CLAIMS

WHAT IS CLAIMED IS:

1. Use of a therapeutic agent that causes a difference in expression or activity of protein kinase, membrane associated tyrosine/threonine 1 (PKMYT1) in the manufacture of a medicament for treating cancer in a subject having said cancer, wherein said cancer comprises a cell comprising a difference in expression or activity of a Protein Phosphatase 2 (PP2A) subunit, as compared to a non-cancer healthy control; and
wherein said PP2A subunit is the 65 kDa regulatory subunit A alpha (PPP2R1A) or the 55 kDa regulatory subunit B alpha (PPP2R2A);
wherein said difference in expression or activity of said PP2A subunit comprises a decrease in said expression or activity; and
wherein a therapeutically effective amount of the therapeutic agent is to be administered to the subject.

2. The use of claim 1, wherein said cell comprises said difference in expression or activity of Protein Phosphatase 2 (PP2A) or said PP2A subunit.

3. The use of claim 2, wherein said difference in expression or activity of PP2A or said subunit comprises a decrease in said expression or activity.

4. The use of claim 1, wherein said cell comprises said mutation or deletion of said nucleic acid encoding said PP2A subunit.

5. The use of claim 1, further comprising identifying said cancer as comprising said cell comprising said difference in expression or activity of PP2A or said PP2A subunit, or as comprising said mutation or deletion of said nucleic acid encoding said PP2A subunit.

6. The use of claim 1, wherein said therapeutic agent comprises a small molecule, a protein, or a nucleic acid.

7. The use of claim 6, wherein said therapeutic agent comprises a small molecule.

8. The use of claim 7, wherein said small molecule comprises a PKMYT1 inhibitor.

9. The use of claim 8, wherein said PKMYT1 inhibitor comprises 5-((5-methoxy-2-((4-morpholinophenyl)amino)pyrimidin-4-yl)amino)-2-methylphenol, *N*-(2-chloro-6-methylphenyl)-2-((6-(4-(2-hydroxyethyl)piperazin-1-yl)-2-methylpyrimidin-4-yl)amino)thiazole-5-carboxamide (dasatinib), 4-((2,4-dichloro-5-methoxyphenyl)amino)-6-methoxy-7-(3-(4-methylpiperazin-1-yl)propoxy)quinoline-3-carbonitrile (bosutinib), *N*-(5-chlorobenzo[*d*][1,3]dioxol-4-yl)-7-(2-(4-methylpiperazin-1-yl)ethoxy)-5-((tetrahydro-2*H*-

pyran-4-yl)oxy)quinazolin-4-amine (saracatinib), (*E*)-*N*-(4-((3-chloro-4-fluorophenyl)amino)-3-cyano-7-ethoxyquinolin-6-yl)-4-(dimethylamino)but-2-enamide (pelitinib), *N*-(3-chlorophenyl)-6,7-dimethoxyquinazolin-4-amine (tyrphostin AG 1478), 6-(2,6-dichlorophenyl)-2-((4-(2-(diethylamino)ethoxy)phenyl)amino)-8-methylpyrido[2,3-*d*]pyrimidin-7(8*H*)-one (PD-0166285), 6-(2,6-dichlorophenyl)-8-methyl-2-((4-morpholinophenyl)amino)pyrido[2,3-*d*]pyrimidin-7(8*H*)-one (PD-173952), 6-(2,6-dichlorophenyl)-8-methyl-2-((3-(methylthio)phenyl)amino)pyrido[2,3-*d*]pyrimidin-7(8*H*)-one (PD-173955), or 6-(2,6-dichlorophenyl)-2-((4-fluoro-3-methylphenyl)amino)-8-methylpyrido[2,3-*d*]pyrimidin-7(8*H*)-one (PD-180970).

10. The use of claim 1, wherein said cancer comprises a cancerous tissue comprising said cell.

11. The use of claim 10, wherein said cancerous tissue comprises breast tissue, pancreatic tissue, uterine tissue, bladder tissue, colorectal tissue, prostate tissue, liver tissue, or ovarian tissue.

12. The use of claim 10, wherein said cancerous tissue is liver tissue.

13. The use of claim 10, wherein said cancerous tissue is ovarian tissue.

14. The use of claim 1, wherein said subject has said cancer, and said administration reduces proliferation or viability of said cancer.