NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

ABIOMED INC.,
Plaintiff/Counterclaim Defendant-Appellee

v.

MAQUET CARDIOVASCULAR LLC,
Defendant/Counterclaim Plaintiff-Appellant

v.

ABIOMED EUROPE GMBH, ABIOMED R&D, INC.,
Counterclaim Defendants-Appellees

2024-1062

Appeal from the United States District Court for the District of Massachusetts in No. 1:16-cv-10914-FDS, Judge F. Dennis Saylor, IV.

Decided: February 9, 2026

KEITH HUMMEL, Cravath, Swaine & Moore LLP, New York, NY, argued for appellees. Also represented by SHARONMOYEE GOSWAMI, ANDREI HARASYMIAK, LAUREN MOSKOWITZ.

KIRK T. BRADLEY, Alston & Bird LLP, Charlotte, NC, argued for appellant. Also represented by NICHOLAS CHRISTOPHER MARAIS; CHRISTOPHER L. MCARDLE, WADE G. PERRIN, New York, NY.

Before HUGHES, CUNNINGHAM, and STARK, *Circuit Judges*.

CUNNINGHAM, *Circuit Judge*.

Maquet Cardiovascular LLC ("Maquet") appeals from a final judgment of the United States District Court for the District of Massachusetts, ordering that Abiomed Inc., Abiomed Europe GmbH, and Abiomed R&D, Inc. (collectively, "Abiomed") have not infringed any claim of U.S. Patent Nos. 7,022,100; 8,888,728; 9,327,068; 9,545,468; 9,561,314; and 9,597,437 (collectively, the "Asserted Patents"). J.A. 1–2. For the reasons discussed below, we *affirm-in-part*, *vacate-in-part*, and *remand*.

I. BACKGROUND

Maquet is the owner of the Asserted Patents, which claim various intravascular blood pump systems and methods for providing heart support using intravascular blood pump systems. *See, e.g.*, '100 patent col. 20 ll. 20–28; '437 patent col. 33 l. 42 to col. 34 l. 31; *Abiomed, Inc. v. Maquet Cardiovascular LLC*, 329 F. Supp. 3d 1, 8 (D. Mass. 2018) ("*Claim Construction Order*").[1]

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[1] "The specifications of the '100, '728, and '068 patents are identical, and the specifications of the '468, '314, and '437 patents are different only in that they explicitly incorporate as Appendices A and B certain material that was incorporated by reference in the other three patents—namely, two patent applications, also owned by Maquet, U.S. Patent App. Nos. 09/280,988 and 09/280,970." *Claim*

The Asserted Patents disclose three "broad aspect[s] of the present invention," each defined by a specific type of "guide mechanism:" (1) "an 'over-the-wire' type guide mechanism;" (2) "a 'side-rigger' or 'rapid exchange' type guide mechanism;" and (3) "a 'guide catheter' type guide mechanism." '100 patent col. 2 l. 56 to col. 3 l. 41; *Claim Construction Order* at 10–11.

Three claim limitations are at issue in this appeal: (1) "an elongate lumen associated with the cannula;" (2) "purge fluid;" and (3) "guide mechanism." Appellant's Br. 26–32; *Claim Construction Order* at 14–17. The "elongate lumen" limitation is found in claims 1 and 22 of the '468 patent, claim 27 of the '314 patent, and claims 1 and 28 of the '437 patent. *See* '468 patent; '314 patent; '437 patent; *see also Claim Construction Order* at 28. The "purge fluid" limitation is found in claim 1 of the '728 patent, claim 1 of the '068 patent, claims 1 and 22 of the '468 patent, claims 1, 20, and 27 of the '314 patent, and claims 1 and 28 of the '437 patent. *See* '728 patent; '068 patent; '468 patent; '314 patent; '437 patent; *see also Claim Construction Order* at 45. The "guide mechanism" limitation is found in claim 16 of the '100 patent. *See* '100 patent; *Claim Construction Order* at 22. Claim 1 of the '468 patent recites:

> 1. An intravascular blood pump system, comprising:
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> An intravascular blood pump adapted to be guided to a predetermined location within the circulatory system of a patient by a guide wire and configured to provide left-heart support, the intravascular blood pump comprising a rotor having a rotor

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Construction Order at 10. For this reason, we generally cite to the specification of the '100 patent.

hub tapering in the distal direction, at least one blade extending radially outward from the rotor hub,

a catheter coupled to a proximal end of the intravascular blood pump, a purge lumen extending through the catheter and operatively arranged to deliver *purge fluid* towards the intravascular blood pump;

A cannula coupled to a distal end of the intravascular blood pump, one or more first ports and one or more second ports establishing fluid communication between a lumen of the cannula and an exterior region of the cannula, wherein at least one first port is located in proximity to the rotor and at least one second port is spaced apart from and located distal to the at least one first port, the cannula is configured such that when the intravascular blood pump is positioned in the patient to provide left-heart support the distal end of the cannula and the at least one second port are positioned inside the patient's heart and the proximal end of the cannula and the at least one first port are positioned in the patient's aorta, the intravascular blood pump is configured to draw blood from the patient's heart into the at least one second port through the cannula lumen and out the at least one first port to provide left-heart support while the cannula is positioned across an aortic valve of the patient;

an elongate lumen associated with the cannula and sized to slidably receive the guide wire and dimensioned such that the guide wire passes slidably and coaxially through

> the elongate lumen, the elongate lumen is sized smaller cross sectionally than the cannula lumen, both the elongate lumen and the cannula lumen not extending through the rotor hub, the intravascular blood pump system configured for the guide wire to extend proximally away from the intravascular blood pump, the guide wire not passing through the rotor hub or the catheter, and the guide wire extending out of the intravascular blood pump system in a distal direction through the elongate lumen;
>
> a pressure sensing element configured to sense pressure proximate the intravascular blood pump;
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> a housing connected to a proximal end of the catheter; and first and second conduits each connected to the housing, at least one of the first conduit and second conduit in fluid communication with the purge lumen.

'468 patent col. 33 l. 58 to col. 34 l. 42 (emphases added).

Claim 16 of the '100 patent recites:

> 16. An intravascular blood pump system comprising:
>
> an intravascular blood pump having a cannula coupled thereto,
>
> a *guide mechanism* adapted to guide said intravascular blood pump and cannula to a predetermined location within the circulatory system of a patient, and
>
> a blood pressure detection mechanism to detect the pressure of the blood proximate

> at least one of the intravascular blood pump and cannula.

'100 patent col. 20 ll. 20–28 (emphasis added).

On May 19, 2016, Abiomed filed a suit seeking a declaratory judgment that its Impella devices do not infringe the claims of the Asserted Patents and that the claims of the Asserted Patents are invalid. *Abiomed, Inc. v. Maquet Cardiovascular LLC*, 566 F. Supp. 3d 59, 65 (D. Mass. 2021) ("*Summary Judgment Order*"); J.A. 158. Maquet filed a counterclaim seeking a declaratory judgment of infringement and damages. *Summary Judgment Order* at 65.

On September 7, 2018, the district court construed disputed claim terms after holding a *Markman* hearing. *Claim Construction Order* at 8. The district court construed "an elongate lumen associated with the cannula" in the '468, '314, and '437 patents to mean "a permanent elongate lumen formed along the side of the cannula." *Claim Construction Order* at 30. In addition, in relevant part, the district court construed the "purge fluid" limitations of the '728, '068, '468, '314, and '437 patents to require that "the purge fluid does not go through the rotor bearings and into the bloodstream." *Claim Construction Order* at 47. The district court also construed the "guide mechanism" limitation in the '100 patent as a means-plus-function term. *Claim Construction Order* at 36–38.

Maquet moved for reconsideration and/or clarification regarding the district court's construction of the "purge fluid" limitations. J.A. 79, 176. The district court denied Maquet's motion for reconsideration and/or clarification. J.A. 88, 180. Maquet subsequently limited its asserted claims to claims 16 and 17 of the '100 patent. *Summary Judgment Order* at 65; J.A. 3497.

Abiomed moved for summary judgment of non-infringement of the '100 patent, arguing that the Impella devices "are not literally infringing, nor equivalent under

35 U.S.C. § 112 ¶ 6 or the doctrine of equivalents." *Summary Judgment Order* at 65; J.A. 1572–1607. On September 30, 2021, the district court granted summary judgment of non-infringement of claims 16 and 17 of the '100 patent. *Summary Judgment Order* at 65. On September 1, 2023, the district court entered final judgment. J.A. 1–2.

This appeal followed. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

II. STANDARD OF REVIEW

"Regarding questions of claim construction, including whether claim language invokes 35 U.S.C. § 112, para. 6, the district court's determinations based on evidence intrinsic to the patent as well as its ultimate interpretations of the patent claims are legal questions that we review de novo." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346 (Fed. Cir. 2015) (en banc in relevant part).

"In reviewing the grant of a motion for summary judgment we apply the law of the regional circuit in which the district court sits, here, the First Circuit." *AntennaSys, Inc. v. AQYR Techs., Inc.*, 976 F.3d 1374, 1377 (Fed. Cir. 2020). "The First Circuit reviews a grant of summary judgment de novo." *Id.*; *see also Santiago-Diaz v. Rivera-Rivera,* 793 F.3d 195, 199 (1st Cir. 2015). Summary judgment is appropriate when the moving party demonstrates that "there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). We view the evidence in the light most favorable to the nonmovant and draw all reasonable inferences in that party's favor. *Santiago-Diaz*, 793 F.3d at 199; *Pineda v. Toomey*, 533 F.3d 50, 53 (1st Cir. 2008).

III. DISCUSSION

Maquet presents four arguments on appeal. First, Maquet argues that the district court erred by restricting the claim phrase "elongate lumen associated with the cannula"

to only elongate lumens "formed along the side of" the cannula. *See* Appellant's Br. 33–45. Second, Maquet argues that the district court erred by importing a negative limitation into the "purge fluid" terms. *See id.* at 46–55. Third, Maquet argues that the district court erred in construing "guide mechanism" as a means-plus-function term. *See id.* at 55–62. Fourth, Maquet argues that the district court erred in granting summary judgment of noninfringement because even under the district court's construction of "guide mechanism," there were genuine disputes of material fact precluding summary judgment. *See id.* at 62–68. We address each argument in turn.

A.

We first address whether the district court erred by limiting the claim phrase "an elongate lumen associated with the cannula" to only elongate lumens "formed along the side of" the cannula.[2] Maquet argues that although the district court correctly determined that no part of the claims, written description, or prosecution history supports restricting the claim phrase, Appellant's Br. 35–38, the district court erred by restricting the claim phrase based on statements by Maquet in related *inter partes* review proceedings. *Id.* at 38–45. Abiomed responds that based on the claims, specification, and the prosecution history, the district court correctly construed the "elongate lumen" terms. Appellees' Br. 23–39. We agree with Maquet.

"Claim terms are generally given their plain and ordinary meaning, which is the meaning one of ordinary skill in the art would ascribe to a term when read in the context of the claim, specification, and prosecution history."

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[2] Maquet does not dispute the district court's construction to the extent that the elongate lumen is "permanent." Appellant's Br. 39; *see also Claim Construction Order* at 30.

Kyocera Senco Indus. Tools Inc. v. ITC, 22 F.4th 1369, 1378 (Fed. Cir. 2022) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313–14 (Fed. Cir. 2005) (en banc)). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Id.* (quoting *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)).

As always, "[w]e start with the claim language." *Straight Path IP Grp., Inc. v. Sipnet EU S.R.O.*, 806 F.3d 1356, 1360 (Fed. Cir. 2015). The claim language does not support limiting "an elongate lumen associated with the cannula" to only elongate lumens "formed along the side of" the cannula. *Claim Construction Order* at 30. The claims only specify two restrictions on the lumen: it must (1) "elongate" and (2) be "associated with the cannula." *See, e.g.*, '468 patent col. 33 l. 58 to col. 34 l. 42, col. 35 l. 63 to col. 36 l. 59; '314 patent col 36 l. 55 to col. 38 l. 18; '437 patent col. 33 l. 42 to col. 34 l. 30, col. 36 l. 13 to col. 37 l. 18. Thus, the claims do not specify whether the elongate lumen is "formed along the side of" the cannula.

Turning to the specification, the embodiments that Abiomed points to do not limit the scope of "an elongate lumen associated with the cannula" to only elongate lumens "formed along the side of" the cannula. Abiomed argues that because the "elongate lumen" is part of the "guide mechanism," a skilled artisan would examine the "side-rigger" aspect of the guide mechanism to understand the relation between the elongate lumen and the cannula in the "elongate lumen" claims. Appellees' Br. 27–29. The problem for Abiomed is that the side-rigger configuration is one of several ways for a lumen to be associated with a cannula. *See, e.g.*, '468 patent col. 3 ll. 4–59; *id.* col. 15 l. 67 to col. 16 l. 4 ("[T]he cannula . . . may be equipped with dedicated lumens to receive various guide mechanisms (such as guide wires, balloon catheters, selectively deformable elements

such as Nitonol, etc).”). The embodiments Abiomed points to are exemplary only and do not limit the scope of “an elongate lumen associated with the cannula” to only elongate lumens “formed along the side of” the cannula.

The district court recognized this but nonetheless determined that Maquet “disclaimed certain interpretations” in related *inter partes* review proceedings, requiring “a narrower construction.” *Claim Construction Order* at 29. In those IPR proceedings, Maquet distinguished its “elongate lumen” claims from a prior art source, Jegaden,[3] by arguing that “Jegaden provides a separate device—a catheter with a guide wire—to guide an unmodified device into a patient. If anything, this [statement] teaches away from [Abiomed’s] proposed modification as Jegaden teaches using a separate catheter instead of modifying the cannula to accommodate a side lumen,” as described in another prior art reference. J.A. 1305–06. The district court concluded that “[b]y saying that the ‘elongate lumen’ claims are not satisfied unless the cannula is modified to accommodate a side lumen, Maquet has clearly and unmistakably (1) associated the ‘elongate lumen’ claims with the side-rigger design and (2) explained that, in its view, the cannula itself must be modified to support the side lumen.” *Claim Construction Order* at 29.

The district court erred in holding that prosecution disclaimer applied to the “elongate lumen” claims. Although statements made by a patent owner during *inter partes* review can be relied on to support a finding of prosecution disclaimer, *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1360 (Fed. Cir. 2017), “to invoke the doctrine of prosecution disclaimer, any such statements must ‘be both

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[3] O. Jegaden, *Clinical Results of Hemopump Support in Surgical Cases*, *in* Temporary Cardiac Assist with an Axial Pump System 61 (W. Flameng ed., 1991), J.A. 1426–30 (“Jegaden”).

clear and unmistakable.'" *Id.* at 1361 (quoting *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1326 (Fed. Cir. 2003)); *see also Maquet Cardiovascular LLC v. Abiomed Inc.*, 131 F.4th 1330, 1342–43 (Fed. Cir. 2025). Maquet's argument that Jegaden discloses using a separate catheter, which allegedly teaches away from modifying a cannula to accommodate a side lumen, does not rise to the requisite level of being "'words or expressions of manifest exclusion or restriction' in the intrinsic record." *Unwired Planet, LLC v. Apple Inc.*, 829 F.3d 1353, 1358 (Fed. Cir. 2016) (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1327 (Fed. Cir. 2002)). Instead, a skilled artisan could read Maquet's statement as refuting Abiomed's characterizations of Jegaden and another prior art reference. Since Maquet's statements are "far too slender [ ] reed[s] to support the judicial narrowing of a clear claim term," *N. Telecom Ltd. v. Samsung Elecs. Co.*, 215 F.3d 1281, 1294 (Fed. Cir. 2000), the district court erred in limiting "an elongate lumen associated with the cannula" to mean "a permanent elongate lumen formed along the side of the cannula." *Claim Construction Order* at 30.

B.

Next, Maquet argues that the district court erred by importing a negative limitation into the "purge fluid" terms by holding that the purge fluid "does not go through the rotor bearings and into the bloodstream." Appellant's Br. 46 (quoting *Claim Construction Order* at 46–47) (emphasis omitted); *see id.* at 46–55. In response, Abiomed argues that the district court correctly construed the "purge fluid" terms because Maquet "clearly and unequivocally distinguish[ed] Aboul-Hosn[4] and disparage[d] a pump configuration in which purge fluid is discharged into the

[4] WO 99/02204 (filed October 14, 1997; published January 21, 1999), J.A. 862–933 ("Aboul-Hosn").

bloodstream." Appellees' Br. 39; *see id.* at 39–50. We agree with Maquet.

Starting with the claim language, the representative claim recites a lumen "operatively arranged to deliver purge fluid to the intravascular blood pump." '728 patent col. 18 ll. 36–59.[5] The claim language does not restrict what path the purge fluid may take, and therefore it does not preclude the purge fluid from going through the rotor bearings and into the bloodstream.

Nor does the specification support that the purge fluid cannot go through the rotor bearings and into the bloodstream. In fact, the specification directly supports that the purge fluid can pass through ball bearing assemblies and into the blood stream. '728 patent col. 10 ll. 19–24 ("[T]he purge fluid flows distally around the cable adapter 60, through the ball bearing assemblies 50, 52, and onward past the radial seal 64. This egress of purge fluid past the radial seal 64 can be controlled to effectively thwart the ingress of blood past the radial seal 64, which might otherwise cause clotting and/or pump damage."); *id.* col. 15 ll. 51–64.

Although the language from the claims and specification indicate that the purge fluid is not precluded from going through the rotor bearings and into the bloodstream, the district court nonetheless determined that "Maquet clearly and unmistakably disparaged one-way systems in which the purge fluid runs both (1) through bearing assemblies and (2) into the blood stream" based on statements Maquet made during *inter partes* review of the '728 patent. *Claim Construction Order* at 46. In that IPR, Maquet

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[5] "Because the claim construction dispute centers on the prosecution history for the '728 patent, Maquet cites the claims and specification of the '728 patent as representative." Appellant's Br. 46 n.4.

argued, in response to Abiomed's argument regarding Figure 10 of Aboul-Hosn, that a person of ordinary skill in the art "would recognize that injecting floating particles from bearings into a patient's blood stream is a bad idea." J.A. 1230.

However, Maquet's statements during related *inter partes* review proceedings do not clearly and unmistakably disclaim passing purge fluid through rotor bearings and into the blood stream. Maquet's argument appears to be specific to addressing why Abiomed misread Figure 10 of Aboul-Hosn. *See* J.A. 1228–30 (section titled "Petitioners Misread the Disclosure in Aboul-Hosn"). These statements do not amount to an instance "[w]here an applicant argues that a claim possesses a feature that the prior art does not possess in order to overcome a prior art rejection," *Seachange Int'l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1372–73 (Fed. Cir. 2005); *see also Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1374 (Fed. Cir. 2007) (collecting cases), because it is unclear from Maquet's statement whether it is contending that the Asserted Patents do not teaching running purge fluid through bearings, or merely through bearings with gaps. *See* J.A. 1230. In fact, the district court was "not entirely sure what to make of this statement," since "[i]t directly contradicts statements in the specification that clearly contemplate passing purge fluid through ball bearing assemblies and into the bloodstream." *Claim Construction Order* at 45. Because it is unclear whether Maquet's argument was specific to Aboul-Hosn, the district court erred in finding "clear and unmistakable" disclaimer.

Accordingly, we vacate the district court's final judgment with respect to the '728, '068, '468, '314, and '437 patents and remand for proceedings consistent with this opinion.

C.

Maquet also argues that the district court erred in construing "guide mechanism" as a means-plus-function term, and the term should be given its plain and ordinary meaning. Appellant's Br. 55–60. In addition, Maquet argues that even if "guide mechanism" were a means-plus-function term, the district court erred by failing to include certain structures disclosed in the specification. *Id.* at 60–62. In response, Abiomed argues that "guide mechanism" is a means-plus-function term, Appellees' Br. 50–58, and the district court correctly identified the corresponding structures. *Id.* at 58–65. We agree with Abiomed.

i.

We begin by addressing whether "guide mechanism" is a means-plus-function term. To determine whether 35 U.S.C. § 112 ¶ 6 applies, the essential inquiry is "whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Williamson*, 792 F.3d at 1348. We traditionally look to whether the claim uses the word "means;" if so, there is a rebuttable presumption that § 112 ¶ 6 applies. *Id.* The converse is also true: "[T]he failure to use the word 'means' also creates a rebuttable presumption—this time that § 112, para. 6 does not apply." *Id.* If "a claim term lacks the word 'means,' the presumption can be overcome and § 112, para. 6 will apply if the challenger demonstrates that the claim term fails to 'recite[ ] sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.'" *Id.* (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)). "Intrinsic evidence, such as the claims themselves and the prosecution history, can be informative in determining whether the disputed claim language recites sufficiently definite structure or was intended to invoke § 112 ¶ 6." *Dyfan, LLC v. Target Corp.*,

28 F.4th 1360, 1365–66 (Fed. Cir. 2022).[6] As the claimed "guide mechanism" does not use the word "means," we begin our analysis with the presumption that the claim does not invoke § 112 ¶ 6.

The district court did not err, however, in determining that "guide mechanism" invokes § 112 ¶ 6 because the term does not recite sufficiently definite structure. A skilled artisan would not understand the claimed "guide mechanism" to have "a sufficiently definite meaning as the name for a structure." *Williamson*, 792 F.3d at 1348. "Guide mechanism" alone does not constitute structure. "Mechanism" is a nonce term that is "tantamount to using the word 'means,'" *id.* at 1350, and "guide" is just a functional modifier. *Media Rts. Techs., Inc. v. Cap. One Fin. Corp.*, 800 F.3d 1366, 1373 (Fed. Cir. 2015) ("We have never found that the term 'mechanism'"—without more—connotes an identifiable structure; certainly, merely adding the modifier "[guide]" to that term would not do so either."). Furthermore, the "surrounding claim language" neither describes structural detail about the "guide mechanism," nor specifies how the "guide mechanism" interacts with an intravascular blood pump and cannula. *See, e.g.*, *Kyocera*, 22 F.4th at 1380. Rather, claim 16 is expressed solely in functional terms—that is, the guide mechanism has the function of "guid[ing] said intravascular blood pump and

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[6] Maquet argues that "Abiomed supplied no evidence—no expert declaration, for example—that the term 'guide mechanism' fails to connote structure." Appellant's Br. 57. However, "none of our cases mandate that a party seeking to overcome the presumption against application of § 112, para. 6 can only do so by presenting extrinsic evidence that one of ordinary skill would *fail to* understand that a term connotes a definite structure." *Diebold Nixdorf, Inc. v. ITC*, 899 F.3d 1291, 1299 (Fed. Cir. 2018).

cannula to a predetermined location within the circulatory system of a patient." '100 patent col. 20 ll. 20–28.

Moreover, "[n]othing in the written description provides a clear and unambiguous definition" of the claim term "guide mechanism." *Kyocera*, 22 F.4th at 1380–81. Although the specification describes use of a "guide mechanism" in the prior art, the specification provides no evidence that "guide mechanism" had a definite meaning before the alleged invention. *See, e.g.*, '100 patent col. 2 ll. 19–55. "That the specification discloses a structure corresponding to an asserted means-plus-function claim term does not necessarily mean that the claim term is understood by persons of ordinary skill in the art to connote a specific structure or a class of structures." *MTD Prods. Inc. v. Iancu*, 933 F.3d 1336, 1344 (Fed. Cir. 2019). Therefore, the district court did not err in determining that "guide mechanism" invokes § 112 ¶ 6.

ii.

Because the term "guide mechanism" is a means-plus-function term, "we next determine whether the specification discloses sufficient structure that corresponds to the claimed function." *Williamson*, 792 F.3d at 1351. This determination is a two-step process. *Id.* We "must first identify the claimed function," and then "determine what structure, if any, disclosed in the specification corresponds to the claimed function." *Id.*

The district court construed "guide mechanism" as having the function of "guid[ing] said intravascular blood pump and cannula to a predetermined location within the circulatory system of a patient" with the following structures: "(a) a guide wire passing slideably through a central lumen extending through a drive cable assembly, blood pump, and cannula; (b) a guide wire passing slideably through a lumen extending through a guide carriage integrally formed along at least a portion of the cannula sidewall; or (c) a conduit assembly, including guide catheter, a

rotor shroud, and a cannula, which is capable of docking to a separate pump assembly." *Claim Construction Order* at 36–38. Maquet argues that the district court "erred by excluding two other corresponding structures disclosed in the specification:" (1) a "rapid exchange" guide mechanism and (2) a guide mechanism that "includes a guide carriage 124." Appellant's Br. 60–62. We disagree.

The district court did not exclude a "rapid-exchange" guide mechanism, as the specification repeatedly and consistently equates a "side rigger" and "rapid-exchange" type guide mechanism. *See, e.g.*, '100 patent col. 3 ll. 6–7; *id.* col. 12 ll. 13, 31–32. The specification explains that "the 'rapid [ ] exchange' or 'side-rigger' guide mechanism 122 includes a guide carriage 124 formed along at least a portion of the cannula 14, and a suitable guide element (such as guide wire 22) dimensioned to pass slidably through a lumen (not shown) extending through the guide carriage 124." '100 patent col. 12 ll. 14–19. Even though one of the '100 patent's inventors testified that a "rapid exchange" guide mechanism does not require a "side rigger," Appellant's Br. 61 n.7 (citing J.A. 1567–68 at 281:22–283:11), this extrinsic evidence is insufficient to add a corresponding structure. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996) (concluding that extrinsic evidence may not "contradict the import of other parts of the specification.").

Furthermore, contrary to Maquet's argument, the district court did not exclude the guide mechanism that "includes a guide carriage 124." Maquet relies on one sentence of the specification: "guide mechanism 122 includes a guide carriage 124 formed along at least a portion of the cannula 14, and a suitable guide element (such as guide wire 22) dimensioned to pass slidably through a lumen (not shown) extending through the guide carriage [124]." Appellant's Br. 61 (quoting '100 patent col. 12 ll. 15–19). But "guide carriage 124" is the same guide carriage already required by structure (b). Therefore, the

district court did not err in identifying the corresponding structures.

D.

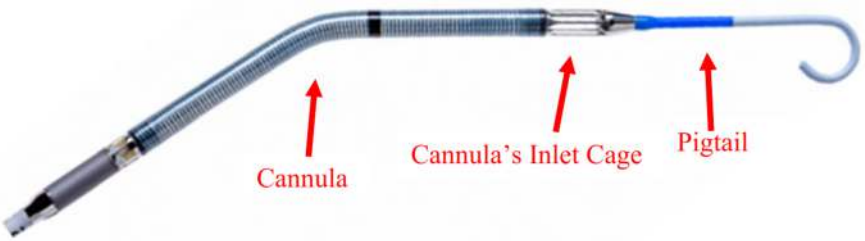
Maquet argues that even accepting the district court's allegedly incorrect construction of "guide mechanism," summary judgment should have been denied because there are genuine disputes of material fact. *Id.* at 62–68. Abiomed responds that the district court correctly granted summary judgment of non-infringement of claims 16 and 17 of the '100 patent and that there were no genuine disputes of material fact precluding summary judgment. *Id.* at 66–77. We agree with Abiomed.

To literally infringe a means-plus-function limitation, "the accused structure must either be the same as the disclosed structure or be a section 112, paragraph 6 'equivalent,' i.e., (1) perform the identical function and (2) be otherwise insubstantially different with respect to structure." *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1364 (Fed. Cir. 2000). "It is undisputed that the accused [Impella] devices perform an identical function to the 'guide mechanism' of the patent." *Summary Judgment Order* at 85. The only disputes are whether Abiomed's Impella contains an inlet cage which is part of the cannula, and, if so, whether the Impella's pigtail is integrally formed along at least a portion of the cannula sidewall. *Summary Judgment Order* at 85.

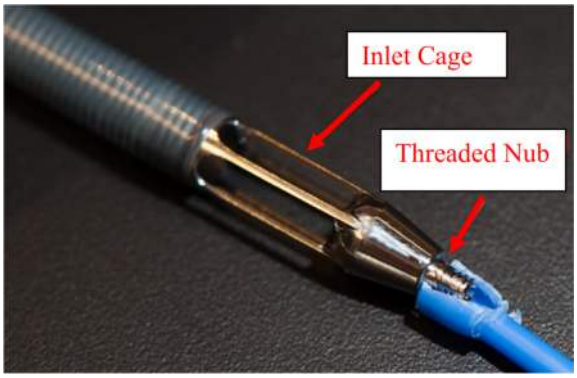
For purposes of deciding Abiomed's summary judgment motion, the district court viewed this fact "in the light most favorable to Maquet" and accepted Maquet's contention, assuming that "the term 'cannula' includes the inlet cage." *Summary Judgment Order* at 85. This approach by the district court is further supported by the fact that in denying Maquet's motion for reconsideration of summary judgment, the district court explained that its "ruling was not premised on the notion that the threaded nub is distinct from the cannula" and "assumed that the cannula

consists of the inlet cage and that the threaded nub is attached to the inlet cage and, therefore, the cannula." J.A. 132. Thus, the record is clear that the district court accepted Maquet's contention that the threaded nub is part of the inlet cage, and, therefore, is part of the cannula.

The district court did not err in determining that the Impella's pigtail is not "formed along" the cannula sidewall. Specifically, the parties dispute whether the structure of the Impella products meets structure (b) of the district court's claim construction. Maquet contends that "a jury could reasonably find that the Impella's pigtail guide carriage is 'integrally formed along at least a portion of the cannula sidewall.'" Appellant's Br. 63–64. However, as the district court determined, "the pigtail is not attached to *any* portion of the cannula sidewalls. Rather, it is attached to the threaded nub, which is attached to a flat surface, which is attached to the inlet cage at the distal end of the cannula[:]"



Summary Judgment Order at 87; Appellant's Br. 23 (annotating J.A. 2872).



Appellant's Br. 24 (annotating J.A. 2770). Because "[t]he cannula sidewalls lie entirely below (proximal) to that plane; the pigtail and threaded nub lie entirely above (distal) to it," "there is never any point in the structure where the pigtail or nub are 'along' even a 'portion' of the cannula sidewall." *Summary Judgment Order* at 87. Therefore, the district court did not reversibly err in determining that the Impella pigtail is not "formed along at least a portion of the cannula sidewall." *Summary Judgment Order* at 86–88; *Claim Construction Order* at 36.

Maquet also argues that "[t]he district court further erred in finding no genuine dispute over the Impella product's infringement as a structural equivalent under § 112 ¶ 6 or as an equivalent under a traditional doctrine of equivalents framework." Appellant's Br. 65; *see id.* at 65–68. However, the expert testimony that Maquet points to does not create a genuine dispute of material fact for the jury to resolve. Maquet's expert never identified the alleged structural differences between the Impella and structure (b) or explained why any differences are "insubstantial." J.A. 2775; *see generally* J.A. 2774–78. Conclusory opinions like those of Maquet's expert are insufficient to defeat summary judgment. *See Traxcell Techs., LLC v. Sprint Commc'ns Co.*, 15 F.4th 1121, 1129 (Fed. Cir. 2021) (determining that "Traxcell [did not] provide enough evidence for a reasonable jury to conclude that the accused structure performs the claimed function in 'substantially the same way' as the disclosed structure"). Thus, Maquet fails to show a genuine dispute of material fact precluding summary judgment.

In sum, the district court did not err in determining that the Impella devices do not infringe claims 16 and 17 of the '100 patent because no reasonable jury could have found that Abiomed's Impella devices contain a "guide mechanism" under structure (b).

IV. CONCLUSION

For the reasons above, we *affirm-in-part*, *vacate-in-part*, and *remand* for proceedings consistent with this opinion.

AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED

COSTS

No costs.