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**(54) Title (EN):** SEQUENCING BY INCORPORATION

**(54) Title (FR):** SEQUENÇAGE PAR INCORPORATION

## **(57) Abstract:**

**(EN):** Nucleotides and nucleotide analogs are used in various sequencing by incorporation/sequencing by synthesis methods. Nucleotide analogs comprising 3'-blocking groups are used to provide reversible chain-termination for sequencing by synthesis. Typical blocking groups include phosphate groups and carbamate groups. Fluorescent nucleotides are used to perform sequencing by synthesis with detection by incorporation of the fluorescently labeled nucleotide, optionally followed by photobleaching and

intercalating dyes are used to detect addition of a non-labeled nucleotide in sequencing by synthesis with detection by intercalation. Microfluidic devices, including particle arrays, are used in the sequencing methods.

**(FR):** L'invention concerne des nucléotides et des analogues de nucléotides utilisés dans différents séquençages par incorporation/séquençage au moyen de techniques de synthèse. Des analogues de nucléotide comprenant des groupes bloquants 3' sont utilisés pour produire une terminaison de chaîne réversible pour séquençage par synthèse. Des groupes bloquants typiques comprennent des groupes phosphate et des groupes carbamate. Des nucléotides fluorescents sont utilisés pour effectuer un séquençage par synthèse avec détection par incorporation du nucléotide marqué par fluorescence, éventuellement suivie d'un photoblanchiment d'une insertion de colorants utilisés pour détecter l'adjonction d'un nucléotide non marqué dans un séquençage par synthèse avec détection par insertion. On utilise des dispositifs microfluidiques, comprenant des réseaux de particules, dans ces techniques de séquençage.

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