CLAIMS

1. A method of identifying a cancer that is likely to be responsive to treatment with a proteasome inhibitor in a subject, the method comprising detecting an indicator that is indicative of a level or activity of Protein polybromo-1 (PB1) in a cancer or blood sample obtained from the subject, wherein the cancer is identified as being likely to be responsive to the proteasome inhibitor when the level or activity of PB1 indicated by the indicator corresponds to an absence or decreased level or activity of PB1 in the cancer or blood sample as compared to a control.

2. The method of claim 1, wherein the method comprises comparing the indicator to the control.

3. The method of claim 1 or 2, wherein the indicator is a PB1 transcript level, PB1 protein level, or a variation in the PB1 gene sequence or operably connected transcriptional control region or UTR.

4. The method of any one of claims 1 to 3, wherein Von Hippel-Lindau (VHL) is absent in the cancer or wherein the cancer has a decreased expression or activity of Von Hippel-Lindau (VHL).

5. The method of any one of claims 1 to 4, wherein the cancer is a renal cancer.

6. The method of claim 5, wherein the renal cancer is renal cell carcinoma.

7. The method of any one of claims 1 to 6, wherein the proteasome inhibitor is bortezomib or carfilzomib.

8. Use of a proteasome inhibitor in the manufacture of a medicament for treating a cancer in a subject, wherein the subject is found likely to be responsive to treatment with the proteasome inhibitor based on an absence or decreased level or activity of PB1 in a cancer or blood sample obtained from the subject as compared to a control.

9. The use of claim 8, wherein Von Hippel-Lindau (VHL) is absent in the cancer or wherein the cancer has a decreased expression or activity of Von Hippel-Lindau (VHL).

10. An *in vitro* method of inhibiting proliferation of a cancer cell, the method comprising contacting the cancer cell with a proteasome inhibitor, wherein PB1 is absent in the cancer cell or wherein the cancer cell has a decreased level or activity of PB1 as compared to a control.

11. The method of claim 10, wherein Von Hippel-Lindau (VHL) is absent in the cancer cell or wherein the cancer cell has a decreased expression or activity of Von Hippel-Lindau (VHL).

12. A method of selecting a cancer subject for treatment with a proteasome inhibitor, the method comprising a) detecting an indicator that is indicative of a level or activity of PB1 in a cancer or blood sample obtained from the subject, wherein the cancer is identified as being likely to be responsive to the proteasome inhibitor when the level or activity of PB1 indicated by the indicator corresponds to an absence or decreased level or activity of PB1 in the cancer or blood sample as compared to a control; and b) selecting the cancer subject found likely to be responsive to treatment with the proteasome inhibitor for treatment with the proteasome inhibitor.

13. A method of stratifying a cancer subject as a likely responder or non-responder to a proteasome inhibitor, the method comprising detecting an indicator that is indicative of a level or activity of PB1 in a cancer or blood sample obtained from the subject, wherein the cancer is identified as being likely to be responsive to the proteasome inhibitor when the level or activity of PB1 indicated by the indicator corresponds to an absence or decreased level or activity of PB1 in the cancer or blood sample as compared to a control, thereby stratifying the subject as a likely responder or non-responder to the proteasome inhibitor.

14. The method of 12 or 13, wherein Von Hippel-Lindau (VHL) is absent in the cancer or wherein the cancer has a decreased expression or activity of Von Hippel-Lindau (VHL).