

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

1. A pyrosequencing kit for identifying a base at a target position in a sample
5 DNA sequence, the kit comprising:

(a) a pyrosequencing reagent comprising a polymerase;

(b) a pyrosequencing reagent comprising a nucleotide triphosphate;

(c) a pyrosequencing reagent comprising a pyrophosphate to ATP
converting enzyme comprising adenosine diphosphate (ADP)-
10 glucose pyrophosphorylase (AGPase) and a substrate ADP-
glucose; and

(d) a pyrosequencing reagent comprising an ATP detecting enzyme,
wherein one or more of the polymerase, the AGPase, the ADP-glucose
and the ATP detecting enzymes is immobilized on a solid support.

15 2. The kit of claim 1 further comprising a pyrosequencing reagent comprising
a nucleotide degrading enzyme.

3. The kit of claim 2 wherein the nucleotide degrading enzyme is apyrase.

20 4. The kit of claim 4 wherein the nucleotide degrading enzyme is immobilized
on a solid support.

5. The kit of claim 4 wherein the nucleotide degrading enzyme is apyrase.

6. The kit of claim 4, wherein the ATP detecting enzyme is luciferase.
7. The kit of claim 6 wherein the luciferase is present in an amount to provide from 0.3 μ g to 3 μ g per pyrophosphate sequencing reaction.

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8. The kit of claim 1, wherein the ATP detecting enzyme is luciferase.
9. The kit of claim 8 wherein the luciferase is present in an amount to provide from 0.3 μ g to 3 μ g per pyrophosphate sequencing reaction.

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10. The kit of claim 1, wherein the polymerase, the AGPase, the ADP-glucose and the ATP detecting enzymes are immobilized on the same solid support.

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11. The kit of claim 10 further comprising a nucleotide degrading enzyme immobilized on the solid support.

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12. The kit of claim 1, wherein one or more of the polymerase, the AGPase, the ADP-glucose and the ATP detecting enzymes not immobilized on the solid support is contained in the pyrosequencing reagent solution.

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13. The kit of claim 12, wherein the one or more of the polymerase, the AGPase, the ADP-glucose and the ATP detecting enzymes not immobilized on the solid support is contained in the same pyrosequencing reagent solution.

14. The kit of claim 13 wherein the pyrosequencing reagent solution further comprises a nucleotide degrading enzyme.

5 15. The kit of claim 12 wherein the pyrosequencing reagent solution further comprises a nucleotide degrading enzyme.

16. The kit of claim 15 wherein the nucleotide degrading enzyme is apyrase.

10 17. The kit of claim 16, wherein the ATP detecting enzyme is luciferase.

18. The kit of claim 17 wherein the luciferase is present in an amount to provide from 0.3 μ g to 3 μ g per pyrophosphate sequencing reaction.