

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

SAN ROCCO THERAPEUTICS, LLC,

Plaintiff,

v.

BLUEBIRD BIO, INC. and THIRD ROCK  
VENTURES, LLC,

Defendants.

Civil Action No. 21-1478-RGA

MEMORANDUM OPINION

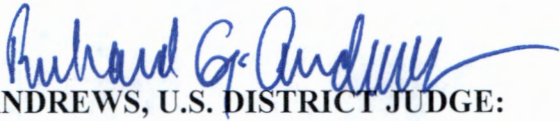
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May 16, 2025

  
ANDREWS, U.S. DISTRICT JUDGE:

Before me is Defendants' motion for summary judgment of noninfringement. (D.I. 179). I have reviewed the parties' briefing. (D.I. 180, 184, 191, 200, 201). I heard oral argument on April 23, 2025 (D.I. 199, hereinafter cited "Tr. \_\_"). For the reasons set forth below, Defendants' motion is GRANTED.

## **I. BACKGROUND**

Plaintiff San Rocco Therapeutics is the exclusive licensee of the two patents at issue in this case, U.S. Patent Nos. 7,541,179 (the "'179 patent") and 8,058,061 (the "'061 patent"). (D.I. 9 ¶¶ 1–2; D.I. 29). The '061 patent is a divisional of the '179 patent. (D.I. 9 ¶ 15). The patents are generally directed to recombinant vectors used to treat hemoglobinopathies like sickle cell disease. (*Id.* ¶ 2). These recombinant vectors include a nucleotide fragment, which is made up of hypersensitive ("HS") sites. (*Id.* ¶¶ 114–15).

Plaintiff filed suit against Defendants Bluebird Bio and Third Rock Ventures alleging Defendants' BB305 product infringes the '179 and '061 patents. (D.I. 9).

I issued a claim construction opinion and order. (D.I. 168, 172). In light of the claim construction, Plaintiff concedes it cannot prove literal infringement of four claim elements in every asserted claim. (D.I. 171-1). Instead, it can only prove infringement, if at all, for those four elements by relying upon the doctrine of equivalents. Defendants argue Plaintiff is barred from asserting certain equivalency arguments due to prosecution history estoppel. The parties agree that the arguments are equally applicable to both patents. (Tr. 3:24–4:6). The parties therefore only address the '179 patent, and I do likewise.

I start with a review of the prosecution of the '179 patent.

The '179 patent issued from U.S. Patent Application No. 10/188,221 (the "'221 application"). (D.I. 9 ¶ 13). Claim 1 in the original '221 application, filed on July 1, 2002, recited,

1. A recombinant lentiviral vector comprising:
  - (a) a region comprising a functional globin gene; and
  - (b) large portions of the  $\beta$ -globin locus control region, which include DNase I hypersensitive sites HS2, HS3, and HS4, said vector providing expression of the globin gene when introduced into a mammal *in vitro*.

(D.I. 184 at 10). The patent examiner rejected the claim as indefinite, anticipated, and obvious. (*Id.* at 11).

On November 23, 2004, the applicant amended<sup>1</sup> claim 1 to recite,

1. A recombinant lentiviral vector comprising:
  - (a) a region encoding a functional  $\beta$ -globin gene; and
  - (b) large portions of the  $\beta$ -globin locus control region, which include **complete** DNase I hypersensitive sites HS2, HS3, and HS4, said vector providing expression of the globin gene when introduced into a mammal *in vitro*.

(*Id.*) (emphasis added).<sup>2</sup> The Examiner withdrew the anticipation rejection, but maintained the obviousness and indefiniteness rejections. (*Id.*).

The applicant submitted further amendments on June 30, 2005. Amended claim 1 then recited,

1. A recombinant lentiviral vector comprising:
  - (a) a region encoding a functional  $\beta$ -globin gene; and
  - (b) portions of the  $\beta$ -globin locus control region, which consist essentially of an 840 bp fragment of HS2 extending between SnaBI and BstXI restriction sites, a 1309 bp fragment of HS3 extending between HindIII and BamHI restriction sites and a 1069 bp fragment of HS4 extending between BAMHI and BanII restriction sites, said vector providing expression of the globin gene when introduced into a mammal *in vitro*.

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<sup>1</sup> The applicant did not label the first amendment as an amendment. The parties agree that this failure is immaterial. (Tr. 15:23–16:13).

<sup>2</sup> Emphasis is added only to the changes relevant to Defendants' estoppel arguments.

(*Id.* at 12).

The examiner maintained the indefiniteness rejection because, as to the specific HS fragments, “there [was] no reference sequence or source sequence.” (*Id.* at 13). The applicant and the examiner went back and forth on rejections and arguments, and the applicant made several more amendments. (*Id.* at 12–13). Claim 1 was eventually allowed in the following form:

1. A recombinant vector comprising a nucleic acid encoding a functional globin operably linked to a **3.2-kb nucleotide fragment** which consists essentially of three contiguous nucleotide fragments obtainable from a human  $\beta$ -globin locus control region (LCR), the three fragments being a BstXI and SnaBI HS2-spanning nucleotide fragment of said LCR, a BamHI and HindIII HS3-spanning nucleotide fragment of said LCR and a BamHI and BanII HS4-spanning nucleotide fragment of said LCR, said vector providing expression of the globin in a mammal in vivo.

(’179 patent at 11:55–65) (emphasis added).

After Plaintiff filed this lawsuit (D.I. 1), Defendants filed IPR petitions against the two patents on October 18, 2022, seeking cancellation of some of the claims based on prior art. (D.I. 184 at 15). The PTAB instituted the IPR petitions. The PTAB denied them on the merits on April 22, 2024. (*Id.*).

After claim construction, I granted Defendants leave to file an early motion for summary judgment based on potential legal impediments to Plaintiff’s doctrine of equivalents infringement theory. (D.I. 176).

## II. LEGAL STANDARD

“The court shall grant summary judgment if the movant shows 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). Material facts are those “that could affect the outcome” of the proceeding. *Lamont v. New Jersey*, 637 F.3d 177, 181 (3d Cir. 2011) (quoting *Anderson v. Liberty Lobby*,

*Inc.*, 477 U.S. 242, 248 (1986)). “[A] dispute about a material fact is ‘genuine’ if the evidence is sufficient to permit a reasonable jury to return a verdict for the nonmoving party.” *Id.* The burden on the moving party may be discharged by pointing out to the district court that there is an absence of evidence supporting the non-moving party’s case. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986).

The burden then shifts to the non-movant to demonstrate the existence of a genuine issue for trial. *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 586–87 (1986); *Williams v. Borough of West Chester, Pa.*, 891 F.2d 458, 460–61 (3d Cir. 1989). A non-moving party asserting that a fact is genuinely disputed must support such an assertion by: “(A) citing to particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations . . . , admissions, interrogatory answers, or other materials; or (B) showing that the materials cited [by the opposing party] do not establish the absence . . . of a genuine dispute . . . .” FED. R. CIV. P. 56(c)(1). The non-moving party’s evidence “must amount to more than a scintilla, but may amount to less (in the evaluation of the court) than a preponderance.” *Williams*, 891 F.2d at 461.

When determining whether a genuine issue of material fact exists, the court must view the evidence in the light most favorable to the non-moving party and draw all reasonable inferences in that party’s favor. *Wishkin v. Potter*, 476 F.3d 180, 184 (3d Cir. 2007). If the non-moving party fails to make a sufficient showing on an essential element of its case with respect to which it has the burden of proof, the moving party is entitled to judgment as a matter of law. *See Celotex Corp.*, 477 U.S. at 322.

### III. DISCUSSION

Plaintiffs assert the doctrine of equivalents for four elements of claim 1, including that accused BB305, which has a 2.7-kb nucleotide fragment, meets the “3.2-kb nucleotide fragment” limitation by equivalents. Defendants give three reasons why I should grant their motion for summary judgment of non-infringement: (1) amendment-based prosecution history estoppel, (2) argument-based prosecution history estoppel, and (3) claim vitiation. I will address the first two.

#### A. Amendment-Based Prosecution History Estoppel

Defendants argue Plaintiff cannot allege BB305 infringes the asserted patents under the doctrine of equivalents because Plaintiff narrowed its claims when prosecuting its patents and gave up the territory it now seeks to recapture via the doctrine of equivalents.

“The scope of a patent is not limited to its literal terms but instead embraces all equivalents to the claims described.” *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 732 (2002). That is, a patent owner can show infringement when the accused product does not literally meet every limitation of a claim if “the accused product or process contain[s] elements identical or equivalent to each claimed element of the patented invention.” *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40 (1997).

The doctrine of equivalents may be limited by prosecution history estoppel. When a patent applicant narrows the claims during prosecution in response to a rejection, the subject matter between the original claim and the amended claim cannot later be re-captured by the doctrine of equivalents. *Festo*, 535 U.S. at 734. So, if an accused product falls within the subject matter surrendered during prosecution, it cannot infringe. There is a presumption of estoppel when a patent applicant adds a claim limitation or narrows a claim limitation during prosecution. *See id.* at 741.

Prosecution history estoppel does not apply when “the amendment cannot reasonably be viewed as surrendering a particular equivalent,” such as when “the rationale underlying the amendment . . . bear[s] no more than a tangential relation to the equivalent in question.” *Id.* at 740. “In those cases the patentee can overcome the presumption that prosecution history estoppel bars a finding of equivalence.” *Id.* at 741.

There are two issues here: (1) whether Defendants’ accused product falls within the scope of subject matter surrendered during prosecution and, (2) if so, whether an exception to prosecution history estoppel applies.

First, did the applicant’s amendment changing “large portions of the  $\beta$ -globin locus control region” to “a 3.2-kb nucleotide fragment” to overcome an indefiniteness rejection trigger prosecution history estoppel? “[A] narrowing amendment made to satisfy any requirement of the Patent Act may give rise to an estoppel.” *Id.* at 736. An amendment made to overcome an indefiniteness rejection may give rise to prosecution history estoppel, so long as the amendment narrowed the claim.

Plaintiff argues that the accused product was not covered by the original claim and, thus, the accused product is not within the scope of the territory surrendered during patent prosecution. (D.I. 184 at 20). Specifically, Plaintiff argues BB305 does not literally infringe “large portions of the  $\beta$ -globin locus control region” because “large portions” means “complete” HS sites, which BB305 does not literally infringe. (*Id.*).

To decide if BB305 falls within the scope of original claim 1, I must determine what original claim 1’s “large portions” means. The language of the patent claims and the patent specification can be used to determine the scope of an originally-filed claim. *See Schwarz Pharma, Inc. v. Paddock Labs, Inc.*, 504 F.3d 1371, 1376–77 (Fed. Cir. 2007). Amendments

during patent prosecution can also shed light on the scope of an original claim. *See Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1142–43 (Fed. Cir. 2004). Before *Festo*, the Federal Circuit explained that the entire prosecution history should be analyzed to determine what material an applicant surrendered during patent prosecution. *See Loral Fairchild Corp. v. Sony Corp.*, 181 F.3d 1313, 1327 (Fed. Cir. 1999). That practice seems to have generally continued post-*Festo*. *See, e.g., Norian Corp. v. Stryker Corp.*, 432 F.3d 1356, 1359 (Fed. Cir. 2005).

I think applicant's changing "large portions" to "3.2-kb" over the series of several amendments triggers prosecution history estoppel. That is, I think the accused product falls within the scope of original claim 1.

Plaintiff's argument rests on the theory that "large portions of the  $\beta$ -globin locus control region" means "complete" HS2, HS3, and HS4 sites, which add up to 3.2 kb. (D.I. 184 at 19–20; Tr. 55:22–56:5). BB305 has a total length of 2.7 kb. (D.I. 184 at 5). It is undisputed that BB305 does not literally infringe complete HS2, HS3, and HS4 sites. (Tr. 53:1–3). Plaintiff cites its expert, Dr. Cannon, for support for its interpretation of "large portions." (*Id.* at 19–20). Plaintiff points to no post-*Festo* Federal Circuit case indicating the extent to which an expert opinion should be considered when determining the scope of an originally-filed claim. Plaintiff acknowledges that intrinsic evidence (the claims and patent specification) and prosecution history are probative. (D.I. 200).<sup>3</sup>

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<sup>3</sup> I think the process of determining the meaning of earlier versions of the claims is essentially claim construction. Thus, what I usually say about claim construction applies just as much here. When a court relies solely upon the intrinsic evidence—the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned

Original claim 1 of the '179 patent does not use the word “complete.” Further, the patent specification recites,

The term “large portions” refers to portions of the locus control region which encompass larger portions of the hypersensitive sites as opposed to previously tested fragments including only the core elements. *The regions may be the complete site or some lesser site* which provides the same functionality as the specific sequences set forth below.

(’179 patent at 2:60–66) (emphasis added). The applicant defined “large portions” to describe a range of HS sites, limited only by a functional requirement. In response to rejections, the applicant narrowed the claim from “the complete site or some lesser site”—by adding the word “complete”—to just the “complete site,” and later narrowed the claim again by amending the claim further, deleting “complete” and including language about the specific fragments claimed. (D.I. 184 at 11–12). The prosecution history shows that “complete” was not a limitation implicitly present in “large portions.” A “complete” site in this context is at least 3.2 kb. (Tr. 43:2–4; 56:3–5). BB305 is 2.7 kb. (Tr. 8:11). BB305 is thus a “lesser” site of the “complete” site and is covered by original claim 1. Applicant narrowed the scope of claim 1 by amending it to recite 3.2 kb, a specific number which does not cover 2.7 kb. BB305 is within the area of the disclaimed subject matter; amendment-based prosecution history estoppel applies.

Second, does an exception apply? Plaintiff alleges only one exception: “tangential relation.” (D.I. 184 at 21). The tangential relation exception “asks whether the reason for the narrowing amendment was peripheral, or not directly relevant, to the alleged equivalent.” *Festo*

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treatises.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (en banc) (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996)). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

*Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1369 (Fed. Cir. 2003). Plaintiff argues the exception applies because the amendment was made in response to an indefiniteness rejection and was peripheral to the alleged equivalent. (D.I. 184 at 22).

As explained above, prosecution history estoppel can apply to indefiniteness arguments so long as the amendment was narrowing, which it was.

Further, I do not think the applicant's amendment was merely tangential to the alleged equivalent. As the applicant explained in the office action accompanying its amendment including the 3.2 kb limitation, "[A]ny vector lacking the claimed 3.2-kb fragment with the three LCR fragments assembled in a contiguous manner is excluded from the scope of the claimed subject matter." (D.I. 181-4 at 235 of 264). The applicant further explained, "[A]ny additional nucleotides added to the 3.2 kb fragment that cause the fragment to exceed 3.2 kb, would alter a basic and novel property of the invention." (*Id.*). While the applicant's comments explain that a larger fragment would not meet the claim limitation, and BB305 is a smaller fragment, the explanation is only by way of example and is illustrative of the greater subject matter relinquished during prosecution. It shows that the applicant made the amendment to claim one specific fragment length: 3.2 kb. The amendment to claim 1 including the precise length of 3.2 kb was not merely tangential to an alleged equivalent of another length (in this case, 2.7 kb).

There is no factual issue that prevents me from finding Plaintiff is estopped from asserting doctrine of equivalents. At oral argument, Plaintiff alleged one factual issue for prosecution history estoppel: the definition of "large portions." (Tr. 46:17–22). Plaintiff points to its expert's interpretation to create a factual issue. I do not think this is a factual issue. It is a legal issue. As explained above, the intrinsic evidence defines "large portions," and there is no need to consider extrinsic evidence such as expert opinions. There is thus no factual issue.

For the foregoing reasons, Plaintiff is barred from asserting the doctrine of equivalents at least for the 3.2 kb claim limitation due to amendment-based prosecution history estoppel. For that reason alone, summary judgment is granted.

### **B. Argument-Based Prosecution History Estoppel**

Similar to amendment-based prosecution history estoppel, argument-based prosecution history estoppel prevents a patent holder from asserting the doctrine of equivalents against an accused product encompassed by subject matter surrendered by arguments made to the Patent Office. *Amgen Inc. v. Coherus BioSciences, Inc.*, 931 F.3d 1154, 1159 (Fed. Cir. 2019). “To invoke argument-based estoppel, the prosecution history must evince a clear and unmistakable surrender of subject matter.” *Id.* (cleaned up).

Defendants contend argument-based prosecution history estoppel applies here because the applicant asserted multiple times during patent prosecution that the claimed nucleotide fragment is 3.2 kb. (D.I. 180 at 16). Some of the applicant’s statements include:

- “[T]he claimed LCR is assembled from three restriction fragments with an overall size of 3.2 kb (as now recited in Claim 1), so that one can unambiguously determine the scope of the claimed invention.” (D.I. 181-4 at 125 of 264).
- “To Applicant’s knowledge, no previous studies have been conducted with a 3.2-kb portion of a human  $\beta$ -globin LCR as claimed herein.” (*Id.* at 126 of 264).
- “[T]he three restriction fragments can be located without ambiguity to form a 3.2-kb portion of a human  $\beta$ -globin LCR.” (*Id.* at 132 of 264).
- “The relevant basic and novel properties of the claimed 3.2 kb nucleotide fragment are defined in Claim 1.” (*Id.* at 234 of 254).

- “[T]he overall combined size of the three fragments . . . provide a single nucleotide fragment of 3.2 kb.” (*Id.*).
- “[T]he three recited LCR fragments (i.e., a 3.2-kb nucleotide fragment consisting essentially of the three specified fragments—as well as encoding a functional globin) define the scope of the invention.” (*Id.*).
- “[A]ny vector lacking the claimed 3.2-kb fragment with the three LCR fragments assembled in a contiguous manner is excluded from the scope of the claimed subject matter.” (*Id.* at 235 of 264).
- “The simple fact that the combination of the three HS-spanning fragments is 3.2 kb partially (and significantly) closes this aspect of the present claim, qualifies its size and thus provides the boundaries for ascertaining the elements excluded by use of ‘consisting essentially of’ as the transitional phrase.” (*Id.*).
- “[B]ased on nucleotide composition and arrangement of the HS fragments (i.e., which pieces of the LCR are present), neither [prior art reference cited by the examiner] shows any fragment that combines the recited HS2-, HS3-, and HS4-spanning fragments in contiguity into a single **3.2-kb** fragment as claimed in present Claim 1.” (*Id.* at 235–36 of 264) (emphasis in original).

Defendants also argue that Plaintiff’s statements during an IPR proceeding, explaining the importance of precise lengths of nucleotide fragments, support an application of argument-based prosecution history estoppel. (D.I. 18 at 16).

Plaintiff argues nothing in the prosecution history shows the applicant surrendered coverage of the BB305 vector when making its arguments to the USPTO or PTAB. (D.I. 184 at 23).

I think argument-based prosecution history estoppel applies here. In the applicant's remarks accompanying its amendment including the "3.2 kb" language, the applicant emphasized eight times that the claimed invention is 3.2 kb; in remarks accompanying later amendments, the applicant emphasized 3.2 kb twelve times, once putting "3.2 kb" in bold and italic font. (D.I. 181-4 at 122–32, 232–37 of 264). The applicant could not have been clearer about the limited scope of the claims. "[A]ny vector lacking the claimed 3.2-kb fragment with the three LCR fragments assembled in a contiguous manner is excluded from the scope of the claimed subject matter." (*Id.* at 135 of 264). The applicant made this point repeatedly. I think the single statement is enough, but the repetition makes the surrender indisputable. The applicant clearly and unmistakably surrendered subject matter; the applicant clearly argued that the applicant was only claiming fragments that are 3.2 kb. The accused product here is 2.7 kb. The accused product falls within the scope of the surrendered subject matter.

For the foregoing reasons, Plaintiff is barred from asserting the doctrine of equivalents at least for the 3.2 kb claim limitation due to argument-based prosecution history estoppel. For that reason alone, summary judgment is granted.

#### **IV. CONCLUSION**

An appropriate order will issue.