

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method of pyrosequencing a polynucleotide molecule, said method comprising the steps of:
 - providing a rotatable platform having at least one open well for containing at least one support surface, said well further defined as being shaped or dimensioned such that a reagent deposited therein is centrifugally removable from said open well and off said platform by sufficient rotation of said platform;
 - ~~providing~~ adding at least one said support surface in the form of a magnetic particle to each said open well, wherein said ~~support surface~~ magnetic particle is adapted to immobilise a polynucleotide molecule or has immobilised thereon a polynucleotide molecule;
 - optionally immobilising a polynucleotide molecule on said magnetic particle;
 - annealing an oligonucleotide primer to a single strand of said polynucleotide molecule;
 - dispensing into each said open well from a point external of said platform a series of pyrosequencing reagents, wherein after one or more ~~said~~-dispensing steps said platform is rotated sufficiently such that any residual or unreacted said reagent is substantially centrifugally removed from each said open well and off said platform, wherein during rotation each said magnetic particle is magnetically held within each said open well;
 - assaying for the presence of a pyrophosphate group in each said well; and
 - repeating said dispensing and assaying steps, thereby sequencing said polynucleotide molecule.
2. A method according to claim 1 further comprising the step of positioning a magnet sufficiently close to said rotatable platform to magnetically hold said magnetic particle(s) within said open wells well(s) during rotation of said platform.
3. A method according to claim 2 wherein said magnet is in the form of a plate or a ring.
4. A method according to claim 3 wherein said magnetic plate or ring is further adapted to heat said open well(s) up to about 150°C thereby heating said magnetic particle(s).

5. A method according to claim 1 further comprising the step of engaging an electromagnet to magnetically hold said magnetic particle(s) within said ~~well~~ open well(s) during rotation of said platform.

6. A method according to ~~any one of the preceding claims~~ claim 1 wherein said rotatable platform is substantially circular and wherein about 2 to 500 open wells ~~well(s)~~ are distributed about the periphery of said circular platform.

7. A method according to claim 6 wherein the diameter of said platform is between about 50 to 500 mm and the thickness of said platform is between about 1 to 6 mm.

8. A method according to claim 6 wherein said open wells comprise a volume of between about 0.5 to 100 μ L or a well depth of about 0.5 to 5 mm, or said open wells are dimensioned to contain between about 1 to about 50 magnetic particles.

9. A method according to ~~any one of the preceding claims~~ claim 1 wherein said rotatable platform is formed of a plastics material selected from the group consisting of polycarbonate, polystyrene, high impact polystyrene, polyethylene and polypropylene, or is formed from glass or quartz.

10. A method according to ~~any one of the preceding claims~~ claim 1 wherein the polynucleotide molecule is chemically adsorbed or covalently or ionically, or hydrogen bonded onto each said magnetic particle, or van der Waals forces immobilise said polynucleotide molecule to each said magnetic particle.

11. A method according to ~~any one of the preceding claims~~ claim 1 wherein said pyrosequencing reagents are selected from the group consisting of one or more of enzymes, substrates, A, T, G and/or C nucleotides or the respective suitable nucleotide analogs, washing reagents, and rinsing reagents.

12. A method according to claim 11 wherein said enzymes include one or more of DNA polymerase, ATP sulfurylase, luciferase and apyrase.

13. A method according to claim 11 wherein said substrates include adenosine 5' phosphosulfate (APS) and/or luciferin.

~~12.14.~~ A method according to ~~any one of the preceding claims~~ claim 1 wherein the step of rotating the rotatable platform is performed at a speed of ~~between about 400 to 1000 rpm~~ to substantially centrifugally remove said residual or said unreacted reagent from said wells well(s) and further comprising the step of rotating the rotatable platform at a speed of about 10 to 200 rpm whilst dispensing said reagent.

~~13.15.~~ A method according to ~~any one of the preceding claims~~ claim 1 further comprising the step of vibrating the said platform for thoroughly mixing together said reagent and said magnetic particle(s).

~~14.16.~~ A method according to ~~any one of the preceding claims~~ claim 1 wherein said polynucleotide molecule is DNA or RNA or a modified form thereof.

~~15.17.~~ A method according to ~~any one of the preceding claims~~ claim 1 wherein said polynucleotide molecule is biotinylated and said magnetic particle(s) comprises avidin or streptavidin or an analogue for binding the biotinylated polynucleotide molecule.

~~16.18.~~ A method according to ~~any one of the preceding claims~~ claim 1 wherein said dispensing of the series of pyrosequencing reagents comprises either:

a) adding each nucleotide or its analog separately and sequentially in any desired or predetermined order, or

b) adding A+T+G+C nucleotides or any predetermined or desired subset of these as a mixture, and optionally repeating the adding one or more times.

~~17.19.~~ A method according to ~~any one of the preceding claims~~ claim 1 wherein said assaying for the presence of a pyrophosphate group in each said open well comprises detecting a light signal in each said open well.

~~18.20.~~ A method according to ~~any one of the preceding claims~~ claim 1 wherein the polynucleotide molecule is a double stranded polynucleotide molecule and the method

further comprises denaturing the double stranded polynucleotide molecule prior to the annealing.

~~19,21.~~ A method according to claim ~~18~~ 20 wherein said denaturing comprises heating said double stranded polynucleotide molecule to effect denaturing, or exposing said double stranded polynucleotide molecule to elevated pH.

~~20,22.~~ A method according to ~~any one of the preceding claims~~ claim 1 further comprising the step of washing said open well(s) with a wash reagent and optionally an enzymatic treatment.

~~21,23.~~ A method according to claim ~~20~~ 22 wherein said washing step occurs after one or more dispensing steps.

~~22.~~ A method according to claim ~~11~~ wherein said enzymes include one or more of DNA polymerase, ATP sulfurylase, luciferase and apyrase.

~~23.~~ A method according to claim ~~11~~ wherein said substrates include adenosine 5' phosphosulfate (APS) and/or luciferin.