

United States Court of Appeals for the Federal Circuit

00-1218, -1350

RHONE-POULENC AGRO, S.A.
(Now known as Aventis CropScience, SA),

Plaintiff-Appellee,

v.

DeKALB GENETICS CORPORATION,

Defendant-Appellant,

and

MONSANTO COMPANY,
(Now known as Pharmacia Corporation),

Defendant.

George Pazuniak, Connolly Bove Lodge & Hutz LLP, of Wilmington, Delaware, argued for plaintiff-appellee. With him on the brief were Rudolf E. Hutz, Richard D. Levin, and Francis DiGiovanni.

John F. Lynch, Howrey Simon Arnold & White, LLP, of Houston, Texas, argued for defendant-appellant. With him on the brief were Richard L. Stanley, Michael E. Lee and Steven G. Spears, of Houston, Texas; and Lisa J. Saks, of Washington, DC. Of counsel on the brief was Donald L. Traut, Dekalb Genetics Corporation, of Dekalb, Illinois.

Appealed from: U.S. District Court for the Middle District of North Carolina
Chief Judge N. Carlton Tilley, Jr.

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DECIDED: November 19, 2000

Before CLEVINGER, SCHALL and DYK, Circuit Judges.

CLEVINGER. Circuit Judge.

This case concerns a claim by Rhône-Poulenc Agro, S.A. ("RPA") that it was fraudulently induced to enter into a 1994 Agreement with DeKalb Genetics Corporation ("DeKalb"), as well as RPA's related claims of trade secret and patent infringement against DeKalb. Trial was bifurcated between two different juries, with the first jury deciding the licensing and technology transfer issues and the second jury deciding the trade secret and patent infringement claims.

The first jury trial resulted in a judgment in favor of RPA that DeKalb fraudulently induced RPA to enter into the 1994 Agreement. RPA was awarded \$1 in nominal damages, \$15 million in unjust enrichment recovery, and \$50 million in punitive damages. RPA also was awarded rescission of the 1994 Agreement. The second jury trial similarly resulted in a judgment in favor of RPA with regard to both the trade secret misappropriation and patent infringement claims. RPA and DeKalb entered into a stipulated agreement regarding damages for trade secret misappropriation and patent infringement.

DeKalb appeals the fraudulent inducement, trade secret misappropriation, and patent infringement verdicts, as well as the award of punitive damages and several related post-trial

rulings by the district court.

For the reasons set forth below, we affirm.

I

Background

This litigation arises from disputes relating to several different technology transfers and licenses between RPA and DeKalb. The technology underlying these agreements involves the research and development of genetically engineered corn that is tolerant to glyphosate herbicides, thereby permitting a farmer to thoroughly douse a field with herbicide to kill weeds, while allowing the resistant corn to survive. Eventually, the successful glyphosate-resistant corn technology resulted in DeKalb's "Roundup Ready®" corn, introduced to market in 1998.

The events leading to the development of Roundup Ready® corn spanned a period of over ten years. In 1985, DeKalb and Calgene, Inc., entered into an agreement for the joint development of crops containing Calgene's C-aroA, or CT-7 gene. The C-aroA gene is covered by a set of Calgene patents referred to as the "Comai" patents, U.S. Patents Nos. 4,535,060 and 4,769,061. The C-aroA gene is an "EPSPS" gene derived from a Salmonella bacterium. Inside a plant, the herbicide glyphosate binds to a specific enzyme in a plant chloroplast, called EPSPS (5-enolpyruvyl-3-phosphoshikimate synthase enzyme), which then cannot perform its normal critical function in the biosynthesis of aromatic acids, and the plant dies. When the C-aroA gene is expressed^[1] in transgenic plants, the bacterial EPSPS enzyme encoded by this gene fulfills the aromatic amino acid needs of the plant in the presence of glyphosate, whereas the plant version of this enzyme (ubiquitous in nature) is sensitive to glyphosate.

The 1985 DeKalb-Calgene Agreement gave DeKalb an exclusive license to the Comai patents in the field of use of corn. It also provided for various royalty payments to be made by DeKalb to

Calgene for products developed under the agreement. In 1991, RPA, DeKalb, and Calgene entered into an "Assignment and Assumption Agreement" whereby RPA assumed Calgene's rights and obligations under the 1985 Agreement. The combination of both the 1985 Agreement and the 1991 Agreement is referred to herein as the "1985/1991 Agreement."

Beyond the 1985/1991 Agreement, DeKalb and RPA were involved in a broader collaboration to produce glyphosate-tolerant corn. RPA performed the initial genetic work by creating various genetic constructs. DeKalb "transformed" corn cells by placing the RPA constructs into corn cells, grew full corn plants from the cells in a greenhouse, and finally, performed field tests on corn plants grown from seeds of the greenhouse plants.

Neither company appeared to have the technical expertise to perform each other's work.

The events leading up to this lawsuit commenced in 1992. At a November 1992 meeting, Dr. Freyssinet of RPA told Dr. Mackey of DeKalb that RPA would provide DeKalb with new genetic material containing a mutated EPSPS gene from maize (corn), as opposed to the bacterial C-aroA gene. In return, Dr. Mackey agreed that DeKalb would provide RPA with the results of its testing. Dr. Freyssinet then asked Dr. DeRose, another RPA scientist, to prepare some constructs of the mutated corn gene for DeKalb. Dr. DeRose combined an optimized transit peptide ("OTP") with a maize EPSPS gene that had been mutated at two different locations in the amino acid sequence (the double mutant maize EPSPS gene, or "DMMG").^[2]

This new construct, consisting of the OTP and the DMMG, is the subject of RPA's trade secret misappropriation claim, and is designated "RD-125." The OTP is covered by claim 11 of U.S. Patent No. 5,510,471, reissued as RE 36,449 on Dec. 14, 1999 ("the '471 patent"), and is the subject of RPA's patent infringement claim. Dr. DeRose of RPA transferred the RD-125 construct to DeKalb in February 1993.

In late 1993 and early 1994, DeKalb succeeded in growing herbicide resistant corn plants in its

greenhouse. On February 18, 1994, DeKalb notified RPA of these results, and told RPA that DeKalb would begin repeating the experiments in the field in the summer of 1994. Dr. Freyssinet of RPA briefly thanked DeKalb for this information. On March 10, 1994, DeKalb sent RPA another letter again mentioning the summer field trials and the gains in herbicide tolerance achieved in the greenhouse with RD-125. The letter also requested RPA's opinion regarding the use of RD-125 for other projects.

DeKalb conducted field tests in Hawaii in the summer of 1994, and on September 6, 1994, DeKalb scientists, including Dr. Flick of DeKalb, received results from the tests indicating that the corn plants grown in the field were resistant to up to four times the normal levels of Roundup® herbicide (results similar to the greenhouse tests). These were very encouraging results. However, DeKalb never sent the results of the field tests to RPA. Instead, on September 7, 1994, Dr. Flick sent only a short letter to RPA inquiring about using RD-125 as a selective marker in soybeans.

Following the field tests, DeKalb immediately began backcrossing the successful corn plants containing RD-125 with commercial corn varieties, also referred to as DeKalb's elite corn lines. For a trait such as glyphosate tolerance to become incorporated into a species' genome, recurrent backcrossing of plants of that species by hybrid intermediaries, and survival and fertility of the resulting offspring, is necessary. Commercial corn varieties with and without the trait of interest are then compared to ensure that the trait does provide resistance to glyphosate herbicide, but does not negatively impact other agronomic traits. Backcrossing of plants in order to prepare for the creation of a marketable line of seeds can take several years. Thus, immediately beginning the backcrossing process gave DeKalb a jump on any potential competition.

Also during the summer of 1994, Calgene and RPA filed a patent infringement suit against Monsanto over Monsanto's alleged use of the Comai patents' technology in making, using and selling glyphosate-resistant soybeans. DeKalb also had an interest in this litigation, because

DeKalb was the exclusive licensee of the Comai patents in the field of corn.

Pursuant to the Monsanto litigation, two agreements were negotiated in December 1994. First, Calgene, RPA and Monsanto agreed to a settlement of the patent litigation over the Comai patents. Monsanto paid \$8 million in return for a co-exclusive license to the Comai patents, shared in part with DeKalb, for use in all fields. Second, RPA and DeKalb entered into a new agreement (the "1994 Agreement"), which dissolved the 1985/1991 Agreements. DeKalb agreed to share its exclusive license for corn under the Comai patents with Monsanto, and received \$500,000 of the settlement proceeds. RPA also granted DeKalb the "world-wide, paid-up right to use" various technologies in the field of corn, explicitly including RD-125 in the list of technologies covered. The 1994 Agreement also gave DeKalb the right to grant sublicenses to the aforementioned technologies, and thus amounted to a complete surrender of RPA's exclusive rights in the technologies.

Eventually, DeKalb developed a successful glyphosate-tolerant corn line containing RD-125, marketed as Roundup Ready® corn, which DeKalb referred to as the "GA21 corn line." In January 1996, DeKalb and Monsanto entered into an agreement to work together on the corn, and DeKalb licensed the GA21 corn line to Monsanto. "Roundup®" is a glyphosate herbicide manufactured by Monsanto. Sales of Roundup Ready® corn seeds began in 1998.

RPA sued DeKalb, claiming that by not providing RPA with the results of the 1994 Hawaii field tests, DeKalb fraudulently induced RPA to enter into the 1994 Agreement, which gave DeKalb paid-up rights to the RD-125 technology. RPA also sued DeKalb for misappropriation of trade secrets, alleging that the RD-125 technology constituted an RPA trade secret. RPA additionally sued for patent infringement of the '471 patent, originally asserting several different claims, although the only claim still at issue is claim 11. The '471 patent covers the OTP which is part of the RD-125 technology.

Granting a motion by DeKalb, the district court bifurcated the case into two different jury trials. The first trial covered all of the fraud and licensing issues. The trade secret and patent issues were delayed until a second jury trial, since it was agreed that if RPA did not win at least partly in the first jury trial, the trade secret and patent issues would become moot.

In the first trial, the jury found that RPA agreed to allow DeKalb to use the RD-125 construct in return for DeKalb's agreement to provide test results to RPA. The jury found that DeKalb breached this agreement by not revealing the Hawaii field tests. The jury also found that DeKalb fraudulently induced RPA to enter the 1994 Agreement, and that this caused RPA to enter the 1994 Agreement on a different basis than it otherwise would have. The district court determined that rescission of the 1994 Agreement was appropriate. The jury awarded RPA \$15 million for DeKalb's unjust enrichment, \$1 in nominal damages, and \$50 million in punitive damages.

Prior to the second jury trial, DeKalb conceded that it did not retain any defense of noninfringement as to claim 11 of the '471 patent. However, DeKalb asserted affirmative defenses of obviousness pursuant to 35 U.S.C. § 103, as well as inequitable conduct by RPA during the procurement of the '471 patent. DeKalb also wanted to introduce evidence in the second jury trial that it had been granted a license to the technology at issue from RPA, but the district court ruled that all licensing issues had already been resolved against DeKalb in the first trial. DeKalb was therefore prevented from asserting a licensing defense to either the trade secret misappropriation or patent infringement claims.

In the second trial, the jury first determined that RD-125 was a trade secret from April 1996 until February 1997, and that DeKalb misappropriated it. Second, the jury determined that claim 11 of the '471 patent was not obvious. Third, the jury, serving in an advisory capacity regarding the inequitable conduct issue, found that a declaration submitted by RPA to the U.S. Patent and Trademark Office was not fraudulent, and the district court agreed in its ruling on the issue. Therefore DeKalb was also liable for patent infringement. Fourth, the jury declined to grant

punitive damages against DeKalb on the trade secret misappropriation claim. RPA and DeKalb entered into a stipulated agreement regarding damages for trade secret misappropriation and patent infringement.

This appeal followed.

II

Fraudulent Inducement

DeKalb argues that the jury verdict finding that it fraudulently induced RPA to enter into the 1994 Agreement is not supported by substantial evidence. The district court denied DeKalb's motion for judgment as a matter of law ("JMOL") overturning the finding of fraudulent inducement, thereby ruling that there was a legally sufficient evidentiary basis for a reasonable juror to reach this conclusion. Rhône-Poulenc Agro S.A. v. Monsanto Company and DeKalb Genetics Corp., No. 1:97CV1138 (M.D.N.C. Feb. 8, 2000). Upon review, this court reapplies the same standard of review. Tec Air, Inc. v. Denso Mfg. Mich. Inc., 192 F.3d 1353, 1357, 52 USPQ2d 1294, 1296 (Fed. Cir. 1999). Thus, we review whether or not there was a legally sufficient evidentiary basis for the jury to find that DeKalb fraudulently induced RPA to enter into the 1994 Agreement in which RPA gave DeKalb paid-up rights to use and sublicense the RD-125 technology.

The fraud claim was tried in the district court pursuant to North Carolina state law. Rhône-Poulenc Agro S.A., slip op. at 16 n.13. We review issues not unique to patent law under the law that would be applied in the regional circuit where appeals from the district court would normally lie. Tronzo v. Biomet, Inc., 236 F.3d 1342, 1346, 57 U.S.P.Q.2d 1385, 1388 (Fed. Cir. 2001). In this case, the Fourth Circuit would apply North Carolina state law, and we thus will do likewise.

North Carolina requires that, for the remedy of rescission, each element of fraud must be proven

by a preponderance of the evidence. Maynard v. Durham & Southern Ry. Co., 112 S.E.2d 249, 251 (N.C. 1960), rev'd on other grounds, 365 U.S. 160 (1961) (citing Walters v. Bridgers, 111 S.E.2d 176, 180 (N.C. 1959)). This is a lower standard than the more typical "clear and convincing evidence." The elements of actual fraud under North Carolina law are:

(1) material misrepresentation of a past or existing fact; (2) the representation must be definite and specific; (3) made with knowledge of its falsity or in culpable ignorance of its truth; (4) that the misrepresentation was made with intention that it should be acted upon; (5) that the recipient of the misrepresentation reasonably relied upon it and acted upon it; and (6) that there resulted in damage to the injured party.

Hudson-Cole Development v. Beemer, 511 S.E.2d 309, 313 (N.C. Ct. App. 1999) (citing Rosenthal v. Perkins, 257 S.E.2d 63, 65 (N.C. 1979)). The district court's opinion combined the first and second elements into a single test for whether a false representation or concealment of material fact was made. Rhône-Poulenc Agro S.A., slip op. at 16. Thus, the district court's opinion refers to only five different elements for proving fraud. However, since DeKalb does not contest either the first or second elements of the district court's opinion, this difference is immaterial.

DeKalb argues that three of the elements of fraud were not supported by substantial evidence at the trial. First, DeKalb argues that no evidence was presented that demonstrated that a representation was made with knowledge of its falsity or in culpable ignorance of its truth, i.e., that DeKalb reasonably calculated to deceive RPA. Second, DeKalb argues that RPA's evidence of DeKalb's intent to deceive RPA was insufficient. Third, DeKalb alleges that any reliance by RPA was unreasonable.

North Carolina law allows the same evidence to be used as proof of the "reasonably calculated to deceive" and "intent to deceive" prongs of the fraud test. New Bern Pool & Supply Co. v. Graubart, 381 S.E.2d 156, 161 (N.C. Ct. App. 1989), aff'd, 390 S.E.2d 137 (N.C. 1990) ("The reasonable inference could be drawn that these representations and concealments were reasonably calculated to deceive, were made with intent to deceive, and that plaintiff was in fact

deceived."). Because the arguments and evidence relating to these two elements of the fraud test are similar, we will address them together.

The heart of RPA's case for fraud concerns DeKalb's behavior upon learning of the successful Hawaii field test results for corn containing the RD-125 technology. The jury found that at a meeting between RPA and DeKalb in November 1992, RPA promised to give DeKalb certain genetic constructs, and DeKalb promised to keep RPA informed of test results. After RPA provided DeKalb with the RD-125 construct in 1993, DeKalb proceeded to insert the construct into corn plants and performed greenhouse tests on the ability of the modified corn plants to withstand glyphosate herbicide. Dr. DeRose from RPA made periodic contact with various scientists from DeKalb, including Dr. Flick, throughout 1993. Dr. DeRose additionally made a site visit to DeKalb to view corn growing in its greenhouse in Connecticut.

On February 18, 1994, Dr. Flick of DeKalb sent a progress report to Drs. Freyssinet and DeRose at RPA, detailing the results of the greenhouse testing to date. The letter was quite positive, stating:

This has been a very exciting period in this work . . . we have now demonstrated tolerance in transgenic plants in the greenhouse to up to four times the field application recommended by Monsanto for tolerant corn! We will repeat these experiments in the field in the summer of 1994. It is obvious from these results that the mutant maize gene [part of the RD-125 construct] has been the key to success.

However, greenhouse testing was only one of the first steps required in demonstrating commercial viability of the glyphosate-tolerant corn. Field tests were necessary in order to demonstrate that the resistant gene would be passed on to the next generation through the seed stage of the plant. Dr. DeRose testified that no successful field trials of glyphosate-resistant corn had ever been done at that point in time, and that due to the number of past failures, he had no specific expectation that the planned field trials would succeed.

On September 6, 1994, Dr. Flick of DeKalb learned that the Hawaii field tests had been successful. However, Dr. Flick did not communicate this information to anyone at RPA. Instead, on September 7, 1994, Dr. Flick wrote Dr. Freyssinet of RPA the following letter, stating in its entirety:

As the results that we have obtained in maize with the glyphosate resistant double mutant maize gene provided by RPA to DEKALB have been very encouraging, we are interested in whether this gene would also function as a selectable marker in soybeans. Is it possible for DEKALB to use this gene in soybeans as a selectable marker?

I will await your answer.

In fact, DeKalb never informed RPA about the success of the Hawaii field test results. When Dr. Flick was asked in deposition why he did not inform anyone at RPA about the Hawaii field test results, he responded that it would have required him to write a longer letter. Dr. Flick was evidently not a compelling witness for DeKalb. In fact, the district court's opinion notes that Dr. Flick's manner during his video deposition "most reasonably could have been interpreted as indicative of deception."^[3] Rhône-Poulenc Agro S.A., slip op. at 26.

Additionally, DeKalb's lawyer Doug Fisher was also aware of the Hawaii field test results. Mr. Fisher and Dr. Flick were involved in preparing the appendix to the 1994 Agreement between RPA and DeKalb which transferred the RD-125 construct to DeKalb under a paid-up license. Furthermore, RPA put forth evidence tending to show that Mr. Fisher's notes relating to the preparation of the 1994 Agreement were destroyed by DeKalb in contravention of DeKalb's stated document retention policy.

DeKalb argues that no evidence shows that it failed to send the Hawaii test results under a "plan" to cause RPA to enter the 1994 Agreement. DeKalb further asserts that Dr. Flick's September letter cannot support a finding of deceitful intent. Certainly, it is true that RPA has not introduced a "smoking gun" memo clearly delineating a fraudulent scheme or plan by DeKalb. However, DeKalb's arguments appear to urge that inferences cannot be drawn from the actions that took

place at DeKalb.

When reviewing a motion for JMOL, we review the evidence and draw inferences in the light most favorable to the verdict winner. McGinley v. Franklin Sports, Inc., 2001 U.S. App. LEXIS 18758 at *22-3 (Fed. Cir. 2001). We do not assess the credibility of witnesses, as that is the jury's province. Comark Communs. v. Harris Corp., 156 F.3d 1182, 1192-93, 48 USPQ2d 1001 (Fed. Cir. 1998). The evidence produced at trial tended to show that the Hawaii field test results were an important and exciting milestone in the development of glyphosate-tolerant corn. In light of this, it seems odd that Dr. Flick neglected to send these results to anyone at RPA, especially in light of his past actions forwarding on the initial field test results and generally keeping RPA informed of research events. Dr. Flick's explanation for his actions was certainly less than convincing. When this evidence is coupled with the testimony regarding the knowledge and actions of DeKalb's lawyer who assisted in procuring a paid-up license to RD-125 for DeKalb, it seems reasonable to infer that DeKalb reasonably calculated and intended to deceive RPA by withholding the Hawaii field test results to gain a strategic advantage in the 1994 Agreement.

DeKalb also argues that there was no substantial evidence that RPA's reliance on DeKalb's alleged fraudulent conduct was reasonable. The RD-125 construct, as well as the OTP and the DMMG sequences, were all clearly included in the exhibit attached to the 1994 Agreement that listed the genetic material subject to the agreement. DeKalb argues that RPA should have inquired about the results of the Hawaii field tests and the potential of the RD-125 construct before signing away exclusive rights to the technology, and that RPA's failure to do so was unreasonable.

Certainly, RPA could have done more to police their own technology. However, RPA did present testimony that the success of the Hawaii field tests was unexpected, because no one had ever achieved success in the field with glyphosate-tolerant corn before. Furthermore, Dr. DeRose testified that he had a close and friendly relationship with the scientists at DeKalb and "they

always sent us this information without asking them when things had worked, so I fully expected to receive information when these experiments were working." The close working relationship between various RPA and DeKalb scientists, as well as their shared past history of prior failure to achieve success in the field, made it reasonable for RPA to assume that silence from DeKalb meant failure. The jury was properly instructed as to the elements of fraud and found reasonable reliance, and "in fraud actions 'it is generally for the jury to decide whether plaintiff reasonably relied upon representations made by defendant.'" Rowan County Bd. Of Educ. v. United States Gypsum Co., 407 S.E.2d 860, 863 (N.C. Ct. App. 1991), aff'd in relevant part, 418 S.E.2d 648 (N.C. 1992). We therefore hold that the jury's fraud verdict was supported by substantial evidence.

III

Punitive Damage Award

After finding DeKalb liable for fraudulent inducement of the 1994 Agreement, the jury returned a damages verdict awarding RPA \$15 million in unjust enrichment, \$1 in nominal damages, and \$50 million in punitive damages. The district court affirmed the punitive damages award. Rhône-Poulenc Agro S.A., slip op. at 123-28. On appeal, DeKalb contests the punitive damages award as unconstitutionally excessive.

Pursuant to the recent Supreme Court decision Cooper Indus., Inc. v. Leatherman Tool Group, Inc., ___ U.S. ___, 121 S. Ct. 1678, 58 USPQ2d 1641 (2001), we review the constitutionality of an award of punitive damages under a de novo standard of review. Punitive damages are intended to both punish the defendant for wrongful conduct, and deter future wrongdoing. The Supreme Court in Cooper cautioned that "[d]espite the broad discretion that States possess with respect to the imposition of criminal penalties and punitive damages, the Due Process Clause of the Fourteenth Amendment to the Federal Constitution imposes substantive limits on that discretion."

Id. at 1684.

The Supreme Court in Cooper reviewed several of its past decisions involving punitive damages and noted that "in each of these cases we have engaged in an independent examination of the relevant criteria." Id. at 1685. Independent examination or review means a searching review, one that hunts for error and gives virtually no weight to the decisional process under review. Each aspect of the appellate review puts each aspect of the decision under review in sharp focus. Although our standard of review is de novo, the Supreme Court's decision in Cooper cautions us that the decision does not suggest "that the Seventh Amendment would permit a court, in reviewing a punitive damages award, to disregard . . . jury findings" on factual issues. Cooper, ___ U.S. ___, 121 S. Ct. at 1687. We understand this to mean that if a punitive damages determination rests on purely factual issues, we are to assume that those factual issues have been resolved adversely to the defendant, absent contrary indication.

We examine the process followed in Cooper to provide guidance on how to approach this searching review. The three main criteria cited by the Court correspond to the three factors from BMW of N. Am., Inc. v. Gore, 517 U.S. 559 (1996):

- (1) the degree or reprehensibility of the defendant's misconduct,
- (2) the disparity between the harm (or potential harm) suffered by the plaintiff and the punitive damages award [the ratio test], and
- (3) the difference between the punitive damages awarded by the jury and the civil penalties authorized or imposed in comparable cases.

Cooper, ___ U.S. ___, 121 S. Ct. at 1687-88, citing Gore, 517 U.S. at 574-75. Thus, the Cooper opinion confirms that the Gore factors continue to provide a blueprint regarding what to examine with regard to punitive damages.

However, the Cooper opinion provides additional guidance beyond a mere recitation of the Gore factors. For instance, the Supreme Court in Cooper looked to see if there was any procedural error lurking in the manner in which the punitive damages request was put to the jury. See

Cooper, ___ U.S. ___, 121 S. Ct. at 1688 (noting that a flaw in the jury charge, namely the statement that the copying in the case was unlawful when in fact it was not, could have influenced the reprehensibility determination by the jury). A similar example of procedural error might include whether the jury charge was potentially misleading, as opposed to actually inaccurate.

The first Gore factor, reprehensibility of the misconduct, merits further discussion. Since punitive damages are in essence a punishment assigned to a wrongdoer by civilians, the degree of reprehensibility of the wrongdoer is of utmost importance in deciding whether the award of punitive damages is unconstitutionally excessive. The reprehensibility judgment thus deserves extremely careful examination. The Court in Cooper, however, noted that this factor can be influenced by the demeanor and credibility of witnesses, matters on which any appellate court must defer substantially to the jury. Cooper, ___ U.S. ___, 121 S. Ct. at 1687-88. It thus appears that the reprehensibility factor presents a mixed issue for appellate review: to the extent that the judgment-call on reprehensibility can be traced to a jury's assessment of witnesses, independent appellate review is essentially meaningless. But with respect to any other aspect of the reprehensibility judgment, appellate review must be searching and close.

The Court in Cooper also considered the factual accuracy of the evidence put to the jury. See Cooper, 121 S. Ct. at 1688-89 (noting that the estimate of the possible harm to the plaintiff, measured by the likely success of the defendant, may have been infected by an inaccurate assessment of the extent of likely gain to the defendant). In Cooper, this subject fed into the second Gore factor, the calculation of the ratio between the size of the punitive damages award and the harm caused by the defendant's tortious conduct.

Third, the Court in Cooper noted that the third Gore factor, the comparison with comparable sanctions, was particularly well suited to appellate review because it called for a broad legal comparison. Id. at 1688. Indeed, upon review of the third factor, the Court in Cooper considered a dispute regarding this factor over which the Court of Appeals had expressed no opinion. See id.

at 1689 (noting that a searching, independent review of comparable state law sanctions might reveal questions as to whether the facts of the case would lead to multiple state law sanctions, instead of a single sanction).

The Court in Cooper candidly recognized that the end result of appellate review might not differ if independent review was not required. Independent review, however, is designed to assure that no aspect of the assessment of punitive damages can escape examination under the judicial microscope. In Cooper itself, the Court discerned three aspects in which independent review required the appellate court to decide for itself if the circumstances of the case warranted the punitive damage award. In the light of Cooper, we think it reasonable to structure our independent review on each of the pertinent factors to include at least three tests, each applied without deference: examination of whether the punitive damages subject was properly submitted to the jury, examination of the factual predicates for any of the pertinent factors, and careful assessment of any comparable state law sanctions.

We first examine the factor denoted "perhaps the most important indicium of the reasonableness of a punitive damages award" – the degree of reprehensibility of the defendant's conduct. Gore, 517 U.S. at 575. Following Cooper, we initially check to ensure that the punitive damage issue was properly submitted to the jury. The jury instructions clearly spelled out the criteria that the jury should consider in reaching its decision, and the district court noted that these criteria were similar to criteria cited with approval in Pacific Mutual Life Ins. Co. v. Haslip, 499 U.S. 1, 21-22 (1991). Rhône-Poulenc Agro S.A., slip op. at 124. Thus, we discern no error in the manner in which the punitive damages issue was submitted to the jury.

DeKalb argues that because the fraud at issue in this case did not involve a deliberate false statement or affirmative act of misconduct, the conduct complained of was not egregious enough to support an award of punitive damages. It is true that the Supreme Court in Gore suggested "the omission of a material fact may be less reprehensible than a deliberate false statement,

particularly when there is a good-faith basis for believing that no duty to disclose exists. " Gore, 517 U.S. at 580. However, the Court in Gore also suggested that the plaintiff BMW had a good faith basis for believing it had no duty to disclose the minor car repairs at issue in that case. Id. at 578 (noting that "a corporate executive could reasonably interpret the [state] disclosure requirements as establishing safe harbors"). By contrast, DeKalb has not cited any plausible basis for believing that it had no duty to disclose the field test results at issue here, a lapse which the jury also found constituted an unlawful breach of contract.

It is true that the facts alleged herein do not demonstrate any of the criteria enhancing reprehensibility mentioned in Gore, such as an act of violence, disregard for the health and safety of others, a pattern of misconduct, or the exploitation of a financially vulnerable target. See Gore, 517 U.S. at 576. However, we are mindful of the caution we must exercise when the determination of reprehensibility depends in meaningful part upon the credibility of witnesses, a matter as to which the jury must decide. Cooper, 121 S. Ct. at 1688. It is evident that much of the determination of reprehensibility in this case turned upon an evaluation of the DeKalb witnesses alleged to have concealed the Hawaii field test results, particularly Dr. Flick. Even our review of the cold record reveals several rather implausible explanations and assertions by DeKalb witnesses. In light of this, we find that DeKalb's conduct was sufficiently reprehensible to support the award of punitive damages.

DeKalb raises an additional argument regarding the reprehensibility of its conduct. DeKalb points out that North Carolina applies a "preponderance of the evidence" standard for proving fraud, whereas in most jurisdictions, fraud must be proven by clear and convincing evidence. However, this argument has been raised and rejected previously by the Supreme Court in Haslip :

We have considered the arguments raised by [petitioner] Pacific Mutual and some of its amici as to the constitutional necessity of imposing a standard of proof of punitive damages higher than "preponderance of the evidence." There is much to be said in favor of a State's requiring, as many do, see, e.g., Ohio Rev. Code Ann. § 2307.80 (Supp. 1989), a standard of "clear and convincing evidence" or, even, "beyond a reasonable doubt," see Colo. Rev. Stat. § 13-25-127(2) (1987), as in the criminal

context. We are not persuaded, however, that the Due Process Clause requires that much. We feel that the lesser standard prevailing in Alabama -- "reasonably satisfied from the evidence" -- when buttressed, as it is, by the procedural and substantive protections outlined above, is constitutionally sufficient.

Haslip, 499 U.S. at 23 n.11. Given that the use of a "preponderance" standard does not impact the constitutional guarantees of the Due Process Clause, we decline to consider it as a weighting factor in the constitutional analysis.

Next, we address the second Gore factor: whether the ratio between the harm, or potential harm, suffered by the plaintiff and the punitive damage award is reasonable. The jury awarded RPA \$15 million in unjust enrichment and \$50 million in punitive damages, resulting in a ratio of 3 and 1/3 to 1. Although we take to heart repeated cautions not to mark the constitutional boundary by a simple mathematical formula, e.g., Gore, 517 U.S. at 582, TXO Production Corp. v. Alliance Resources Corp., 509 U.S. 443, 458 (1993), we note that this ratio is well within the ratios approved in other cases. See, e.g., Gore, 517 U.S. at 582 (noting that the punitive damage award rejected by the Court was 500 times the amount of the actual harm as determined by the jury); TXO, 509 U.S. at 459-62 (upholding a punitive damage award alleged to be 526 times as large as the actual damage award, while emphasizing that the magnitude of potential harm was likely much greater than the actual damages); Haslip, 499 U.S. at 23 (approving a punitive damage award more than 4 times the amount of compensatory damages, while noting that this "may be close to the line").

However, before we can be content with the ratio in the present case, we must first address DeKalb's contention that the proper point of comparison is between the nominal damages of \$1 and the punitive award, and not between the unjust enrichment award and the punitive award. Of course, such a comparison changes the applicable ratio to 50 million to 1, one of vastly different proportion.

DeKalb claims that under North Carolina law, it is inappropriate to base a punitive damage award

on an award for unjust enrichment instead of compensatory damages. DeKalb relies on the Fourth Circuit case of Winant v. Bostic, 5 F.3d 767 (4th Cir. 1993) for this proposition. Winant dealt with a land deal gone sour. Claiming fraud, the plaintiffs asked for the remedy of rescission and were awarded restitution presumably based upon the price they paid for the land they no longer wanted. The court then trebled the restitution amounts, relying on a North Carolina statute allowing such punitive measures. The appeals court reversed, stating:

In a fraud case, damage is the value of the loss caused by the tortious conduct, and it is measured by the difference between what was received and what was promised by the false representation. . . . The remedy of rescission, on the other hand, does not include a notion of damage. It intends to undo the transaction and return the parties to their original status. . . . Instead of trebling damages [this action] would treble the size of the transaction.

Winant, 5 F.3d at 776.

DeKalb argues that the same logic applies here, because the remedy RPA sought and received was rescission of the 1994 Agreement. DeKalb claims that the punitive damage award improperly penalizes DeKalb for the size of the transaction involved, without regard to RPA's actual harm. We disagree. This case involves an award of unjust enrichment, not the return of the entire purchase price as in Winant. At a minimum, the unjust enrichment of DeKalb relates to the bad actions of DeKalb and resultant harm to RPA. If RPA had been informed of the value of the RD-125 construct, it would have had the opportunity to participate in the commercial success of the resultant glyphosate-tolerant corn products, which have garnered large profits for DeKalb. Rhône-Poulenc Agro S.A., slip op. at 125-26. DeKalb's fraud denied RPA that opportunity for several years. Denying RPA the opportunity to profit from the technology it expended money and effort to develop certainly constitutes harm.

Furthermore, as RPA argues, the more recent case of Mehovic v. Mehovic, 514 S.E.2d 730 (N.C. Ct. App. 1999) seems more directly relevant. In Mehovic, the plaintiff had foregone compensatory damages in favor of rescission. The court held that "North Carolina public policy supports an award of punitive damages upon a jury verdict establishing fraud and consequent entitlement, at

the plaintiff's election, either to rescission or compensatory damages." Mehovic, 514 S.E.2d at 734. Although North Carolina law is not binding on the due process issue, we conclude that under the facts of this case the unjust enrichment gained by DeKalb is logically related to the harm or potential harm caused RPA, and it was appropriate to base the award of punitive damages on the unjust enrichment award.

Our examination of the ratio between the unjust enrichment and punitive damages assures us that the relationship between the two is reasonable. Additionally, we note that upon examination of the factual basis for the award of unjust enrichment, it appears that had DeKalb's fraud proceeded undetected, the potential lost opportunity and harm to RPA would have continued to increase. Thus, we find that the second Gore factor does not suggest that the punitive damage award in this case is unconstitutionally excessive.

Finally, we examine the third factor noted in Gore: comparing the punitive damage award with other available sanctions for comparable misconduct. DeKalb relies upon two recent North Carolina statutes as demonstrating that the punitive damage award is improper for several reasons. First, N.C. Gen. Stat. § 1D-25 states "punitive damages awarded against a defendant shall not exceed three times the amount of compensatory damages." N.C. Gen. Stat. § 1D-25 (2000). Also, N.C. Gen. Stat. § 1D-15 states that punitive damages may only be awarded if the aggravating factor of fraud is proven "by clear and convincing evidence." N.C. Gen. Stat. § 1D-15 (2000).

Together, these two statutes imply that a punitive damage award with a comparative ratio greater than three, based upon a showing of fraud by only a preponderance of the evidence (such as the one we have in the present case), would not be upheld under North Carolina law. However, the problem with DeKalb's reliance on these statutes as a matter of state law is that both of them were only effective as of January 1996. The two North Carolina statutes at issue here were specifically designated by the legislature to become effective as of January 1, 1996, and the North

Carolina legislature made no provision for retroactivity. And the editor's note to the statute states that the statute "is applicable to claims for relief arising on or after [January 1, 1996]." N.C. Gen. Stat. § 1D-1 (2000) (editor's note); see also Food Lion, Inc. v. Capital Cities/ABC, Inc. , 984 F. Supp. 923, 936 (M.D.N.C. 1997). The fraud complained of in this action occurred in 1994. But DeKalb suggests that these statutes are pertinent to our due process analysis of comparable statutes. Thus, we must determine whether it is appropriate to consider factors that were not applicable at the time of the events in question in our analysis of the third Gore factor.

The Supreme Court in Gore emphasized that the three factors it put forth regarding punitive damages were all related to the idea of providing a defendant with fair notice of the possible result of his or her actions. Specifically, the Court stated "[e]lementary notions of fairness enshrined in our constitutional jurisprudence dictate that a person receive fair notice not only of the conduct that will subject him to punishment, but also of the severity of the penalty that a State may impose." Gore, 571 U.S. at 574. Although the Court in Gore noted the existence of a relevant Georgia statute enacted after the events leading to the fraud claim at issue, id. at 569 n.13, the Court concluded its analysis of the sanctions for comparable misconduct by stating:

Moreover, at the time [defendant's] policy was first challenged , there does not appear to have been any judicial decision in Alabama or elsewhere indicating that application of that policy might give rise to such severe punishment.

Id. at 584 (emphasis added).[\[4\]](#)

Applying the rationale of fair notice to the case at hand, we in sum hold that subsequent changes in the law occurring after the misconduct has taken place are not relevant as an example of a comparable sanction. The changes in North Carolina law that occurred after DeKalb decided to commit its fraudulent conduct cannot be argued to have provided notice or guidance to DeKalb at that time. Thus, only comparable sanctions available at the time of the misconduct will be considered in our analysis.

DeKalb cites no additional statutes tending to indicate that the punishment which might have

been expected for its conduct was less severe than that which DeKalb actually received. We note that North Carolina criminal statutes in 1994 made obtaining property by false pretenses a felony punishable by a term of incarceration and a fine at the discretion of the court. Rhône-Poulenc Agro S.A., slip op. at 127-28. Given the lack of any statute or rule limiting or barring the imposition of punitive damages in North Carolina at the time of DeKalb's fraudulent conduct, our review of comparable statutes does not indicate any potential constitutional problem.

Thus, our de novo review of the three factors listed in Gore, as well as the criteria noted in Cooper, fails to detect any constitutional infirmity in the award of punitive damages.

In future cases, we suggest that district courts consider creating a record that will enable the district court, on post-trial motions, and courts on appeal to determine with greater certainty what the jury fact-findings regarding punitive damages actually were. In general, this may suggest use of special interrogatories under Rule 49 of the Federal Rules of Civil Procedure. Without specific jury findings on issues that result in punitive damages awards, we will be left to speculate as to what the jury "may" or "might" have concluded. See Cooper, ___ U.S. ___, 121 S. Ct. at 1688. If the district courts and we are to exercise our de novo review authority with confidence, the facts should be as clearly expressed as possible to permit application of the law to those facts. In bench trials, detailed findings of fact on punitive damages issues will, of course, be equally important.

IV

Rescission of the 1994 Agreement

Due to the jury's ruling that the 1994 Agreement was procured through fraud, the district court rescinded the 1994 Agreement to return the parties to the status quo ante. The district court determined that this meant that DeKalb retained no rights to the RD-125 technology (which

includes both the OTP and the DMMG), because the original 1985/1991 Agreement did not cover this technology. The district court then ruled that DeKalb was barred from presenting to the jury a defense that it was licensed to use the OTP and the RD-125 construct under a 1992 modification to the 1985/1991 Agreement in the second phase of the trial regarding trade secret misappropriation and patent infringement, because all possible license rights were determined in the first phase of the trial. DeKalb contests the district court's determination of the status quo ante after rescission of the 1994 Agreement, and the resulting decision to bar it from using a licensing defense in the second trial.

First, DeKalb argues that RPA's pleadings constituted a judicial admission that the DMMG was transferred pursuant to a modification of the 1985/1991 Agreement that authorized DeKalb to commercialize the technology. Pleadings are judicial admissions and a party may use them to render facts indisputable. See Help At Home Inc. v. Medical Capital, L.L.C., 2001 WL 902462, *6 (7th Cir. 2001). However, the pleading language cited by DeKalb states only that "[u]nder the [1991 Agreement], DeKalb was required to keep RPA informed of its accomplishments and progress." This very general pleading language does not explicitly mention either the DMMG or RD-125, nor does it mention anything regarding an authorization of commercial rights. Such a pleading by RPA is simply not explicit enough to constitute the judicial admission that DeKalb alleges, and therefore we find these contentions lack merit.

Next, DeKalb relies upon the jury verdict itself to argue that RPA granted DeKalb a license to commercialize the DMMG technology. The jury verdict form regarding fraud contained four different questions relating to the status of the agreements between DeKalb and RPA, which the jury answered in the following manner:

1. Has RPA proven by a preponderance of the evidence that DeKalb agreed to provide RPA with the results of its testing in return for receiving the double mutant maize EPSPS genes?

Answer: yes

(a) Was the agreement formed orally at the November 1992 meeting in Mystic, Connecticut?

Answer: yes

(b) Was the agreement formed through the conduct of RPA and DeKalb at or following the Mystic meeting in November of 1992?

Answer: yes

(c) Was the agreement formed through the conduct of the parties as a modification of the 1985/1991 written agreements?

Answer: yes

DeKalb argues that because the jury answered question 1(c) in the affirmative, a 1992 modification to the 1985/1991 Agreement was formed that potentially provided DeKalb with rights to the disputed technology. The original 1985/1991 Agreement provided DeKalb with commercial rights to use the C-aroA gene technology and patents. DeKalb claims that because the DMMG was transferred pursuant to a 1992 modification of the 1985/1991 Agreement, the same terms must apply to the DMMG, i.e., DeKalb must also have been granted similar commercial rights to the DMMG.

DeKalb's arguments read far too much into the alleged terms of the 1992 modification. The jury's affirmative verdict 1(c) answer means that the parties modified the 1985/1991 Agreement such that, pursuant to the jury's affirmative answer in question 1, RPA agreed to provide DeKalb with the DMMG in return for DeKalb sharing test results. Nothing in the jury verdict form suggests that RPA additionally agreed to provide DeKalb with commercial rights to the DMMG technology.

DeKalb relies upon Deien Chevrolet, Inc. v. Reynolds & Reynolds Co., 639 N.E.2d 949 (Ill. App. Ct. 1994), to argue that the original contract terms applicable to the C-aroA technology must apply to the DMMG technology as well. [\[5\]](#) According to DeKalb, Deien dictates that essential terms in the original agreements apply to any modifications, and since the commercial rights granted are an "essential term" of the original 1985/1991 Agreement, these terms must apply to any modification of the products covered by the 1985/1991 Agreement.

We disagree. The contract at issue in Deien was quite different from the one at issue here. Deien involved a "Master Agreement" which set forth the general rights and obligations of the

parties, with a set of exhibits. The court in Deien merely found that because the modification related to changes to an exhibit, the rights under the Master Agreement were not affected. However, Deien cannot be stretched in the way DeKalb urges in order to mandate that the 1992 oral modification found in jury verdict 1(c) constituted a specific grant of commercial rights to the DMMG. The 1992 modification in the present case is not merely a modification of a peripheral exhibit to the original agreement, as in Deien.

The 1992 modification relates to a different technology, the DMMG, which was not even mentioned in the original 1985/1991 Agreement. The jury was never asked to find that the 1992 modification further constituted a modification of the commercial license agreement itself, which in the original 1985/1991 Agreement only covered the genes of the Comai patents. DeKalb cannot now presuppose that any modification must necessarily implicate the commercial licensing provisions of the original contract. If DeKalb wanted the jury to find that a modification was made to the commercial licensing provisions, it should have argued and submitted this issue to the jury explicitly.

Additionally, RPA points out that even if some type of binding license or grant of commercial rights to the DMMG technology was created by the 1992 modification, this modification required DeKalb to disclose the Hawaii field test results, which DeKalb did not do. As the district court's opinion notes, the first jury specifically found that DeKalb breached the modification of the 1985/1991 Agreement by not disclosing the test results. Rhône-Poulenc Agro S.A., slip op. at 12. It is clear that this would constitute a material breach of the modified agreement, despite DeKalb's protestations to the contrary. Thus, any commercial license granted by the modification would be unenforceable.

In response, DeKalb states that any breach affecting the 1994 Agreement could not affect the 1985/1991 Agreements. However, this misstates the issue: the relevant breach would be a breach of the 1985/1991 Agreement as modified in 1992. Therefore, even if DeKalb could prove

that the 1992 oral modification granted it commercial rights to the DMMG technology, because DeKalb materially breached the modified agreement, it cannot enforce it. Thus, we find that the district court did not err in its determination of the status quo ante existing after the rescission of the 1994 Agreement.

DeKalb makes several related arguments in claiming that it should have been allowed to present a licensing defense in the second phase of trial covering the patent infringement and trade secret misappropriation claims. However, it was DeKalb who originally requested a bifurcation of the trial into two different phases, and it must live with the consequences of that action. The intent of the bifurcation was to resolve the licensing and contract issues in the first phase of trial. Rhône-Poulenc Agro S.A., slip op. at 37-8. Although DeKalb now claims that the licensing defense it wished to present in the second trial would have involved different evidence than that presented in the first trial, DeKalb cites no such evidence. The evidence and testimony presented during the first trial involved both the 1985/1991 Agreement and any subsequent modifications, as well as the 1994 Agreement. Furthermore, the jury verdict form covered both agreements. In addition, as discussed previously, the "license" DeKalb desired to advocate in the second trial would have been unenforceable due to DeKalb's material breach of the terms of the 1992 modification to the 1985/1991 Agreement. Therefore, the district court properly excluded this licensing defense from the second trial.

V

Patent Infringement Defenses

RPA charged DeKalb with infringement of claim 11 of the '471 patent, and DeKalb has conceded infringement of this claim. Rhône-Poulenc Agro S.A., slip op. at 12. DeKalb presented two different defenses to RPA's claim of patent infringement: inequitable conduct by RPA during the procurement of the '471 patent, and obviousness of claim 11 pursuant to 35 U.S.C. § 103. We

address each of these arguments in turn.

A

Inequitable Conduct

DeKalb claims that a 37 C.F.R. § 1.132 declaration filed by RPA during prosecution (a declaration submitted to traverse an Examiner's rejection) contained material omissions and therefore constituted inequitable conduct with regard to the '471 patent. Both an advisory jury and the district court disagreed. We review the district court's ultimate determination of the inequitable conduct issue using an abuse of discretion standard. PerSeptive Biosystems, Inc. v. Pharmacia Biotech, Inc., 225 F.3d 1315, 1319, 56 USPQ2d 1001, 1003 (Fed. Cir. 2000).

The district court's opinion provides a detailed and thorough discussion of the inequitable conduct issue. See Rhône-Poulenc Agro S.A., slip op. at 85-102. The '471 patent claim 11 was written to cover the OTP (optimized transit peptide). The declaration at issue was filed by Dr. LeBrun of RPA to rebut an obviousness rejection over a prior art publication discussing the genes of the Comai patent ("the Comai publication").

The Comai publication also involved the goal of achieving glyphosate resistance in plants. It was known in the art that glyphosate tolerance could be achieved by introducing some type of EPSPS protein into a plant cell's chloroplasts. A transit peptide is required to import the EPSPS protein into the chloroplasts, and in nature, once this type of protein import is complete, an enzyme removes the transit peptide to leave a "mature" protein. Rhône-Poulenc Agro, S.A., slip op. at 62.

Dr. Comai attached a bacterial EPSPS gene to a transit peptide from a sunflower "Rubisco" (ribulose-1-5-biphosphate carboxylase) protein. [6] However, even with this transit peptide, the chloroplast import machinery will not recognize the foreign bacterial protein and generally will not allow entry into the chloroplast. To solve this problem, Dr. Comai attached to the transit peptide a

short region of the "mature" sunflower Rubisco protein, also called an "N-terminal extension." In laymen's terms, this N-terminal extension "fools" the chloroplast into admitting the attached protein.

The Examiner's obviousness rejection concerned whether or not the effect of adding a second transit peptide to the prior art Comai structure was of patentable significance. The prior art structure generally consisted of "TP + AA," where TP is a transit peptide and AA is an N-terminal extension (a specified number of amino acids of a protein). The Comai publication referenced by the Examiner had the specific structure: TP + 24AA (24 AA denotes a 24 amino acid N-terminal extension).

Claim 11 of the '471 patent states:

11. A nucleic acid construct which codes for a polypeptide sufficient for localization of a gene product in a chloroplast of a plant cell which polypeptide comprises a fusion which in the direction of translation comprises a first chloroplast transit peptide from a sunflower ribulose-1,5-bisphosphate carboxylase small subunit, approximately 22 amino acids from the N-terminal region Of [sic] a mature maize ribulose-1,5-bisphosphate carboxylase small subunit and a second chloroplast transit peptide from a maize ribulose-1,5-bisphosphate carboxylase small subunit.

'471 patent, col. 7, line 7–col. 8, line 7. This claim denotes a construct of the following basic structure: TP + AA + 2dTP (2dTP denotes the second transit peptide).

In order to demonstrate the effectiveness of the second transit peptide, the LeBrun declaration compared the "294 construct" (TP + 22AA) with the "410 construct" (TP + 22AA + 2dTP). By using the same N-terminal extension, this test was designed to predict the difference resulting only from the addition of the second transit peptide. DeKalb argues that it was a material omission not to include an allegedly less favorable comparison between the "297 construct" (TP + 33AA) and the 410 construct. However, as the district court and RPA point out, comparing the 297 and the 410 constructs would not demonstrate the benefit of only adding the second transit peptide, since the change in the number of amino acids of the N-terminal extension

might also produce an unknown effect. Thus, this argument by DeKalb fails.

DeKalb's additional allegations regarding purportedly false and misleading greenhouse and field tests results reported in the LeBrun declarations are similarly unconvincing. These allegations are amply refuted by the district court's opinion. Rhône-Poulenc Agro, S.A., slip op. at 96-9. Therefore, we affirm the district court's determination that RPA did not commit inequitable conduct.

B

Obviousness

"This court reviews the district court's conclusions on obviousness, a question of law, without deference, and the jury's underlying findings of fact for substantial evidence." Elec. Sci. Indus. Inc. v. Gen. Scanning, Inc., 247 F.3d 1341, 1349, 58 USPQ2d 1498, 1503 (Fed. Cir. 2001). First, DeKalb argues that the Comai publication alone renders claim 11 of the '471 patent obvious. DeKalb claims that the structural variation between the two, i.e., the second transit peptide, is an "irrelevant" variation, and therefore the claim is obvious. DeKalb cites In re Dillon, 919 F.2d 688, 692-94, 16 USPQ2d 1897, 1900-02 (Fed. Cir. 1990), for this proposition. In Dillon, this court affirmed a determination of obviousness for hydrocarbon fuel claims where the PTO established: (1) the only structural distinction over the prior art was the use of tetra-orthoesters versus tri-orthoesters, and (2) it was known in the fuel oil arts that there was a sufficiently close relationship between tri-orthoesters and tetra-orthoesters such that similar properties would be expected. Id.

In order to draw the Dillon analogy, DeKalb must demonstrate that in the relevant field of art, plant molecular biology, it was expected that constructs imparting glyphosate tolerance would have similar properties with and without a second transit peptide. DeKalb points to no evidence that demonstrates any expectation in the relevant field of art regarding the effect of a second

transit peptide on glyphosate tolerance constructs, or indeed, any type of genetic construct. Furthermore, substantial evidence was presented at trial demonstrating that the second transit peptide, far from being a "useless structural variation" as claimed by DeKalb, serves an important purpose. Testimony was introduced to explain that in the Comai construct without a second transit peptide, the N-terminal extension remains attached to the EPSPS passenger protein once it is inside the chloroplast, decreasing the efficiency of the EPSPS enzyme. In contrast, the addition of the second transit peptide allows the entire construct, including the N-terminal extension, to be cleaved off from the EPSPS passenger protein. The removal of the N-terminal extension may increase the efficiency of the EPSPS passenger protein inside the chloroplasts. Rhône-Poulenc Agro S.A., slip op. at 65-66. Thus, we affirm the district court's ruling that the Comai publication alone does not render claim 11 of the '471 patent obvious.

DeKalb also argues that the combination of the Comai publication with U.S. Patent No. 5,776,760, issued to Barry et al. ("Barry") renders the '471 patent obvious. The Barry patent is also directed towards the production of glyphosate-tolerant plants, although Barry uses Rubisco protein from Arabidopsis (a species of mustard plant), as opposed to the sunflower and maize Rubisco used in the Comai and '471 patent constructs. Rhône-Poulenc Agro, S.A., slip op. at 67. The Comai publication, as noted previously, discloses the structure TP + AA (a first transit peptide combined with an N-terminal extension), whereas the OTP of the '471 patent claims TP + AA + 2dTP (i.e., the addition of a second transit peptide).

DeKalb argues that Barry also shows the addition of a second transit peptide. However, DeKalb admits that the precise combination of Comai and Barry does not yield the patented invention. Barry contains a first transit peptide from a Rubisco gene attached to an N-terminal extension, 23 amino acids in length, from a mature Rubisco gene. Barry does not contain an additional full second transit peptide, but instead includes the last eight amino acids of the end of a Rubisco transit peptide. Thus, at best, Barry contains a fragment of a second transit peptide.

However, DeKalb argues that the fragment of a second transit peptide in Barry serves the same purpose as the full transit peptide in the '471 patent, and therefore effectively teaches the addition of a second transit peptide. As discussed above, the second transit peptide allows the N-terminal extension to be cleaved off from the passenger protein inside the chloroplast. The addition of this second cleavage site is allegedly beneficial to the efficiency of the passenger protein.

DeKalb offered testimony from their expert, Dr. Dewey, that Barry discloses a second cleavage site. However, Dr. Dewey was unable to indicate any specific passage in the Barry patent that teaches the use or importance of a second cleavage site; all Dr. Dewey was able to point to was the conclusion that the construct in the Barry patent works. In an obviousness determination, some evidentiary support must be offered beyond an expert's conclusory opinion. Upjohn Co. v. MOVA Pharm. Corp., 225 F.3d 1306, 1311, 56 USPQ2d 1286, 1290 (Fed. Cir. 2000). In addition,

RPA's expert Dr. DeRose testified that the Barry patent does not disclose a second transit peptide or a second cleavage site. Given the structural differences between the second transit peptide of the '471 patent and the transit peptide fragment in Barry, it was reasonable for the jury to conclude that the Barry patent does not teach a second transit peptide or a second cleavage site.

Additionally, even if Barry does teach some variant of adding a second transit peptide, DeKalb must still provide some evidence of a motivation to combine the Barry and Comai publication references. See, e.g., C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998) (stating that there must be some suggestion or teaching in the prior art to make the combination alleged to render the device obvious); Ruiz v. A.B. Chance Co., 234 F.3d 654, 665, 57 USPQ2d 1161, 1167(Fed. Cir. 2000) (noting that the required motivation to combine may be found either explicitly or implicitly in the prior art references, the knowledge of those of ordinary skill in the art, or the nature of the problem to be solved).

DeKalb cites to no specific language in either the Comai publication or the Barry patent

demonstrating a motivation to combine. DeKalb merely refers to Barry's "inherent teachings" without further explanation. Therefore, we agree with the district court's determination that claim 11 of the '471 patent is not obvious.

VI

Trade Secret Misappropriation

The jury found that RD-125 was a trade secret of RPA. The jury also found that RD-125 ceased to be a trade secret when RPA's PCT application for the technology was published in February 1997. However, the jury failed to find that DeKalb's PCT application (WO 95/06128), published in May 1995, constituted a similar disclosure of the RD-125 trade secret. DeKalb contests only the finding that DeKalb's PCT application did not constitute a disclosure of the RD-125 trade secret. DeKalb's argument is that RD-125 lost its trade secret status upon publication of the PCT application in May 1995. The issue of trade secret misappropriation is a matter of state law. Group One, Ltd. v. Hallmark Cards, Inc., 254 F.3d 1041, 1049, 59 USPQ2d 1121, 1127 (Fed. Cir. 2001). In the present case, the parties agreed that North Carolina was the proper law to apply, and the district court applied North Carolina law. Rhône-Poulenc Agro, S.A., slip op. at 78 n.29.

DeKalb contests (1) the exclusion of evidence related to the teachings of DeKalb's PCT application, claiming that this evidence proves that DeKalb's PCT application did indeed disclose the RD-125 trade secret, and (2) the refusal to find a judicial admission that the trade secret was disclosed. However, we find that a broader rule of law renders these issues moot. In the particular facts and circumstances of this case, DeKalb's PCT publication cannot be used to demonstrate the disclosure of RPA's trade secret, because this would allow DeKalb to unfairly benefit from their own wrongful conduct.

Typically, the publication of a patent terminates all trade secret rights. See, e.g., Scharmer v. Carrollton Mfg. Co., 525 F.2d 95, 99 (6th Cir. 1975). RPA does not contest that its own PCT

publication in February 1997 constituted a disclosure terminating all claims to a trade secret.^[7] However, in the present case the jury found, and the district court affirmed, that DeKalb did not have RPA's permission to include RD-125 in its May 1995 PCT application. DeKalb has not appealed this finding, and therefore whatever disclosure DeKalb made of the RD-125 technology in its PCT application constituted a wrongful use.

Courts have carved out an exception to the general rule that publication terminates all trade secret rights in cases where the wrong-doer is the one who has published the trade secret. For example, the Seventh Circuit has stated:

Here the holder of the trade secret did not make an election to obtain a patent, but instead it was appellants who had misappropriated the trade secrets and secured the patent. In 1936 we held in Shellmar Products Co. v. Allen-Quality Co., 87 F.2d 104 (7th Cir. 1936), cert. denied, 301 U.S. 695, 57 S. Ct. 923, 81 L. Ed. 1350 (1937), that a wrongdoer who has made an unlawful disclosure of another's trade secrets cannot assert that publication to escape the protection of trade secret law. We believe that principle to be equally vital today. To hold otherwise in the instant case would be to permit appellants to profit from their own wrong.

Syntex Ophthalmics, Inc. v. Tsuetake, 701 F.2d 677, 683 (7th Cir. 1983).

Additionally, the court in Glaxo Inc. v. Novopharm Ltd., 931 F. Supp. 1280, 1300 (E.D.N.C. 1996), applying North Carolina law concluded that "it is true that parties responsible for the dissemination of another's trade secret may not benefit from the disclosure." See also Forest Labs., Inc. v. Formulations, Inc., 299 F. Supp. 202, 207 (E.D. Wis. 1969) (stating "[t]he general rule is that the issuance of a patent which clearly discloses all essentials of a process destroys any secrecy that previously attached to that process. Ferroline Corp. v. General Aniline and Film Corp., 207 F.2d 912 (7th Cir. 1953). However, if there is a wrongful use or disclosure prior to the issuance of the patent, the wrongdoer will not be absolved from liability for his wrong committed during that prior period. Engelhard Industries, Inc. v. Research Instrumental Corp., 324 F.2d 347 (9th Cir. 1963).").

Therefore, assuming arguendo that DeKalb's PCT application did disclose the RD-125 trade

secret, we hold that DeKalb in this case cannot use its own wrongful disclosure of RPA's trade secrets in order to overcome a claim of trade secret misappropriation. We therefore affirm the ruling of trade secret misappropriation.

VII

For the reasons stated above, we affirm the rulings of the district court.

COSTS

No costs.

AFFIRMED

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[1] Gene expression is the process by which a gene's coded information is converted into the structures present and operating in the cell.

[2] A peptide is two or more amino acids joined by a peptide bond, and a transit peptide is a coding sequence involved in importing a protein into a subcellular compartment, in this case delivering the EPSPS protein to the chloroplasts of the corn plants.

[3] Dr. Flick was not called as a witness at trial, and testified only via his video deposition.

[4] It could be argued that this language suggests that it is the timing of the filing of the complaint, rather than the timing of the fraudulent event, that is actually relevant. However, the filing of the complaint is not the point in time at which the defendant must choose whether or not to commit the fraudulent conduct by considering what penalty might result. Rather, this choice and comparison is made at the time at which the fraudulent conduct occurs.

[5] The 1985 Agreement between RPA and DeKalb contained an Illinois choice-of-law provision, and therefore Illinois law applies to the interpretation of the contracts at issue.

[6] Bacterial EPSPS proteins do not naturally comprise transit peptides.

[7] Certain federal courts have held that a party misappropriating trade secrets may be enjoined permanently from using the information, even if it becomes public knowledge later. The relevant cases on both sides of the issue are discussed in American Can Co. v. Mansukhani, 742 F.2d 314, 334 (7th Cir. 1984). Because RPA has not requested damages for trade secret misappropriation following their own February 1997 PCT disclosure, this split in authority is not at issue in this case.