Wip1 Inhibitors as Anticancer Agents

TEDCO/NIH/NCI Technology Showcase

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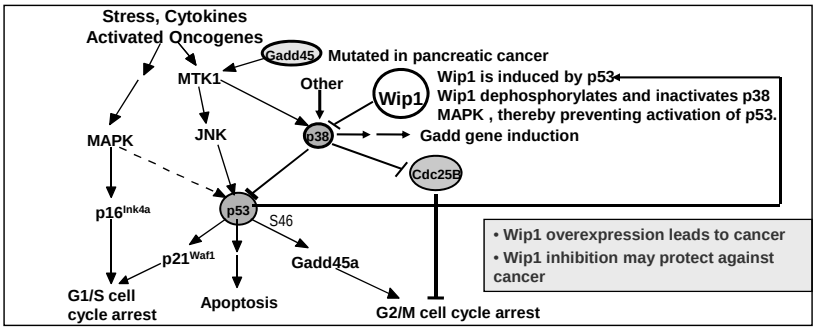
September 25, 2007

Technology

- Development of specific peptides that can be used as anti-cancer agents, particularly as promoters of apoptosis.
- Modified the natural substrate of the Wip1 protein phosphatase in order to produce the inhibitors, allowing for specific and efficient inhibition of Wip1.
- These peptides represent the first Wip1 peptide inhibitors



Technology

- **Current State of Development:**
  - A specific small molecule inhibitor has been designed based upon a cyclic peptide inhibitor
  - Inhibition binding studies performed with a colorimetric assay.
  - Subset of compounds will be evaluated to detect lower-potency inhibitors and to screen a large set of compounds from a targeted library.
- **Value Proposition:**
  - a cyclic peptide or small molecule inhibitor that specifically inhibits enzymatic activity
  - is water soluble
  - has potential for use in combination therapy.
- **Patent Status:**

  Patent Application has been filed.

Technology Applications

- These peptides represent the first Wip1 peptide inhibitors as a target for cancer therapy.
- Inhibitors are designed based on structural similarity to the native substrate, providing a high degree of specificity to the target and not to related phosphatases.

Commercial Applications

- Anti-cancer therapeutics for a wide variety of tumors, including breast cancer, ovarian cancer, and neuroblastomas.
- Inhibitors can be combined with other pro-apoptotic therapeutics to improve patient survival, providing an advantage to previous pro-apoptosis approaches.

Collaboration Opportunities

- **Development of the small molecule inhibitor through a CRADA agreement, including:**
  - Optimizing lead compound(s) for activity, potency, formulation, stability, metabolism, toxicity, absorption/distribution etc.
  - Biological testing:
    - tumor cell lines that over-express Wip1.
    - three animal models of breast cancer, lymphoma and adenoma that we have identified.

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