EXHIBIT 7

Columbia Ex
Illumina, Inc
of Columbia
in the City o
IPR2020-01

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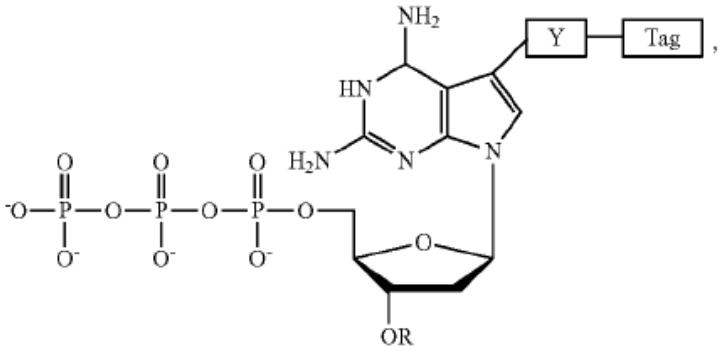
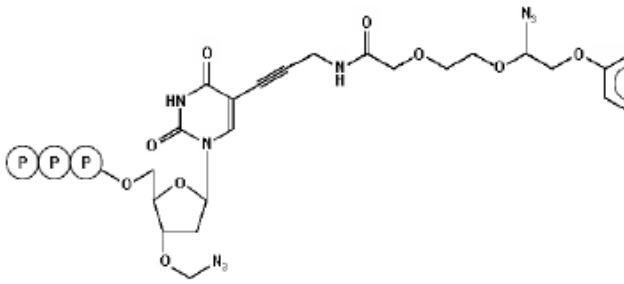
U.S. Pat. No. 10,407,458	Infringement by Illumina's nucleo analogues in the 4-Channel Accused Bentley *et al.*, Nature, Vol. 456:53-59 (2008) ("Be Supplementary Information to Bentley (Milton *et al.*, WO 2004018497 A2 (2004) (
1. An guanine deoxyribonucleotide analogue having the structure:  	Illumina's sequencing chemistry uses guanine deoxyr analogues. "To ensure base-by-base nucleotide incorporation in we used a set of four reversible terminators, 3′-*O*-azi deoxynucleoside triphosphates (A, C, G and T), each different removable fluorophore (Supplementary Fig. *a*  Ex. 5 at 14, Fig. 1a. Although only the structure for a deoxyribonucleotide analogue is provided, Bentley in and G nucleotides have the same general structure. E On information and belief, Illumina uses a guanine de analogue with a linker attached to the 7-deaza positio shown in the claimed structure. Ex. 12 at 74, compou

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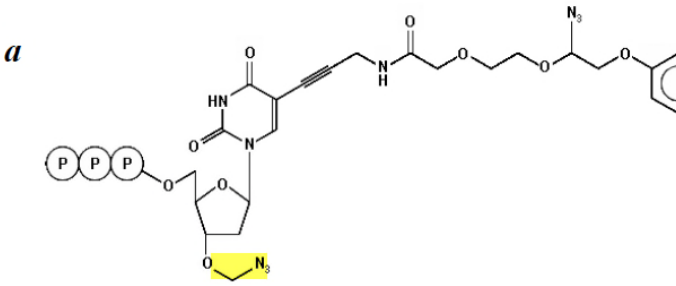
	linker attached to the 7-deaza position of a guanine).
wherein R (a) represents a small, chemically cleavable, chemical group capping the oxygen at the 3′ position of the deoxyribose of the deoxyribonucleotide analogue, (b) does not interfere with recognition of the analogue as a substrate by a DNA polymerase, (c) is stable during a DNA polymerase reaction, (d) does not contain a ketone group, and (e) is not a $–CH_2CH=CH_2$ group;	As shown in Fig. 1a of Supplementary Information to uses an azidomethyl group (CH_2N_3) at position R (hig The azidomethyl group is a small chemically cleavab does not contain a ketone group, and is not a $–CH_2CH$  Ex. 5 at 14, Fig. 1a. Illumina uses these modified nuc sequencing. Ex. 4 at 53 (“We sequenced DNA templ cycles of polymerase-directed single base extension.” uses these nucleotides successfully in a polymerase re accomplish DNA sequencing, it follows that the azido not interfere with recognition of the analogue as a sub polymerase and is stable during a DNA polymerase re
wherein OR is not a methoxy group or an ester group;	Illumina uses an azidomethyl group to cap the 3′-OH form an OR moiety. This OR moiety is not a methox group.
wherein the covalent bond between the 3′-oxygen and R is stable during a DNA polymerase reaction;	As Illumina uses nucleotides with an azidomethyl gro base-by-base nucleotide incorporation in a stepwise m that the bond between the 3′-oxygen and R is stable d

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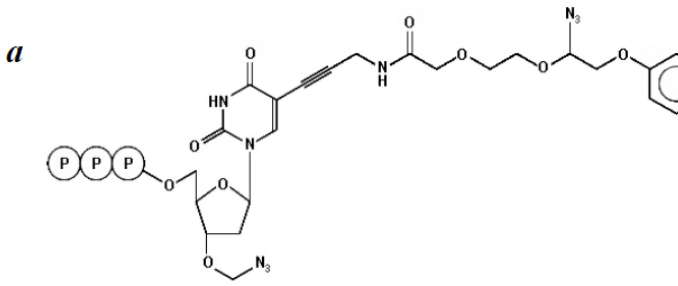
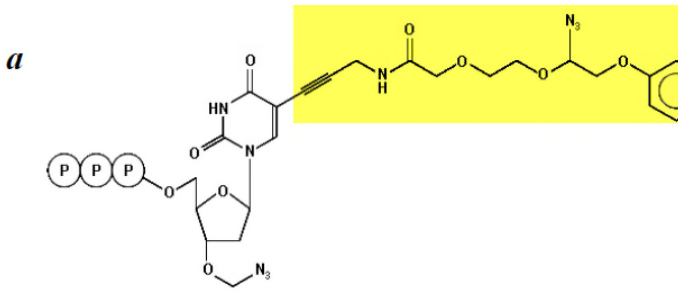
	polymerase reaction. Ex. 4 at 53.
wherein tag represents a detectable fluorescent moiety;	As shown in Fig. 1a below, Illumina's modified nucl fluorescent moiety tag (highlighted below).  Ex. 5 at 14, Fig. 1a.
wherein Y represents a chemically cleavable, chemical linker which (a) does not interfere with recognition of the analogue as a substrate by a DNA polymerase and (b) is stable during a DNA polymerase reaction; and	As shown in Fig. 1a below, Illumina's modified nucl chemically cleavable linker (highlighted below).  Ex. 5 at 14, Fig. 1a. Illumina has indicated that this l cleavable using tris(2-carboxyethyl)phosphine (TCEP As Illumina "***sequenced*** DNA templates by repeated polymerase-directed single base extension" using nuc linker, it follows that this linker (a) does not interfere

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	the analogue as a substrate by a DNA polymerase and a DNA polymerase reaction. Ex. 4 at 53 (emphasis a Figure S13 (showing "Illumina sequence reads" ident resulting from incorporation by a DNA polymerase o deoxyribonucleotide analogue having a label attached cleavable, chemical linker); Ex. 12 at 74, compound 2
wherein the guanine deoxyribonucleotide analogue: i) is recognized as a substrate by a DNA polymerase, ii) is incorporated at the end of a growing strand of DNA during a DNA polymerase reaction, iii) produces a 3′-OH group on the deoxyribose upon cleavage of R, iv) no longer includes a tag on the base upon cleavage of Y, and v) is capable of forming hydrogen bonds with cytosine or a cytosine nucleotide analogue.	As discussed above, as Illumina "***sequenced*** DNA te cycles of polymerase-directed single base extension" analogues, including guanine deoxyribonucleotide an that these nucleotide analogues are recognized as a su polymerase, are incorporated at the end of a growing during a DNA polymerase reaction, and are capable o bonds with cytosine or a cytosine nucleotide analogue Illumina also discloses using tris(2-carboxyethyl)pho remove the fluorescent dye [*i.e.* tag] and side arm fro to the base and simultaneously regenerate a 3′ hydrox the next cycle of nucleotide addition (Supplementary 53. Thus, Illumina's sequencing chemistry results in deoxyribonucleotide that produces a 3′-OH group on upon cleavage of R and no longer includes a tag on th cleavage of Y.
2. An guanine deoxyribonucleotide analogue having the structure:	Illumina's sequencing chemistry uses guanine deoxyr analogues. "To ensure base-by-base nucleotide incorporation in we used a set of four reversible terminators, 3′-*O*-azid deoxynucleoside triphosphates (A, C, G and T), each different removable fluorophore (Supplementary Fig.

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