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Barnes et al.

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(21) Appl. No.: **10/227,131**

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(65) **Prior Publication Data**

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C07H 21/00 (2006.01)
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C07H 21/04 (2006.01)
C12Q 1/68 (2006.01)

(52) **U.S. Cl.** **536/23.1**; 435/6; 435/91.1; 435/287.2; 536/25.3; 536/26.6

(58) **Field of Classification Search** 435/6, 435/91.1, 287.2; 536/23.1, 25.3, 26.6
See application file for complete search history.

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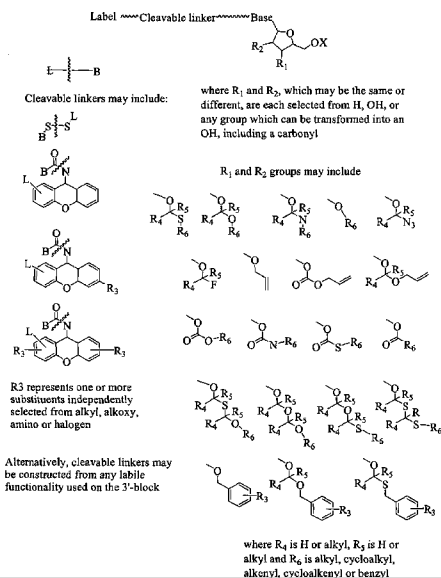
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(57) **ABSTRACT**

Nucleosides and nucleotides are disclosed that are linked to detectable labels via a cleavable linker group.

8 Claims, 6 Drawing Sheets



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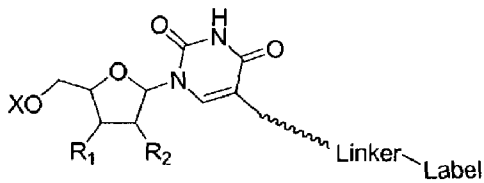
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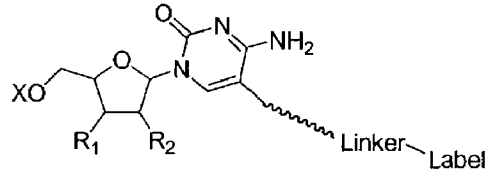
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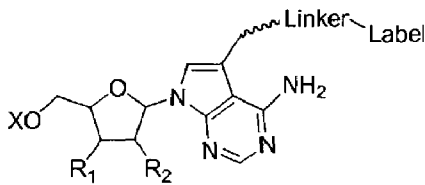
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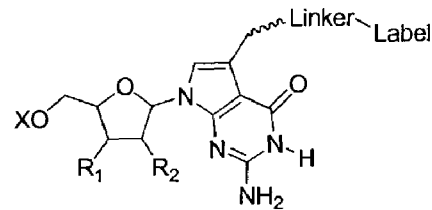
Uridine C5-linker



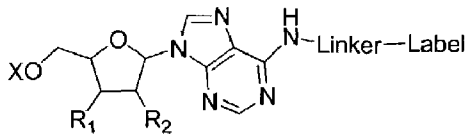
Cytidine C5-linker



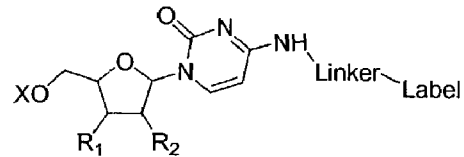
N7 Deazaadenosine C7-linker



N7 Deazaguanosine C7-linker



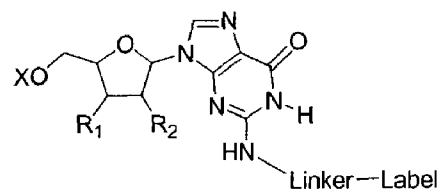
Adenosine N6-linker



Cytidine N4-linker

where R_1 and R_2 , which may be the same or different, are each selected from H, OH, or any group which can be transformed into an OH. Suitable groups for R_1 and R_2 are described in Figure 3

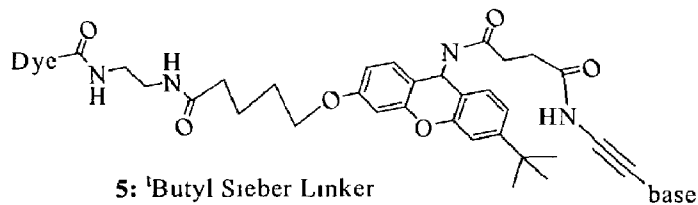
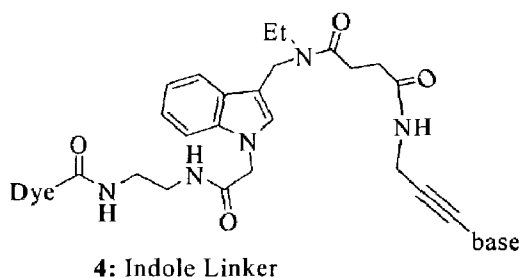
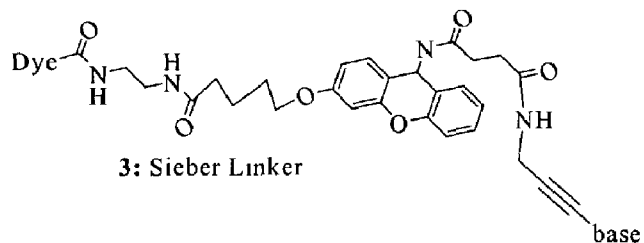
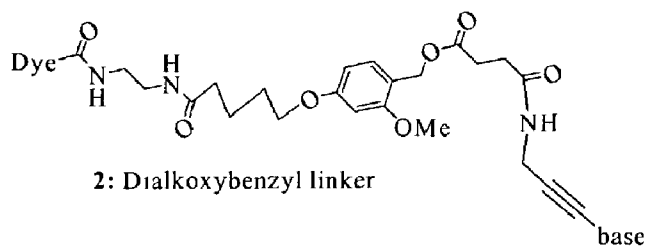
X = H, phosphate, diphosphate or triphosphate



Guanosine N2-linker

Fig. 1

Acid Labile Linkers



Disulfide Linker

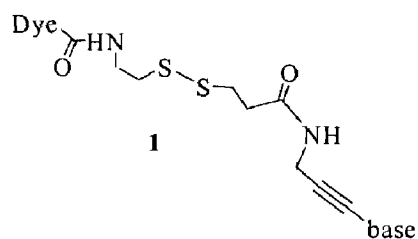
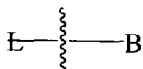
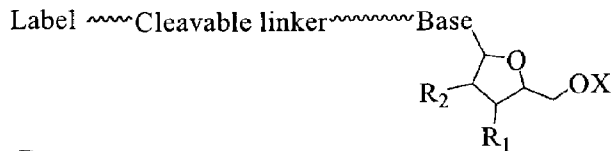
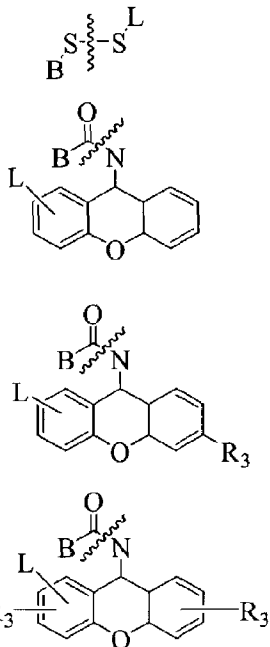


Fig. 2



Cleavable linkers may include:

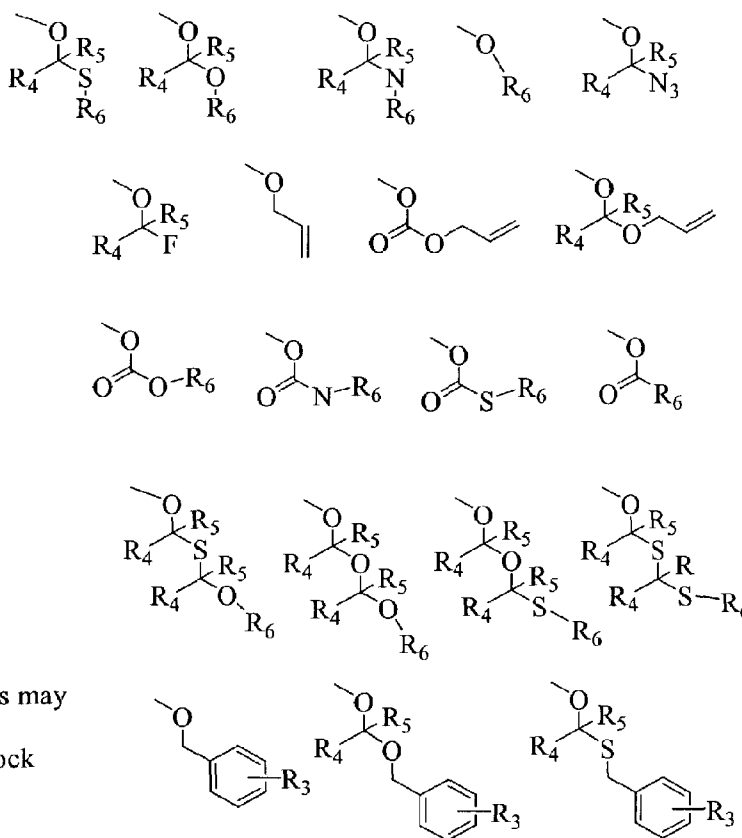


R₃ represents one or more substituents independently selected from alkyl, alkoxy, amino or halogen

Alternatively, cleavable linkers may be constructed from any labile functionality used on the 3'-block

where R₁ and R₂, which may be the same or different, are each selected from H, OH, or any group which can be transformed into an OH, including a carbonyl

R₁ and R₂ groups may include



where R₄ is H or alkyl, R₅ is H or alkyl and R₆ is alkyl, cycloalkyl, alkenyl, cycloalkenyl or benzyl

and X is H, phosphate, diphosphate or triphosphate

Fig. 3

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