scientists are credited with authorship.³ ECF No. 478-3; ECF No. 478-4; ECF No. 478-5.

The three scientists, recognizing the potential commercial value of the invention, agreed to divide ownership amongst themselves. ECF No. 476 at 57, Dec. 12, 2014 Tr. Trans. 57:15-58:8. Consistent with their understanding, Drs. Weiss, Tetzlaff and Reynolds signed a document on January 3, 1991 (the “1991 Memo”) that stated:

This letter is to indicate the allotment of interests to the *inventors* of the above invention.

45% - Dr. Samuel Weiss, Dept. of Pathology
45% - Mr. Brent Allan Reynolds, Dept. of Pathology
10% - Dr. Wolfram Tetzlaff, Dept. of Anatomy

The inventors are in agreement with this assignment which relates to 50% of any profits derived from this invention, the other 50% being assigned to the University of Calgary through their agent University Technologies International, Inc. per the current policy relating to Intellectual Property.⁴ (emphasis added)

ECF No. 478-8. This document, dated January 2, 1991, was addressed to Beverly A. Sheridan of University Technologies, Inc. (“UTI”). *Id.* UTI was the entity responsible for commercializing inventions made by faculty and staff at the University of Calgary. ECF No. 474 at 86-87, Dec. 9, 2014 Tr. Trans. 86:25-87:2.

On January 3, 1991, Drs. Weiss and Reynolds, but not Dr. Tetzlaff, signed an agreement (the “1991 Assignment”) purporting to assign their interest in the invention to UTI; the document represented that no other party had a claim to the invention. ECF No. 478-10. UTI ultimately failed to successfully commercialize the invention, and it was purportedly reassigned to

³ Dr. Reynolds indicates that these authorship credits were simply a “reward” to Dr. Tetzlaff for having paid Dr. Reynolds’ salary although Dr. Reynolds was working in Weiss’ lab. The Court does not find this testimony credible. Not only is there no evidence of Dr. Tetzlaff even paying Dr. Reynolds’ salary, but also there is ample evidence in the record showing that Dr. Tetzlaff contributed in very meaningful ways to the subject matter of all of the articles and abstracts where he is credited as an author.

⁴ Under the University of Calgary’s intellectual property policy, the University retained a 50% economic interest in the invention. There is no dispute that this related to an economic interest, not an ownership interest.

Drs. Weiss and Reynolds, who set about attempting to commercialize the invention themselves. ECF No. 474 at 108; Tr. Tran. 108:9-109:1.

C. The Patent Application

Drs. Weiss and Reynolds filed Patent Application 07/726,812 (the “812 Application”) on July 8, 1991. ECF No. 402-2 at 46-121. On February 2, 1994, the United States Patent and Trademark Office (“PTO”) rejected several claims in the ‘812 Application for failing to list Dr. Tetzlaff as an inventor, even though he was listed as an author on Abstract 474.2 in Volume 16 of the Society for Neuroscience Abstracts. ECF No. 299-4 at 12.

Faced with this rejection by the PTO, Jan Brunelle, the attorney prosecuting the ‘812 Application, contacted Dr. Tetzlaff and requested that he provide her with information regarding his contributions to the invention. ECF No. 478-9 at 2-3. Dr. Tetzlaff responded with a detailed letter outlining his contributions. *Id.* at 4-7. Based on his response, Ms. Brunelle concluded that Dr. Tetzlaff was not an inventor. *Id.* at 8-10. Drs. Weiss and Reynolds submitted declarations to the PTO minimizing Dr. Tetzlaff’s role and asserting that his involvement consisted primarily of giving financial support to Dr. Reynolds. The Court finds that these declarations significantly misrepresented the important role that Dr. Tetzlaff played in the conception and reduction to practice of the invention, and significantly understated his contribution to the invention in quality when measured against the dimension of the full invention. *General Electric Co. v. Wilkins*, 750 F.3d 1324, 1332 (Fed. Cir. 2014)

On August 31, 1994, Dr. Tetzlaff entered into a consulting agreement with NeuroSpheres Ltd., the company set up by Drs. Weiss and Reynolds to attempt to commercialize the invention. ECF No. 478-21. That agreement required Dr. Tetzlaff to disclose any interest he had in any intellectual property related to the subject of the agreement. *Id.* at 8. Dr. Tetzlaff did

not disclose any interest. *Id.* Dr. Tetzlaff stated that he did not do so because “I felt it was not necessary to list anything with them because they knew already what I did with them in the past.” ECF No. 476 at 71, Dec. 12, 2014 Tr. Trans. 71:15-17.

D. The Patents-in-Suit

The patents-in-suit are patent Nos. 5,851,832, 6,497,872, 6,294,346, 7,101,709, 7,115,418, and 7,361,505 (referred to as the ‘832, ‘872, ‘346, ‘709, ‘418, and ‘505 patents respectively), and they are all continuations-in-part of the ‘812 application. ECF No. 231, Ex. 13-18. Applications for the ‘832, ‘872, ‘346, and ‘505 patents were each filed on June 7, 1995 and named as inventors Samuel Weiss, Brent Reynolds, Joseph P. Hammang, and E. Edward Baetge, except for the ‘505 patent, which named only Samuel Weiss and Brent Reynolds as inventors. ECF No. 231, Ex. 13, 14, 15, 18. On November 6, 1995, the named inventors of the ‘832, ‘872, ‘346, and ‘505 patents purportedly assigned them to NeuroSpheres Ltd. ECF No. 231, Ex. 19, 20, 21, 24. Then, on December 15, 1995, NeuroSpheres Ltd. purportedly assigned these patents to NeuroSpheres Holdings Ltd. *Id.* The ‘709 and ‘418 patent applications were filed on July 19, 2002 and listed as inventors Samuel Weiss, Brent Reynolds, Joseph P. Hammang, and E. Edward Baetge. ECF No. 231, Ex. 16, 17.

On February 13, 2006, the named inventors purportedly assigned these patents to NeuroSpheres Ltd., and on February 14, 2006, it assigned the patents to NeuroSpheres Holdings Ltd. ECF No. 231, Ex. 22, 23. By February 14, 2006, NeuroSpheres Holdings purportedly held title to all of the patents-in-suit. When NeuroSpheres Holdings executed license agreements with StemCells, those agreements included patent rights to all continuations of the ‘812 application, which include the patents-in-suit. *See* ECF No. 232, Ex. 1 at 6, 30; Ex. 2 at 4.

Procedural History

A previous opinion in this case supplies in full the lengthy procedural history of this case. ECF No. 325 at 2-9. Accordingly, the Court will only relate here what is necessary for an understanding of the basis for this Opinion.

On February 28, 2011, approximately five years into this litigation, Defendant Neuralstem filed a motion to dismiss. ECF No. 202. The basis for that motion was Neuralstem's discovery in December 2010 of the 1991 Memo, which Neuralstem argued undercut Plaintiffs' standing. *Id.* at 7n.3. Neuralstem's discovery of this document sparked an explosion of motions and memoranda, including cross-motions for summary judgment, which culminated in an opinion by Judge Alexander Williams issued on April 6, 2012. ECF No. 325. In that opinion, Judge Williams reasoned that the document Neuralstem produced was ambiguous, and that the state of the record at that time did not allow the Court to come to a conclusion as to whether StemCells had standing. *Id.* at 21.

Discovery continued, and on December 19, 2013, Neuralstem filed a supplemental motion for summary judgment. ECF No. 396. The basis of this motion was the same as Neuralstem's original motion to dismiss, but with the benefit of an expanded record from additional discovery surrounding the 1991 Memo. A hearing was held before the undersigned, and Neuralstem's motion was denied. ECF No. 418. The Court reasoned that, giving all reasonable inferences to StemCells, it could not conclude that Neuralstem had established a lack of standing as a matter of law based only on the 1991 Memo. ECF No. 428 at 75. To resolve the factual disputes surrounding standing, the Court conducted a bench trial on December 9, 11, and 12, 2014. ECF Nos. 461, 466, 467. The parties filed post-trial memoranda on January 16, 2015. ECF Nos. 478, 479.

Analysis

I. Legal Principles

A. Standing

The Constitution limits the jurisdiction of federal courts to “cases” or “controversies.” U.S. Const. art. III, § 2, cl. 1. This Constitutional requirement underpins the doctrine of standing, i.e. “[a] party’s right to make a legal claim or seek judicial enforcement of a duty or right.” Black’s Law Dictionary (10th ed. 2014). Simply put, a plaintiff has standing to bring a claim in federal court if the plaintiff has a sufficient stake in the outcome of the case to satisfy the Constitutional “cases” or “controversies” requirement. To demonstrate standing, a plaintiff must show that there is (1) an “injury in fact” -- “an invasion of a legally protected interest which is (a) concrete and particularized, and (b) actual or imminent, not conjectural or hypothetical,” (2) “a causal connection between the injury and the conduct complained of—the injury has to be fairly ... trace[able] to the challenged action of the defendant, and not ... th[e] result [of] the independent action of some third party not before the court,” and (3) “it must be ‘likely,’ as opposed to merely ‘speculative,’ that the injury will be redressed by a favorable decision.” *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560, 1 (1992) (internal citations and quotations omitted).

In a patent infringement suit, “[s]tanding to sue for infringement stems from the Patent Act, which provides: ‘[a] patentee shall have remedy by civil action for infringement of his patent.’” *Israel Bio-Eng’g Project v. Amgen, Inc.*, 475 F.3d 1256, 1264 (Fed. Cir. 2007) (quoting 35 U.S.C. § 281). “The word ‘patentee’ includes not only the patentee to whom the patent was issued but also the successors in title to the patentee.” 35 U.S.C. § 100(d). *Sicom Sys., Ltd. v. Agilent Technologies, Inc.*, 427 F.3d 971, 976 (Fed. Cir. 2005). “[O]nly a patent owner or an

exclusive licensee⁵ can have constitutional standing to bring an infringement suit; a non-exclusive licensee does not.” *Spine Solutions, Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1317 (Fed. Cir. 2010) (quoting *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1367 (Fed. Cir. 2008)); ECF No. 325 at 16 (quoting *Mars*). Stated differently, “[t]o bring an action for patent infringement, a party must be either the patentee, a successor in title to the patentee, or an exclusive licensee of the patent at issue.” *Fieldturf, Inc. v. Sw. Recreational Indus., Inc.*, 357 F.3d 1266, 1268 (Fed. Cir. 2004). In essence, a plaintiff must have sufficient exclusionary rights in order to suffer a Constitutional injury in fact when infringement occurs. *See Morrow v. Microsoft Corp.*, 499 F.3d 1332, 1339-40 (Fed. Cir. 2007).

If there are multiple owners of a patent, “all co-owners must ordinarily consent to join as plaintiffs in an infringement suit,” as “one co-owner has the right to impede the other co-owner’s ability to sue infringers by refusing to voluntarily join in such a suit.” *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1468 (Fed. Cir. 1998); *see Israel Bio-Eng’g Project v. Amgen, Inc.*, 475 F.3d 1256, 1265 (Fed. Cir. 2007). Co-owners of a patent have the right to “exploit [a] patent without a duty to account to other co-owners,” and they are able to “freely license others to exploit the patent without the consent of other co-owners.” *Ethicon*, 135 F.3d at 1468.

Dr. Tetzlaff never assigned his interest to StemCells, to any predecessor in title to StemCells, or to any other named Plaintiff. Thus, if Dr. Tetzlaff has a valid ownership interest, StemCells would not have an exclusive license, and would not have standing to pursue a patent infringement lawsuit against Neuralstem or any other Defendant.⁶ All parties agree that if

⁵ “However, these exclusionary rights ‘must be enforced through or in the name of the owner of the patent,’ and the patentee who transferred these exclusionary interests is usually joined to satisfy prudential standing concerns.” *Morrow v. Microsoft Corp.*, 499 F.3d 1332, 1340 (Fed. Cir. 2007) (internal citations omitted). Neither party raises the issue that StemCells has not joined as named Plaintiffs the patentee(s) who transferred their exclusionary interests in the patents at issue in this case to StemCells, so this opinion will not address that issue.

⁶ Dr. Tetzlaff has assigned any ownership interest he had to Neuralstem.

Dr. Tetzlaff does not have an ownership interest in the patent, StemCells has standing to pursue this lawsuit. Dr. Tetzlaff could have acquired an ownership interest in one of two ways: either he was vested with an original ownership interest as a co-inventor of the patents-in-suit, or he could have acquired an ownership interest by agreement with Drs. Weiss and Reynolds.

B. Inventorship and Ownership

Ownership of a patent originally vests in the inventor. *Patent Law and Practice*, 7th ed. at 46 (“[a]s a general rule, ownership of a patent vests initially in the inventor(s), i.e., the person(s) in whose name the patent application is filed.”).⁷ The Federal Circuit has explained that “inventorship is a question of who actually invented the subject matter claimed in a patent,” while “[o]wnership, however, is a question of who owns legal title to the subject matter claimed in a patent, patents having the attributes of personal property.” *Beech Aircraft Corp. v. EDO Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993). Nevertheless, “[a]t the heart of any ownership analysis lies the question of who first invented the subject matter at issue, because the patent right initially vests in the inventor who may then, barring any restrictions to the contrary, transfer that right to another, and so forth.” *Beech Aircraft Corp. v. EDO Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993); *see also Bd. of Trustees of Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2195 (2011) (“Our precedents confirm the general rule that rights in an invention belong to the inventor.”). “Thus, although others may acquire an interest in an invention, any such interest—as a general rule—must trace back to the inventor.” *Bd. of Trustees of Leland Stanford Junior Univ. v. Roche Molecular Sys., Inc.*, 131 S. Ct. 2188, 2195 (2011).

⁷ This book also notes that “[t]here are statutory exceptions to the rule of ownership by the inventor, e.g., for inventions relating to nuclear power, 42 U.S.C. § 2182, for inventions made pursuant to contracts with the National Aeronautics and Space Administration, 51 U.S.C. § 20135(b)(1), and for certain inventions made under contracts with the Department of Energy, 42 U.S.C. § 5909.” *Patent Law and Practice* at 46 n. 2. None of these exceptions applies here.

In the United States, a presumption exists that the inventors named on a patent are the true and only inventors of the invention contained in the patent. Under federal law, issued patents are presumed to be valid, *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2243 (2011), and “the named inventors are [presumed to be] the true and only inventors.” *Gen. Elec. Co. v. Wilkins*, 750 F.3d 1324, 1329 (Fed. Cir. 2014). However, inventorship may be corrected, 35 U.S.C. § 256, but a person seeking correction must overcome the presumption that the named inventors are the correct inventors by clear and convincing evidence. *Wilkins*, 750 F.3d at 1329.

II. Witness Testimony

In a case such as this, where one document evidencing the agreement between the parties is ambiguous, witness testimony becomes crucial, and the credibility of witnesses is of paramount consideration to the finder of fact. Here, the Court, sitting as fact finder, had the opportunity to observe the testimony of all four individuals with any connection to the 1991 Memo. Drs. Reynolds and Tetzlaff testified in person. Dr. Weiss and Beverly Sheridan, (the person to whom the 1991 Memo was addressed), “testified” via excerpts of videotaped depositions. In particular, it is critical to determine the credibility of Drs. Weiss, Reynolds, and Tetzlaff, parties to the agreement evidenced by the 1991 Memo, because each offered sharply differing accounts of the nature of their agreement.

While it would be naïve to say Dr. Tetzlaff has *no* interest whatsoever in the outcome of this case,⁸ only Drs. Weiss and Reynolds have a concrete pecuniary interest in the *outcome*. Drs. Weiss and Reynolds signed an agreement to assist in this litigation. In return for their

⁸ Cf. ECF No. 476 at 72, Dec. 12, 2014 Tr. Trans. 72:4-6 (“for me this is a really big opportunity to set the record straight and to finally get acknowledged for my initial contributions in this inventions [sic]”).

assistance they are entitled to receive 2% of any award StemCells receives in excess of \$200,000.⁹ ECF No. 478-19.

Unlike Drs. Weiss and Reynolds, Dr. Tetzlaff has no pecuniary interest in the *outcome* of this case. Whatever rights he may have had in the patents-in-suit he has already assigned in exchange for a single lump sum payment. ECF No. 397-28. There is no evidence that Dr. Tetzlaff could benefit financially from the *outcome* of this case. By contrast, Drs. Weiss and Reynolds are essentially entitled to a royalty interest in any proceeds from an award in this case. Because Drs. Weiss and Reynolds have a direct pecuniary interest in the outcome of this case, the Court will view their testimony with due caution.¹⁰

A. Beverly Sheridan

During the timeframe in question, Beverly Sheridan was the manager of medical technologies at UTI. ECF No. 472-2 at 3. She was responsible for evaluating projects that were disclosed by the faculty of the University of Calgary and determining whether they had commercial potential. *Id.* In this role she came across the work of Drs. Weiss, Reynolds, and Tetzlaff. *Id.* at 5-8. The 1991 Memo signed by the three scientists was addressed to Sheridan. ECF No. 47-8.

It is apparent from Sheridan's testimony that she recalled very little about the relevant events. She repeatedly emphasized that the events in question occurred decades ago and that her memory of what actually occurred is hazy. *E.g.* ECF No. 472-2 at 9 ("I can give you generalities, but, I'm sorry, my memory is not that good."). Moreover, even if Sheridan's memory were perfect, she was not present when the 1991 Memo was signed or at any

⁹ A finding by the Court that Dr. Tetzlaff had an ownership interest in the patents-in-suit could also potentially be a breach of any assignment or licensing agreement that Drs. Weiss and Reynolds may have executed.

¹⁰ StemCells asserts that Beverly Sheridan is the "only disinterested witness in this matter." The Court does not agree. Sheridan was a director of NeuroSpheres, which once purportedly owned the contested patents. However, for other reasons detailed below, the Court did not find her testimony particularly reliable or helpful.

discussions among the scientists that preceded it. Her testimony indicates that the practice of UTI was to tell the involved parties “You tell us the contribution that these particular people have made...[and] you tell us how each of the people involved in this particular file will be financially compensated.” *Id.* at 12. Sheridan’s knowledge extended only to how UTI was directed to allocate revenues, not to any agreement the scientists made among themselves with respect to their respective ownership interests in the invention. However, it is the latter issue that is the crucial issue in this litigation. Because Sheridan had no personal knowledge on that issue, her testimony made no meaningful contribution to the resolution of the standing question.

B. Dr. Samuel Weiss’ Testimony

Similar to Beverly Sheridan, Dr. Weiss indicated that he was unable to recall much detail surrounding the signing of the 1991 Memo. When asked if he recalled the circumstances surrounding the signing of that document, Dr. Weiss answered “I don’t.” ECF No. 473-2 at 10. When asked whether he recollected what the intent of the document was, Dr. Weiss indicated that he “[v]aguely” recalled that Dr. Tetzlaff was given a share because Dr. Tetzlaff was paying Dr. Reynolds’ salary, even though Dr. Reynolds was working in Dr. Weiss’ lab. *Id.* What the nature of that share was, and whether it was merely an economic interest or an ownership interest, Dr. Weiss did not say.

C. Dr. Brent Reynolds’ Testimony

Dr. Reynolds provided much more specific testimony surrounding the 1991 Memo and how he believes it should be interpreted. This testimony, however, was self-serving to the point of contradicting common sense. For example, when asked who the term “inventors” in the 1991 Memo referred to, Dr. Reynolds insisted it referred only to Dr. Weiss and himself, and not to Dr. Tetzlaff. ECF No. 474 at 97, Dec. 9, 2014 Tr. Trans. 97:4-15. Although the 1991 Memo is

in many ways ambiguous, on this point it is not. The first sentence reads “This letter is to indicate the allotment of interests to the *inventors* of the above invention.” ECF No. 8 (emphasis added). Immediately below are the names of Drs. Weiss, Reynolds, and Tetzlaff, with a percentage next to each. *Id.* The only possible reading of this is that the term “inventors” refers directly to all three named individuals who are allotted their respective interests. Dr. Reynolds’ attempt to portray the term “inventors” otherwise is, frankly, a disingenuous attempt to minimize the import of the language of the document; Dr. Reynolds may have felt, subjectively, that the document should not have referred to Dr. Tetzlaff as an inventor, but to claim that the document, objectively, can possibly be read in that way undermines the credibility of his testimony.¹¹

Moreover, Dr. Reynolds’ testimony is a plain attempt to minimize the significant contributions Dr. Tetzlaff made to the invention. Dr. Reynolds essentially testified that Dr. Tetzlaff was allotted an interest only because he had been paying Dr. Reynolds’ salary from his funding, although Dr. Reynolds worked in Dr. Weiss’ lab. ECF No. 474 at 97 Dec. 9, 2014 Tr. Trans. 97:24-25. (“Well, it was a reward for the investment he had made in my salary.”). As noted above, however, there is no evidence that Dr. Tetzlaff ever paid Dr. Reynolds’ salary, and Dr. Reynolds’ lack of clarity on this point further undermines his credibility. The Court determines, based on the record, that Dr. Tetzlaff’s contribution was much more substantial than a financial contribution (of which there is no evidence) and cannot be so easily trivialized. He critiqued results; he suggested techniques for analyzing results; he lent his unique expertise as a medical doctor to adapt the technology to more practical uses, such as use in adult humans. ECF No. 478-9. No one has suggested that Dr. Tetzlaff’s recounting of his contributions in his

¹¹ Indeed, it was unnecessary for Dr. Reynolds to testify in this way. As the Court made clear at the summary judgment hearing, the fact that the word “inventors” appears on this document does not conclusively demonstrate that any or all of the scientists were legally inventors under patent law. There is no indication that the document was prepared with the nuances of U.S. patent law on anyone’s mind. Even if it was, none of the parties to the agreement has ever been in any position to opine on legal inventorship.

correspondence with Jan Brunelle was inaccurate. Further, the 1990 grant application that Drs. Tetzlaff and Weiss prepared strongly supports Dr. Tetzlaff's contention that he devoted material effort, and not just financial support, to the invention. ECF No. 478-11.

D. Dr. Tetzlaff's Testimony

Dr. Tetzlaff's testimony, unsurprisingly, differs sharply from that of Drs. Weiss and Reynolds. Regarding the 1990 Grant Application, Dr. Tetzlaff testified that he and Dr. Weiss, were "together conceiving the ideas and responsible for the execution and reporting on the grant." ECF No. 476 at 49, Dec. 12, 2014 Tr. Trans. 49:2-3. Moreover, Dr. Tetzlaff testified that he was "involved" in preliminary studies regarding the subject matter "interpreting, designing and discussing the next steps." *Id.* at 50, 50:11-12. This testimony is supported by his somewhat more contemporary recollection evidenced by his correspondence with Jan Brunelle. ECF No. 478-9 at 6 ("I had essential input in the design and execution of the first human experiment carried out in Calgary in early 1992."). It is also supported by the description in the 1990 Grant Application of Dr. Tetzlaff as a "co-ordinator of all phases of cell biology experiments." ECF No. 478-11 at 8.¹²

More specifically, Dr. Tetzlaff testified that his contributions to the development of the invention were twofold: first, Dr. Tetzlaff did the work necessary to confirm that the discovered

¹² The 1990 Grant Application also stated, with regard to the potential applicability of the discovery to humans:

Another long term objective is to extend our findings to human embryonic brain cells. At present, human embryonic brain grafts are being used as a therapeutic approach for the treatment of progressive neurodegenerative disease. However, there is nothing known about what controls the differentiation or survival of human embryonic nerve cells. We suggest that the findings of growth factors actions on embryonic mouse nerve cells, if extended to human embryonic nerve cells, may be useful in two ways. First, by virtue of their selective ability to induce nerve cell proliferation, techniques may be developed for the selective proliferation and differentiation of a specific cell type, e.g. nigral dopaminergic neurons for Parkinson's Disease, striatal GABA/M-enk/calbindin-D_{28k} neurons for HD. This would reduce the need to obtain continuous supplies of fetal material. In addition, the administration of growth factors together with embryonic cells, in grafts into human subjects, may enhance their long term survival.

ECF No. 457 at 17.

proliferation of neurons would work in animals, i.e. *in vivo*, as opposed to *in vitro*, i.e. in a petri dish; second, he performed the immunocytochemistry to confirm the types of cells that were proliferating. ECF No. 476 at 50-52, 50:14-52:2. Dr. Tetzlaff believed his *in vivo* contribution was essential to getting the discovery to the clinical stage, a stage necessary for the discovery to evolve into a patentable process. *Id.* at 51, 51:15-23. His immunocytochemistry contribution was also essential to determining precisely what types of cells were proliferating. *Id.* at 52-53, 52:8-53:3. Dr. Tetzlaff further testified that he agreed with Drs. Weiss and Reynolds as to a division of actual ownership interests in the invention, later reflected in the 1991 Memo, and that his ownership stake reflected a fair share representing the time and input he contributed, and not to repay him for anything. *Id.* at 58-60, 58:25-60:6.

III. Dr. Tetzlaff's Ownership Interest

The Court now turns to applying the facts as determined from the voluminous exhibits and credible witness testimony to the legal principles that will determine the outcome of this case.

A. Principles of Canadian Contract Law

Under Canadian contract law, contracts are to be “enforced in accordance with the intention of the parties, which is to be gleaned from the words used in their agreements.” *Nexstep Resources Ltd. v. Talisman Energy Inc.*, [2013] A.J. No. 57; 2013 ABCA 40; 2013 A.B.C. Lexis 56 (Feb. 1, 2013) at *15. This is an objective intention, *see id.*, which the Court may ascertain from considering, in connection with the text, the circumstances surrounding a contract, also known as the “factual matrix.” The “factual matrix,” or the contextual circumstances surrounding the formation of a contract, which the court may consider when interpreting the text of a contract, includes “the relevant background against which the contract was included.” *Orbus*

Pharma, [2008] A.J. No. 1430; 2008 ABQB 54, para. 28. This “extends to the genesis of the agreement, its purpose, and the commercial context in which the agreement was made.” [2013] A.J. No. 57; 2013 ABCA 40; 2013 A.B.C. Lexis 56 (Feb. 1, 2013) at *21 (quoting *Dumbrell v. Regional Group of Companies, Inc.*, 2007 ONCA 59, 279 DLR (4th) 201). Geoff Hall, in *Canadian Contractual Interpretation Law* (hereinafter “*Hall*”), notes that “[t]he scope of what may be considered within the rubric ‘factual matrix’ is quite broad,” and that it “always involves a highly contextual analysis, and can amount to a very detailed examination of the facts depending on the particular circumstances of the case.” *Hall* at 25.

If a contract is ambiguous, courts may look to extrinsic evidence to give meaning to the contract, but not to contradict the writing in question. *1337523 Ontario, Inc. v. Golden State Bancorp, Inc.*, 163 F. Supp. 2d 1111, 1116 (N.D. Cal. 2001). Hall has noted that there are a number of exceptions to the parol evidence rule, including if there remains ambiguity in the contract, which Hall explains to often mean whether, after an objective evaluation, “there are two or more reasonable interpretations.” *Hall* at 59. The rule might also not apply when “the written document is not the complete agreement or where there is a collateral oral agreement,” or when surrounding circumstances indicate that a latent ambiguity may exist. *Hall* at 59-64. Extrinsic evidence may also be considered if “the written document is not the complete agreement or where there is a collateral agreement.” *Hall* at 59-64.

B. The 1991 Memo is not the Entire Agreement

The parties in this case appear to give the 1991 Memo itself much more weight than it is due. While this document evidences an agreement between Drs. Weiss, Reynolds, and Tetzlaff, it does not purport to be *the agreement*. It is addressed to Beverly Sheridan at UTI, rather than one or more of the parties to the agreement. ECF No. 478-10. By its terms, it is a letter intended

to “*indicate* the allotment of interests to the inventors of the above invention.” *Id.* Moreover, it states that “[t]he inventors *are* in agreement with this assignment,” without any other language indicating it is, itself, the legally operative agreement. *Id.* (emphasis added). Based on the language of the document, the Court concludes that Drs. Weiss, Reynolds, and Tetzlaff had reached an agreement as to the allocation of ownership interests prior to signing the 1991 Memo, and the 1991 Memo merely conveys the relevant terms of that existing agreement to UTI.

These points are important because they meet several arguments put forth by StemCells in an effort to construe the 1991 Memo in its favor. First, StemCells argues that, at most, the 1991 Memo confers an economic interest in Dr. Tetzlaff, but that this interest did no more than entitle Dr. Tetzlaff to royalty payments. ECF No. 479 at 25. Not surprisingly, Neuralstem counters by pointing out that Dr. Tetzlaff has never received any royalty payments. ECF No. 479 at 29. StemCells answers that the failure to receive royalty payments is explained either because (i) any agreement to pay royalties pursuant to the 1991 Memo was extinguished when the rights to the invention were reassigned from UTI or (ii) that any failure to pay royalties does not undermine the purely economic nature of the 1991 Memo, but simply indicates a breach on the part of UTI or the University, who were obligated to make royalty payments.¹³ ECF No. 479 at 27-28.

As to StemCells’ argument that the 1991 Memo was extinguished, it would certainly appear to be the case that *once UTI no longer had any rights* in the invention, it would no longer have any responsibility to allocate profits it would never see. In that sense, the 1991 Memo can be said to have been “extinguished” as to UTI. Again, however, the 1991 Memo *evidences* an

¹³ StemCells also argues that the failure to pay Dr. Tetzlaff any royalties could be explained by a breach by Drs. Reynolds or Weiss. While true, this fact adds little to the analysis. Drs. Reynolds and Weiss could just as easily have breached an agreement regarding allocation of ownership interests as they could have an agreement regarding allocation of economic interests.

agreement between the three scientists and directs UTI to allocate profits in accordance with that agreement, but it is not *the* agreement. To conclude that the 1991 Memo is no longer operative as to UTI is not the same as saying the agreement between the three scientists reflected in the 1991 Memo is no longer operative.

As to the argument that the failure to pay royalties was simply a breach, any failure to pay royalties could not have been a breach by UTI or the University of Calgary, because there is no evidence either was legally bound by the 1991 Memo. The memo is signed only by Drs. Weiss, Reynolds, and Tetzlaff. No other party agreed to be bound by its terms.

Moreover, to the extent the 1991 Memo has language regarding profit-sharing and economic interests, such as “which relates to 50% of the profits...,” this is, again, explained by the fact that the 1991 Memo is addressed to UTI. UTI’s function was to commercialize the invention, a role which would necessarily have involved passing along any profits along to the parties entitled to them. It stands to reason that a memorandum addressed by the three scientists to UTI would relate primarily to an allocation of economic interests, but it does not necessarily follow that the actual agreement between the three scientists related solely to economic interests. Dr. Tetzlaff gave credible testimony that the three scientists had agreed on their respective ownership interests in any invention, and that the 1991 Memo reflected the allocations agreed upon by them. ECF No. 476 at 58-59, Dec. 12, 2014 Tr. Trans. 58:25-59:3.

None of this is to minimize the importance of the 1991 Memo. It is the only contemporaneous document that evidences the agreement among the three scientists. Although it may not reflect the entire agreement among them, its language certainly provides important clues as to what the entire agreement was.

C. The Language of the 1991 Memo is Ambiguous

Both sides attempt to parse the language of the 1991 Memo to support an interpretation favorable to their position. Ultimately, however, this short document is rife with ambiguities, such that resort to extrinsic evidence regarding its meaning is unavoidable. For example, Neuralstem places tremendous weight on the use of the word “inventors” twice in the document. That the 1991 Memo uses the word inventor is certainly of some import, inasmuch as it provides insight into how the parties to the 1991 Memo viewed themselves, and sheds important light on what they believed were their respective contributions to the invention. However, standing alone, the use of this word does not definitively indicate the three were allotting ownership interests, any more than it indicates the three scientists intended to conclusively establish themselves as “inventors” as that term is understood under United States patent law.

StemCells for its part argues that the language that “this assignment which relates to 50% of any profits derived from this invention” clearly shows that the scientists only made an agreement with regard to economic interests. However, as explained above, this argument loses much of its force when one recognizes that the 1991 Memo is only directed to the entity whose primary responsibility was to realize and allocate profits from the invention. Because of the ambiguity of the 1991 Memo, the Court must review extrinsic evidence to determine what was the agreement between the parties.

D. Drs. Weiss, Reynolds, and Tetzlaff Agreed to a Division of Ownership Interests

As noted above, not only is the 1991 Memo ambiguous, but also it is simply not the agreement between Drs. Weiss, Reynolds, and Tetzlaff. Rather, it is powerful evidence of an oral agreement between Drs. Weiss, Reynolds and Tetzlaff. As explained above, the 1991 Memo, addressed to a third party, does not purport to be the entire agreement, but merely directs

UTI how to divide profits among the three. Thus, the Court must engage in an inquiry as to the “factual matrix” surrounding the signing of the 1991 Memo, and may also resort to available extrinsic evidence, to determine whether Dr. Tetzlaff obtained an ownership interest in the patent, or merely an economic interest. Critical to this inquiry is the credibility of the only three witnesses who have personal knowledge as to what their agreement was, an assessment the Court made above. The testimony of Drs. Weiss and Reynolds is unreliable for a variety of reasons, not the least of which is their pecuniary interest in the outcome of this case and, in Dr. Weiss’ case, his lack of memory regarding the events at issue.

Further, Dr. Tetzlaff’s testimony is substantively in accord with the contemporary record of his contributions, whereas Drs. Weiss and Reynolds’ testimony was inconsistent with the record. Specifically, Drs. Weiss and Reynolds consistently downplayed Dr. Tetzlaff’s contributions. To hear them tell it, Dr. Tetzlaff’s primary contribution was that he happened to be next door to Dr. Weiss’ laboratory, and his assistant, Dr. Reynolds, was working with Dr. Weiss. In reality, Dr. Tetzlaff contributed much more than the Plaintiffs and Drs. Reynolds and Weiss wish to acknowledge. While there is no evidence that Dr. Tetzlaff contributed to Dr. Reynolds’ salary, there is ample evidence that he contributed ideas and expertise necessary to reduce the discovery to practice. His contributions to *in vivo* experiments, to human experiments, and his immunocytochemistry work, were critical in demonstrating the efficacy of the discovery and its practical application. They were significant enough to have made it very plausible that Drs. Weiss and Reynolds would agree that Dr. Tetzlaff should have an ownership interest in the invention.

Accordingly, taking into account the language of the 1991 Memo, the circumstances surrounding its signing, including Dr. Tetzlaff’s substantial contributions to the invention, and

the due weight to be given to the testimony of the only three witnesses to have personal knowledge of the agreement, the Court agrees with Neuralstem's position that Drs. Weiss, Reynolds, and Tetzlaff entered into an agreement to allocate ownership interests in the invention, not just economic interests.

E. The Agreement Does not Fail for Lack of Consideration

Determining that the three scientists reached an agreement to allocate ownership interests does not end the inquiry. Under Canadian contract law, an agreement must be supported by consideration for it to be legally enforceable. *See, e.g., Urban Communications Inc. v. BCNET Networking Society*, [2014] B.C.J. No. 1171; 2014 BCSC 1045; 2014 BC.C. Lexis 1255, at para. 23; 642718 *Alberta Ltd (c.o.b. CNE Centre) v. Alberta (Minister of Public Works, Supply and Services)*, [2004] A.J. No. 870; 2004 ABQB 539; 2004 AB.C. Lexis 872, at para. 45 (Alberta Court of Queen's Bench Judicial District of Edmonton). As StemCells points out, an agreement fails for lack of consideration if it is merely a promise to pay for past services rendered out of friendship, without any request for payment at the time of performance. *Kokonis v. Shaw Pipe Indus. Ltd.* (1982), 41 A.R. 140 (Q.B.), para. 43-44 (promise to compensate for the performance of past gratuitous services fails to form a binding contract). However, this is not an accurate characterization of the agreement between the three scientists.

The evidence shows that, not only did Dr. Tetzlaff collaborate with Drs. Weiss and Reynolds before the agreement evidenced by the 1991 Memo, but also he continued to collaborate afterwards. ECF No. 474 at 137, Dec. 9, 2014 Tr. Trans. 137:3-7. Moreover, in the 1990 Grant Application, Dr. Tetzlaff had committed to spending 10% of his time on the project. ECF No. 478-11. Given this evidence, StemCells' contention that Dr. Tetzlaff's contributions to the invention were given without any expectation of remuneration, and that the 1991 Memo was

entered into without any expectation that he would continue to assist the efforts of Drs. Weiss and Reynolds does not withstand scrutiny. The agreement does not fail for lack of consideration.

F. An Ownership Interest Can be Assigned Before a Patent Issued

StemCells argues that, even if Drs. Tetzlaff, Weiss, and Reynolds did enter a binding contract regarding an allocation of ownership interest, they could not have accomplished that because “they could not as a matter of law allocate what they did not already own.” ECF No. 479 at 6. This argument misses the mark. The rule is that “the act of invention *itself* vests an inventor” with ownership of the invention. *Arachnid, Inc. v. Merit Indust., Inc.*, 939 F.2d 1574, 1578 (Fed. Cir. 1991). By all accounts, by the time of the 1991 Memo, the invention had already come into existence.¹⁴ Thus, at the moment of invention, the inventors had an ownership interest which they could freely convey.¹⁵ *See Filmtec Corp. v. Allied-Signal Inc.*, 939 F.2d 1568, 1572 (Fed. Cir. 1991). Any such conveyance passes legal title to the assignee, who then gains “legal title to the ensuing patent...upon grant of the patent.” *Id.*

Put together, this analysis leads to the conclusion that, at the time the patents-in-suit were issued, Dr. Tetzlaff had an ownership interest in them. He made significant contributions to the work necessary to bring the invention to market. In 1990, he committed to spending ten percent of his time on the work surrounding the invention. Drs. Weiss and Reynolds agreed with Dr. Tetzlaff regarding ownership interests in the invention, with all agreeing that Dr. Tetzlaff would be given a ten percent interest. This agreement constitutes a binding contract, as the Court

¹⁴ Even if the invention had not been made, it is possible to assign a future interest in an invention. This creates in the assignee an equitable title in the invention. *Filmtec Corp. v. Allied-Signal Inc.*, 939 F.2d 1568, 1572 (Fed. Cir. 1991) (“If an assignment of rights in an invention is made prior to the existence of the invention, this may be viewed as an assignment of an expectant interest. An assignment of an expectant interest can be a valid assignment.”)

¹⁵ For purposes of this analysis, the Court will assume that Dr. Tetzlaff was not a co-inventor, but was assigned an interest by Drs. Reynolds and Weiss. If he were a co-inventor, the 1991 Memo would operate to allocate ownership interests, not assign them. In that case, the Court would not need to analyze the 1991 Memo, because ownership would have vested in Dr. Tetzlaff at the time of the invention.

finds consideration both in Dr. Tetzlaff's past performance, which was not *gratis*, and in the understanding that he would continue working on the invention. Finally, Drs. Weiss and Reynolds could, and did, validly convey to Dr. Tetzlaff an ownership interest in the invention, which then vested in him an ownership interest in the patents that flowed from the invention once they were issued.

G. Drs. Weiss and Reynolds Assigned an Ownership Interest to Dr. Tetzlaff Before Granting the 1991 Assignment to UTI

Another point that must be addressed is the 1991 Assignment, signed the same day as the 1991 Memo, which purported to assign all of Drs. Weiss and Reynolds' interest in the invention to UTI. ECF No. 478-10.¹⁶ Assuming the 1991 Assignment operated to grant to UTI the entirety of the ownership interest held by Drs. Weiss and Reynolds, timing becomes critical.¹⁷ If the 1991 Assignment was signed before the ownership allocation agreement among the scientists reflected in the 1991 Memo then (unless Dr. Tetzlaff was an inventor) Drs. Weiss and Reynolds had nothing left to give or allocate to Dr. Tetzlaff. However, if Drs. Weiss and Reynolds agreed to convey or allocate an ownership interest to Dr. Tetzlaff before signing the 1991 Assignment, they could only have given UTI their *remaining* interests, not Dr. Tetzlaff's interest, and would merely have breached any representation that the invention was unencumbered by any other claim.

At first glance, this issue of timing seems hopelessly unresolvable. The 1991 Memo and the 1991 Assignment were each dated January 2, 1991, and each signed January 3, 1991.

¹⁶ StemCells regards the 1991 Assignment as proof that Drs. Weiss and Reynolds did not intend to convey any ownership interest to Dr. Tetzlaff. ECF No. 479 at 25-26. Although perhaps probative on this point, it became clear at trial that the three scientists did not understand particularly well the documents they were signing. Thus, the Court does not find the fact that Drs. Weiss and Reynolds signed the 1991 Assignment as particularly illuminating as to their intent with regard to their agreement with Dr. Tetzlaff.

¹⁷ However, there is evidence by way of Dr. Reynolds' testimony that the 1991 Assignment *did not* assign the entirety of the invention. ECF No. 474 at 145 (Tr. Trans. 145:16-23) (acknowledging that the invention record attached to the assignment agreement did not include the totality of the invention).

ECF No. 478-8; ECF No. 478-9. Upon further analysis, however, the picture clears. By its terms the 1991 Assignment could not have been legally binding on Drs. Weiss and Reynolds until it was actually signed on January 3, 1991. ECF No. 478-10 (signing “I agree to the foregoing agreement this 3 day of January, 1991.”). By contrast, as noted earlier, the 1991 Memo evidenced an agreement that was already in existence. Although not signed until January 3, 1991, the 1991 Memo is *dated* January 2, 1991. Unlike the 1991 Assignment, the signatures were not necessary to make the preexisting agreement legally binding.¹⁸ The preexisting agreement would have been legally binding assuming all the requirements of a contract were met, and would have come into effect at that time. Because the 1991 Memo is dated January 2, 1991, the Court concludes that the agreement among the three scientists occurred, at the latest, on that date. Thus, at the time Drs. Weiss and Reynolds agreed to share an ownership interest in the invention with Dr. Tetzlaff, they had their full ownership interests to convey.

IV. Dr. Tetzlaff’s Inventorship

Finally, the Court concludes alternatively that Dr. Tetzlaff is an owner of the patents-in-suit because he was a co-inventor. As noted above, the named inventors of a patent are presumed to be the correct inventors, but this presumption can be overcome by clear and convincing evidence. *Wilkins*, 750 F.3d at 1329. Moreover, “the law requires corroboration of a putative inventor’s credible testimony.” *Id.* at 1330. Corroborating evidence is evaluated using a “rule of reason” standard that considers all pertinent evidence. *Sandt Technology, Ltd. v. Resco Metal and Plastics Corp.*, 264 F.3d 1344, 1350 (Fed. Cir. 2001). In particular, “[d]ocumentary...evidence that is made contemporaneously with the inventive process provides

¹⁸ The signatures would simply have been proof to UTI that all the owners agreed that UTI could allocate profits according to the percentages in the 1991 Memo.

the most reliable proof that the inventor's testimony has been corroborated." *Id.* at 1350-51. Neuralstem has met its high burden here.

"Conception is the touchstone of inventorship, the completion of the mental part of invention." *Burroughs Wellcome Co. v. Barr Laboratories, Inc.*, 40 F.3d 1223, 1227-1228 (Fed. Cir. 1994). As the Federal Circuit has stated, "[c]onception exists when a definite and permanent idea of an operative invention, *including every feature of the subject matter sought to be patented*, is known." *Sewall v. Walters*, 21 F.3d 411, 415 (Fed. Cir. 1994) (emphasis added). "A co-inventor must contribute in some significant manner to the conception or reduction to the practice of the invention [and] make contribution to the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention." *Gen. Elec. Co.*, 750 F.3d at 1332 (internal quotation marks omitted).

Placing substances in a petri dish, and seeing that neurons proliferate as a result is interesting, but much more took place after this discovery to evolve into the '812 Application resulting in patents for the "Neural Transplantation Using Proliferated Multipotent Neural Stem Cells and Their Progeny," (name of the '872 Patent) and "Use of Multipotent Neural Stem Cells and Their Progeny For the Screening of Drugs and Other Biological Agents," (name of the '346), among others. Each of the patents claims in part either the extraction of human tissue, the transplantation of stem cells into human tissue, or both, something far more significant than the petri dish discovery. For example, the '872 patent is titled "Neural Transplantation Using Proliferated Multipotent Stem Cells and Their Progeny." ECF No. 113-3 at 2. Moreover, by its terms, as amended following a reexamination, that patent is not limited to growing neurons in a petri dish, but explicitly claims a "method of transplanting a multipotent neural stem cell progeny to a *human* host." ECF No. 113-6 at 3. Thus, the use of humans, either as source

material or as a destination for stem cells, is crucial to this invention. *See* ECF No. 113-2 at 43 (claiming methods of proliferating multipotent neural stem cells “wherein said mammalian neural tissue is obtained from a human”); ECF No. 113-6 (claiming a “method of transplanting multipotent neural stem cell progeny to a *human* host”).

Accordingly, the design of human experiments was an essential part of the evolution of the discovery into a patentable invention. Until confirmation that Dr. Weiss’ serendipitous discovery of proliferation could be caused to occur in humans, and not just in a petri dish, not every feature of the ultimately patented invention was known. *See Sewall*, 21 F.3d at 415 (“Conception exists when a definite and permanent idea of an operative invention, *including every feature of the subject matter sought to be patented*, is known.”) (emphasis added).

StemCells argues that the design of experiments is nothing more than reduction to practice. ECF No. 479 at 13. But even assuming that reduction to practice alone is insufficient for inventorship,¹⁹ the design of human experiments here is much more than reduction to practice. The patents-in-suit claim methods for extracting stem cells from human tissue, and transplanting stem cells into human tissue. Without human experiments, those methods claimed in the patents-in-suit would not be known. Designing those experiments was thus not simply a reduction of invention to practice, but rather it was a conception of the idea of a key aspect of the invention.

Having determined that the design of human experiments was a key part in the conception of the invention, the Court next must determine whether Dr. Tetzlaff played a key role in the design of those experiments. Dr. Tetzlaff has stated that he assisted in designing the

¹⁹ The Federal Circuit has been less than clear on this point. *Compare Pannu v. Iolab Corp.*, 155 F.3d 1344, 1351 (Fed. Cir. 1998) (explaining that, among things, a co-inventor must “contribute in some significant manner to the conception or reduction to practice of the invention”) with *StoneEagle Services, Inc. v. Gillman*, 746 F.3d 1059, 1063 (Fed. Cir. 2014) (“This court has stated that assistance in reducing an invention to practice generally does not contribute to inventorship.”)

first human experiment, and the Court finds that testimony entirely credible.²⁰ ECF No. 476 at 66-67, Dec. 12, 2014 Tr. Trans. 66:17-67:22; ECF No. 478-9 at 2. That Dr. Tetzlaff designed experiments is corroborated by several contemporaneous documents. The 1990 Grant Application states that Dr. Tetzlaff will be the “co-ordinator of all phases of molecular biology experiments.” ECF No. 478-11 at 8. Indeed, Dr. Weiss’ role is described in a nearly identical way, except that he is described as a co-ordinator of cell biology experiments. *Id.* Moreover, Dr. Tetzlaff is listed as an author on a Society of Neuroscience abstract documenting the results of the human experiment. ECF No. 478-6 at 4. Using the rule of reason to evaluate this corroborating evidence, and considering all pertinent evidence as a whole, the Court concludes that Dr. Tetzlaff’s testimony regarding his important role in developing the human experiments is amply corroborated by clear and convincing evidence.

Although the Court recognizes that a person may be listed as an author on an abstract without having contributed to the design of the experiment reflected in the abstract, that is not what occurred here. For reasons noted above, the Court does not find credible the testimony of Dr. Reynolds that Dr. Tetzlaff’s inclusion as an author on the abstract was simply payback for financial support. The Court finds persuasive the testimony of Dr. Laurie Doering, Neuralstem’s expert, who explained the importance of Dr. Tetzlaff’s expertise as a physician to the design and execution of the human experiments. ECF No. 474 at 186-87, Dec. 9, 2014 Tr. Trans. 186:5-187:4. Accordingly, the design of human experiments by Dr. Tetzlaff was a key contribution of a significant quality when measured against the full dimension of the invention, and thus qualifies Dr. Tetzlaff as a co-inventor. *General Elec. Co.*, 750 F.3d at 1332. Because the clear and convincing evidence, taken as a whole, persuades the Court that Dr. Tetzlaff

²⁰ Dr. Weiss has admitted he does not know how to extract human fetal tissue. ECF No. 473-2 at 5.

contributed significantly to a key part of the invention, its application to humans, the Court determines that he was a co-inventor of the patents-in-suit.

Contrary to StemCells' assertion, that Dr. Tetzlaff was not named as an inventor on the patents-in-suit does not necessarily render them invalid. 35 U.S.C. § 256(b) provides:

The error of omitting inventors...shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Director shall issue a certificate accordingly.

The Court will include an order in accordance with this section to add Dr. Tetzlaff as a named inventor.

CONCLUSION

Dr. Tetzlaff credibly testified that he agreed to share ownership interests in the invention with Drs. Weiss and Reynolds. Drs. Weiss and Reynolds testified that they merely granted Dr. Tetzlaff an economic interest. However, this testimony, already undermined by the pecuniary interest they have in the outcome of this case, is plainly contradicted by the record, and is simply not credible. Dr. Tetzlaff was a co-owner of the patents-in-suit by agreement. Alternatively, the Court determines that Neuralstem has demonstrated through Dr. Tetzlaff's credible, corroborated testimony, that he is a co-inventor of the patents-in-suit by clear and convincing evidence. In either event, Dr. Tetzlaff is a co-owner of the patents-in-suit. Because Dr. Tetzlaff never assigned any interest to any of the Plaintiffs in this case, they lack standing, and the Complaint must be dismissed. A separate Order follows.

Date: July 22, 2015

/s/
ROGER W. TITUS
UNITED STATES DISTRICT JUDGE