

CLAIMS

1. A polynucleotide sequencing method comprising:
 - (a) incorporating a blocked, labeled nucleotide into a copy polynucleotide strand complementary to at least a portion of a template polynucleotide strand;
 - (b) identifying the blocked, labeled nucleotide in the presence of a first buffer composition;
 - (c) chemically removing a label and blocking moiety from the blocked, labeled nucleotide incorporated into the copy strand; and
 - (d) washing the chemically removed label and blocking moiety away from the copy strand with a wash solution comprising the first buffer composition, wherein the washing results in a reduced error rate or phasing,wherein the first buffer composition comprises an antioxidant and a scavenger compound.
2. The method of claim 1, further comprising repeating steps (a) to (d) until a sequence of the portion of the template polynucleotide strand is determined.
3. The method of claim 1, wherein the scavenger compound comprises a disulfide moiety or an azide moiety.
4. The method of claim 3, wherein the scavenger compound comprises a disulfide moiety.
5. The method of claim 3, wherein the scavenger compound is lipoic acid or 3,3'-dithiodipropionic acid (DDPA).

6. The method of claim 1, wherein removing the label and the blocking moiety from the blocked, labeled nucleotide incorporated into a copy polynucleotide strand comprises contacting the copy strand with tris(hydroxymethyl)phosphine.
7. The method of claim 1, wherein the first buffer composition comprises an antioxidant selected from the group consisting of ascorbate, acetovanillone, and 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid.
8. The method of claim 1, wherein the template polynucleotide strand is attached to a solid support.
9. The method of claim 8, wherein the template polynucleotide is attached to a flow cell.
10. A polynucleotide sequencing method comprising:
removing a label and a blocking moiety from a blocked, labeled nucleotide incorporated into a copy polynucleotide strand that is complementary to at least a portion of a template polynucleotide strand; and
washing the removed label and blocking moiety away from the copy strand with a wash solution comprising 3,3'-dithiodipropionic acid (DDPA), wherein the washing results in a reduced error rate or phasing.
11. The method of claim 10, further comprising:
identifying the blocked, labeled nucleotide incorporated into the copy strand prior to chemically removing the blocked, labeled nucleotide,
wherein detecting the identity of the blocked, labeled nucleotide occurs in the presence of a buffer composition comprising DDPA.