IN THE UNITED STATES DISTRICT COURT

FOR THE WESTERN DISTRICT OF WISCONSIN

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NOVOZYMES A/S and
NOVOZYMES NORTH AMERICA, INC.,

OPINION AND ORDER

Plaintiffs,

10-cv-251-bbc

v.

DANISCO A/S,
GENENCOR INTERNATIONAL WISCONSIN, INC.,
DANISCO US INC. and DANISCO USA INC.,

Defendants.

- -

A jury awarded plaintiffs Novozymes A/S and Novozymes North America, Inc. more than $18 million on their claims that the sale of certain enzymes by defendants Danisco A/S, Genencor International Wisconsin, Inc., Danisco US Inc. and Danisco USA Inc. infringed plaintiffs' U.S. Patent No. 7,713,723, which discloses a variant of an enzyme called an alpha-amylase that "has increased thermostability relative to the parent alpha-amylase" under certain conditions. Various motions from both sides are before the court: (1) plaintiffs' motion for a permanent injunction, dkt. #832; (2) plaintiffs' motion for attorney fees and enhanced damages, dkt. #839; (3) plaintiffs' motion to amend the judgment to

include interest and supplemental damages, dkt. #865; (4) plaintiffs' motion for judgment as a matter of law on their claim that defendants' "whole broth" products infringe certain claims of the '723 patent, dkt. #869 (the jury found in defendants' favor with respect to those products); (5) defendants' motion for judgment as a matter of law that plaintiffs are not entitled to lost profits for alpha-amylase sales, dkt. #877; (6) defendants' motion for judgment as a matter of law that the '723 patent is invalid for lack of enablement, dkt. #879; (7) defendants' motion for judgment as a matter of law that plaintiffs are not entitled to lost profits for collateral sales, dkt. #882; (8) defendants' motion for judgment as a matter of law that the '723 patent is invalid for lack of an adequate written description, dkt. #886; (9) defendants' motion for judgment as a matter of law that the infringement was not willful, dkt. #888; and (10) defendants' motion for a new trial. Dkt. #891.

As the above list of motions demonstrates, the parties in this case have debated tenaciously many issues of infringement, invalidity and damages, but the focal point has always been the adequacy of the written description for the '723 patent. Since the beginning of the case, I have questioned the validity of the patent in this respect. I denied plaintiffs' motion for a preliminary injunction in part because I concluded that there was a substantial question whether the written description for the '723 patent was adequate. Dkt. #106. Although I later denied defendants' motion for summary judgment because defendants failed to show it was appropriate at that time, I noted that I still had reservations about the written

description. Dkt. #185. Having reviewed the evidence at trial, the developing case law on this issue and the parties' arguments in their postverdict motions, I am persuaded that defendants have proven by clear and convincing evidence that the claims of the '723 patent are invalid as a matter of law. Accordingly, I am vacating the judgment and directing the clerk of court to enter judgment in defendants' favor. All other motions will be denied as moot.

OPINION

The '723 patent includes 17 claims, most of which depend from claim 1:

> An isolated variant of a parent alpha-amylase, wherein:
>
> (a) the variant has at least 90% sequence identity to SEQ ID NO: 6,
>
> (b) the variant comprises a substitution of serine at position 239 relative to the parent alpha-amylase, using the amino acid sequence of SEQ ID NO: 8 for determining position numbering, and
>
> (c) the variant has increased thermostability relative to the parent alpha-amylase, wherein thermostability is determined at pH 4.5, 90° C. and 5 ppm calcium and has alpha-amylase activity.

The parties agree that all of the claims include the following limitations: (1) a parent alpha-amylase with at least 90% sequence identity to *Bacillus stearothermophilus*; (2) a substitution of one of the parent's amino acids at position 239; (3) increased thermostability at pH 4.5,90° C. and 5 ppm calcium. Defendants argue that plaintiffs failed to describe

these limitations in their patent application, individually or in combination. In addition, defendants argue that the written description is inadequate because the patent involves "genus claims," but the application did not set forth either a representative number of species falling within the scope of the genus or structural features common to the members of the genus, as required by precedent.

As with all invalidity defenses, defendants have the burden to prove that the written description is inadequate by clear and convincing evidence. Cordis Corp. v. Medtronic AVE, Inc., 339 F.3d 1352, 1364 (Fed Cir. 2003). Because the jury found in plaintiffs' favor on this issue, defendants must show that the jury's finding is not supported by substantial evidence and the claims of the '723 patent are invalid as a matter of law. Abbott Laboratories v. Syntron Bioresearch, Inc., 334 F.3d 1343, 1357 (Fed. Cir. 2003).

The written description requirement comes from the first paragraph of 35 U.S.C. § 112 ("The specification shall contain a written description of the invention. . ."). Because it is the specification in existence at the time of the filing date that matters, Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co., 598 F.3d 1336, 1351 (Fed. Cir. 2010), this requirement is especially important in cases like this one, in which the asserted claims were added well after the filing date. (The filing date of the '723 patent is November 2000, but the claims were not added until December 2009.)

Generally, the Court of Appeals for the Federal Circuit has summarized the first

paragraph of § 112 as requiring the patentee to show in his application that he "possessed" the claimed invention as of the filing date. Boston Scientific Corp. v. Johnson & Johnson, 647 F.3d 1353, 1362 (Fed Cir. 2011); Ariad, 598 F.3d at 1351; LizardTech, Inc. v. Earth Resource Mapping, Inc., 424 F.3d 1336, 1345 (Fed. Cir. 2005); Moba, B.V. v. Diamond Automation, Inc., 325 F.3d 1306, 1319 (Fed. Cir. 2003); Union Oil Co. of California v. Atlantic Richfield Co., 208 F.3d 989, 1001 (Fed. Cir. 2000). In other cases, the court has stated that "[t]he disclosure must allow one skilled in the art to visualize or recognize the identity of the subject matter purportedly described," Enzo Biochem, Inc. v. Gen-Probe Inc., 323 F.3d 956, 968 (Fed. Cir. 2002), and that "one skilled in the art, reading the original disclosure, must immediately discern the limitation at issue in the claims." Purdue Pharma L.P. v. Faulding Inc., 230 F.3d 1320, 1323 (Fed. Cir. 2000). "A mere wish or plan for obtaining the claimed invention is not adequate written description." Centocor Ortho Biotech, Inc. v. Abbott Labs., 636 F.3d 1341, 1348 (Fed. Cir. 2011).

These statements seem to be different ways of saying that the inventor must show in her application that she in fact invented what she later claimed. Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1566 (Fed. Cir. 1991) (question is "whether the [application] conveyed with reasonable clarity to those of ordinary skill that [the inventor] had in fact invented the [invention] recited in those claims"); Application of Ruschig, 379 F.2d 990, 995-96 (CCPA 1967) (question is whether "specification convey[s] clearly to those skilled in the art, to

whom it is addressed, in any way, the information that appellants invented that specific compound"). The concern is that a patentee may attempt to use later filed claims, relying on more recently discovered data, to expand the scope of his invention or to complete an idea. Billups-Rothenberg, Inc. v. Associated Regional and University Pathologists, Inc., 642 F.3d 1031, 1036 (Fed. Cir. 2011) (quoting Fiers v. Revel, 984 F.2d 1164, 1171 (Fed. Cir. 1993) ("The written description requirement exists to ensure that inventors do not 'attempt to preempt the future before it has arrived.'")).

"[B]asic research" is not patentable, even when that research is "groundbreaking or necessary" to a later invention. Ariad, 598 F.3d at 1353. Rather, "patent protection [is limited] to those who actually perform the difficult work of 'invention'—that is, conceive of the complete and final invention with all its claimed limitations—and disclose the fruits of that effort to the public." Id. at 1353.

Defendants argue that plaintiffs' application failed to adequately describe the claims in the '723 patent because it does not identify: (1) which parent alpha-amylase to use (*Bacillus stearothermophilus* is one of seven options, '723 pat., col. 3, lns. 62-65); (2) which amino acid position on the parent should be modified (position 239 is one of 33 options, id. at col. 7, lns. 40-42); (3) how the position should be modified (the application says that the alteration may be a deletion, insertion or substitution of an amino acid or a combination of these, id. at col. 7, lns. 45-51); (4) the result the modification will bring about (higher or

lower stability, id. at col. 16, ln. 42); and (5) the conditions under which the variant will exhibit that result (the claims require pH 4.5,90° C. and 5 ppm calcium, but the application discloses a pH range between 4 and 6 or 8 and 11, temperatures between 70° and 120° C and calcium concentrations less than 60 ppm, id. at col. 16, lns. 42-46).

Defendants say that all of these combinations represent more than 8.589×10^{42} possible variants and that the application does not inform a person of ordinary skill in the art how to choose among them. Although plaintiffs repeatedly argue that defendants' number is not relevant because it "is not directed to the claimed invention," Plts.' Br., dkt. #934, at 7, plaintiffs do not deny that, under their view of the law, they would be entitled to claim any of the variants encompassed by the application. In any event, a person viewing the November 2000 application would not have the guidance of the more narrowly drawn claims, which were added several years later. The question is whether the application shows that the patentee possessed the invention, so plaintiffs may not rely on the later-filed claims to make that showing. Billups-Rothenberg, 642 F.3d at 1037 (patentee "cannot satisfy the written description requirement merely through references to later-acquired knowledge"); Ruschig, 379 F.2d at 995 (court may not analyze adequacy of written description "[w]orking backward from a knowledge of" claimed compound, but "from the standpoint of one with no foreknowledge of the specific compound" identified in claim).

The cases plaintiffs cite simply stand for the obvious proposition that a court must

look at the claims first to determine what it is that must be described. Laryngeal Mask Co. v. Ambu A/S, 618 F.3d 1367, 1373-75 (Fed. Cir. 2010); Ariad, 598 F.3d at 1355-58; In re Driscoll, 562 F.2d 1245,1246, 1248-50 (C.C.P.A. 1977); In re Rasmussen, 650 F.2d 1212, 1214-16 (C.C.P.A. 1981); Ruschig, 379 F.2d 990. However, plaintiffs cite no authority for the proposition that a court may use the claims in determining whether the description is adequate.

In the opinion denying plaintiffs' motion for a preliminary injunction, dkt. #106, I noted that the application did not inform a person of ordinary skill in the art how to choose among the many options presented, and that "[t]his may be a case in which plaintiffs 'provide[d] only a starting point, a direction for further research,' Genentech, Inc. v. Novo Nordisk A/S, 108 F.3d 1361, 1366 (Fed. Cir. 1997), rather than a true invention." Dkt. #106, at 20. However, I later denied defendants' motion for summary judgment primarily for two reasons: (1) in the cases defendants cited in which the court found the written description to be inadequate, a particular limitation in the claims was completely absent from the specification (rather than buried in a sea of possibilities); and (2) under Driscoll, 562 F.2d 1245, it is permissible for patentees to claim limitations in the alternative under certain circumstances. After reviewing the parties' briefs on defendants' Rule 50 motion, I am persuaded that the cases cited by defendants are not distinguishable in any meaningful way and that Driscoll does not support a finding that plaintiff's specification is a true

invention.

Defendants have cited various cases in which the court found the written description inadequate because it failed to identify a particular limitation and left to others the task of choosing among many possible options that might satisfy the claims. Boston Scientific, 647 F.3d at1364 (specification did not describe limitation of "macrocyclic lactone analogs of rapamycin"); Billups-Rothenberg, 642 F.3d at 1036 (specification did not identify claimed mutation except to say that its "general location [was] somewhere 'within less than a 300 base pair region of a defined exon of a well studied multi-gene family'"); Centocor, 636 F.3d at 1350-51 ("[T]he specification does not describe a single antibody that satisfies the claim limitations."); University of Rochester v. G.D. Searle & Co., Inc., 358 F.3d 916, 927 (Fed. Cir. 2004) ("It is undisputed that the '850 patent does not disclose any compounds that can be used in its claimed methods."); Purdue, 230 F.3d at 1327 ("What the '360 patentees have done is to pick a characteristic possessed by two of their formulations, a characteristic that is not discussed even in passing in the disclosure, and then make it the basis of claims that cover not just those two formulations, but any formulation that has that characteristic."); Ruschig, 379 F.2d at 993 ("[N]owhere in the specification is the particular selection indicated. . . . [T]he general disclosure of the application encompasses something like half a million possible compounds. ").

Although the application for the '723 patent is superficially different from some of

these cases because it expressly names the particular limitations in the claims, that is not enough to save the patent. First, it is undisputed that the application does not list a single variant that meets all the claim limitations. The application identifies one variant with a substitution of trytophan at position 239, e.g., '723 patent, col. 8, ln. 12, but plaintiffs' experts admit that substituting trytophan does not lead to increased thermostability under the claimed conditions. Davies Testimony, Tr. Trans. 4B, dkt. #729, at 7; Arnold Testimony, Tr. Trans. 5A, dkt. #763, at 122.

Plaintiffs are quick to point out, as they have throughout the proceedings, that actual reduction to practice is not required. Ariad, 598 F.3d at 1352. However, plaintiffs fail to acknowledge the importance that the court of appeals has placed on the absence of a working example. "Although examples are not always required to satisfy the written description requirement, the lack of any disclosure of examples may be considered when determining whether the claimed invention is adequately described." Boston Scientific, 647 F.3d at 1364. See also Billups-Rothenberg, 642 F.3d at 1033 ("Although Billups claimed methods of detecting mutations responsible for hemochromatosis in the '681 patent, it had not yet identified any disease-causing mutations."); Centocor, 636 F.3d at 1350-51 ("[T]he specification does not describe a single antibody that satisfies the claim limitations."); Ariad, 598 F.3d at 1357-58 (finding written description inadequate; noting that "[t]he '516 patent discloses no working or even prophetic examples of methods that reduce NF-êB activity, and

no completed syntheses of any of the molecules prophesized to be capable of reducing NF-êB activity."); Ruschig, 379 F.2d at 994 ("[W]hile we agree with the appellants, as the board did, that naming is not essential, something more than the disclosure of a class of 1000, or 100, or even 48, compounds is required.").

When an application does not include any examples, the patent is invalid unless "one of skill in the art can 'visualize or recognize' the claimed [invention] based on the specification's disclosure." Centocor, 636 F.3d at 1353. Plaintiffs never explain how a person of ordinary skill in the art could visualize or recognize the claimed invention from a list of variables.

I conclude that there is no meaningful difference between identifying a generic group in which a limitation of a claim may be found (as in many of the prior cases) and individually listing each member of that group without directing the reader to a particular member (as in the '723 patent). In the cases cited by defendants, the problem with the specification was not simply that the words included in the claims were missing from the specification, but that the specification failed to inform the reader which member of that group was the right one. E.g., Boston Scientific, 647 F.3d at 1367 ("The patent laws do not reward an inventor's invitation to other researchers to discover which of the thousands of macrocyclic lactone analogs of rapamycin could conceivably work in a drug-eluting stent."); Centocor, 636 F.3d at 1352-53 (likening specification to "a ring with a million keys on it");

Ruschig, 379 F.2d at 995 (patentee's disclosure so broad that anyone reading patents from choose from "the myriads of possibilities encompassed by the broad disclosure, with no guide indicating or directing that this particular selection should be made rather than any of the many others which could also be made.").

This makes obvious sense when one considers that the relevant question is whether the inventors possessed then what is claimed now. It is no invention simply to list variables without identifying which ones to choose. Ruschig, 379 F.2d at 994 ("Surely, given time, a chemist could name (especially with the aid of a computer) all of the half million compounds within the scope of the broadest claim, which claim is supported by the broad disclosure. This does not constitute support for each compound individually when separately claimed."). If that were enough, specifications could be drafted broadly enough to include almost anything. One cannot disclose a list of individual components and then claim any combination of those components later discovered to be useful. Patent protection is granted only when the patentee comes up with a solution to a particular problem. Identifying the right questions to ask is not enough.

Plaintiffs continue to rely on Driscoll for the proposition that a claimed invention "need not be highlighted over other inventions disclosed in the [specification] to be adequately described." Plts.' Br., dkt. #934, at 24. However, Driscoll has an important limitation: each member of a group must be "alternatively usable for the purposes of the

invention." Driscoll, 562 F.2d at 1249. Thus, the principle in Driscoll is limited and unremarkable. A specification or claim may include multiple options, but only if the invention may be used no matter which option is chosen.

Plaintiffs have taken a simple, common sense rule and have attempted to expand it dramatically to avoid complying with the even more fundamental rule that the application must show that the patentee possessed the invention. No expert in this case testified that the invention would work the same way regardless which Termamyl-like alpha-amylase was the parent, which of the 33 positions was altered, which of the many possible alterations was made and which set of conditions in the specification was used. And no expert testified that a person of ordinary skill in the art would read the specification as teaching that any combination of the variables disclosed would have the same effect. Rather, plaintiffs' experts admitted that there was no way to tell from reading the patent which variant would produce a particular result or even which position should be altered. Raines Testimony, Tr. Trans. 4A, dkt. #729, at 8 ("There are 33. . . positions of which we can make these variants, but we'd have to follow the teachings and go out and make and test them."); id. ("You couldn't identify which variant of that position would have improved thermostability. For that you would have to make and test it."); Arnold Testimony, Tr. Trans. 5A, dkt. #763, at 116 ("Q: Dr. Arnold, from reading the specification of the patent, is it your testimony that one can make an alteration in each of the 33 positions and that there would be at least one alteration

at each of those positions that would result in a variant with increased thermostability? A: No, that's not what I would say because I haven't done that experiment. I have—I don't know."). In fact, plaintiffs' expert Gideon Raines testified that the 33 positions in the specification represented a "design strategy" for identifying a working variant, Tr. Trans. 4A, dkt. #729, at 7-8, but a design strategy is not a completed invention.

When information is missing from the specification, a patentee may fill the gaps with what is already known in the art at the relevant time. Capon v. Eshhar, 418 F.3d 1349, 1359 (Fed. Cir. 2005) (adequacy of written description determined by "variety of factors, such as the existing knowledge in the particular field, the extent and content of the prior art, the maturity of the science or technology, the predictability of the aspect at issue"). At trial, plaintiffs presented evidence that the inventors of the '723 patent used "rational protein design" to identify positions, including position 239, that were important for thermostability and that others in the art had been using rational protein design for similar purposes even before 2000. Plts.' Br., dkt. #934, at 29-30 (citing trial testimony and exhibits). Defendants challenge the reliability of that method, citing papers from 2002 and 2003 in which the authors concluded that rational protein design often did not lead to the predicted result. Dfts.' Br., dkt. #887, at 25-27 (citing exhs. DX-1150 and DX-1154). In addition, defendants cite experimental data showing that six of the preferred alterations identified in the 2000 application do not lead to increased themostability. Id. at 27-28 (citing exhs. DX-

1158, DX-1059 and DX-1033). Thus, it is questionable whether a person of ordinary skill in the art would have reason to believe from reading the 2000 application or any other information available in the art at the time that altering any of the listed 33 positions likely would lead to a beneficial result.

Moreover, even if I assume that a person of ordinary skill in the art would understand from the patent that position 239 was somehow important to thermostability, plaintiffs point to no evidence that a person of ordinary skill in the art would know from the patent or from anything else what she was supposed to do with that position in order to make the claimed invention. Defendants cite testimony from their expert that it is *still* unknown why certain alterations of position 239 lead to increased thermostability, Tr. Trans. 3A, dkt. #723, at 41, and plaintiffs do not cite any contrary evidence. As in Centocor, 636 F.3d at 1352-53, plaintiffs "simply failed to support [their] contention that generating [a variant] with the claimed properties would be straightforward for a person of ordinary skill in the art given the state of" the art in 2000.

In their brief, plaintiffs argue that the adequacy of the written description is shown by defendants' own actions:

> [T]he evidence at trial established that Danisco's own scientists read the disclosure of the '723 patent in 2007 and put position 239 on an "avoid list" of positions they should not genetically engineer because they understood that Novozymes had disclosed the subject matter claimed in the '723 patent. *Bacillus stearothermophilus* alpha-amylases with a substitution at position 239

> and increased thermostability. This Court has noted that this evidence alone "acknowledg[es] implicitly that the inventors had described the invention sufficiently to allow others of skill in the art to understand what the invention was and to enable others to practice it." Dkt. No. 750, Opinion and Order dated October 22, 2011, at 3.

Plts.' Br., dkt. #934, at 1.

Plaintiffs' reliance on this court's October 22 order is disingenuous. The quoted passage is a summary of *plaintiffs'* position, not the court's. Further, plaintiffs never explain why defendants' actions in 2007 may be relied upon as evidence that the written description is adequate. Plaintiffs cite no evidence that defendants were able to make the claimed variants simply from the information in the 2000 application. Rather, defendants' vice president of research testified that defendants included position 239 on an "avoid list" simply because that position was listed in the 2000 application, Powers Testimony, dkt. #752-2. at 38; they did not make a determination regarding the adequacy of the written description. In fact, defendants' team leader of the project that led the creation of the accused products testified that it took six months of testing to discover a variant with a substitution at position 239 that led to increased thermostability. Ramer Testimony, Tr. Trans. 3A, dkt. #723, at 33. If defendants believed that the 2000 application led them directly to the claimed invention, then it is not clear why they wasted their resources on that testing.

The claimed invention in the '723 patent is a particular variant of a particular alpha-

amylase under particular conditions that leads to a particular beneficial result, but the 2000 application does not show that inventors possessed that variant, actually or constructively. Rather, the application tells the public that, if they do something to some alpha-amylases under some conditions, something will happen.

The written description for the '723 patent is inadequate because it "provides only a starting point, a direction for further research." Genentech, 108 F.3d at 1366. It may be that the patentees made an important discovery when they identified 33 positions they believed were important to thermostability, but it was still only one step of many needed to arrive at the claimed invention. The Court of Appeals for the Federal Circuit has stated many times that the written description must demonstrate possession of a completed invention, even when groundbreaking research is involved. Boston Scientific, 647 F.3d at 1367 ("The patent laws do not reward an inventor's invitation to other researchers to discover which of the thousands of macrocyclic lactone analogs of rapamycin could conceivably work in a drug-eluting stent."); Ariad, 598 F.3d at 1353 (not enough to "merely recite a description of the problem to be solved while claiming all solutions to it . . . leaving it to [others] to complete an unfinished invention"); University of Rochester, 358 F.3d at 930 n.10 ("[A] patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion."); Fiers, 984 F.2d at 1171 (patentee may not "attempt to preempt the future before it has arrived"). Because "[t]he actual inventive work

of producing a [working variant] was left for subsequent inventors to complete," Centocor, 636 F.3d at 1353, I cannot conclude that plaintiffs' 2000 application has an adequate written description.

Defendants argue that the written description is inadequate for a second reason. They point to the rule that applies to genus claims: "a sufficient description of a genus . . . requires the disclosure of either a representative number of species falling within the scope of the genus or structural features common to the members of the genus so that one of skill in the art can 'visualize or recognize' the members of the genus." Ariad, 598 F.3d at 1350.

There is no dispute that the asserted claims are "genus claims" because they "encompas[s] two or more disclosed embodiments within [their] scope." Billups, 642 F.3d at 1037. In particular, they do not identify a particular variant, but encompass any variant with an amino acid substitution at position 239 that leads to increased thermostability under the claimed conditions. Defendants say that the 2000 application identifies neither a representative number of variants that meet the claim limitations nor structural features common to the members of the genus that would allow a person of ordinary skill in the art to distinguish between the variants that meet the claim limitations and those that do not.

In response, plaintiffs do not develop an argument that the 2000 application discloses a representative number of variants that meet the claim limitations. As discussed above, the application does not identify *any* variants that meet the claim limitations. Plaintiffs say that

the variants share structural features because they are all variants of a *Bacillus stearothermophilus* alpha-amylase, but they do not respond to defendants' argument that there is no way for a person of ordinary skill in the art to distinguish variants that meet the claim limitations from those that do not. University of Rochester, 358 F.3d at 926 ("[T]he inventor cannot lay claim to that subject matter unless he can provide a description of the compound sufficient to distinguish infringing compounds from non-infringing compounds, or infringing methods from non-infringing methods."). However, because I have concluded that the written description is inadequate for other reasons, I need not resolve this issue.

ORDER

IT IS ORDERED that the motion for judgment as a matter of law filed by defendants Danisco A/S, Genencor International Wisconsin, Inc., Danisco US Inc. and Danisco USA Inc., dkt. #886, is GRANTED on the ground that U.S. Patent No. 7,713,723 is invalid for lack of an adequate written description. The judgment entered on October 27, 2011, dkt. #816, is VACATED. The clerk of court is directed to enter an amended judgment in favor of defendants and close this case.

FURTHER, IT IS ORDERED that the following motions are DENIED as moot: (1) plaintiffs Novozymes A/S's and Novozymes North America, Inc.'s motion for a permanent injunction, dkt. #832; (2) plaintiffs' motion for attorney fees and enhanced damages, dkt.

#839; (3) plaintiffs' motion to amend the judgment to include interest and supplemental damages, dkt. #865; (4) plaintiffs' motion for judgment as a matter of law on its claim that defendants' "whole broth" products infringe certain claims of the '723 patent, dkt. #869; (5) defendants' motion for judgment as a matter of law that plaintiffs are not entitled to lost profits for alpha-amylase sales, dkt. #877; (6) defendants' motion for judgment as a matter of law that the '723 patent is invalid for lack of enablement, dkt. #879; (7) defendants' motion for judgment as a matter of law that plaintiffs are not entitled to lost profits for collateral sales, dkt. #882; (8) defendants' motion for judgment as a matter of law that the infringement was not willful, dkt. #888; and (9) defendants' motion for a new trial. Dkt. #891.

Entered this 4th day of May, 2012.

BY THE COURT:
/s/
BARBARA B. CRABB
District Judge