

## UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

### NOTICE OF ENTRY OF JUDGMENT ACCOMPANIED BY OPINION

OPINION FILED AND JUDGMENT ENTERED: 01/29/2016

The attached opinion announcing the judgment of the court in your case was filed and judgment was entered on the date indicated above. The mandate will be issued in due course.

Information is also provided about petitions for rehearing and suggestions for rehearing en banc. The questions and answers are those frequently asked and answered by the Clerk's Office.

Costs are taxed against the appellant in favor of the appellee under Rule 39. The party entitled to costs is provided a bill of costs form and an instruction sheet with this notice.

The parties are encouraged to stipulate to the costs. A bill of costs will be presumed correct in the absence of a timely filed objection.

Costs are payable to the party awarded costs. If costs are awarded to the government, they should be paid to the Treasurer of the United States. Where costs are awarded against the government, payment should be made to the person(s) designated under the governing statutes, the court's orders, and the parties' written settlement agreements. In cases between private parties, payment should be made to counsel for the party awarded costs or, if the party is not represented by counsel, to the party pro se. Payment of costs should not be sent to the court. Costs should be paid promptly.

If the court also imposed monetary sanctions, they are payable to the opposing party unless the court's opinion provides otherwise. Sanctions should be paid in the same way as costs.

Regarding exhibits and visual aids: Your attention is directed Fed. R. App. P. 34(g) which states that the clerk may destroy or dispose of the exhibits if counsel does not reclaim them within a reasonable time after the clerk gives notice to remove them. (The clerk deems a reasonable time to be 15 days from the date the final mandate is issued.)

FOR THE COURT

/s/ Daniel E. O'Toole

Daniel E. O'Toole  
Clerk of Court

cc: Brenton R. Babcock  
Jonathan Edward Bachand  
Robert R. Baron Jr.  
John L. Cuddihy  
Nathanael Luman  
Scott David Marty  
Marc S. Segal  
Kerry S. Taylor  
William R. Zimmerman

15-1123 & 15-1243: Illumina Cambridge Ltd. v. Intelligent Bio-Systems, Inc.  
United States Patent and Trademark Office, Case Nos. IPR2013-00128 & IPR2013-00266

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

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**ILLUMINA CAMBRIDGE LTD.,**  
*Appellant*

v.

**INTELLIGENT BIO-SYSTEMS, INC.,**  
*Appellee*

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2015-1123

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Appeal from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in No. IPR2013-  
00128.

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**ILLUMINA CAMBRIDGE LTD.,**  
*Appellant*

v.

**INTELLIGENT BIO-SYSTEMS, INC.,**  
*Appellee*

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2015-1243

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2 ILLUMINA CAMBRIDGE LTD. v. INTELLIGENT BIO-SYSTEMS

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2013-00266.

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Decided: January 29, 2016

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WILLIAM R. ZIMMERMAN, Knobbe, Martens, Olson & Bear, LLP, Washington, DC, argued for appellant. Also represented by JONATHAN EDWARD BACHAND; BRENTON R. BABCOCK, Irvine, CA; NATHANAEL LUMAN, KERRY S. TAYLOR, San Diego, CA.

ROBERT R. BARON, JR., Ballard Spahr LLP, Philadelphia, PA, argued for appellee. Also represented by MARC S. SEGAL; JOHN L. CUDDIHY, Washington, DC; SCOTT DAVID MARTY, Atlanta, GA.

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Before LOURIE, BRYSON, and STOLL, *Circuit Judges*.

LOURIE, *Circuit Judge*.

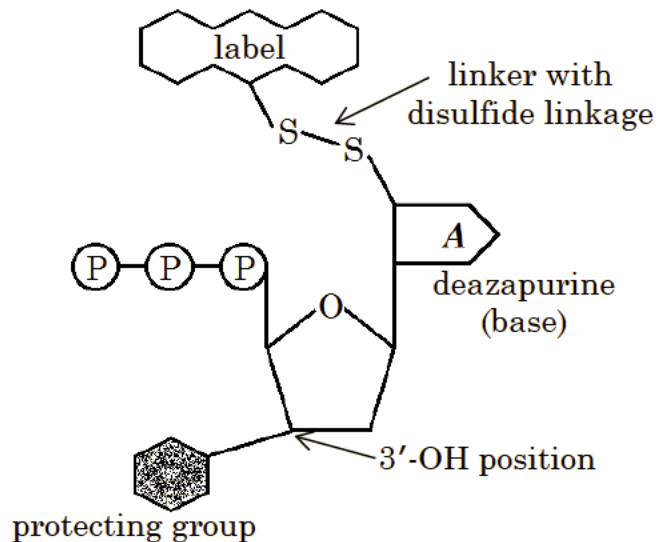
Illumina Cambridge Ltd. (“Illumina”) appeals from the final written decisions of the United States Patent and Trademark Office, Patent Trial and Appeal Board (“the Board”) cancelling all challenged claims of its U.S. Patents 7,057,026 (“the ’026 patent”) and 8,158,346 (“the ’346 patent”) and denying entry of substitute claims in two *inter partes* review proceedings. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, IPR2013-00128, Paper No. 92 (P.T.A.B. July 25, 2014); *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, IPR2013-00266, Paper No. 73 (P.T.A.B. Oct. 28, 2014). Because the Board did not err in determining that Illumina failed to show that the proposed substitute claims are patentable over the prior art of record, and thus did not err in denying in part the motions to amend, we *affirm*.

## BACKGROUND

Illumina owns the '026 and '346 patents, which are both directed to DNA sequencing by synthesis (“SBS”) with non-natural nucleotides. As the name implies, SBS allows one to determine the composition of a target DNA sequence by synthesizing new copies of the DNA. Briefly, the synthesis process involves splitting the double helix of a target DNA molecule into two strands and then incorporating complementary labeled nucleotides onto each strand to create two double helices. Non-natural nucleotides contain a non-natural base, *i.e.*, a modified purine or pyrimidine base.

The '026 patent is directed to nucleotide compositions of matter, while the '346 patent relates to methods of using such nucleotides. As the issues relating to the patentability of the claims of both of these patents are essentially the same, we evaluate both of them here in one opinion and decision.

An exemplary non-natural nucleotide of the two patents, pictured below, has a deoxyribose ring, with a protecting group attached at the 3'-OH position and a label connected to the non-natural base (here, deazapurine) by a linker (here, containing a disulfide linkage). According to the '026 and '346 patents, the linker and the protecting group for the claimed non-natural nucleotides are cleavable under identical conditions.



The claimed SBS methods involve incorporating the non-natural nucleotides into multiple copies of a target DNA molecule, one at a time for each strand in a stepwise fashion. At each step, the signal from the label is detected, indicating which nucleotide has been incorporated. Because a second nucleotide is added to the newly forming strand by its phosphate group binding to the 3'-OH position of a first nucleotide, a protecting group already attached at that position blocks the bond from being formed, and thus prevents multiple nucleotides from being added to the strand in the same step. Once the incorporated nucleotide is identified by the signal from its label, its attached protecting group is cleaved (or "deblocked"), allowing the next nucleotide to be incorporated. Ideally, the label is also cleaved at this time, clearing the slate for the next nucleotide's signal. This stepwise process repeats until the sequence of the target DNA molecule has been determined.

If a protecting group is not properly cleaved, then the newly forming strand will not incorporate the next complementary nucleotide in that step and will become "out of

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