

# Wake Forest University

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## Featured Technology

### NOVEL CYTOTOXINS THAT SELECTIVELY TARGET AND KILL CANCER CELLS IN VIVO

**INVENTORS:** Dr. Waldemar Debinski, Jill Wykosky, Denise Gibo

Researchers at Wake Forest University Health Sciences have developed novel potent cytotoxins based on a platform of the tumor suppressor protein ephrinA1 as a targeting delivery protein. **The cytotoxins have been tested *in vivo* against human Glioblastoma multiforme (GBM) cells and *in vitro* against GBM, breast and prostate cancer cells,** all of which over-express the EphA2 receptors. The cytotoxic conjugates selectively kill these cancer cells while sparing normal cells and are excellent candidates for developing targeted therapeutics for various solid tumor cancers, such as GBM, head, neck, pancreatic, ovarian and prostate cancers.

#### Technology Highlights:

- EphrinA1-derived cytotoxins result in 56% tumor reduction in mice harboring human GBM xenograft tumors with no observed toxicity.
- Cytotoxins potently bind to, internalize and kill GBM, prostate and breast cancer cells in vitro with IC<sub>50</sub> in the 10<sup>-11</sup> M range.
- Cytotoxins are specific for cancer cells over-expressing the EphA2 receptor and do not target normal cells.

#### Unique Possibilities:

- The cytotoxins selectively target cells over-expressing EphA2 in solid tumors, resulting in **highly targeted drug delivery for various cancers.**
- Both EphA2 and IL-13R $\alpha$ 2 targeted cytotoxins potently kill human GBM cells, and a **combinatorial therapeutic scheme targeting the EphA2, IL-13R $\alpha$ 2 and Fra-1 proteins, which are over-expressed in at least 95% of GBM, may be effective in all GBM patients.**

#### Additional information:

Wykosky et al. Mol Cancer Ther 2007; 6(12), 3208-3218.

Wykosky et al. Clin Cancer Res 2008; 14(1), 199-208.

US Patent application 12/201,662.

#### Status:

Patents pending

#### MISSION

To maximize the value of Wake Forest University's intellectual assets through the creation of novel and effective models for commercializing technology.

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