CLAIMS

1. A hypoxia-activated bioreductive agent (HABA) for use in treating a solid tumor in a subject, wherein the solid tumor or a region of the solid tumor is supplied by an identifiable arterial branch, the use comprising:

(a) administering to the subject said HABA;

(b) inducing hypoxia by mechanical embolization of one or more blood vessels supplying the solid tumor; and

(c) administering an immune checkpoint inhibitor prior to, simultaneously with, or subsequent to step (b) in an amount effective to enhance an immune response to the solid tumor, as compared to an immune response in the absence of the immune checkpoint inhibitor.

2. The HABA for use of claim 1, wherein the HABA is tirapazamine.

3. The HABA for use of claim 1 or 2, wherein the mechanical embolization comprises administering an embolizing agent that is capable of vascular occlusion.

4. The HABA for use of claim 3, wherein the embolizing agent comprises Lipiodol®, Gelfoam®, beads, or nanoparticles.

5. The HABA for use of claim 4, wherein the embolizing agent comprises Lipiodol® or Gelfoam®.

6. The HABA for use of claim 1 or 2, wherein the mechanical embolization comprises trans-arterial embolization (TAE).

7. The HABA for use of any one of claims 1-6, wherein the immune checkpoint inhibitor is an inhibitor of programmed cell death protein 1 (PD-1), an inhibitor of programmed cell death ligand 1 (PD-L1), or an inhibitor of cytotoxic T-lymphocyte associated protein 4 (CTLA-4).

8. The HABA for use of claim 7, wherein the immune checkpoint inhibitor is an inhibitor of programmed cell death protein 1 (PD-1), or an inhibitor of programmed cell death ligand 1 (PD-L1)

9. The HABA for use of any one of claims 1-8, wherein the immune checkpoint inhibitor is a monoclonal antibody.

10. The HABA for use of claim 9, wherein the monoclonal antibody is selected from the group consisting of: nivolumab, pembrolizumab, atezolizumab, MEDI4736 (durvalumab), MSB0010718C (avelumab), and ipilimumab.

11. The HABA for use of claim 10, wherein the monoclonal antibody is nivolumab or pembrolizumab.

12. The HABA for use of any one of claims 1-11, wherein the solid tumor is selected from the group consisting of: hepatocellular carcinoma, cholangiocarcinoma, metastatic colorectal cancer, liver cancer, lung cancer, breast cancer, gastrointestinal cancer, bladder cancer, head and neck cancer, ovarian cancer, and pancreatic cancer.

13. The HABA for use of claim 12, wherein the solid tumor is hepatocellular carcinoma.

14. The HABA for use of any one of claims 1-13, wherein (b) is performed after (a), wherein (c) comprises administering the immune checkpoint inhibitor two or more times after (b).

15. The HABA for use of any one of claims 1-14, wherein the administration of HABA with the induction of hypoxia induces necrosis of at least about 75% of the solid tumor