

**United States Court of Appeals
for the Federal Circuit**

**SIONYX LLC, PRESIDENT AND FELLOWS OF
HARVARD COLLEGE,**
Plaintiffs-Cross-Appellants

v.

**HAMAMATSU PHOTONICS K.K., HAMAMATSU
CORPORATION,**
Defendants-Appellants

DOES 1-10,
Defendant

2019-2359, 2020-1217

Appeals from the United States District Court for the District of Massachusetts in No. 1:15-cv-13488-FDS, Judge F. Dennis Saylor IV.

Decided: December 7, 2020

WILLIAM D. BELANGER, Troutman Pepper Hamilton Sanders LLP, Boston, MA, argued for plaintiffs-cross-appellants. Also represented by ANTHONY H. CATALDO, GWENDOLYN TAWRESEY.

JOHN DAVID SIMMONS, Panitch Schwarze Belisario & Nadel LLP, Philadelphia, PA, argued for defendants-

appellants. Also represented by KEITH AARON JONES, STEPHEN EMERSON MURRAY; KOICHIRO MINAMINO, Minamino Law Office, PLLC, Washington, DC.

Before LOURIE, REYNA, and WALLACH, *Circuit Judges*.

LOURIE, *Circuit Judge*.

Hamamatsu Photonics K.K. and Hamamatsu Corporation (“Hamamatsu”) appeal from the judgment of the U.S. District Court for the District of Massachusetts after a jury verdict that (1) Hamamatsu breached its Non-Disclosure Agreement (“NDA”) with SiOnyx LLC (“SiOnyx”); (2) Hamamatsu willfully infringed U.S. Patent 8,080,467 (“the ’467 patent”); (3) SiOnyx is entitled to \$796,469 in damages and \$1,091,481 of pre-judgment interest for breach of the NDA; (4) SiOnyx is entitled to \$580,640 in damages and \$660,536 of pre-judgment interest for unjust enrichment; (5) SiOnyx is entitled to post-judgment interest at the statutory rate for its breach of contract and unjust enrichment claims; (6) Dr. James Carey is a co-inventor of U.S. Patents 9,614,109; 9,293,499; 9,190,551; 8,994,135; 8,916,945; 8,884,226; 8,742,528; 8,629,485; and 8,564,087 (collectively “the Disputed U.S. Patents”); (7) SiOnyx is entitled to sole ownership of the Disputed U.S. Patents; (8) SiOnyx is entitled to an injunction prohibiting Hamamatsu from practicing the Disputed U.S. Patents for breach of the NDA; and (9) SiOnyx is entitled to an injunction prohibiting Hamamatsu from practicing the ’467 patent for infringement. *See SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS (D. Mass. Sept. 24, 2019), ECF No. 834.

SiOnyx cross-appeals from the district court’s decisions (1) denying SiOnyx sole ownership of the Japanese patent applications from which the Disputed U.S. Patents claim priority and all other foreign patents claiming priority from the Japanese applications (collectively “the Disputed

Foreign Patents”); and (2) denying SiOnyx’s motion for fees under 35 U.S.C. § 285.

Because the district court erred in failing to grant SiOnyx sole ownership of the Disputed Foreign Patents, we reverse the district court’s denial of SiOnyx’s motion to compel Hamamatsu to transfer ownership of those patents to SiOnyx. We decline to address the issue of willfulness and affirm the district court’s judgment in all other respects.

BACKGROUND

This appeal arises from research conducted at Harvard University by Professor Eric Mazur and his then-student James Carey. In 1998, Mazur discovered a process for creating “black silicon” by irradiating a silicon surface with ultra-short laser pulses. In addition to turning the silicon black, the process creates a textured surface, and the resulting black silicon has electronic properties different from traditional silicon. After discovering the process for making the material, Mazur worked with his students, including Carey, to study its properties and potential uses. Based on their work, Mazur and Carey filed U.S. Provisional Patent Application 60/293,590 on May 25, 2001, from which several patents eventually issued, including the ’467 patent.

I. THE PARTIES’ RELATIONSHIP

Around 2005, Mazur and Carey founded SiOnyx to further develop and commercialize black silicon. Thereafter, SiOnyx sought to establish relationships with companies that may be interested in its technology. In November 2006, SiOnyx met with Hamamatsu, which produces, among other things, silicon-based photodetector devices. SiOnyx gave a brief presentation on the discovery of black silicon and, on January 11, 2007, SiOnyx and Hamamatsu entered into the NDA to allow the parties to share confidential information relating to “evaluating applications

and joint[] development opportunities of pulsed laser process doped photonic devices.” J.A. 2881.

The NDA includes several provisions that are relevant to this appeal. First, the NDA provides that a party receiving confidential information (as defined in the agreement) shall maintain the information in strict confidence for seven years after the expiration of the agreement, after which the receiving party may use or disclose the confidential information. J.A. 2881–82 ¶¶ 2, 8. Second, the agreement provides that a party receiving confidential information acknowledges that the disclosing party claims ownership of the information and all patent rights “in, or arising from” the information. J.A. 2882 ¶ 5. Finally, the agreement requires a party receiving confidential information to return all confidential information within 30 days of the termination of the agreement. *Id.* ¶ 7.

While the NDA was in effect, SiOnyx provided to Hamamatsu proposed architectures and a manufacturing process for a photodetector device, which were marked as confidential. Hamamatsu and SiOnyx worked together to produce experimental devices using SiOnyx’s process. Hamamatsu produced silicon wafers as it would to manufacture its traditional photodiodes, which were then sent to SiOnyx to perform SiOnyx’s laser-texturing process. The textured wafers were then returned to Hamamatsu to be cut, packaged, and tested. The sample devices produced favorable results, but Hamamatsu represented that it wished to develop its products alone “without further reference to proprietary information of SiOnyx,” and the NDA expired on January 12, 2008. J.A. 3013. After expiration of the NDA, SiOnyx did not request that Hamamatsu return any confidential information received from SiOnyx, and Hamamatsu did not do so.

After the NDA was terminated, Hamamatsu continued to develop new photodetector devices. On February 1, 2008, as part of its work developing a new commercial

photodiode, Hamamatsu prepared an internal development report that referred to the prototype work done with SiOnyx. On February 9, 2009, Hamamatsu emailed SiOnyx to inform SiOnyx that Hamamatsu intended to introduce a new photodiode at its Photon Fair exhibition that included a “black silicon surface fabricated by laser.” J.A. 3011. The email included a cross-sectional diagram of the structure of the photodiode and a performance curve. Hamamatsu stated that it did not believe that the new product infringed SiOnyx’s intellectual property or breached Hamamatsu’s confidentiality obligations. At the time, SiOnyx did not consider the product to be meaningfully different from the devices the parties developed together in 2007.

On February 24, 2009, Hamamatsu filed the first of a series of Japanese patent applications relating to photodetector devices. Hamamatsu subsequently filed patent applications in several countries that claimed priority from these applications, including the U.S. applications that became the Disputed U.S. Patents. In 2010, Hamamatsu began releasing the accused products, which include laser-textured photodiodes, avalanche photodiodes, and charge-coupled device (CCD) sensors. SiOnyx began selling its own photodetector products by 2013, and in 2014 one of SiOnyx’s customers alerted SiOnyx to Hamamatsu’s patents. SiOnyx met with Hamamatsu to discuss ownership of the Disputed U.S. and Foreign Patents, but the parties did not reach an agreement.

II. DISTRICT COURT PROCEEDINGS

Having failed to reach an agreement with Hamamatsu regarding ownership of the patents, SiOnyx sued Hamamatsu in the District of Massachusetts. SiOnyx brought four claims: (1) breach of contract; (2) unjust enrichment; (3) infringement of the ’467 patent; and (4) change of inventorship of the Disputed U.S. Patents. The case was tried to a jury on the issues of infringement, willfulness, invalidity,

inventorship, breach of contract, unjust enrichment, and damages. After a two-week trial, the jury returned a verdict in favor of SiOnyx. Specifically, the jury found that (1) Hamamatsu first breached the NDA on February 1, 2008, when it referred to SiOnyx's confidential information in an internal report, and awarding \$796,469 in damages; (2) Hamamatsu was unjustly enriched beginning January 10, 2010, and awarding \$580,640 in damages; (3) SiOnyx's breach of contract and unjust enrichment claims were not barred by the statute of limitations; (4) Carey is a co-inventor of the Disputed U.S. Patents; and (5) the asserted claims of the '467 patent are valid and willfully infringed by Hamamatsu beginning December 20, 2011, but awarding \$0 in damages.

The parties filed numerous post-trial motions. Hamamatsu moved for judgment as a matter of law that (1) SiOnyx's breach of contract and unjust enrichment claims were barred by the statute of limitations; (2) that SiOnyx is not entitled to damages after the NDA's confidentiality period ended on January 11, 2015; and (3) that Hamamatsu did not willfully infringe the '467 patent. The district court denied Hamamatsu's motion. SiOnyx filed post-trial motions seeking (1) sole ownership of the Disputed U.S. Patents; (2) sole ownership of the Disputed Foreign Patents; (3) an injunction for breach of the NDA prohibiting Hamamatsu from "making, using, offering for sale, selling, or importing the accused products and/or products practicing the [Disputed U.S. Patents]"; (4) an injunction for patent infringement prohibiting Hamamatsu from "making, using, offering for sale, selling, or importing the accused products" practicing the '467 patent; (5) pre- and post-judgment interest on damages awarded for breach of contract; (6) pre-judgment interest on damages awarded for unjust enrichment; and (7) fees under 35 U.S.C. § 285. The district court granted SiOnyx sole ownership of the Disputed U.S. Patents, injunctions on accused products practicing the Disputed U.S. Patents and the '467 patent, pre- and

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post-judgment interest on damages for breach of contract, and pre-judgment interest on damages for unjust enrichment. The court denied SiOnyx's motions for ownership of the Disputed Foreign Patents and fees under § 285.

Hamamatsu appealed, and SiOnyx cross-appealed. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

DISCUSSION

In reviewing issues tried to a jury, we review the district court's denial of post-trial motions for judgment as a matter of law under the law of the regional circuit. *See Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1202 (Fed. Cir. 2010) (citing *Revolution Eyewear, Inc. v. Aspex Eyewear, Inc.*, 563 F.3d 1358, 1370 (Fed. Cir. 2009)). The First Circuit reviews denials of post-verdict motions for JMOL de novo, construing the facts in the light most favorable to the jury verdict and drawing any inferences in favor of the non-movant. *Sánchez v. Foley*, 972 F.3d 1, 10–11 (1st Cir. 2020) (citing *Blomquist v. Horned Dorset Primavera, Inc.*, 925 F.3d 541, 546 (1st Cir. 2019)). Judgment as a matter of law should be granted if “a reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue.” FED. R. CIV. P. 50(a). “Our review, however, ‘is weighted toward preservation of the jury verdict,’ for ‘we must affirm unless the evidence was so strongly and overwhelmingly inconsistent with the verdicts that no reasonable jury could have returned them.’” *Crowley v. L.L. Bean, Inc.*, 303 F.3d 387, 393 (1st Cir. 2002) (quoting *Rodowicz v. Mass. Mut. Life Ins. Co.*, 279 F.3d 36, 41–42 (1st Cir. 2002)). “Credibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge.” *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150–51 (2000) (quoting *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986)). As will be seen, this appeal largely, but not entirely, resolves itself on the fact that most of the determinations were made by a jury.

I. HAMAMATSU'S APPEAL

In this appeal, Hamamatsu challenges the district court's judgment on the issues of the statute of limitations, pre-judgment interest, grant of an injunction for patent infringement, grant of an injunction for breach of contract, damages, ownership of the Disputed U.S. Patents, and willfulness. We address each issue in turn.

A. Statute of Limitations

We first address Hamamatsu's argument that SiOnyx's breach of contract and unjust enrichment claims are barred by Massachusetts's six-year statute of limitations. The issue was presented to the jury and, although the jury found that Hamamatsu first breached the NDA on February 1, 2008—more than six years before SiOnyx filed its complaint—it nevertheless found that the claims are not barred by the statute of limitations. Hamamatsu moved for JMOL, which the district court denied. *See SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS (D. Mass. July 25, 2019), ECF No. 797.

On appeal, Hamamatsu argues that the claims are barred because SiOnyx knew or should have known of Hamamatsu's breach of the NDA more than six years prior to the filing of its complaint. According to Hamamatsu, at least two events that occurred more than six years prior to the filing of SiOnyx's complaint should have alerted SiOnyx to the likelihood of Hamamatsu's breach, causing the claims to accrue and beginning the limitations period. First, Hamamatsu argues that SiOnyx knew of Hamamatsu's breach in February 2008, when Hamamatsu failed to return SiOnyx's confidential information, as was required by the NDA. Second, Hamamatsu argues that SiOnyx should have known of Hamamatsu's misuse of SiOnyx's confidential information in February 2009, when Hamamatsu emailed SiOnyx a diagram of a photodiode that SiOnyx perceived to be identical to the parties' 2007 work. Both events were more than six years prior to the filing of

SiOnyx's complaint and, according to Hamamatsu, should bar SiOnyx's breach of contract and unjust enrichment claims.

SiOnyx responds that Hamamatsu presented both defenses at trial, and the jury nonetheless determined that SiOnyx's claims were not barred by the statute of limitations. According to SiOnyx, a reasonable jury could have determined that Hamamatsu's failure to return SiOnyx's confidential information was an immaterial breach that did not begin the limitations period, or that Hamamatsu concealed its later use of SiOnyx's confidential information through its repeated assurances that its new products did not infringe SiOnyx's intellectual property.

We agree with SiOnyx. In Massachusetts, "any disputed issues relative to the statute of limitations ought to be decided by the jury." *Riley v. Presnell*, 565 N.E.2d 780, 787 (Mass. 1991). "In most instances, the question when a plaintiff knew or should have known of its cause of action is one of fact that will be decided by the trier of fact." *Taygeta Corp. v. Varian Assocs., Inc.*, 736 N.E.2d 1053, 1063 (Mass. 2002) (citing *Riley*, 565 N.E.2d at 787). Here, the jury was presented with the terms of the NDA, the circumstances surrounding its expiration, and Hamamatsu's failure to return SiOnyx's confidential information, and it found that the limitations period did not begin to run at that time. We agree with the district court that a reasonable juror could have determined that SiOnyx was not harmed by Hamamatsu's failure to return the confidential information and that the breach was therefore immaterial and did not cause SiOnyx's claims to accrue.

Regarding the 2009 emails, the jury similarly was presented with competing evidence, and concluded that the limitations period did not begin to run at that time. While Hamamatsu elicited testimony that SiOnyx was "concerned" about the similarities between Hamamatsu's products and the parties' 2007 work, J.A. 624, the jury was also

presented with multiple statements by Hamamatsu to SiOnyx that Hamamatsu's products did not make use of SiOnyx's confidential information. J.A. 3011, 3021. Weighing competing evidence is the quintessential function of the jury and, confronted with this evidence, a reasonable jury could have determined that SiOnyx did not know, nor should it have known, of Hamamatsu's breach at that time. As the district court noted, "[w]hether a plaintiff knew or should have known of an injury so as to trigger the running of a statute of limitations is, with rare exception, a jury issue," *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS (D. Mass. July 25, 2019), ECF No. 797, slip op. at 2 (quoting *Santiago Hodge v. Parke Davis & Co.*, 909 F.2d 628, 633 (1st Cir. 1990)), and we perceive no reason to upset the jury's verdict here.

B. Pre-Judgment Interest

Hamamatsu contends that the district court erred in awarding pre-judgment interest for SiOnyx's breach of contract and unjust enrichment claims. Hamamatsu makes two principal arguments. First, it argues that no pre-judgment interest should be available for unjust enrichment based on disgorged profits. Second, Hamamatsu argues that the court erred in awarding interest for the breach of contract damages from the date of first breach because SiOnyx suffered no financial harm until a later time. We consider Hamamatsu's arguments in turn.

1. Unjust enrichment

The parties' dispute turns on whether the Massachusetts statutory provision for pre-judgment interest for contract claims applies to disgorged profits for unjust enrichment. MASS. GEN. LAWS ch. 231, § 6C provides that "[i]n all actions based on contractual obligations . . . interest shall be added . . . to the amount of damages . . . from the date of the breach . . ." Hamamatsu argues that, because profit disgorgement is not designed to make the plaintiff whole, but rather to punish the defendant, it is not

“damages” within the meaning of the statute. For support, Hamamatsu relies on *Governo Law Firm, LLC v. CMBG3 Law, LLC*, in which the Massachusetts Superior Court held that an “award to disgorge profits earned by the misuse of trade secrets or confidential information is not ‘damages’ within the meaning of the statutes that govern pre-judgment interest, and thus is not the sort of recovery as to which pre-judgment interest accrues as of right.” 2019 WL 3801560, at *7 (Mass. Sup. Ct. July 29, 2019). SiOnyx responds that § 6C applies to contract-based claims for unjust enrichment and therefore it is entitled to pre-judgment interest from the date of first breach. For its part, SiOnyx relies on *Bushkin Associates, Inc. v. Raytheon Co.*, in which the First Circuit held that “quantum meruit is encompassed by the pre-judgment interest statute.” 906 F.2d 11, 15 (1st Cir. 1990).

We agree with SiOnyx and the district court that damages for unjust enrichment are subject to § 6C. Under Massachusetts law, unjust enrichment is the “underlying basis for awarding quantum meruit damages in a quasi-contract case.” *Salamon v. Terra*, 477 N.E.2d 1029, 1031 (Mass. 1985). Thus, the First Circuit’s holding in *Bushkin* that § 6C applies to quantum meruit appears to apply equally to SiOnyx’s contract-based unjust enrichment claim. To the extent that *Governo* appears to suggest otherwise, we note that in that case the court considered damages in the context of § 6B (the statute governing pre-judgment interest for tort claims), not § 6C. Accordingly, we agree that § 6C applies to the jury’s award of damages for unjust enrichment and that the district court correctly awarded pre-judgment interest from the date of first breach.

2. Breach of Contract

We now turn to Hamamatsu’s second argument that awarding pre-judgment interest for SiOnyx’s breach of contract claim from the date of first breach determined by the jury is improper because SiOnyx did not suffer financial

harm at that time. Relying on *Bank v. Thermo Elemental Inc.*, 888 N.E.2d 897 (Mass. 2008), and *Sterilite Corp. v. Continental Casualty Co.*, 494 N.E.2d 1008 (Mass. 1986), Hamamatsu contends that, even under § 6C, pre-judgment interest should be awarded only from the time the plaintiff was deprived of funds, so as not to produce an undeserved windfall. Accordingly, Hamamatsu urges us to vacate the district court's pre-judgment interest award and remand for a determination of the date when SiOnyx first suffered financial harm.

We disagree with Hamamatsu. As an initial matter, Hamamatsu overreads the meaning of *Thermo Elemental* and *Sterilite*. In each of those cases, the plaintiff sought, and received, damages for payments that it was forced to make as a result of the defendant's earlier breach of contract. That is, the damages were essentially reimbursement for expenditures of fixed amounts on known dates that the plaintiff would not have made but for the defendant's breach. In those circumstances, even though the breach had occurred at an earlier date, disallowance of pre-judgment interest prior to the time that the plaintiff was improperly forced to lay out its own money for which it sought reimbursement is a reasonable interpretation of § 6C because the plaintiff had not lost access to those funds prior to those expenditures.

But the circumstances here do not lend themselves to such a tidy accounting. At trial, the jury was presented with multiple damages theories, including a \$1 million upfront license fee, J.A. 1700, a 7% royalty on sales of the accused products, J.A. 1532, and over \$2 million from a lost partnership with Nikon in 2015. J.A. 1557. The jury's ultimate award of \$794,469 matches none of those theories, and the verdict forms shed no light on the jury's perceived timing of the damages, other than the date on which the jury determined that Hamamatsu first breached the NDA. In light of the jury's verdict, we discern no rational basis for assigning the jury's damages award to specific dates

between 2008 and 2015 for the purpose of calculating pre-judgment interest, and therefore we see no reason to deviate from the general rule for pre-judgment interest on contract claims set out in § 6C.

C. Injunction for Infringement of the '467 Patent

Hamamatsu argues that the district court erred in granting SiOnyx's motion for a permanent injunction prohibiting Hamamatsu from "making, using, offering for sale, selling, or importing" the products held to infringe the '467 patent. A party seeking a permanent injunction for patent infringement must demonstrate: "(1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction." *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 390–91 (2006). Hamamatsu argues primarily that SiOnyx failed to demonstrate irreparable harm and an inadequate remedy at law. Specifically, Hamamatsu argues that SiOnyx cannot show irreparable harm because SiOnyx's products do not compete with the accused products. And because the parties do not directly compete, according to Hamamatsu, money damages could provide adequate compensation for Hamamatsu's continued sales of the accused products. Hamamatsu has not argued the balance of harms and public interest factors, so we need not address them.

SiOnyx responds that its products do in fact compete with the accused products. SiOnyx argues that it will suffer irreparable harm from Hamamatsu's continued sales of the accused products because SiOnyx would be the only supplier of products practicing the technology disclosed in the '467 patent but for Hamamatsu's misuse of SiOnyx's confidential information. Absent Hamamatsu's

reliance on SiOnyx's confidential information, SiOnyx argues, Hamamatsu never could have entered the market, or at a minimum its entry would have been delayed, and therefore the court did not abuse its discretion in determining that damages at law would be impossible to quantify and inadequate.

We agree with SiOnyx. We review the decision to grant a permanent injunction for an abuse of discretion. *Robert Bosch LLC v. Pylon Mfg. Corp.*, 659 F.3d 1142, 1147 (Fed. Cir. 2011). "We may find an abuse of discretion on a showing that the court made a clear error of judgment in weighing relevant factors or exercised its discretion based upon an error of law or clearly erroneous factual findings." *Innogenetics, N.V. v. Abbott Lab's.*, 512 F.3d 1363, 1379 (Fed. Cir. 2008) (internal quotation marks omitted). Based on the record before us, Hamamatsu has not demonstrated that the district court so erred. In granting the injunction, the district court found that SiOnyx's laser-processed CMOS sensors are competitive products with Hamamatsu's accused CCD sensors. *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS, 2019 WL 3358599, at *3 (D. Mass. July 25, 2019). The court relied on the trial testimony of SiOnyx's expert, Dr. Ezekiel Kruglick, that CMOS sensors or CCD sensors could be used for some applications. J.A. 1438. Hamamatsu counters with the testimony of SiOnyx's CEO, Steve Saylor, that Hamamatsu's products "would not really get in the way of SiOnyx's core business dramatically." J.A. 876. But the existence of contrary testimony alone does not make the district court's finding clearly erroneous. *See Anderson v. City of Bessemer City*, 470 U.S. 564, 574 (1985) ("Where there are two permissible views of the evidence, the fact-finder's choice between them cannot be clearly erroneous." (citing *United States v. Yellow Cab Co.*, 338 U.S. 338, 342 (1949))). Based on the record before us, we are not convinced that the district court clearly erred in finding that the accused products are competitive with SiOnyx's products, and

Hamamatsu has not otherwise persuasively refuted the demonstration of irreparable harm.

Further, we conclude that the district court did not abuse its discretion in finding that money damages would be inadequate to compensate SiOnyx. The jury found that Hamamatsu breached its NDA with SiOnyx by using SiOnyx's confidential information and that the accused products infringe the '467 patent. Hamamatsu does not appeal those findings, and it is therefore evident that Hamamatsu's development of the accused products and entry into the relevant markets were aided and accelerated by its improper use of SiOnyx's confidential information. Because SiOnyx would have otherwise had those markets to itself, at least for some period of time, we agree with SiOnyx that it was not an abuse of discretion for the court to determine that it was difficult to quantify the harm to SiOnyx due to Hamamatsu's premature entry in those markets. Accordingly, we affirm the district court's grant of a permanent injunction for infringement of the '467 patent.

D. Injunction for Breach of Contract

The district court also granted a permanent injunction as a remedy for SiOnyx's breach of contract claim, prohibiting Hamamatsu from "making, using, offering for sale, selling, or importing the accused products and/or products practicing" the Disputed U.S. Patents. *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS, 2019 WL 3358599, at *2 (D. Mass. July 25, 2019). We review non-patent issues under the law of the regional circuit. *Versa-Top Support Sys., LLC v. Georgia Expo, Inc.*, 921 F.3d 1364, 1368 (Fed. Cir. 2019). In Massachusetts, injunctive relief is appropriate where (1) the plaintiff would suffer irreparable harm absent injunctive relief, (2) there is inadequate remedy at law, and (3) the harm to plaintiffs would outweigh the harm the defendant would suffer from the imposition of an injunction. *See John T. Callahan & Sons,*

Inc. v. City of Malden, 713 N.E.2d 955, 960 (Mass. 1999) (citing *Packaging Indus. Grp., Inc. v. Cheney*, 405 N.E.2d 106, 111–12 (Mass. 1980)). Trial judges have broad discretion to grant or deny injunctive relief, which is reviewed for abuse of discretion. *Lightlab Imaging, Inc. v. Axsun Techs., Inc.*, 13 N.E.3d 604, 614 (Mass. 2014) (citing *Johnson v. Martignetti*, 375 N.E.2d 290, 298 (Mass. 1978), and *Curtiss–Wright Corp. v. Edel–Brown Tool & Die Co.*, 407 N.E.2d 319, 326 (Mass. 1980)).

Due to the similarity of the legal standard, the parties' arguments are substantially similar to those made with respect to the injunction for patent infringement, and we reach the same conclusion. Hamamatsu additionally argues that the injunction does not prevent future harm to SiOnyx because the NDA's confidentiality period has expired, and the confidential information has been made public. Thus, according to Hamamatsu, the injunction operates only to punish Hamamatsu for its past conduct. But Hamamatsu ignores the ongoing benefit it receives from having improperly used SiOnyx's confidential information to develop its products. As we explained with respect to the injunction for infringement of the '467 patent, it was not an abuse of discretion for the district court to determine that the harm to SiOnyx from Hamamatsu's head start in developing its products and premature entrance to the market was irreparable and not adequately remedied by money damages, and for the same reason, we affirm here.

E. Damages After the Confidentiality Period

Hamamatsu filed a post-trial motion for judgment as a matter of law that SiOnyx is not owed damages for the breach of contract and unjust enrichment claims after the confidentiality period of the NDA expired on January 11, 2015. The district court denied the motion. *See SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS (D. Mass. July 25, 2019), ECF No. 797. Hamamatsu argues

that the court erred in denying its motion because Hamamatsu's use of that information was no longer in breach after the confidentiality period ended, and SiOnyx therefore is entitled only to Hamamatsu's profits through 2014. SiOnyx responds that the jury reasonably could have inferred that Hamamatsu continued to benefit from its breach beyond the expiration of the confidentiality period.

We agree with SiOnyx. As we have noted above, and as the district court observed below, “[a]lthough [Hamamatsu] may not have ‘disclosed’ confidential information after the nondisclosure agreement ended in January 2015, the jury’s verdict can be reasonably construed to incorporate a finding that [Hamamatsu] continued to reap the benefit of their earlier breach by selling products that it had designed using [SiOnyx’s] confidential information.” *Id.* slip op. at 3. We agree that such an inference is reasonable, and we decline to alter the jury’s damages award.

F. Ownership of the Disputed U.S Patents

In its complaint, SiOnyx requested correction of inventorship of the Disputed U.S. Patents under 35 U.S.C. § 256 to name Carey as inventor. The jury was charged with determining whether Carey was an inventor and, if so, whether he was the sole inventor or a co-inventor. The jury returned a verdict in favor of SiOnyx and found that Carey should be added as a co-inventor of the Disputed U.S. Patents. In post-trial motions, SiOnyx asked the district court to grant sole ownership of all disputed patents to SiOnyx as a remedy for Hamamatsu’s breach of contract. J.A. 2239. SiOnyx’s request was based on Paragraph 5 of the NDA, which provides that “[t]he Receiving Party acknowledges that the Disclosing Party . . . claims ownership of the Confidential Information disclosed by the Disclosing Party and all patent, copyright, trademark, trade secret, and other intellectual property rights in, or arising from, such Confidential Information.” J.A. 2882.

The court granted SiOnyx's motion with respect to the Disputed U.S. Patents and denied the motion with respect to the Disputed Foreign Patents. *See SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS, 2019 WL 3358599 (D. Mass. July 25, 2019); *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS (D. Mass. Sept. 24, 2019), ECF No. 831. The court reasoned that the jury's verdict that Hamamatsu breached the NDA by using SiOnyx's confidential information and that Carey should be named a co-inventor of the Disputed U.S. Patents necessarily implies that those patents arose, at least in part, from SiOnyx's confidential information. *SiOnyx*, 2019 WL 3358599, at *1. Thus, the court concluded that SiOnyx should be granted ownership of the patents under Paragraph 5 of the NDA. *Id.* at *2. With respect to the Disputed Foreign Patents, the court did not question whether the same rationale applied, but nonetheless declined to grant ownership to SiOnyx because the court questioned its authority to do so. We address the district court's decision with respect to the Disputed U.S. Patents here and the Disputed Foreign Patents in SiOnyx's cross-appeal, below.

On appeal, Hamamatsu argues that the district court erred in granting SiOnyx sole ownership of the Disputed U.S. Patents because the jury's finding of co-inventorship necessarily implies that the jury found that Hamamatsu also contributed to the patents. According to Hamamatsu, it is therefore equally entitled to ownership under Paragraph 5 of the NDA because the patents also "arose from" its information. SiOnyx responds that the court did not abuse its discretion because the jury's verdict establishes that the patents are based on its confidential information, requiring transfer of ownership under Paragraph 5 of the NDA.

The district court's decision transferring ownership of the patents according to the terms of the NDA is an equitable remedy which is reviewed for abuse of discretion under Massachusetts law. *Cavadi v. DeYeso*, 941 N.E.2d 23,

31 (Mass. 2011) (quoting *Demoulas v. Demoulas*, 703 N.E.2d 1149, 1174 (Mass. 1998)). We agree with SiOnyx that the district court did not abuse its discretion in granting SiOnyx sole ownership of the Disputed U.S. Patents. “It is elementary that inventorship and ownership are separate issues,” *Beech Aircraft Corp. v. EDO Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993), and while conception is the touchstone of inventorship, ownership operates based on contract or law—in this case, the NDA. Corporations are not inventors, but they derive ownership rights through contracts, usually with employees, or provisions of law. Thus, while Hamamatsu employees may be co-inventors, and their rights transferred to their employer, Hamamatsu, Hamamatsu is the contracting party in the NDA, and the NDA provides that ownership of patents arising from confidential information exchanged under the agreement is claimed by the disclosing party. But Hamamatsu has not established that any of the patents arose from confidential information disclosed under the agreement and therefore has failed to show that it is entitled to joint ownership.

The primary shortcoming in Hamamatsu’s argument is its conflation of the contribution of *any* information to the patents with the contribution of *confidential* information within the meaning of the NDA. To the extent that the jury’s finding implies that Hamamatsu contributed its own information to the patents, it does not necessarily follow that Hamamatsu contributed *confidential* information to the patents within the meaning of the NDA, other than that which it appropriated from SiOnyx. In its briefing, Hamamatsu does not direct us to any evidence presented to the jury or to the district court even suggesting that the patents arose in part from its confidential information such that Paragraph 5 also operates to assign co-ownership to Hamamatsu, and we cannot otherwise identify any. Absent evidence that Hamamatsu contributed confidential information to the patents under the NDA, it is not entitled to co-ownership of the patents under the agreement.

Aside from the absence of evidence that Hamamatsu contributed confidential information to the patents, the implication that Hamamatsu made other contributions to the patents does not warrant a different result. To the extent that the jury's finding that Carey is a co-inventor rather than the sole inventor implies that Hamamatsu personnel contributed to the claimed inventions, the modification of claims founded upon SiOnyx's confidential information "does not negate the imposition of an equitable remedy," *Richardson v. Suzuki Motor Co., Ltd.*, 868 F.2d 1226, 1249 (Fed. Cir. 1989), and does not demonstrate that the district court abused its discretion to provide equitable relief. Accordingly, we affirm the district court's decision granting sole ownership of the Disputed U.S. Patents to SiOnyx.

G. Willfulness

Finally, Hamamatsu appeals the willfulness judgment. The jury returned a verdict finding that Hamamatsu's infringement of the '467 patent was willful. Despite its finding of willful infringement, the jury awarded SiOnyx \$0 in damages for Hamamatsu's infringement. SiOnyx filed a post-trial motion for enhanced damages under 35 U.S.C. § 284, requesting that the district court assess \$490,889 in damages for patent infringement and treble those damages based on the jury's finding of willfulness. *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS, 2019 WL 3358691, at *1 (D. Mass. July 25, 2019). The court declined to assess damages for patent infringement, concluding that "it is certainly reasonable to interpret the jury's verdict as a rational attempt to award damages for both breach of contract and patent infringement while avoiding an award of duplicative damages." *Id.* at *2. Because the court could not ascertain the amount of damages the jury intended to award for patent infringement, the court held that "it is impossible to treble that amount" and denied SiOnyx's motion for enhanced damages. *Id.* Nonetheless, Hamamatsu moved for judgment as a matter of law on willfulness, which the district court denied.

On appeal, Hamamatsu maintains that its infringement was not willful, challenging the adequacy of the evidence presented at trial to support the jury's finding. However, given that the district court awarded no enhanced damages based on willfulness, it is not apparent what effect the jury's finding of willfulness had on the district court's judgment, and it is likewise not apparent what the effect a reversal by this court would be. We cannot reduce the enhanced damages awarded to SiOnyx for Hamamatsu's allegedly willful infringement because no such damages exist. Because there is no "tangible, demonstrable consequence" to the jury's finding of willfulness, our consideration of the issue would be tantamount to an advisory opinion, which we lack the authority to provide. *Samsung Elec. Co., Ltd. v. Rambus, Inc.*, 523 F.3d 1374, 1380 (Fed. Cir. 2008) (quoting *Chathas v. Local 134 IBEW*, 233 F.3d 508, 512 (7th Cir. 2000)). Accordingly, we decline to address the willfulness issue.

II. SIONYX'S CROSS-APPEAL

SiOnyx raises two issues in its cross-appeal. First, it argues that the district court erred in denying its request to grant SiOnyx sole ownership of the Disputed Foreign Patents. Second, it argues that the district court erred in denying its motion for attorney fees under 35 U.S.C. § 285.

A. Ownership of the Disputed Foreign Patents

Although the district court granted sole ownership of the Disputed U.S. Patents to SiOnyx, it declined to grant to SiOnyx ownership of the Disputed Foreign Patents—that is, Hamamatsu's Japanese patents and any non-U.S. patents claiming priority therefrom. *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS (D. Mass. Sept. 24, 2019), ECF No. 831. The court appears to have declined to do so for two principal reasons: first, uncertainty regarding the court's jurisdiction to grant ownership of foreign patents; and second, failure by SiOnyx adequately to identify the foreign patents for which it was

requesting ownership. SiOnyx contends that the district court erred because the same evidence that establishes its right to sole ownership of the Disputed U.S. Patents establishes its right to sole ownership of the Disputed Foreign Patents, and the court had authority to compel the transfer of ownership of the foreign patents because the court had jurisdiction over Hamamatsu. Hamamatsu's argument to the contrary is substantially similar to its argument with respect to the Disputed U.S. Patents—that is, Hamamatsu also contributed to the Japanese applications and foreign counterparts, and therefore SiOnyx is entitled at most to joint ownership.

We agree with SiOnyx that the evidence that established SiOnyx's right to sole ownership of the Disputed U.S. Patents also applies to the Disputed Foreign Patents. And because the district court erroneously perceived that it lacked authority to compel the transfer of ownership, we conclude that it was an abuse of discretion to distinguish between the two groups of patents. As we discussed above with respect to the Disputed U.S. Patents, we agree that the jury's findings compel the conclusion that those patents arose from SiOnyx's confidential information and that Hamamatsu has not shown that it contributed confidential information entitling it to joint ownership. And because the Disputed U.S. Patents claim priority from Hamamatsu's Japanese patent applications, the Japanese applications must be for the same inventions as the Disputed U.S. Patents. *See* 35 U.S.C. § 119(a). Thus, Hamamatsu's Japanese patent applications and any applications claiming priority from the Japanese applications in other countries must also have arisen from SiOnyx's confidential information. Accordingly, we conclude that SiOnyx is entitled to sole ownership of the Japanese applications and any foreign applications claiming priority therefrom.

Turning to the district court's jurisdiction to grant ownership of foreign patents, it is well established that courts have authority to compel parties properly before them to

transfer ownership of foreign patents, just as they would any other equitable remedy. *See Richardson*, 868 F.2d at 1249. This is because an order compelling a party to assign ownership of a foreign patent is an exercise of the court's authority over the party, not the foreign patent office in which the assignment is made. Here, there is no argument that the district court lacked jurisdiction over Hamamatsu, and therefore the court had authority to compel assignment of foreign patents. And our judgment does not in any way deal with validity of foreign patents, which is a matter for foreign courts and patent offices. Because we perceive no rational basis for disparate treatment of the Disputed U.S. Patents and the Disputed Foreign Patents, we conclude that the district court abused its discretion in declining to grant to SiOnyx sole ownership of Hamamatsu's Japanese applications and any foreign applications claiming priority therefrom.

B. Section 285 Fees

Finally, SiOnyx argues that the district court abused its discretion in denying SiOnyx's motion to declare this case exceptional under 35 U.S.C. § 285. *See SiOnyx, LLC v. Hamamatsu Photonics K.K.*, No. 1:15-cv-13488-FDS (D. Mass. July 25, 2019), ECF No. 798. Under § 285, a "court in exceptional cases may award reasonable attorney fees to the prevailing party." An exceptional case under § 285 is "one that stands out from others with respect to the substantive strength of a party's litigating position (considering both the governing law and the facts of the case) or the unreasonable manner in which the case was litigated." *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, 572 U.S. 545, 554 (2014). SiOnyx argues that this case is exceptional in both respects. First, it argues that the strength of Hamamatsu's litigating position was exceptionally weak due to its overt copying of SiOnyx's patented technology, as evidenced by the jury's finding of willful infringement. Second, SiOnyx argues that Hamamatsu's litigation conduct was unreasonable because it sought to

increase the cost and duration of litigation to strain SiOnyx's resources. SiOnyx urges that the district court applied the wrong legal standard by requiring evidence that Hamamatsu "deliberately attempted" to increase the cost and complexity of the case for an improper purpose.

Hamamatsu responds that the district court did not abuse its discretion in denying SiOnyx's motion. Hamamatsu argues that the jury's finding of willful infringement is not determinative of whether a case is exceptional under § 285, and that its litigation conduct was consistent with an aggressive defense but was not otherwise uncommon or exceptional.

We agree with Hamamatsu. We review the grant or denial of attorney fees under § 285 for an abuse of discretion. *Highmark Inc. v. Allcare Health Mgmt. Sys., Inc.*, 572 U.S. 559, 563–64 (2014); *Bayer CropScience AG v. Dow AgroSciences LLC*, 851 F.3d 1302, 1306 (Fed. Cir. 2017) (citing *Mentor Graphics Corp. v. Quickturn Design Sys., Inc.*, 150 F.3d 1374, 1377 (Fed. Cir. 1998)). To satisfy that standard, an appellant must demonstrate that the district court made "a clear error of judgment in weighing relevant factors or in basing its decision on an error of law or on clearly erroneous factual findings." *Bayer*, 851 F.3d at 1306 (quoting *Mentor Graphics*, 150 F.3d at 1377). While willfulness is "among the reasons that a court may find a case to be exceptional," *Therasense, Inc. v. Becton, Dickinson & Co.*, 745 F.3d 513, 516 (Fed. Cir. 2014), "an attorney fee award is not mandatory when willful infringement has been found," *WhitServe, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 37 (Fed. Cir. 2012) (citing *Spectralytics, Inc. v. Cordis Corp.*, 649 F.3d 1336, 1349 (Fed. Cir. 2011)). Here, despite the jury's finding of willful infringement, the district court concluded that Hamamatsu's noninfringement and invalidity defenses were not so weak as to be exceptional, in particular noting that SiOnyx failed even to move for summary judgment on those issues. While the district court may have been permitted to award fees under § 285

based on the jury's finding of willfulness, it was not required to do so, and SiOnyx has not otherwise demonstrated that Hamamatsu's infringement defenses were so weak as to be exceptional.

With regard to Hamamatsu's litigation conduct, we reject SiOnyx's argument that the district court applied the wrong legal standard. While the court observed that SiOnyx "provided no evidence that counsel deliberately attempted to increase the cost and complexity of this case for any improper purpose," it is apparent that the court treated this as a factor in its inquiry, not as a legal standard. SiOnyx otherwise relies on several aspects of the litigation as evidence that Hamamatsu intentionally extended the litigation to increase SiOnyx's costs, including Hamamatsu's refusal to settle, refusal to waive service of process, providing incomplete information during discovery, and excessive post-trial motions. But while Hamamatsu's conduct may have had the effect of extending the litigation and commensurately increasing cost, we cannot say that the district court abused its discretion in not finding that delay alone was Hamamatsu's purpose. Hamamatsu was not obligated to settle or to waive service. And having dealt directly with the parties' discovery disputes and post-trial motions, the district court was well-situated to determine whether Hamamatsu's conduct was unreasonable. Ultimately, abuse of discretion is a deferential standard, and while the district court may have been within its right to grant SiOnyx's motion for fees under these circumstances, we cannot say that it abused its discretion in denying fees.

CONCLUSION

We have considered the parties' remaining arguments but find them unpersuasive. For the foregoing reasons, we reverse the district court's decision denying SiOnyx sole ownership of the Disputed Foreign Patents. We decline to

address the issue of willfulness and affirm the district court's judgment in all other respects.

AFFIRMED-IN-PART, REVERSED-IN-PART

COSTS

Costs to SiOnyx.