

to see whether there is a genuine need for trial.” *Mesnick v. General Elec. Co.*, 950 F.2d 816, 822 (1st Cir. 1991) (quoting *Garside v. Osco Drug, Inc.*, 895 F.2d 46, 50 (1st Cir. 1990)).

Summary judgment shall be granted when “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). A genuine issue is “one that must be decided at trial because the evidence, viewed in the light most flattering to the nonmovant, would permit a rational factfinder to resolve the issue in favor of either party.” *Medina-Munoz v. R.J. Reynolds Tobacco Co.*, 896 F.2d 5, 8 (1st Cir. 1990) (citation modified). In evaluating a summary judgment motion, the court indulges all reasonable inferences in favor of the nonmoving party. *See O’Connor v. Steeves*, 994 F.2d 905, 907 (1st Cir. 1993). When “a properly supported motion for summary judgment is made, the adverse party must set forth specific facts showing that there is a genuine issue for trial.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 250 (1986) (citation modified). The nonmoving party may not simply “rest upon mere allegation or denials of his pleading,” but instead must “present affirmative evidence.” *Id.* at 256-57.

Because “[a] patent shall be presumed valid,” 35 U.S.C. 282, a defendant arguing invalidity must prove that defense by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 100 (2011). That heightened burden applies even at the summary judgment stage. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 254 (1986) (“[I]n ruling on a motion for summary judgment, the judge must view the evidence presented through the prism of the substantive evidentiary burden.”).

II. Analysis

Maquet has moved for summary judgment as to the affirmative defense of prosecution laches with respect to claim 24, which (among other things) claims a “pigtail shaped distal tip.” It also seeks summary judgment as to that defense for claims 1-3, which do not claim such a tip.

Because Abiomed has not proffered any evidence to support a defense of prosecution laches as to claims 1-3, the Court will grant the motion as to those claims. For the following reasons, and because Abiomed has demonstrated evidence of a genuine dispute of material fact as to the laches defense, the Court will deny the motion as to claim 24.

A. Background

The following facts are undisputed unless otherwise noted.

In March 1999, U.S. Patent Application No. 09/280,988 (the “Steerable Cannula Application”) was filed with the U.S. Patent and Trademark Office. (Dkt. No. 422 ¶ 1). Dr. Aboul-Hosn was the first named inventor on the application. (*Id.* ¶ 21). It described a “cannula which can be steered during its advancement in the body of the patient.” (Dkt. No. 421-2, at -374). The application referred to a pigtail-shaped distal tip several times. Claims 6 and 20 are directed to a steerable cannula “wherein a distal tip of the cannula is provided with a pigtail shape.” (*Id.* at -386 to -87, -390 to -91). The application also includes figures depicting the pigtail tip. (*Id.* at -400, -402, -410).

The PCT/US00/2415 (the “PCT Application”) was filed in September 2000 and published in March 2001. (Dkt. No. 422 ¶¶ 8-9). Dr. Aboul-Hosn was also the first named inventor. (*Id.* ¶ 21). The application was directed to a “an improved intra-vascular blood pump having a guide mechanism.” (Dkt. No. 421-5, at -118). The PCT Application did not mention or depict a pigtail tip. (Dkt. No. 490 ¶ 4, at 12). The application did, however, incorporate by reference at least part of the Steerable Cannula Application. Specifically, it stated:

It is also contemplated to incorporate various . . . guidability features into at least one of the cannula 14 and pump 12. Such features may include, but are not necessarily limited to, those shown and described in commonly-owned and co-pending U.S. Patent Application No. 09/280,988 (filed March 30, 1999) entitled “Steerable Cannula,” . . . the disclosure[] of which [is] hereby expressly incorporated by reference as if set forth herein in [its] entirety The

guidability features may include, but are not necessarily limited to, the use of side lumens and deformable materials (i.e. Nitinol).

(Dkt. No. 422 ¶ 12). At the time, the Manual of Patent Examining Procedure (“MPEP”) stated that “[a]n application for a patent when filed may incorporate ‘essential material’ by reference to . . . a pending U.S. application, subject to [certain] conditions.” (*Id.* ¶ 7). The Steerable Cannula Application was pending when the PCT Application was published. (*Id.* ¶ 3).

On December 5, 2001, the Steerable Cannula Application was abandoned. (*Id.* ¶ 4). Accordingly, it was never published or issued as a patent. (Dkt. No. 490 ¶ 10, at 13).

The PCT Application, on the other hand, was issued as the ’100 patent on April 4, 2006. The ’100 patent did not mention or depict a pigtail. (Dkt. No. 491-5). The specification for the ’100 patent included the same language as the application, including the cross-reference to the abandoned application. (*Id.* col. 18 ll. 21-38).

In the following years, several additional applications were filed in continuation of the PCT Application. (Dkt. No. 491-4 ¶ 26). None mentioned a pigtail tip. (*Id.*). In 2015, Maquet filed an application for the patent that eventually issued as U.S. Patent No. 9,789,238 (“the ’238 patent”)—the fifth patent in the family that claims priority to the PCT Application. (*Id.*). Like the preceding applications, it contained no direct reference to a pigtail tip. (*Id.*).

Meanwhile, Abiomed had developed and begun to sell a line of intravascular blood pumps. Abiomed had added a pigtail tip to the accused Impella products by at least 2003. (Dkt. No. 490 ¶ 19, at 14).

In December 2015, Maquet sent a letter to Abiomed alleging infringement of the ’100 patent. In response, in May 2015, Abiomed filed suit in this Court for declaratory judgment of noninfringement. *See Abiomed I.*

In August 2016, Maquet amended the ’238 patent application to include a claim that

recited a pigtail. (Dkt. No. 490 ¶ 13, at 13). Maquet also copied the Steerable Cannula Application into Appendix A. (*Id.* ¶ 14, at 13).

In September 2018, Maquet applied for the '783 patent. Claim 24 of the '783 patent recites a “a pigtail shaped distal tip.” ('783 patent, col. 38 ll. 10-14). The '783 patent claims priority to the PCT Application; thus, its term expired in September 2020, twenty years after the date the priority application was filed. (Dkt. No. 422 ¶¶ 22, 25). In the present case, Maquet accused Abiomed of infringing claim 24, among others.

B. Legal Standard

Prosecution laches is an equitable affirmative defense. *Personalized Media Commc'ns, LLC v. Apple Inc.*, 57 F.4th 1346, 1354 (Fed. Cir. 2023); *see Webster Elec. Co. v. Splitdorf Elec. Co.*, 264 U.S. 464 (1924); *Woodbridge v. United States*, 263 U.S. 50 (1923). “That doctrine may render a patent unenforceable when it has issued only after an unreasonable and unexplained delay in prosecution that constitutes an egregious misuse of the statutory patent system under the totality of the circumstances.” *Google LLC v. Sonos, Inc.*, 2025 WL 2473258, at *6 (Fed. Cir. Aug. 28, 2025) (citation modified).

To succeed, the party asserting a laches defense must establish “two elements: (1) the patentee’s delay in prosecution must be unreasonable and inexcusable under the totality of circumstances and (2) the accused infringer must have suffered prejudice attributable to the delay.” *Personalized Media*, 57 F.4th at 1354. In turn, “[p]roving prejudice . . . requires proving intervening rights, [that is], that either the accused infringer or others invested in, worked on, or used the claimed technology during the period of delay.” *Hyatt v. Hirshfeld*, 998 F.3d 1347, 1369 (Fed. Cir. 2021) (citation modified). “Laches is an equitable and flexible doctrine,” and its applicability is subject to the discretion of the court. *Personalized Media*, 57 F.4th at 1354; *see Symbol Techs., Inc. v. Lemelson Med., Educ. & Research Found., LP (Symbol II)*, 422 F.3d

1378, 1385 (Fed. Cir. 2005).

C. Analysis

1. “Unreasonable and Inexcusable” Delay

The first issue is whether Maquet’s delay in the prosecution of a claim involving a “pigtail shaped distal tip” from 2001 to 2016 was “unreasonable and inexcusable under the totality of the circumstances.” *Personalized Media*, 57 F.4th at 1354.

Maquet contends that it publicly disclosed the “pigtail shaped distal tip” when it filed the PCT Application in September 2000 and when it was published in March 2001. That application, as noted, incorporated by reference the Steerable Cannula Application, which was filed in 1999, and which included a reference to a pigtail tip. In 2016, Maquet amended its continuation application to claim such a tip. It contends that the filing of a continuation application is permitted by statute, and the fact that it did so in 2016 to include a claim that recited a pigtail does not preclude it from claiming priority to the filing of the PCT Application.

The Federal Circuit has not taken a categorical approach to what counts as “unreasonable” delay in the prosecution of a patent, and there are few, if any, bright-line rules. *Cf. Symbol II*, 422 F.3d at 1385 (“Thus, there are no strict time limitations for determining whether continued refiling of patent applications is a legitimate utilization of statutory provisions or an abuse of those provisions. The matter is to be decided as a matter of equity, subject to the discretion of a district court before which the issue is raised.”).¹ Delay in the filing of continuation applications may be unreasonable when the applicant’s competitors do not have notice as to what is patented and what they must do to design around the patent. *Id.* at 1386.

¹ It is true that many of the delay tactics the Federal Circuit has found to be unreasonable are no longer relevant under the current patent system. Because a patent’s term is now keyed to the filing date (or from the filing date of the application to which the subject application claims priority) rather than the date of issuance, delays in the prosecution of a patent no longer necessarily delay the end of its term.

Maquet cites to *Google LLC v. Sonos, Inc.*, a recent Federal Circuit nonprecedential decision, for the proposition that its disclosure of the pigtail tip in the PCT Application precludes a finding of prosecution laches as a matter of law. 2025 WL 2473258 (Fed. Cir. Aug. 28, 2025).

In that case, the court stated:

[E]ven if we accept as fact that Google’s investment began in 2014 or 2015, it cannot establish prejudice on this record. Although Sonos submitted a nonpublication request with the filing of its 2007 nonprovisional application (an entirely lawful request, *see* 35 U.S.C. § 122(b)(2)(B)(i)), that application was published when it issued as U.S. Patent 8,483,853 on July 9, 2013. As we have concluded above, no reasonable factfinder could conclude that the specification—which was published in 2013, before any of Google’s asserted investments—does not reasonably disclose overlapping zone scenes. Google cannot be prejudiced by incorporating into its products a feature that was publicly disclosed in a patent application prior to its investment. *Cf. Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 909 (Fed. Cir. 2004) (“[I]t is not improper for an applicant to broaden his claims during prosecution in order to encompass a competitor’s products, as long as the disclosure supports the broadened claims.”); *Eli Lilly & Co. v. Hospira, Inc.*, 933 F.3d 1320, 1334 (Fed. Cir. 2019) (explaining that, although subject matter disclosed but not claimed is generally dedicated to the public, there is an exception for subject matter “claimed in a continuation or other application”).

Id. at *7 (Fed. Cir. Aug. 28, 2025) (citation modified).

The court in *Google* (which expressly “limit[ed] [its] discussion to the second element—prejudice”) did not purport to create a bright-line rule that unreasonable delay in prosecution cannot occur after disclosure in an application. More importantly, it does not address what constitutes a reasonable “disclosure.” Instead, *Google* simply affirms that the date and content of disclosure may be dispositive on the question of prejudice.

Accordingly, and because prosecution laches is an equitable doctrine, the issue of unreasonable delay must be considered in light of all the facts and circumstances. And for present purposes, because the issue arises in the context of summary judgment, the Court must view the facts in the light most favorable to Abiomed.

A central question is whether, in fact, Maquet reasonably disclosed the pigtail shaped distal tip when the PCT Application was published. The parties dispute whether the Steerable Cannula Application was made reasonably accessible during the lengthy period that followed before it was copied into Appendix A of the '238 application in August 2016.

As noted, the PCT Application was published with no direct mention of a pigtail. While it incorporated by reference the Steerable Cannula Application's "guidability features," it was ambiguous as to what those guidability features were and whether it was incorporating the entire Steerable Cannula Application. Indeed, it referred specifically to two "guidability features"—"side lumens" and "deformable materials"—without mentioning pigtail tips. The Steerable Cannula Application was then abandoned. After the PCT Application, four more continuing applications were filed over the course of more than 15 years, not one of which mentioned a pigtail. Maquet only amended the pending application to claim the pigtail *after* litigation had begun against Abiomed.

By regulation, an unpublished, abandoned application that was identified in a U.S. patent is available to the public—but only by written request to the USPTO and payment of a \$15 fee. (Dkt. No. 422, ¶ 16; *see* 37 C.F.R. § 1.14). However, according to Abiomed's expert, "unlike all issued patents and published applications, the [Steerable Cannula A]pplication still is not publicly available on the USPTO's website." (Dkt. No. 491-4 ¶ 69). He opines that "[t]he requirement to file a written request and pay a fee, combined with the indication provided by the [Steerable Cannula A]pplication's abandoned status that it would describe only the background of the invention and the state of the art, would deter any party conducting a due diligence review of patents and published applications from viewing the '988 application." (*Id.* ¶ 70). He also asserts that his review of the file history produced by the USPTO suggests that no member of the

public had requested the Steerable Cannula Application before August 2016. (*Id.* ¶ 71). A reasonable factfinder could therefore conclude that Maquet did not, in fact, reasonably disclose the pigtail tip in 2001.

Nonetheless, there are other factors that may favor Maquet. As Maquet notes, the filing of a continuation application is permitted by statute, 35 U.S.C. § 120, and the doctrine of prosecution laches “should be used sparingly lest statutory provisions be unjustifiably vitiated. The doctrine should be applied only in egregious cases of misuse of the statutory patent system.” *Symbol II*, 422 F.3d at 1385. The PCT Application’s incorporation by reference of the ’988 application passed PTO muster and was, apparently, in compliance with the USPTO manual. In an earlier order in this case, the Court found that “Maquet’s incorporation [of the Steerable Cannula Application] by reference appears to be consistent with case law and administrative guidance.” *Maquet Cardiovascular LLC v. Abiomed, Inc.*, 627 F. Supp. 3d 72, 84 (D. Mass. 2022). And, generally, “it is not improper for an applicant to broaden his claims during prosecution in order to encompass a competitor’s products, as long as the disclosure supports the broadened claims.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 909 n.2 (Fed. Cir. 2004) (citation modified).

Nevertheless, prosecution laches is an equitable remedy, and mere statutory compliance is not sufficient to avoid the application of the doctrine. *Hyatt*, 998 F.3d at 1366 (“An applicant must therefore not only comply with the statutory requirements and PTO regulations but must also prosecute its applications in an equitable way that avoids unreasonable, unexplained delay that prejudices others.”). And if Maquet was actually aware that Abiomed was investing in a device with a pigtail during the period between 2001 and 2016, that fact must be given weight when considering the issue of whether the delay was unreasonable.

In short, viewing the facts in the light most favorable to Abiomed, there is a genuine issue of material fact as to whether Maquet’s delay in prosecuting the pigtail claims was “unreasonable and inexcusable.”

2. “Prejudice Attributable to the Delay”

That leaves the question of prejudice. There is no dispute that Abiomed “invested in, worked on, or used the claimed technology during the period” between 2001 and 2016. *Hyatt*, 998 F.3d at 1369. Proof that Abiomed was unfairly prejudiced requires, among other things, a showing that it made those investments without being aware of Maquet’s claim to the invention and that its lack of knowledge was reasonable.

As noted, in *Google*, the Federal Circuit found that Google had not met its burden to establish prejudice. Google had “presented no evidence—testimony or otherwise—to support its assertion that its investment in those products actually began in 2015, or that it was caught unawares that Sonos may have already invented the adjudicated-infringing functionality when making those investments.” *Google*, 2025 WL 2473258, at *6 (citation modified). The court further found that even if Google had demonstrated investment in its products, the publication of the subject matter in the patent issued in 2013 precluded a finding of prejudice. *Google* thus makes clear that a party cannot assert prejudice when it knew or reasonably should have known that a competitor had rights in the subject matter when making those investments.²

Whether Abiomed was, in fact, “caught unawares” for purposes of determining whether it suffered unfair prejudice is again largely dependent on whether Maquet reasonably disclosed the

² The facts in *Google* are certainly distinguishable. In *Google*, the application published in 2013 contained the written description of the subject matter, such that “no reasonable factfinder could conclude that the specification . . . d[id] not reasonably disclose” the subject matter.” *Google LLC*, 2025 WL 2473258, at *7. Here, and as noted, the pigtail was only incorporated by reference to an abandoned application that may not have been available to a person exercising reasonable diligence.

pigtail tip when the PCT Application was published. As discussed, there is a disputed issue of fact as to whether a reasonable diligence review would have uncovered the abandoned Steerable Cannula Application.

Again, there are factors that may favor Maquet. In 2007, Dr. Aboul-Hosn, the first named inventor on the Steerable Cannula and PCT Applications, went to work for Abiomed as a consultant. (Dkt. No. 422 ¶ 21). That is circumstantial evidence that Abiomed knew, or reasonably could have known, about the pigtail no later than 2007, although it is apparently undisputed that Abiomed began investing in the pigtail in 2003. In addition, Dr. Thorsten Siess, the Chief Technology Officer of Abiomed, saw the PCT Application when it was published in 2000, but did not request or obtain a copy of the Steerable Cannula Application. (Dkt. No. 422 ¶ 17).

In any event, under the circumstances, there is genuine question of material fact as to whether Abiomed was unfairly prejudiced by the delayed prosecution of the pigtail claim. The Court will therefore deny summary judgment as to the affirmative defense of prosecution laches as to claim 24.

III. Conclusion

For the foregoing reasons, the motion of plaintiff Maquet Cardiovascular LLC for partial summary judgment as to the affirmative defense of prosecution laches is DENIED as to claim 24 and GRANTED as to claims 1-3.

So Ordered.

Dated: April 15, 2026

/s/ F. Dennis Saylor IV
F. Dennis Saylor IV
United States District Judge