

Near-Universal Diagnostic For Malignant Tumors

by James Summerton, Ph.D.
18 December 2007

The Challenges:

1. Detect all malignant tumors.
2. Detect even very small early-stage tumors.
3. Avoid false positives.

The means:

1. Virtually all malignant tumors contain hypoxic/**acidic** areas. A diagnostic **onco-tool** is specially designed to only enter cells in such **acidic** areas, whereupon its attached radiohalogen will report its presence to a gamma ray scanner or a PET scanner. This should allow one to detect all malignant tumors.
2. A malignant tumor begins to form hypoxic/acidic areas when the tumor is less than 1 millimeter in diameter. The volume of a 1 mm diameter tumor containing newly-forming hypoxic/acidic areas is a thousand-fold smaller than the volume of a 1 centimeter diameter tumor, which is about the smallest tumor that can be reliably detected by current tumor diagnostics. Thus, **onco-tools** are designed to detect even very small early-stage tumors - which is the stage that can be treated most successfully by current cancer therapies.
3. Three means will be used to avoid false positives when using an **onco-tool** diagnostic.
 - (a) Use **onco-tools** that are uniquely designed to provide unprecedented specificity for acidic areas.
 - (b) Optimize known methods for increasing acidity in tumors.
 - (c) Optimize known methods for avoiding acidity in non-tumor areas.
 - (i) proximal tubules of kidneys
 - (ii) areas of inflammation
 - (iii) non-tumor hypoxic areas

I am looking for collaborators
interested in pursuing items in red

Prior art acid-targeted agents currently used in the clinic (11C-DMO and chlorambucil) provide a 6-fold to 8-fold preference for acidic areas of tumor compared to normal tissues.

Acid-targeted **onco-tools** provide a 30-fold to 300-fold preference for acidic areas of tumor compared to normal tissues.

[The first **onco-tool** will be available as a research reagent in 2008.]

Return to: www.onco-tools.com