IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

ADVANCED CARDIOVASCULAR SYSTEMS, INC. and GUIDANT SALES CORP.,	)	
Plaintiffs,	)	
v.	)	Civ. No. 98-80-SLR (consolidated with Civ. No. 98-314-SLR and Civ. No. 98-316-SLR)
MEDTRONIC VASCULAR, INC. and MEDTRONIC USA, INC.,	)	
Defendants.	)	

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MEMORANDUM OPINION

Dated: March 29, 2007
Wilmington, Delaware

ROBINSON, Chief Judge

I. INTRODUCTION

Throughout the course of the last ten years, the major manufacturers of stents have filed suit in this court asserting claims of infringement of their respective patents against their competitors. Because of the duplication of causes of action between and among these parties, and in an effort to conserve scarce judicial resources and present manageable disputes to jurors, lawsuits have been consolidated and parties realigned. The procedural history of the instant litigation is no exception. Although the lawsuit originally was filed by the predecessor in interest to Medtronic Vascular Inc. and Medtronic USA, Inc. (collectively, "Medtronic"), claiming infringement by Advanced Cardiovascular Systems, Inc. and Guidant Sales Corporation (collectively, "ACS") of certain of its patents ("the Boneau patents"), ACS countersued for infringement of certain of its patents ("the Lau patents").[1] Because judgment was entered in favor of ACS in connection with the Boneau patents (D.I. 546), the parties were "realigned" in order to proceed with the jury trial on the Lau patents. (D.I. 585) In February 2005, at the conclusion of trial, the jury returned a verdict that the Lau patents were valid and infringed by Medtronic. Presently before the court are Medtronic's motions for judgment as a latter of law ("JMOL") and for a new trial. (D.I. 650, 651)

II. BACKGROUND

The Lau patents claim endovascular support devices, or stents, that are used in the treatment of cardiovascular disease. ACS's stents are balloon expandable devices

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[1]Although multiple Lau patents were asserted, only four were tried, that is, U.S. Patent Nos. 5,514,154 ("the '154 patent"), 6,066,167 ("the '167 patent"), 6,066,168 ("the '168 patent"), and 6,432,133 ("the '133 patent"). These four patents will be referred to in this context as the "Lau patents."

that are formed from a metal tube. (D.I. 427 at 4) These stents are comprised of multiple circular elements that are connected together by connecting elements. Id.

The court first construed the terms of the asserted claims of the Lau patents in its Markman order of January 5, 2005. (D.I. 542) The court construed the term "cylindrical element" to require "a circumferential undulating pattern," and an "undulating pattern" was in turn defined as "a wavelike pattern that includes any combination of U-shaped, W-shaped or Y-shaped members."[2] (Id. at 3-4) Following a request for reconsideration, the court subsequently withdrew its construction of "cylindrical element" on February 4, 2005, and directed the parties to present evidence as they deemed appropriate in support of their respective interpretations to aid the court in its jury instructions on claim construction. (D.I. 587)

A jury trial was held for nine days between February 7 and 18, 2005 on the remaining issues in the case, namely, ACS's claims of infringement and Medtronic's counterclaims that the Lau patents are invalid as obvious and anticipated. (D.I. 631-39) Medtronic moved for judgment as a matter of law ("JMOL") at the close of ACS's case and both parties moved for JMOL at the close of evidence. The court granted Medtronic's motion that it does not infringe the Lau patents under the doctrine of

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[2]On the same date, the court granted summary judgment for ACS that Medtronic's S7 and Driver stents, pictures of which "reveal that the cylindrical elements are made up of a combination of U-shaped and possibly Y-shaped members," infringe claim 1 of the '133 patent. (D.I. 545 at 11) Medtronic moved for reconsideration based on the underlying factual dispute regarding whether a "combination" of at least two types of members (U-shaped, Y-shaped, or W-shaped) is present in those products, and the court granted the motion. (D.I. 579)

equivalents and ACS's motion that the Lau patents are not invalid as anticipated.[3] As part of the charge to the jury, the court defined the terms "undulating pattern" and "undulating portion" as "a wave-like pattern," without reference to any particular combination of U-shaped, Y-shaped, or W-shaped elements. (D.I. 639 at 1883:22-23) On February 18, 2005, the jury rendered a verdict that the Lau patents were not invalid, and that Medtronic's accused products infringe each of the asserted claims.[4] (D.I. 629) Medtronic renewed its motion for JMOL on April 18, 2005. (D.I. 651)

Medtronic asserts that it is entitled to JMOL on the following grounds: (1) Medtronic's stents do not have "cylindrical elements" with an "undulating pattern" as those terms are properly construed; (2) nor do its stents have the "connecting elements" required by the claims of the '154 patent; (3) ACS failed to show that most of Medtronic's stents comprise expandable cylindrical elements whose length is less than the diameter as required by the claims; (4) ACS failed to show that Medtronic made, used, or sold the accused stents during the term of the Lau patents; and (5) ACS failed to show ownership of the Lau patents. (D.I. 654 at 2) Medtronic further asserts that it

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[3]The court's order was entered in open court and docketed on February 17, 2005.

[4]The jury found that each of Medtronic's accused stents infringe asserted claims of the Lau patents. Specifically, the jury found Medtronic's MicroStent II, GFX, GFX2, GFX2.5, S540, S660, S670 and BeStent2 stents infringe claims 1 and 4 of the '154 patent, Medtronic's BeStent2 stent infringes claim 12 of the '154 patent, and that Medtronic's MicroStent II, GFX, GFX2, GFX2.5, S540, S660, S670, S7, Driver, MicroDriver, and Racer stents infringe claims 5 and 8 of the '167 patent. (D.I. 629) Additionally, the jury found that all of the aforementioned stents infringe claims 1, 3, and 11 of the '168 patent (with the exception of the MicroStent II, which infringes only claims 1 and 3), and infringe claims 1, 2, and 3 of the '133 patent. (Id.) The jury found that the BeStent2 stent also infringes claim 9 of the '133 patent. (Id.)

is entitled to JMOL that the asserted claims of the Lau patents are invalid as obvious. (Id.)

Medtronic argues that it is entitled to a new trial because: (1) the jury verdict was based on an incorrect claim construction of "undulating pattern"; (2) the court improperly excluded testimony from several of its witnesses regarding its obviousness defense; (3) the court improperly excluded allegedly incorrect statements made to the United States Patent and Trademark Office ("USPTO") during the prosecution of the Lau patents; (4) Medtronic's anticipation defense should have gone to the jury; (5) the court improperly precluded Medtronic from admitting the court's prior statements regarding a prior art reference (made in connection with the its doctrine of equivalents analysis in the Boneau case), in violation of the "law of the case doctrine"; and (6) Medtronic was prejudiced in having to present its claim construction evidence to the jury prior to the court's pronouncement of the "prevailing" construction (ACS's proposed construction) at the close of evidence. (D.I. 653 at 3-4)

III. STANDARD OF REVIEW

A. Motion for Judgment as a Matter of Law

To prevail on a renewed motion for judgment as a matter of law following a jury trial under Federal Rule of Civil Procedure 50(b), the moving party "'must show that the jury's findings, presumed or express, are not supported by substantial evidence or, if they were, that the legal conclusions implied [by] the jury's verdict cannot in law be supported by those findings.'" Pannu v. Iolab Corp., 155 F.3d 1344, 1348 (Fed. Cir. 1998) (quoting Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 893 (Fed.

Cir. 1984)). "'Substantial' evidence is such relevant evidence from the record taken as a whole as might be acceptable by a reasonable mind as adequate to support the finding under review." Perkin-Elmer Corp., 732 F.2d at 893. In assessing the sufficiency of the evidence, the court must give the non-moving party, "as [the] verdict winner, the benefit of all logical inferences that could be drawn from the evidence presented, resolve all conflicts in the evidence in his favor, and in general, view the record in the light most favorable to him." Williamson v. Consol. Rail Corp., 926 F.2d 1344, 1348 (3d Cir. 1991); Perkin-Elmer Corp., 732 F.2d at 893. The court may not determine the credibility of the witnesses nor "substitute its choice for that of the jury between conflicting elements of the evidence." Id. In summary, the court must determine whether the evidence reasonably supports the jury's verdict. See Dawn Equip. Co. v. Kentucky Farms Inc., 140 F.3d 1009, 1014 (Fed. Cir. 1998).

B. Motion for a New Trial

The decision to grant or deny a new trial is within the sound discretion of the trial court and, unlike the standard for determining judgment as a matter of law, the court need not view the evidence in the light most favorable to the verdict winner. See Allied Chem. Corp. v. Darflon, Inc., 449 U.S. 33, 36 (1980). Federal Rule of Civil Procedure 59(a) provides, in pertinent part:

> A new trial may be granted to all or any of the parties and on all or part of the issues in an action in which there has been a trial by jury, for any of the reasons for which new trials have heretofore been granted in actions at law in the courts of the United States.

New trials are commonly granted in the following situations: (1) where the jury's verdict is against the clear weight of the evidence, and a new trial must be granted to prevent a

miscarriage of justice; (2) where newly-discovered evidence surfaces that would likely alter the outcome of the trial; (3) where improper conduct by an attorney or the court unfairly influenced the verdict; or (4) where the jury's verdict was facially inconsistent. See Zarow-Smith v. N.J. Transit Rail Operations, 953 F. Supp. 581, 584 (D. N.J. 1997) (citations omitted). The court, however, must proceed cautiously and not substitute its own judgment of the facts and assessment of the witnesses' credibility for the jury's independent evaluation. Nevertheless,

> [w]here a trial is long and complicated and deals with a subject matter not lying within the ordinary knowledge of jurors a verdict should be scrutinized more closely by the trial judge than is necessary where the litigation deals with material which is familiar and simple, the evidence relating to ordinary commercial practices. An example of subject matter unfamiliar to a layman would be a case requiring a jury to pass upon the nature of an alleged newly discovered organic compound in an infringement action.

Lind v. Schenley Indus. Inc., 278 F.2d 79, 90-91 (3d Cir. 1960).

IV. DISCUSSION

A. Medtronic's Motion for JMOL of Non-Infringement

1. Construction of "undulating pattern"

It is undisputed that Medtronic's stents are made up exclusively of U-shaped members, and do not comprise Y-shaped or W-shaped members. (D.I. 654 at 15 & ex. C) The court's final claim construction did not require the presence of Y-shaped or W-shaped members; consequently, Medtronic was found to infringe all asserted claims of the Lau patents at trial. Medtronic argues that JMOL of non-infringement is appropriate under the proper construction of "undulating pattern" which, in its view, requires a combination of U-, W-, and Y-shaped members. (Id. at 3-15) In the alternative,

Medtronic argues that a new trial is warranted because the jury verdict was based on an improper claim construction (D.I. 679 at 2-3), and/or because the jury was tainted by the court's "announcing the 'loser' of the claim construction dispute" by incorporating ACS's construction into the jury's instructions following the close of evidence (D.I. 653 at 33).[5]

In its jury charge, the court instructed the jury that the terms "undulating pattern" and "undulating portion" mean "a wave-like pattern." (D.I. 639 at 1883:22-23) Medtronic asserts that this construction was improper in view of the Federal Circuit's en banc decision in Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005) (hereinafter, "Phillips").[6] (D.I. 678 at 3) Specifically, Medtronic emphasizes the court's statement that it "felt it was more important . . . under the latest iteration of what the Federal Circuit looks at to make the claim language more consistent rather than trying to make the specification, [and] prosecution history consistent with the claim language." (D.I. 637 at 1711:8-22) Medtronic argues that the court did not apply the proper weight to the specification in its analysis, violating the pronouncement in Phillips that the specification is "usually . . . dispositive; it is the single best guide to the meaning of a disputed term." (D.I. 654 at 3, citing Phillips, 415 F.3d at 1315) In Medtronic's view, the

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[5]Medtronic asserts that this procedure "implicitly signaled to the jury that the [c]ourt had decided that ACS's witnesses were 'right' about claim construction (as well, perhaps, as other issues) while Medtronic's were 'wrong'", therefore effectively "telegraph[ing] to the jury that the key elements of Medtronic's infringement defense were either incorrect or irrelevant." (D.I. 653 at 33)

[6]The court issued its final Markman order on February 16, 2005 (D.I. 615), and incorporated its claim constructions into its jury charge on February 18, 2005 (D.I. 639 at 1883:22-23). Phillips issued on July 12, 2005, after Medtronic had renewed its motion for JMOL (and moved for a new trial). (D.I. 654) Medtronic addressed Phillips in its reply brief (D.I. 678), and ACS addressed Phillips in its combined surreply (D.I. 682, tab 1).

specification and the file history indicate that all claims require W-shaped and/or Y-shaped members because it is fundamental to the invention that the cylindrical elements "must be spaced apart."[7] (Id. at 14)

a. The Lau patents' common specification

The Lau specification consistently uses the term "undulating pattern" in a manner consistent with its ordinary meaning, i.e., wavy or wavelike.[8] Medtronic has not pointed to any portion in the specification which purports to be a statement of manifest exclusion or restriction of the term "undulating," such as to require a combination of U-, Y-, and/or W-shaped members. See Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1324 (Fed. Cir. 2002) ("[C]laim terms take on their ordinary and accustomed meanings unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."); see also Liebel-Flarsheim

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[7]According to Medtronic, if the court were to construe "cylindrical elements" as "wave-like," it was error not to construe other claim elements (such as "interconnected" and "connected") to require spacing apart of the cylindrical elements. (D.I. 654 at 14) Because the verdict was based on a construction which is inconsistent with the description of the invention, Medtronic argues, it was improper. (Id. at 14-15)

[8]For example, the specification states that

> [t]he radial expansion of the expandable cylinder deforms the undulating pattern thereof similar to changes in a waveform which result from decreasing the waveform's amplitude and the frequency. Preferably, the undulating patterns of the individual cylindrical elements are in phase with each other . . . .

('154 patent col. 2, ll. 35-41) Unless otherwise specified, all pinpoint citations to the specification refer to the '154 patent.

Co. v. Medrad, Inc., 358 F.3d 898, 910 (Fed. Cir. 2004) ("Absent a clear disclaimer of particular subject matter, the fact that the inventor may have anticipated that the invention would be used in a particular way does not mean that the scope of the invention is limited to that context." (citations omitted)). Medtronic instead argues that the specification requires that the cylindrical elements "must be spaced apart," thus necessitating the presence of W-shaped and/or Y-shaped members which provide the required spacing. (D.I. 654 at 4-5, 14) The specification provides:

> The resulting stent structure is a series of radially expandable cylindrical elements which are spaced **longitudinally close enough** so that small dissections in the wall of a body lumen may be pressed back into position against the lumenal wall, **but not so close as to compromise the longitudinal flexibilities** of the stent.

(col. 2, ll. 1-6 (emphases added)) Though this passage makes clear that some spacing is required to ensure longitudinal flexibility, there is nothing in this portion of the specification which equivocates "undulating" with a combination of U-, Y-, and W-shaped members.

Medtronic further argues that the figures of the Lau patents, as well as the specification's description of the figures, support its construction. Medtronic points to figure 5, which depicts an undulating pattern[9] with U-, Y-, and W-shaped members, with

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[9]Medtronic emphasizes the fact that the description of figure 5 includes the phrase "**the** undulating pattern of the stent." (D.I. 654 at 6; col. 3 ll. 63-63 (emphasis added)) Medtronic's argument that the term "the" signifies that ACS intended to confer the "undulating pattern" with Y-shaped members is misplaced. (D.I. 654 at 6) The complete statement from the Brief Description of the Drawings concerning figure 5 states that "Fig. 5 . . . illustrates the undulating pattern of the stent shown in Fig. 4," which in turn "is a prospective view of **a** stent embodying features of the invention." (col. 3 ll. 61-67 (emphasis added)) This statement does not preclude other stents which also embody the claimed features.

figure 11, which depicts a pattern with both U- and Y-shaped members and was described as an "alternate undulating pattern." (D.I. 654 at 5-6) According to Medtronic, there would have been no need to distinguish between the two patterns if an "undulating pattern" contains only U-shaped members. (Id. at 6-7) Medtronic, however, has not substantiated its argument that the figures do not simply depict a preferred embodiment by pointing to any language in the specification that purports to limit the ordinary meaning of "undulating pattern" to require the combination of U-, Y- and/or W-shaped members present in figures 5 and 11. See CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002) (the presumption of ordinary meaning cannot be rebutted "simply by pointing to the preferred embodiment or other structures or steps disclosed in the specification").

Medtronic argues that the phrase "[i]n keeping with the invention," as used in the specification's description of figures 4 and 12-14 (in which "[s]erpentine pattern 30 is made up of a plurality of U-shaped members 31, W-shaped members 32 and Y-shaped members 33"), coupled with the specification's interchangeable use of the terms "serpentine" and "undulating," confirms that the "undulating" patterns (and thus "cylindrical elements") must contain a combination of at least two of the three letter-shaped members and not merely U-shaped members. (D.I. 654 at 5-6) As an initial matter, the specification states that a "serpentine" waveform is only one example of an "undulating pattern," without exclusion.[10] The court declines to find that "in keeping with

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[10]The specification specifically contemplates that "undulating" is broader than "serpentine":

The presently preferred structure for the expandable cylindrical elements which

the invention" is a term of manifest exclusion or restriction, as would be required to deviate from the ordinary and accustomed meanings of the claim terms. See Teleflex, 299 F.3d at 1324.

The court notes that this is not a case where the specification describes only one way in which the cylindrical elements can be connected. The specification does not preclude the use of non-serpentine "undulating patterns" – for example, a square or sawtooth wave pattern – so long as the stent remains expandable and longitudinally flexible. The specification does not absolutely require that the interconnecting elements join the cylindrical elements at the peaks or valleys of the waveform, such as would be required where Y-shaped members are present.[11] (col. 3, ll. 6-9 ("**[p]referably**, all of the interconnecting elements of a stent are joined at either the peaks or the valleys of the undulating structure of the cylindrical elements" (emphasis added)) The figures are not inconsistent with the ordinary meaning of "undulating pattern," and the language of the specification falls short of definitively limiting the scope of the claims to the particular "undulating patterns" depicted in figures 5 and 11.

b. Claim language

> form the stents of the present invention generally circumferential undulating pattern, **e.g.** serpentine.

(col. 2, ll. 24-27 (emphasis added)) This is also consistent with the ordinary meaning of undulating, i.e., wavy or wavelike.

[11]In order to provide a Y-shaped member, the extended portion must be oriented downward from a valley (forming a Y) or upward from a peak (forming an upside-down Y). The language of the specification does not preclude the use of "connecting elements" that are not the tail portion of the Y-shaped member (for example, where the cylindrical elements are joined at points other than at a peak or valley).

As the court has previously noted, the language of the claims themselves further supports the court's construction. Claim 12 of the '168 patent separately describes "cylindrical elements having an undulating pattern of peaks and valleys," and a "weld connection" for attaching the peaks. Similarly, claims 1 and 5 of the '167 patent, as well as claims 12 and 15 of the '133 patent, first describe the cylindrical elements (having an undulating pattern) or "undulating portions" and, thereafter, state that each of these elements is "interconnected" or "connected" to an adjacent cylindrically shaped element. In view of the use of these terms in the claims, the court reasoned that

> [i]t is inconsistent to define "undulating patterns" and "undulating portions" to essentially require Y-shaped "connecting elements," (e.g., a structural feature identified at trial as the Y-shaped members), when the claims that require "undulating portions" (the claims of the '167, '168, and '133 patents) do not require such a structure. Moreover, to define "cylindrical elements" as having W-shaped and/or Y-shaped members, again, essentially requires "cylindrical elements" to have "connecting elements" when the claim either already requires the presence of "connecting elements" (e.g., claims 1 and 12 of the '154 patent) or when the claim does not require the presence of "connecting elements" ([the aforementioned claims of the '167, 168 and '133 patents]). In other words, Medtronic's proposed construction (and the construction earlier adopted by the court) serves to either make the "connecting elements" limitation surplusage or impermissibly adds such a limitation.[12]

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[12]Further, dependant claim 5 of the '154 patent specifically requires the plurality of cylindrical elements of claim 1, additionally requiring a "plurality of peaks and valleys having a serpentine pattern," which "include a plurality of U-shaped members, a plurality of Y-shaped members, and a plurality of W-shaped members, whereby a portion of said Y-shaped members forms said plurality of said connecting elements." The incorporation of U-, Y-, and W-shaped members into the dependant claim, as well as the statement that a portion of the Y-shaped members form the connecting elements in this embodiment, gives rise to some presumption that the independent claims do not require U-, Y-, and W-shaped members, and that the required connecting element is not necessarily part of a Y-shaped member. See Phillips, 415 F.3d at 1315 ("the presence of a dependant claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim") (citing Liebel-Flarsheim Co. v. Medrad, Inc., 358 F.3d 898, 910 (Fed. Cir. 2004)).

(D.I. 615) Phillips itself condones this inference. 415 F.3d at 1314 (recognizing that "[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment" as to the meaning of claim terms) (citing Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

c. Prosecution history

There is evidence that both the examiner of the '790 application and ACS understood that Y-shaped members include a component which is a "connector element." Originally-filed dependant claims 5-7 required that the cylindrical elements included a plurality of Y- and W-shaped members, "some of said U-shaped, Y-shaped, and W-shaped members being interconnected."[13] (AX-11 at 20) The examiner rejected the claims as indefinite under 35 U.S.C. § 112, stating that "it is not apparent what applicant considers the connecting elements if the cylindrical elements included such [U-, Y-, and W-]shaped members because it appears that the Y-, and W-shaped members are nothing more than part of the normal serpentine pattern and **further** including the connecting element attached thereto (particularly, the Y-shaped members)." (AX-11 at 44-45 (emphasis added)) In response, ACS amended claim 5 to require a plurality of U-, Y-, and W-shaped members, "whereby a portion of said Y-

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[13]Originally-filed claim 5 read:

> 5. The stent of claim 4, wherein said plurality of peaks and valleys include a plurality of Y-shaped members, and a plurality of W-shaped members, some of said U-shaped, Y-shaped, and W-shaped members being interconnected.

(AX-11 at 20) Oringially-filed claim 4 depended on claim 1, and further required that the cylindrical elements included "a plurality of peaks and valleys having a serpentine pattern." (AX-11 at 19) Claims 6 and 7 depended further from claim 5. (Id.)

shaped members forms said plurality of said connecting elements." (AX-11 at 118)

ACS stated that

> [c]laim 5 [was] amended to define the connecting elements as a portion of the Y-shaped members, as suggested by the [e]xaminer. As is clear, the tail portion of the Y-shaped members is the connecting element between the cylindrical elements.

(Id. at 119)

The court declines to find that ACS's statement made in connection with dependant claim 5 was a clear indication of an intent to limit the "cylindrical elements" of all claims to a combination of U-, Y-, and/or W-shaped members. See Cannon Rubber Ltd. v. The First Years, Inc., 163 Fed. App'x. 870, 876-77 (Fed. Cir. 2005) (non-precedential) (substitution of operational language ("mounting a diaphragm") with different, but not narrower structural language (a "diaphragm disposed in the body") in response to an indefiniteness rejection did not evidence a clear disavowal of subject matter that was not completely in the body).[14] This exchange demonstrates that the examiner and the applicant understood that a portion of the Y-shaped members of

[14]Medtronic points to an additional statement made by ACS during prosecution in response to an indefiniteness rejection in support for its argument, which fails for the same reasons. A rejection was made to original dependant claim 3 of the '154 application which related to the "projecting edges" feature of the invention. (AX-11 at 19) Specifically, the examiner stated that claim 3 was objectionable because "no specific distances have been disclosed for the outwardly projecting edges, nor any minimum distance which would enable the edges to embed in the vascular wall." (Id. at 44) In response, ACS amended claim 3 to state that the outwardly projecting edges extend "radially outwardly," and pointed to a particular paragraph in the specification, which it believed "clearly explained the dimensions of the stent and the thickness of the various members making up the serpentine pattern 30 [and] will dictate which of the U-shaped, W-shaped, and Y-shaped members that tip radially outwardly to form a projecting edge 34." (Id. at 119) Contrary to Medtronic's assertion, there is nothing in ACS's statement which purports to restrict that term, or even the term "cylindrical elements," so as to require a combination of U-, Y-, and/or W-shaped members.

claims 5-7 is part of the "normal serpentine pattern" of the cylindrical element, and a portion (the tail portion) of the Y-shaped members constitutes the connecting element. Since it is not feasible to divorce the Y-shaped member from its tail portion, it follows that the incorporation of a requirement that the "undulating pattern" of the "cylindrical elements" of the independent claims contain a plurality of Y- and/or W-shaped members (in addition to U-shaped members) would necessarily import a "connecting element" limitation into those claims, rendering other limitations to connecting elements redundant or superfluous.

d. Conclusion

Upon review of the issue, the court does not find its construction inconsistent with Phillips. The court finds the language of the specification inadequate to limit the term "undulating pattern" of the cylindrical elements beyond its ordinary meaning. ACS did not attempt to distinguish any prior art based on U-, Y-, and/or W-shaped members, nor did the examiner mention U-, Y-, and/or W-shaped members in connection with any prior art rejection. Further, importing a Y-shaped member restriction into "undulating pattern" necessarily incorporates a connecting element, rendering segregate connecting element limitations superfluous. For all of these reasons, the court finds no error in its construction of "undulating pattern" as "a wave-like pattern," consistent with the ordinary meaning of that term. Medtronic is not entitled to JMOL of non-infringement based upon an improper claim construction.

Additionally, Medtronic argues that the court's Markman decision, made after the presentation of evidence on claim construction, was improper. (D.I. 691) Medtronic cites Cytologix Corporation v. Ventana Medical Systems, Inc., 424 F.3d 1168 (Fed. Cir.

2005), in which the Federal Circuit stated that "[t]he risk of confusing the jury is high when experts opine on claim construction." 424 F.3d at 1172. Medtronic's reliance on Cytologix is misplaced, however, as that case confirms that Medtronic's objection should have been advanced prior to trial. Id. at 1173 ("in this case there is no ground for reversal since there was no objection to the expert testimony as to claim construction . . ."). The Cytologix Court noted that it appeared, in that case, that the presentation of conflicting expert views on claim construction "created confusion," which was evidenced by a verdict of infringement "that was not supported by substantial evidence." Id. at 1172-73. The opposite is the case here and, therefore, any error was harmless error in this case.[15] Medtronic is not entitled to a new trial on this ground. See Lucent Tech., Inc. v. Newbridge Networks Corp., 168 F. Supp. 2d 181, 253 (D. Del. 2001) ("The timing of the [c]ourt's claim construction decision [at the close of evidence following testimony from both parties' expert witnesses] did not conflict with Federal Circuit case law, and in the [c]ourt's view, did not unduly prejudice either party so as to warrant the granting of a new trial").

2. "Connecting elements" limitation

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[15]Additionally, the court did not require the parties to present expert testimony on claim construction. It merely delayed its construction of "undulating" until the close of evidence, as expressly permitted in Cytologix itself, and stated that the parties could "present evidence as they deem appropriate in support of their respective interpretations." (D.I. 587) See Cytologix, 424 F.3d at 1172 ("the district court has considerable latitude in determining when to resolve issues of claim construction") (citation omitted); see also Sofamor Danek Group, Inc. v. Depuy-Motech, Inc., 74 F.3d 1216, 1221 (Fed. Cir. 1996) ("Markman does not obligate the trial judge to conclusively interpret claims at an early stage in a case.").

The court construed "connecting elements" to mean "segments of a stent that extend between adjacent cylindrical elements, connecting them together."[16] (D.I. 639 at 1884:3-7) Medtronic asserts that it is entitled to JMOL of non-infringement of the '154 patent because no reasonable juror could have found that its stents have "connecting elements" required by the claims. (D.I. 654 at 16-19) Medtronic introduced evidence at trial that its stents are formed by welding the crowns of individual segments together with a laser in a process known as "autogenous laser fusion," which does not add any new material to the crowns.[17] (e.g., D.I. 634 at 788:20-793:10) ACS's expert, Dr. Jerome Segal, M.D. ("Segal"), an interventional cardiologist, agreed that Medtronic's fusion welding process does not add any new material. (D.I. 633 at 596:11-18) Because it was unrefuted that Medtronic's fusion welds are not a discrete component, Medtronic argues, there was no evidence that the welds "extend between adjacent cylindrical elements" under the court's definition. (D.I. 654 at 19)

In response, ACS asserts that the court's claim construction only requires that the connecting elements are "segments of a stent," and there was no dispute at trial that Medtronic's fusion welds are three-dimentional segments of a stent. (D.I. 673 at 22) Medtronic's own engineer, Mr. Jeffrey Allen ("Allen"), testified that, despite not adding any new material, Medtronic's fusion welding process results in a new structure -

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[16]The court also gave this same definition to the terms "connecting members," "interconnecting elements," and "struts for connecting." (D.I. 639 at 1884:3-7)

[17]Photographs of the welds were introduced into evidence. (D.I. 634 at 793:11-796:9; DTX-149A; DTX-150A)

a weld - created from metal borrowed from the two adjacent crowns.[18] The jury was given Medtronic's design specifications for each of its stents, as well as photographs of Medtronic's welds. (AX-104-09; AX-111; AX-113; AX-115-16; AX-119A; AX-899a) Dr. Segal testified for ACS that these specifications and photographs indicate that Medtronic's fusion welds have minimum dimensions, i.e., they take up space and, therefore, constitute "connecting elements" between the cylindrical elements under the court's definition. (D.I. 633 at 547:18-550:10) Medtronic's expert, Dr. Raymond Vito, Ph.D., a biomechanical engineer, confirmed that the weld is three-dimensional (D.I. 635 at 1055:11-16), and testified that "there's really no room between there for anything to come between the crowns other than the weld" (D.I. 635 at 972:2-3)

The court's claim construction did not require that the connecting element is a component that is discrete from the cylindrical elements.[19] The court agrees with Medtronic that its definition requires a segment that "extend[s] between" the cylindrical elements, i.e., spaces apart those elements beyond what could result from a simple

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[18]Allen testified as follows:

> Q. All right. The crowns come together. The heat is applied. Some of the metal from one crown and some of the metal from the other crown come together, and they form something new, called the weld?
> A. They mix together and form an autogenous fusion weld.
> Q. Which is new, because you didn't have a weld before?
> A. It's new that they're connected now.
> Q. And the weld itself is new because it wasn't there before; correct?
> A. The material that -- yes. That's correct.

(D.I. 634 at 854:11-22)

[19]As discussed previously, the Y-shaped members described in the Lau patents are part cylindrical element and part connecting element (at the tail portion).

overlay. However, Medtronic's design specifications indicate that its fusion welds fill space previously unoccupied by either adjacent crown, for example, a length of 0.040 inches +/- 0.003, and a width of 0.003 inches for the S7 stent, as described by Allen on cross-examination, and as confirmed by Segal. (D.I. 634 at 844:6-846:8; AX-112; D.I. 633 at 547:18-550:10) Based on the foregoing evidence presented, the court finds that the jury could have reasonably found that Medtronic's stents have a "segment[ ] of a stent that extend[s] between adjacent cylindrical elements, connecting them together," resulting from the blending of metal between the crowns of individual segments. Medtronic's motion for JMOL of non-infringement of the '154 patent on this ground is denied.

3. "Length less than diameter" limitation

The court construed "cylindrical element" to mean "a radially expandable segment of a stent having a longitudinal length less than its diameter ["L<D"] with a circumferential undulating pattern."[20] (D.I. 639 at 1883:16-20) Medtronic asserts that all of its accused stents, except for the Driver and the MicroDriver stents, have longitudinal lengths greater than their diameter in the stents' non-expanded, or "crimped" state and, thus, can not have a cylindrical element with L<D as required by the claims. (D.I. 654 at 19-22) ACS objects to Medtronic's interpretation that L<D can only be met in the "crimped" state on several grounds: (1) Medtronic did not suggest that L<D must be met in a particular state during Markman proceedings, and can not argue a narrower claim construction for the first time in connection with its JMOL

[20]The court also gave this same definition to the terms "cylindrically shaped element" and "cylindrical ring." (D.I. 639 at 1883:16-20)

motion; and (2) at trial, Medtronic asserted that all of the asserted Lau claims are invalid over various prior art references which it asserts disclose L<D in the expanded state. (D.I. 673 at 23-25)

Medtronic does not dispute that it did not raise the claim construction argument it makes now at the Markman stage, stating only that it explained its position at length in closing argument and in its JMOL motions. (D.I. 678 at 15) Medtronic can not now argue that L<D only applies in the crimped state.[21] See Interactive Gift Express, Inc. v. Compuserve Inc., 256 F.3d 1323, 1345-46 (Fed. Cir. 2001) (presentation of the adopted construction to the district court constituted a waiver and precluded the party from proposing a new construction either on JMOL or on appeal); see also Hewlett-Packard Co. v. Mustek Systems, Inc., 340 F.3d 1314, 1321 (Fed. Cir. 2003) ("The verdict must be tested by the charge actually given and by giving the ordinary meaning of the language of the jury instruction."). ACS introduced Segal's testimony at trial that all of Medtronic's stents have L<D in the expanded state, and many also have L<D in the crimped state as well. (D.I. 633 at 476:6-477:9) The court finds that a reasonable

[21]At trial, Medtronic argued that the asserted claims of the Lau patents are invalid in view of prior art describing L<D in the expanded state. (D.I. 673 at 23-24) Medtronic argues that the broader interpretation of L<D advanced in its invalidity case was in response to ACS's arguments that L<D in the expanded case sufficed for infringement. (D.I. 678 at 15) Medtronic seems to argue that ACS's focus was misplaced at trial, as it was required to establish that Medtronic's stents infringe in the crimped state, i.e., when they are "expandable." (D.I. 654 at 21) The court is not convinced that Medtronic took the position it did at trial simply to rebut a misfocused infringement position taken by ACS. Nevertheless, because the court finds that Medtronic is estopped from advancing its claim construction argument at the JMOL stage, the court need not address whether or not Medtronic's invalidity position at trial also supports a denial of its motion for JMOL.

juror could have concluded, based on the evidence of record, that Medtronic's stents satisfy the L<D limitation.

4. Conclusion

The court finds that Medtronic's additional arguments in support of its motion for JMOL of non-infringement are without merit. Medtronic claims that ACS failed to demonstrate that Medtronic committed infringing activities during the term of the Lau patents. (D.I. 654 at 23-28) Notwithstanding that there was evidence introduced at trial that demonstrates otherwise,[22] the court previously determined that the issue of liability should be addressed separately from damages so that any non-infringing alternatives would be identified prior to the damages phase of trial. Medtronic does not argue that none of its products were made, used, sold, or offered for sale during the life of any of the claims at issue. It is ultimately ACS's burden to establish that Medtronic violated the patent statute during the life of any of its infringed claims during the damages trial. There was no error in the jury's verdict regarding infringement liability.

Finally, Medtronic's argument that ACS failed to demonstrate ownership of the Lau patents is also without merit. (D.I. 654 at 28-30) Standing is a question of law to be determined by the court, not a question of fact for the jury. See Paradise Creations, Inc. v. UV Sales, Inc., 315 F.3d 1304, 1308 (Fed. Cir. 2003). ACS has an assignment (D.I. 623), and is listed as the assignee of record on the face of the Lau patents. Notably, Medtronic did not challenge standing prior to trial, and the court finds no error

[22](e.g., D.I. 632 at 279:8-12; 281:16-24; D.I. 636 at 1475:13-14)

in ACS's failure to make a proffer on its standing during the trial. For all of the foregoing reasons, Medtronic is not entitled to JMOL of non-infringement.

B. Medtronic's Motion for JMOL of Invalidity Based on Obviousness

Medtronic argues that it presented clear and convincing evidence that the Lau patents are invalid due to obviousness, which no reasonable juror could have found was rebutted by ACS. (D.I. 654 at 31-39) As an initial matter, it is not clear to the court that Medtronic put forth a prima facie case of obviousness. Medtronic's expert, Neil Saigal, Ph.D. ("Saigal"), a civil engineer, identified the limitations of the Lau patent claims in various prior art patents in various combinations.[23] Medtronic does not point to any testimony regarding the purported motivation to combine these references. See, e.g., Tec Air, Inc. v. Denso Mfg. Mich. Inc., 192 F.3d 1353, 1359-60 (Fed. Cir. 1999) ("To establish a prima facie case of obviousness, [defendant] must show some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." (citation and internal quotation omitted)). In its papers, Medtronic avers that with respect to the '154 patent, "[i]t would have been obvious to combine [the

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[23]According to Medtronic, the '154 patent is obvious over: (1) U.S. Patent No. 5,292,331 ("Boneau '331") and U.S. Patent No. 5,102,417 ("Palmaz '417"), also referred to by the parties as "spiral Palmaz"; and (2) Boneau '331 and U.S. Patent No. 5,195,984 ("Schatz"). (D.I. 654 at 33) Medtronic asserts that the '167 patent is obvious over Boneau '331 in combination with either Palmaz '417, Schatz, or U.S. Patent No. 5,104,404 ("Wolff"). (Id. at 33-34) Medtronic further asserts that the '168 patent is obvious over Boneau '331 in combination with: (1) Palmaz '417 and Wolff; (2) Schatz and Wolff; or (3) Boneau '331, Palmaz '417 or Schatz with U.S. Patent No. 4,733,665 ("Palmaz '665"); and that the '133 patent is obvious in view of Boneau '331 and: (1) Palmaz '417; (2) Schatz; (3) Schatz or Palmaz '417 with Wolff or Palmaz '665. (Id. at 34)

Boneau '331 and Schatz] patents, as they were both drawn to similar subject matter," but cites no testimony in support of this assertion. (D.I. 654 at 33) Medtronic generally argues that the testimony of Segal, ACS's expert, "shows that any person of ordinary skill in the art with the prior art in front of him or her would know that shorter lengths increase flexibility and connectors increase stability (or, decrease migration)," but strikingly absent is any specific testimony by Segal to this effect. (D.I. 654 at 38) Nor does Medtronic point to any evidence that a person of ordinary skill in the art would have perceived a reasonable expectation of success in making the combinations that Medtronic asserts were obvious. See, e.g., Medichem, S.A. v. Rolabo, S.L., 437 F.3d 1157, 1165 (Fed. Cir. 2006) ("[A]n obviousness determination requires not only the existence of a motivation to combine elements from different prior art references, but also that a skilled artisan would have perceived a reasonable expectation of success in making the invention via that combination.").

Notwithstanding, there is evidence of record which a reasonable juror could have found rebutted a prima facie case of obviousness. Segal testified that there could have been no expectation of success during the relevant timeframe, because the stent community in 1990-91 did not believe that the required diameter could be achieved using very short stents (e.g., less than 7 mm) and had not considered connecting very short elements (e.g., 1-2 mm) that are not in and of themselves stents. (D.I. 638 at 1576:10-1577:7) Segal also testified that Dr. Simon Stertzer, an interventional cardiologist working with Michael Boneau ("Boneau"), rejected the idea of connecting short 1-2mm elements. (Id. at 1574:25-1575:17)

ACS also presented evidence regarding secondary considerations. Segal (and Dr. David Pearle, an interventional cardiologist who testified for Medtronic) testified that there was a need in the industry for a stent with radial strength and flexibility. (Id. at 1578:3-7; D.I. 634 at 715:2-7) Segal also testified that several companies, including Medtronic and ACS, were trying to achieve this type of stent during the relevant timeframe. (D.I. 638 at 1584:16-1585:17) Beverly Huss, former President of Endovascular Solutions at ACS, testified that the ACS Multi-Link design was a tremendous commercial success upon its launch. (D.I. 636 at 1479:10-25)

In view of this evidence, the court finds that, even assuming that a prima facie case of obviousness was made by Medtronic, a reasonable jury could have found that Medtronic's proffer was rebutted by ACS. Medtronic is not entitled to JMOL that the claims of the Lau patents are invalid for obviousness.

C. Medtronic's Remaining Arguments Regarding its Motion for a New Trial

1. Exclusion of testimony

Medtronic claims that it was prejudiced by the court's exclusion of the testimony of several witnesses relating to its obviousness defense, necessitating a new trial. (D.I. 653 at 6-16) Medtronic states that the excluded testimony of Lilip Lau ("Lau"), coinventor of the Lau patents, would have been relevant to describe

> (a) the context and background of Mr. Lau's inention; (b) Mr. Lau's consulting agreements with ACS . . . ; (c) the entire development story of ACS's stents . . . to show that Mr. Lau's invention was not new or groundbreaking; and (d) Medtronic's claim of invalidity (because one of ordinary skill in the art would have been motivated to combine the Boneau rings with the connectors found in the Palmaz-Schatz stent).

(D.I. 653 at 14) According to Medtronic, William Hartigan ("Hartigan"), also a coinventor of the Lau patents, would have testified that he "had no knowledge of any major breakthroughs or radical advances that others contributed to the ACS invention; that he did not recall what most of the notes in his notebook [to a "stent idea" and "stent concept"] referred to . . . and that he had no recollection of speaking with Mr. Lau regarding making a stent with multiple ring connectors." (Id. at 15, citing D.I. 604, ex. B at 108-09, 113-14, 120-21, 205-06) Medtronic argues that this testimony on "what was in the prior art" and "what [Lau] did" would have rebutted ACS's "one-sided development story" that its invention was new and different from the prior art. (D.I. 653 at 15-16)

With regard to Boneau, Medtronic states that

> Boneau would have explained how he met with ACS in 1989 and again in 1990 (before Mr. Lau filed his original patent application in October of 1991), told them about his sinusoidal ring, and provided them with not one, but two copies of his own [unpublished] patent application (which was filed in August 1989 and issued as the '331 patent in 1994). Mr. Boneau also could have told the jury that he discussed with ACS the idea of connecting single rings (with sutures), again, before Mr. Lau filed his patent application claiming connected rings.

(Id. at 9)

Medtronic argues that Boneau's testimony was relevant to rebutting ACS's proffer on secondary considerations of obviousness,[24] i.e., to explain that ACS's commercial success was not due to the invention, rather, because ACS won the "horse

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[24]Medtronic is incorrect in asserting that ACS "put[ ] the commercial success of the [Lau] invention[s] at issue." (D.I. 679 at 8) It was Medtronic's burden to put forth a prima facie case of obviousness, at which point ACS had a burden to rebut Medtronic's prima facie case by challenging Medtronic on its proofs, and/or by demonstrating non-obviousness with well-established secondary considerations.

race" to first commercialize a stent comprising short, sinusoidal elements after Boneau gave ACS "the very idea that made ACS's invention possible" before his own patent application was made public. (Id. at 8-11; D.I. 679 at 4) As described by Medtronic, however, Boneau's testimony could have only had three purposes: (1) to back-door a claim of trade secret misappropriation;[25] (2) to demonstrate that the Lau inventors did not independently invent the patented technology; or (3) to demonstrate Lau's state of mind during the inventive process. Medtronic claims that it did not offer Boneau's testimony to invalidate the Lau patents on a claim of derivation or priority of Boneau's invention.[26] (D.I. 653 at 12) If Boneau did not himself invent the Lau stents or contribute to that invention, however, it is irrelevant whether the Lau inventors were propelled forward in their own inventive process during discussions or dealings with Boneau. See Life Techs., Inc. v. Clontech Labs., Inc., 224 F.3d 1320, 1325 (Fed. Cir.

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[25]Medtronic's theory that it "should have been allowed to demonstrate that ACS's early market success was due to the leg up and head start it had by getting access to the Boneau technology years before its competitors" is reminiscent of Medtronic's trade secret claim which was properly dismissed by the court as time-barred. (D.I. 543, 544)

[26]Yet, in the same breadth, Medtronic asserts that "Boneau should have been permitted to testify about his early work in stent design and testing, including his design and testing of his 'suture stent'." (D.I. 679 at 9-10) As an initial matter, the court previously granted summary judgment for ACS that Boneau is not a joint inventor of the Lau patents and the Lau patents are not invalid under 35 U.S.C. § 102(f), noting that there was no evidence to substantiate Boneau's claim that the information he provided to Lau substantially contributed to Lau's conception of his patented technology. (D.I. 543) This remains the case today. Boneau's uncorroborated testimony was not admissible at trial for purposes of proving derivation or prior conception. See Price v. Symsek, 988 F.2d 1187, 1194 (Fed. Cir. 1993) ("[T]he case law is unequivocal that an inventor's testimony respecting the facts surrounding a claim of derivation or priority of invention cannot, standing alone, rise to the level of clear and convincing proof. . . . such inventor testimony must be supported by some type of corroborating evidence." (citations omitted)).

2000) ("It does not matter whether the inventors reached their invention after an exhaustive study of the prior art, or developed their [invention] in complete isolation.") (citing 35 U.S.C. § 103(a) ("Patentability shall not be negatived by the manner in which the invention was made")). ACS did not present testimony regarding the inventive process,[27] and did not "open the door" to otherwise irrelevant rebuttal testimony on "what [Lau] did." The court's exclusion of the proffered testimony of Boneau, Lau, and Hartigan, therefore, was appropriate under Federal Rules of Civil Procedure 402 and 403.

Medtronic further claims that the court erred in excluding the testimony of Farhad Khosravi, a former engineer who worked with Lau in developing ACS's stent technology, regarding purported similarities between ACS's prototype stent and the Boneau stent. (D.I. 653 at 12-13) Specifically, Medtronic sought "to tell the jury that Mr. Khosravi – someone who was clearly skilled in the art of stent design in the late 1980s or early 1990s – believed that ACS's Multilink stent was nothing more than a series of connected Boneau rings." (Id. at 13) Khosravi, however, never testified to this point. (D.I. 674, ex. 4 at 290 ("Q. But do you see the [Multilink and Boneau] designs as being at all similar? A. No.")) Nor was Ksoravi's testimony relevant to any other reference

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[27]ACS's proffer that its stents revolutionized the treatment for coronary disease was a wholly separate proffer. As the court previously remarked:

> [T]here's a huge difference in telling the development story in terms of a cardiologist who has discussed what products were available on the market for his use versus what was in the inventor's mind when he was actually going through the inventive process. Those are two different development stories, and I don't think the one is relevant.

(D.I. 633 at 350:14-21)

relied upon for obviousness. The court finds no legal error in its exclusion of Ksoravi's testimony under Federal Rules of Civil Procedure 402 and 403.

2. Purportedly incorrect statements made to the USPTO

Medtronic asserts that the court erred in excluding evidence that ACS mischaracterized the Palmaz '417 patent to the USPTO during prosecution of the '154 patent, to help rebut the presumption of validity of the '154 patent. (D.I. 653 at 19) Medtronic did not simply seek to demonstrate "that the jury had different information about the Palmaz patent than did the Patent Office during prosecution of the Lau patents." (D.I. 653 at 23) Rather, Medtronic sought to challenge the merits of the statements made to the USPTO during prosecution, in order to "point out that the information on which the Patent Office relied in issuing the ['154] patent was incorrect." (Id. at 23) The caselaw is clear that "flawed prosecution arguments" and "[m]isleading statements made by patent applicants, if intentionally made and material to patentability, can produce unenforceability, not invalidity." Norian Corp. v. Stryker Corp., 363 F.3d 1321, 1329 (Fed. Cir. 2004).[28] The court discerns no legal error in

[28]Medtronic's reliance on Surface Technology, Inc. v. United States ITC et al., 801 F.2d 1336 (Fed. Cir. 1986), in support of its proposition that such arguments are relevant to validity is misplaced. The issue presented in Surface Technology was whether the Commission's findings that the patent claims were invalid for obviousness, and were not infringed, were supported by substantial evidence. Id. at 1340. The Surface Technology court answered these questions in the affirmative, noting that: (1) the claims at issue were allowed based on affidavits submitted by three individuals; (2) one affiant subsequently took directly contradictory positions during a deposition; (3) another affiant testified before the Commission in a manner which "raised questions as to his credibility"; and (4) the affiants' testimony "compromised the strength and effectiveness of the affidavits." Id. In essence, the Federal Circuit held that the ITC could have reasonably found the affidavit evidence submitted during prosecution unreliable. Id. The court declines to expand the holding of Surface Technology to the breadth of Medtronic's proposition, i.e., that it is appropriate to argue (in an invalidity

excluding Medtronic's proffer regarding the purported falsehood of statements made to the USPTO during its validity case-in-chief.

3. Summary judgment on anticipation

After the close of evidence, the court determined that there was no way a jury could have found that the Palmaz '417 patent anticipated the claims of the '154 and '167 patents based on Saigal's testimony, and granted ACS's motion for JMOL on anticipation.[29] The court has reviewed Medtronic's revised proffer on anticipation (D.I. 653, ex. C), and again concludes that Saigal did not put forward an anticipation analysis. Saigal testified that some of the '154 claim limitations were present in several pieces of prior art;[30] Medtronic points to no testimony by Saigal indicating that any one

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case) that "the jury had different information about the [prior art] than did the Patent Office during prosecution." (D.I. 653 at 23) Medtronic's argument goes to the merits of the representations to the USPTO, properly addressed in the inequitable conduct trial.

[29]The court stated:

> With respect to anticipation, try as we might, we could not cobble together a true anticipation analysis from the evidence that was presented to us. There is no way a jury could – [Professor Saigal's] analysis wasn't couched in terms of anticipation. It was truly couched in terms of obviousness. Again, I determined that there was insufficient evidence to take that issue to the jury.

(D.I. 638 at 1739:20-1740:1)

[30]Even in the aggregate, Saigal did not testify that each limitation of the asserted '154 and '167 claims is present in Palmaz '417. For example, Saigal did not testify that Palmaz '417 discloses an "undulating" ("wave-like") pattern as defined by the court. (D.I. 636 at 1300:21-1301:14) The following exchange constituted Saigal's conslusion regarding this limitation:

> Q. Okay. You looked at the prior art under each definition of cylindrical element and undulating pattern and serpentine?
> A. Yes, I did.
> Q. And did you find[,] in the prior art[,] stents that had either parties'

reference contains all of the limitations of any asserted claim. The portions of Saigal's testimony cited by Medtronic are not cohesive, and further indicate that Saigal was focused on obviousness rather than anticipation.[31] The court finds no error in its determination that the evidence presented demonstrated that there was no question of material fact for the jury.

4. Law of the case doctrine

In granting ACS's motion for summary judgment of non-infringement of Medtronic's Boneau patents, the court made a finding that Boneau surrendered subject matter during prosecution that prevented Medtronic from asserting infringement by the doctrine of equivalents. (D.I. 545 at 16) Specifically, Boneau distinguished U.S. Patent No. 4,776,337 ("Palmaz '337") on the basis that Boneau's stent had upper and lower peaks, which could not exist if the elements of Palmaz '337 – "straight segments that connect circular bands" as described by the court – were incorporated into Boneau. (Id.

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definitions?
A. Yes, I did.
Q. Okay. I'm going to check 2 and 3 off, because you found those in the prior art; right, sir?
A. Yes. Yes, sir.

(Id. at 1301:8-14) Saigal did not testify that Palmaz '417 contained this limitation of the '167 patent claims. The court further rejects Medtronic's suggestion that an average juror could have readily looked at Palmaz '417 and made a determination, using their common understanding of "wavelike" patterns, as to anticipation, thus creating a material issue of fact on anticipation. (D.I. 679 at 12-13 ("Palmaz ['417] was in evidence. That is all Medtronic needed.") (record citation omitted))

[31]As yet another example of the nature of Saigal's testimony, Saigal's testimony cited by Medtronic regarding the "cylindrical elements" limitation of the '154 patent claims explicitly related to obviousness. (Id. at 1375:3-4 ("So that was -- you know, these combinations made the Claim 8 of '167 patent obvious."))

at 14-15) Through a motion in limine, Medtronic sought to preclude ACS from asserting any argument or evidence in the Lau case that conflicted with the court's statement that Palmaz '337 discloses a stent with "connections between circular bands." (D.I. 563) The court denied the motion on the grounds that its discussion of Palmaz '337 in the context of prosecution history estoppel in the Boneau case did not invoke the law of the case doctrine in the Lau case. (D.I. 578) Medtronic argues that it was prejudiced because it was not able to point out to the jury that, under the court's description of Palmaz '337, ACS's argument that it was the first to come up with the idea of connecting short cylindrical elements to make a stent out of segments (that would not function independently as stents) was incorrect. (D.I. 653 at 26-31)

As the court has previously stated, the Boneau and Lau cases involve different issues. (D.I. 580 at 4)

> The law of the case doctrine directs courts to refrain from re-deciding issues that were resolved earlier in the litigation. . . . Because it prevents courts from entertaining endless appeals on the same issue, the doctrine promotes finality and judicial economy. Law of the case rules have developed to maintain consistency and avoid reconsideration of matters once decided during the course of a single continuing lawsuit.

Pub. Interest Research Group of N.J., Inc. v. Magnesium Elektron, Inc., 123 F.3d 111, 116 (3d Cir. 1997) (internal citations omitted). The issue of Boneau's waiver was not relitigated in the Lau case. Even more fundamentally, the court characterized the description of Palmaz '337 for the limited purpose of determining the scope of Boneau's waiver and, in doing so, did not create a controlling description addressing the full scope of Palmaz '337. The court simply held that Boneau's waiver "included connections between circular bands" such as were described in Palmaz '337. (D.I. 545

at 15) This description is not a controlling statement on the breadth of the disclosure of Palmaz '337. For all of the foregoing reasons, the law of the case doctrine does not apply. The court discerns no legal error in its holding, and Medtronic is not entitled to a new trial on this ground.

V. Conclusion

For the foregoing reasons, Medtronic's motion for JMOL of non-infringement and that the Lau patents are invalid for obviousness (D.I. 650) is denied. Medtronic's motion for a new trial (D.I. 651) is also denied.[32] An appropriate order shall issue.

[32]Having determined that Medtronic's arguments in support for a new trial are without merit, the court declines to find that the "cumulative effect" of the court's rulings against it unfairly prejudiced Medtronic. (D.I. 279 at 1)

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

ADVANCED CARDIOVASCULAR SYSTEMS, INC. and GUIDANT SALES CORP.,	)	
Plaintiffs,	)	
v.	)	Civ. No. 98-80-SLR (consolidated with Civ. No. 98-314-SLR and Civ. No. 98-316-SLR)
MEDTRONIC VASCULAR, INC. and MEDTRONIC USA, INC.,	)	
Defendants.	)	

ORDER

At Wilmington this 29th day of March, 2007, consistent with the memorandum opinion issued this same date;

IT IS ORDERED that:

1. Defendants' motion for judgment as a matter of law (D.I. 651) is denied.

2. Defendants' motion for a new trial (D.I. 650) is denied.

3. The court reserves final judgment pending its disposition of Medtronic's charges of inequitable conduct.

United States District Judge