

Filed: April 2, 2019

On behalf of **Illumina, Inc.**

By:

Kerry Taylor (Reg. No. 43,947)  
Michael L. Fuller (Reg. No. 36,516)  
William R. Zimmerman (pro hac vice)  
Nathanael R. Luman (Reg. No. 63,160)  
KNOBBE, MARTENS, OLSON  
& BEAR, LLP  
2040 Main Street, 14th Floor  
Irvine, CA 92614  
Telephone: 949-760-0404  
Facsimile: 949-760-9502  
Email: [BoxIllumina@knobbe.com](mailto:BoxIllumina@knobbe.com)

Derek Walter (Reg. No. 74,656)  
[Derek.walter@weil.com](mailto:Derek.walter@weil.com)  
Edward R. Reines (pro hac vice)  
[Edward.reines@weil.com](mailto:Edward.reines@weil.com)  
[Illumina.Columbia@weil.com](mailto:Illumina.Columbia@weil.com)  
WEIL, GOTSHAL & MANGES LLP  
201 Redwood Shores Parkway  
Redwood Shores, CA 94065  
Telephone: 650-802-3000  
Facsimile: 650-802-3100

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

**ILLUMINA, INC.**  
Petitioner

v.

**THE TRUSTEES OF COLUMBIA UNIVERSITY  
IN THE CITY OF NEW YORK**  
Patent Owner

---

IPR2018-00291	Patent 9,718,852
IPR2018-00318	Patent 9,719,139
IPR2018-00322	Patent 9,708,358
IPR2018-00385	Patent 9,725,480
IPR2018-00797	Patent 9,868,985*

---

**ILLUMINA'S SUPPLEMENTAL REPLY REGARDING ESTOPPEL**

\*This identical paper is being filed in each of these five IPRs.

## TABLE OF CONTENTS

	Page No.
1. Collateral estoppel applies in IPRs.....	1
2. Estoppel applies to the issue of the 3'-O-allyl capping group .....	2
3. Columbia is relitigating the same <i>issues</i> previously decided against it.....	4

## TABLE OF AUTHORITIES

### Page No(s).

<i>BioDelivery Sci. Int’l, Inc. v. Aquestive Therapeutics, Inc.</i> , 898 F.3d 1205 (Fed. Cir. 2018) .....	1
<i>MaxLinear, Inc. v. CF Crespe LLC</i> , 880 F.3d 1373 (Fed. Cir. 2018) .....	1, 4
<i>Nestle USA, Inc. v. Steuben Foods, Inc.</i> , 884 F.3d 1350 (Fed. Cir. 2018) .....	1
<i>Senju Pharm. Co., Ltd. v. Apotex Inc.</i> , 746 F.3d 1344 (Fed. Cir. 2014) .....	5
<i>Senju Pharm. Co. Ltd. v. Lupin Ltd.</i> , 780 F.3d 1337 (Fed. Cir. 2015) .....	4
<i>Soverain Software LLC v. Victoria’s Secret Direct Brand Mgmt., LLC</i> , 778 F.3d 1311 (Fed. Cir. 2015) .....	5
<i>VirnetX Inc. v. Apple, Inc.</i> , 909 F.3d 1375 (Fed. Cir. 2018) .....	2

## OTHER AUTHORITIES

35 U.S.C. § 315 .....	1
35 U.S.C. § 325 .....	1
37 C.F.R. § 42.73 .....	4

Petitioner hereby replies to Patent Owner's estoppel briefing (Paper 64).<sup>1</sup>

## 1. Collateral estoppel applies in IPRs

Columbia's position that collateral estoppel does not apply in IPRs ignores binding precedent. The Federal Circuit has held that collateral estoppel applies in IPRs. *See MaxLinear, Inc. v. CF Crespe LLC*, 880 F.3d 1373, 1376 (Fed. Cir. 2018) ("Both parties agree that those prior [IPR] decisions, having been affirmed by our court, are binding in this proceeding, *as a matter of collateral estoppel*, and they could hardly argue otherwise.") (emphasis added). In the subsequent *Nestle* IPR appeal, the Federal Circuit reiterated that "[i]t is well established that collateral estoppel, also known as issue preclusion, applies in the administrative context." *Nestle USA, Inc. v. Steuben Foods, Inc.*, 884 F.3d 1350, 1351 (Fed. Cir. 2018).

Columbia bases its position on a 2017 USPTO brief from *BioDelivery*. *See* Paper 64 at 7-9. The Federal Circuit did not decide estoppel issues in *BioDelivery*. *See BioDelivery Sci. Int'l, Inc. v. Aquestive Therapeutics, Inc.*, 898 F.3d 1205, 1210 (Fed. Cir. 2018). The USPTO brief submitted before *MaxLinear* and *Nestle* were decided does not overrule these subsequent binding precedents.

Further, that 35 U.S.C. §§ 315 and 325 exist does not show a Congressional intent to bar traditional estoppel. Rather, they show an intent to expand and move Petitioner estoppel forward in time; to attach even before all appeals are exhausted.

---

<sup>1</sup> Citations to papers and exhibits are from IPR2018-00291 except where indicated.

**2. Estoppel applies to the issue of the 3'-O-allyl capping group**

Columbia asserts that the “Board did not [previously] decide *any* issue regarding the allyl capping group” (Paper 64 at 12 (emphasis in original)), and patentability of the 3'-O-allyl capping group is an issue of “first impression.” *Id.* at 7; *id.* at 15 (arguing the Motion to Amend in IPR2012-00007 “had nothing to do with the obviousness of a 3'-O-allyl nucleotide”). This is simply not true.

Substitute Claim 40 was directed to (and only to) the allyl group. Ex. 1137, Appx. A at 4. Columbia vastly understates the role that its Substitute Claims played in the prior proceedings. Not only did Columbia file a Motion to Amend, it used its Patent Owner Response to argue its Substitute Claims rather than its original claims. Ex. 1047 at 5, 13-25. At the oral argument, both sides made clear that it was the Substitute Claims that were primarily at issue. IPR2012-00007, Paper 136 at 5-7, 53-54. The Board considered and rejected all the Substitute Claims. The only issue raised by Claim 40 was the allyl group, thus making this issue essential to the Board’s judgment. *See VirnetX Inc. v. Apple, Inc.*, 909 F.3d 1375, 1378 (Fed. Cir. 2018). Estoppel therefore applies to the allyl group.

Columbia also vastly understates the importance of the allyl capping group to the prior proceedings. Not only was the allyl group of Tsien relevant to Claim 40, it was also cited against Claims 43 and 49. Ex. 1127 at 11-12. Further, while the allyl capping group was specifically mentioned twice at oral argument, the

esters, carbonyls, and methoxys were not. IPR2012-00007, Paper 136 at 14-15.

In addition, while Columbia asserts that it is making new arguments against the allyl capping group in this proceeding, its two primary arguments are just a rehash of arguments made in the prior proceeding. It previously raised whether SBS compatible cleavage conditions were known for allyl. Paper 63 at 6, 9; Ex. 1034 ¶¶30-31, 39; Ex. 1098 at 112:8-24. It also previously raised whether the allyl capping group was efficiently incorporated. Paper 45 at 27; Ex. 1034 ¶¶112, 75, 84, 110; Ex. 1098 at 444:5-445:11; Ex. 1127 at 11-12; Ex. 1139 at 70-71.

More basically, the fundamental flaw that undercuts all of Columbia's arguments against allyl is the same in this proceeding as the prior one. Columbia's patent describes the same allyl capping group as Tsien, representing to the Patent Office that such a group would work for SBS—even claiming it. Had some new chemistry or technique *actually* been required for allyl, Columbia would have been obliged to describe it. Ex. 1008 at 31. It did not. Paper 45 at 2, 9. This issue that the Board and Federal Circuit identified in the prior proceeding persists here.

Columbia also argues that the present claims are directed to a nucleotide having the following four limitations, and that this combination of limitations was “not previously combined”: (i) a small capping group, (ii) a deazapurine,<sup>2</sup> (iii) a

---

<sup>2</sup> Columbia admits that the use of a deazapurine is “immaterial to the resolution of the present proceedings.” Paper 64 at 6.

label, and (iv) cleavage of the capping group by chemical means. Paper 64 at 6. Columbia is wrong—these limitations were combined in previously adjudicated claims. Substitute Claim 40 depended from independent Substitute Claim 34, which recited a deazapurine nucleotide with a label and a chemically cleavable capping group. Ex. 1137, Appx. A at 3-4. By virtue of its dependency, Claim 40 was directed to a nucleotide having (i) a small 3'-O-allyl capping group, (ii) a deazapurine, (iii) a label, and (iv) a chemically cleavable capping group. In addition, Substitute Claim 52 (which depended from Substitute Claim 34) recited “wherein the cleavable chemical group capping the 3' OH group is a small chemical moiety.” *Id.*, Appx. A at 6. Thus, at least Claims 40 and 52 combined the exact features Columbia alleges impart patentability in these proceedings. The collateral-estoppel effect of the Board’s previous decision of unpatentability on Columbia’s Motion to Amend requires cancellation of the present claims. *See MaxLinear*, 880 F.3d at 1377. The same is true, alternatively, of Patent Owner Estoppel under 37 C.F.R. § 42.73(d)(3)(i). *See* Paper 63 at 2-4.

**3. Columbia is relitigating the same issues previously decided against it**

Columbia concedes that in considering the claims as a whole, the Board “need not relitigate issues common to the previous proceedings.” Paper 64 at 2. It is proper to consider only the limitations that Columbia focused on in these IPRs. *See Senju Pharm. Co. Ltd. v. Lupin Ltd.*, 780 F.3d 1337, 1342-43 (Fed. Cir. 2015).

The identical issues raised and decided previously include the unpatentability of “smallness,” cleavability, incorporation, and the 3’-O-allyl. Paper 63 at 5-15.

Columbia’s estoppel briefing provides a list of allegedly new limitations along with the assertion—without explanation—that the listed limitations present a material distinction. Paper 64 at 2-6. This is insufficient to avoid estoppel. Columbia was required to explain how these limitations render the claims nonobvious. *See Soverain Software LLC v. Victoria’s Secret Direct Brand Mgmt., LLC*, 778 F.3d 1311, 1319 (Fed. Cir. 2015) (applying estoppel where “the patentee failed to explain how the additional limitation would change an invalidity analysis”). The Petition demonstrated that all these limitations were in the prior art, and Columbia only disputed “smallness,” cleavability, and incorporation. Collateral estoppel applies since nothing indicates that Columbia’s new limitations provide anything other than the exercise of routine skill. Paper 63 at 7-9.

Columbia asserts that estoppel does not apply because Columbia makes different patentability *arguments*. Columbia misunderstands estoppel. Estoppel prevents parties from relitigating the *same issue*, not merely the same arguments. Making different arguments for a second shot at the same issues does not escape estoppel; “obtain[ing] a second bite at the apple.... is exactly what claim preclusion was designed to prevent.” *Senju Pharm. Co., Ltd. v. Apotex Inc.*, 746 F.3d 1344, 1353 (Fed. Cir. 2014). The Board should apply estoppel.



Respectfully submitted,

Dated: April 2, 2019

By: /Kerry Taylor/

Kerry Taylor (Reg. No. 43,947)

Michael L. Fuller (Reg. No. 36,516)

William R. Zimmerman (pro hac vice)

Nathanael R. Luman (Reg. No. 63,160)

KNOBBE, MARTENS, OLSON & BEAR, LLP

Derek Walter (Reg. No. 74,656)

Edward R. Reines (pro hac vice)

WEIL, GOTSHAL & MANGES LLP

Attorneys for Petitioner

ILLUMINA, INC.

**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the foregoing **ILLUMINA'S SUPPLEMENTAL REPLY REGARDING ESTOPPEL** is being served on April 2, 2019, via e-mail to counsel for the Trustees of Columbia University, at the email addresses below:

John P. White  
[jwhite@cooperdunham.com](mailto:jwhite@cooperdunham.com)  
Gary J. Gershik  
[ggershik@cooperdunham.com](mailto:ggershik@cooperdunham.com)  
[ColumbiaIPR@cooperdunham.com](mailto:ColumbiaIPR@cooperdunham.com)  
COOPER & DUNHAM, LLP  
30 Rockefeller Plaza, 20th Floor  
New York, NY 10112

Justin J. Oliver  
VENABLE | FITZPATRICK  
VENABLE LLP  
[joliver@venable.com](mailto:joliver@venable.com)  
600 Massachusetts Ave.  
Washington, D.C. 20001

John D. Murnane  
Robert S. Schwartz  
Zachary L. Garrett  
VENABLE | FITZPATRICK  
VENABLE LLP  
[jmurnane@venable.com](mailto:jmurnane@venable.com)  
[rschwartz@venable.com](mailto:rschwartz@venable.com)  
[zgarrett@venable.com](mailto:zgarrett@venable.com)  
1290 Avenue of the Americas  
New York, NY 10104

Respectfully submitted,

Dated: April 2, 2019

By: /Kerry Taylor/  
Kerry Taylor (Reg. No. 43,947)  
Michael L. Fuller (Reg. No. 36,516)  
William R. Zimmerman (pro hac vice)  
Nathanael R. Luman (Reg. No. 63,160)  
KNOBBE, MARTENS, OLSON & BEAR, LLP  
Derek Walter (Reg. No. 74,656)  
Edward R. Reines (pro hac vice)  
WEIL, GOTSHAL & MANGES LLP  
Attorneys for Petitioner  
ILLUMINA, INC.