CLAIMS

1. Use of Vorinostat in the manufacture of a medicament for treating a subject with a sarcoma harboring at least one mutation in p53 in a biological sample derived from the sarcoma, wherein the medicament is to be administered to the subject if there is at least one mutation in p53,

optionally further comprising identifying or having identified the at least one mutation in p53.

2. The use of claim 1, wherein:

an effective amount of a DNA damaging chemotherapeutic agent is to be further administered, optionally wherein the DNA damaging chemotherapeutic agent is selected from the group consisting of: a DNA-alkylating agent, a DNA crosslinking agent, an antimetabolite, a topoisomerase inhibitor and a DNA intercalating agent.

3. The use of claim 2, wherein the DNA-alkylating agent is selected from the group consisting of: a nitrosourea, a triazene and a platinum agent, optionally wherein the nitrosourea is a lomustine.

4. The use of claim 1, wherein a therapeutically effective amount of the Vorinostat in the medicament is 0.01 mg/mL -500.0 mg/mL.

5. The use of claim 1, wherein:

the Vorinostat is to be administered at a dose equal to or less than 100 mg/kg, optionally at a dose of 30-60 mg/kg.

6. The use of claim 1, wherein the subject is a canine.

7. The use of claim 1, wherein the sarcoma is a soft tissue sarcoma, a splenic stromal

sarcoma, a spindle cell sarcoma, a hemangiosarcoma, a histiocytic sarcoma, a leiomyosarcoma, a lymphosarcoma, and a osteosarcoma.

8. The use of claim 1, wherein the Vorinostat is to be administered at a frequency selected from the group consisting of: twice daily, once daily, once every other day, once every third day, once every fourth day, once every fifth day, or weekly.

9. The use of claim 1, wherein the Vorinostat is to be administered orally.

10. The use of claim 1, wherein a therapeutically effective amount of a targeted anti-cancer agent, optionally selected from the group consisting of: Crizotinib, Erlotinib, Gefinitib, Imatinib, Dasatinib, Rapamycin, Sorafenib, Lapatinib, and Trametinib is to be further administered.

11. The use of claim 1, wherein surgery is to be performed on the subject.

12. The use of claim 1, wherein the subject is to be administered ionizing radiation.

13. The use of claim 1, further comprising having determined from the biological sample derived from the sarcoma, that the sarcoma harbors a mutation in at least one gene selected from the group consisting of p300, CBP, TIF-2, RAR, BCL-6, AML1, STAT5 and HDAC1.

14. The use of claim 1, wherein the biological sample is a nucleic acid sample, optionally a purified nucleic acid sample, optionally wherein the purified sample is DNA or RNA.

15. The use of claim 1, wherein the determining of the mutation in p53 is performed by sequencing the nucleic acid sample.