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On behalf of:

Illumina, Inc.

By: Kerry S. Taylor

Michael L. Fuller

William R. Zimmerman (pro hac vice)

KNOBBE, MARTENS, OLSON & BEAR, LLP

2040 Main Street, 14th Floor

Irvine, CA 92614

Ph.: (858) 707-4000 Fax: (858) 707-4001

E-mail: BoxIllumina@knobbe.com

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

IPR2018-00322

Patent 9,708,358

**ILLUMINA OBJECTIONS TO ADMISSIBILITY
OF COLUMBIA EVIDENCE**

Pursuant to 37 C.F.R. § 42.64(b)(1), Petitioner Illumina, Inc. (“Illumina”) hereby timely files its objections to the admissibility of evidence submitted with the Patent Owner Response filed by The Trustees of Columbia University in the City of New York (“Columbia”) on October 26, 2018.

Exhibit Number and Description	Objections
Ex. 2053 – Metzker, Nature Reviews, 11:31-46 (2010)	<p>Relevance (FRE 401, 403): The date markings on this document are after the asserted priority date of Columbia’s patent. Columbia’s reliance on this document is misleading because the document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>
Ex. 2055 – GenomeWeb, “Illumina Closes Solexa Acquisition,” January 26, 2007	<p>Relevance (FRE 401, 403): The date markings on this document are after the asserted priority date of Columbia’s patent. Columbia’s reliance on this document is misleading because the document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>
Ex. 2057 – Lindahl, “Instability and decay of the primary structure of DNA,” Nature, 362:709-715 (1993)	<p>Relevance (FRE 401, 403): This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.</p>

Exhibit Number and Description	Objections
Ex. 2065 – Excerpts from the <i>Ex Parte</i> Reexamination History of U.S. Patent No. 6,232,465	Incomplete, Relevance, Misleading (FRE 106, 401, 403): The document does not stand for the proposition for which it is cited as supposed admissions made by Illumina. In addition, to the extent that Columbia is relying upon statements regarding supposed admissions made by Illumina, such reliance is misleading because Columbia has mischaracterized the statements made in this document and has taken statements out of context. Also, the excerpts provide an incomplete version of the reexamination proceeding that, when taken in isolation, are misleading in the manner in which they are used.
Ex. 2080 – IPR2013-00128, Exhibit 1033, Deposition of Floyd Romesberg, Ph.D. (January 14, 2014)	Incomplete, Relevance, Misleading (FRE 106, 401, 403): This document, when taken in isolation, provides an incomplete version of the previous IPR proceeding. This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.
Ex. 2081 – IPR2013-00266, Exhibit 2037, Second Declaration of Floyd Romesberg, Ph.D. (March 21, 2014)	Incomplete, Relevance, Misleading (FRE 106, 401, 403): This document, when taken in isolation, provides an incomplete version of the previous IPR proceeding. This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.
Ex. 2082 – IPR2013-00266, Exhibit 1042, Deposition of Floyd Romesberg, Ph.D. (April 10, 2014)	Incomplete, Relevance, Misleading (FRE 106, 401, 403): This document, when taken in isolation, provides an incomplete version of the previous IPR proceeding. This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.
Ex. 2083 – IPR2013-00128, Substitute Exhibit 2009, Substitute Declaration of Floyd Romesberg, Ph.D. in Support of Patent Owner’s Motion to Amend (February 19, 2014)	Incomplete, Relevance, Misleading (FRE 106, 401, 403): This document, when taken in isolation, provides an incomplete version of the previous IPR proceeding. This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.

Exhibit Number and Description	Objections
Ex. 2084 – Jannasch 1992	Incomplete, Relevance, Misleading (FRE 106, 401, 403): This document, when taken in isolation, provides an incomplete and confusing characterization of the knowledge in the art as of the year 2000.
Ex. 2087 – Lindahl & Nyberg, “Rate of Depurination of Native Deoxyribonucleic Acid,” Biochem., 11(19):3610-3618 (1972)	Relevance (FRE 401, 403): This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.
Ex. 2089 – Hamed et al., “Palladium(II)-Catalyzed Oxidation of Aldehydes and Ketones. 1. Carbonylation of Ketones with Carbon Monoxide Catalyzed by Palladium(II) Chloride in Methanol,” J. Org. Chem., 66(1):180-185 (2001)	Relevance (FRE 401, 403): The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention. This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance. Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.
Ex. 2094 – Pillai & Nandi, “Interaction of Palladium (II) With DNA,” Biochimica et Biophysica Acta, 474:11-16 (1977)	Relevance (FRE 401, 403): This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.
Ex. 2096 – Transcript of the Deposition of Dr. Floyd Romesberg, September 19-20, 2018, in IPR2018-00291, -00318, -00322, and -00385 (ORIGINAL TRANSCRIPT)	Incomplete, Relevance, Misleading (FRE 106, 401, 403): This exhibit is an incomplete and incorrect version of the transcript and creates confusion. A Revised Transcript was prepared and submitted as Exhibit 2126. This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.

Exhibit Number and Description	Objections
<p>Ex. 2102 – Qian, “Enzymatic and Chemical Synthesis of Oligosaccharide Analogs,” Thesis, University of Alberta (2000)</p>	<p>Relevance (FRE 401, 403): Columbia has not demonstrated that this document is prior art, nor that this document represents the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>
<p>Ex. 2103 – Project Information for Dr. Romesberg NIH Grant, “Evolving Novel Polymerases for Genome Sequencing”</p>	<p>Relevance (FRE 401, 403): The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>
<p>Ex. 2104 – GenomeWeb, “Helicos and Columbia to Test Scripps’ Improved Polymerase for Next-Gen Sequencing,” October 3, 2006</p>	<p>Relevance (FRE 401, 403): The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>

Exhibit Number and Description	Objections
Ex. 2113 – Transcript of the Deposition of Dr. Floyd Romesberg, October 9, 2018, in IPR2018-00797	Relevance, Misleading (FRE 106, 401, 402, 403): The October 9, 2018 deposition was limited to testimony solely for the purpose of IPR2018-00797 and is improper in this proceeding.
Ex. 2115 – Parshall, “Homogeneous Catalysis, the Applications and Chemistry of Catalysis by Soluble Transition Metal Complexes,” John Wiley and Sons (1980) (excerpts)	Incomplete, Relevance, Misleading (FRE 106, 401, 403): The excerpts provide an incomplete version of this document and lacks any information concerning the title, cover page, copyright date, etc. The excerpts, when taken in isolation, are misleading in the manner in which they are used. Columbia has not demonstrated that this document is prior art, nor that this document represents the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.
Ex. 2116 – Declaration of Steven M. Menchen, Ph.D., October 26, 2018 (IPR2018-00291, -00318, -00322, and -00385)	Relevance, Misleading (FRE 106, 401, 402, 403): ¶¶ 11-16 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Tsien, Dower, Metzker, and Welch. ¶ 17 is misleading, incomplete, and irrelevant because it lacks support for the contentions for which it is cited and improperly mischaracterizes the teachings of the cited references. ¶ 18 is misleading, incomplete, and irrelevant because it lacks support for the contention for which it is cited and improperly mischaracterizes the teachings of Metzker and Welch as well as Dr. Romesberg’s testimony. ¶ 20 is misleading, incomplete, and irrelevant because it lacks support for the contention for which it is cited and improperly mischaracterizes the teachings of Dower as well as Dr. Romesberg’s testimony. ¶ 24 is misleading, incomplete, and irrelevant because it lacks support for the contention for which it is cited and

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	<p>improperly mischaracterizes the prior art and the petitions for IPR filed by Illumina.</p> <p>¶¶ 25-32 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Metzker.</p> <p>¶¶ 33-48 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Metzker, Ronagi, Jones, Albrecht, and Johnson, as well as Dr. Romesberg's testimony, and these paragraphs do not represent the knowledge of a person of ordinary skill in the art at the time of Columbia's alleged invention.</p> <p>¶¶ 49-51 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Metzker, Tsien, and Jannasch, as well as Dr. Romesberg's testimony.</p> <p>¶¶ 52-53 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of the prior art.</p> <p>¶¶ 54-58 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Tsien, Gigg, and Kit, as well as Dr. Romesberg's testimony.</p> <p>¶¶ 59-65 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Kamal, Levine, and Tsien, as well as Dr. Romesberg's testimony.</p>

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	<p>¶¶ 66-70 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Boss, Kit, and Levine, as well as Dr. Romesberg's testimony.</p> <p>¶¶ 71-81 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Qian 1998, Beig, Parshall, Kang, and Qian 1999, as well as Dr. Romesberg's testimony.</p> <p>¶¶ 82-85 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Metzker, Tsien, Dower and "the allyl-cleavage references," as well as Dr. Romesberg's testimony.</p> <p>¶¶ 86-89 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the teachings of Pelletier and Dower, as well as Dr. Romesberg's testimony.</p> <p>¶¶ 90-99 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize the prior art (including Metzker) and the petitions for IPR filed by Illumina, as well as Dr. Romesberg's testimony, and these paragraphs do not represent the knowledge of a person of ordinary skill in the art at the time of Columbia's alleged invention.</p> <p>¶¶ 100-106 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize Tsien, Gigg, Tsuji, Ochiai, and Katritzky, as well as Dr. Romesberg's testimony.</p>

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	<p>¶ 107 is misleading, incomplete, and irrelevant because it lacks support for the contention for which it is cited and improperly mischaracterizes the teachings of the prior art.</p> <p>¶ 109 is misleading, incomplete, and irrelevant because it lacks support for the contention for which it is cited and improperly mischaracterizes the teachings of Metzker as well as Dr. Romesberg's testimony.</p> <p>¶¶ 110-112 are misleading, incomplete, and irrelevant because they lack support for the contentions for which they are cited and improperly mischaracterize Dower, Prober, and Metzker, as well as Dr. Romesberg's testimony.</p> <p>Improper Testimony by Expert Witness (FRE 702):</p> <p>¶¶ 11-16 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 17-18 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 20 and 24 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 25-32 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 33-48 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 49-51 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 52-53 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p>

Exhibit Number and Description	Objections
	<p>¶¶ 54-58 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 59-65 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 66-70 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 71-81 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 82-85 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 86-89 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 90-99 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 100-106 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 107 and 109 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p> <p>¶¶ 110-112 are not based on sufficient facts and data, and do not reliably apply facts and data using scientific principles.</p>
Ex. 2117 – IPR2017-02172, Paper 22, Decision Denying Petitioner’s Request for Rehearing (August 2, 2018)	<p>Relevance (FRE 401, 403): This exhibit is not cited to or otherwise relied upon in Patent Owner’s Response and therefore lacks relevance.</p>

Exhibit Number and Description	Objections
Ex. 2118 – Dr. Romesberg NIH Grant, “Evolving Novel Polymerases for Genome Sequencing”	<p>Relevance (FRE 401, 403): The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>
Ex. 2119 – Solexa, Inc.’s Form 425 Submission to the United States Securities and Exchange Commission (November 14, 2006)	<p>Relevance (FRE 401, 403): The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p>
Ex. 2120 – Internal Solexa Email (SEALED and PUBLIC versions)	<p>Incomplete, Relevance, Misleading (FRE 106, 401, 403): The excerpts provide an incomplete version of this document that, when taken in isolation, are misleading in the manner in which they are used. The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>
Ex. 2121 – Internal Solexa Email (SEALED and PUBLIC versions)	<p>Incomplete, Relevance, Misleading (FRE 106, 401, 403): The excerpts provide an incomplete version of this document that, when taken in isolation, are misleading in the manner in which they are used. The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>Hearsay (FRE 802):</p>

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	The exhibit includes out-of-court statements offered for the truth of the matter asserted.
Ex. 2122 – Internal Solexa Email (SEALED and PUBLIC versions)	<p>Incomplete, Relevance, Misleading (FRE 106, 401, 403): The excerpts provide an incomplete version of this document that, when taken in isolation, are misleading in the manner in which they are used. The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>
Ex. 2123 – Attachment to Ex. 2122 (SEALED and PUBLIC versions)	<p>Incomplete, Relevance, Misleading (FRE 106, 401, 403): The excerpts provide an incomplete version of this document that, when taken in isolation, are misleading in the manner in which they are used. The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>
Ex. 2124 – Attachment to Ex. 2122 (SEALED and PUBLIC versions)	<p>Incomplete, Relevance, Misleading (FRE 106, 401, 403): The excerpts provide an incomplete version of this document that, when taken in isolation, are misleading in the manner in which they are used. The date markings on this document are after the asserted priority date of Columbia’s patent. This document does not represent the knowledge of a person of ordinary skill in the art at the time of Columbia’s alleged invention.</p> <p>Hearsay (FRE 802): The exhibit includes out-of-court statements offered for the truth of the matter asserted.</p>

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: November 2, 2018

By: /Kerry Taylor/
Kerry S. Taylor, Reg. No. 43,947
Michael L. Fuller, Reg. No. 36,516
William R. Zimmerman (pro hac vice)
Customer No. 20,995

Attorneys for Petitioner
Illumina, Inc.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing **ILLUMINA OBJECTIONS TO ADMISSIBILITY OF COLUMBIA EVIDENCE** is being served on November 2, 2018, via e-mail, pursuant to agreement of the parties, to counsel for The Trustees of Columbia University in the City of New York, at the addresses below:

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

John D. Murnane
Robert S. Schwartz
Zachary L. Garrett
Fitzpatrick, Cella, Harper & Scinto
jmurnane@fchs.com
rschwartz@fchs.com
zgarrett@fchs.com
1290 Avenue of the Americas
New York, NY 10104

Justin J. Oliver
Fitzpatrick, Cella, Harper & Scinto
joliver@fchs.com
975 F Street, N.W.
Washington, D.C. 20004

Dated: November 2, 2018

By: /Kerry Taylor/
Kerry S. Taylor, Reg. No. 43,947
Attorney for Petitioner
ILLUMINA, INC.