

## Sensitizing Cancer Cells to DNA Targeted Therapies

### Summary

Chk2 is a protein kinase activated in response to DNA double strand breaks. In normal tissues, Chk2 phosphorylates and thereby activates substrates that induce programmed cell death, or apoptosis, via interactions with p53, E2F1, PML proteins. In cancer tissues, where apoptosis is suppressed, Chk2 phosphorylates and inactivates cell cycle checkpoints (via interactions with Cdc25, phosphatases and Brca1 proteins), which allows cancer cells to repair and tolerate DNA damage. Hence, Chk2 inhibitors would be expected to protect normal tissues by reducing apoptosis, and to sensitize cancer cells to DNA-targeted agents. The National Cancer Institute seeks licensees for small molecule inhibitors of Chk2 for the treatment of cancer.

### NIH Reference Number

E-054-2008

### Product Type

- Therapeutics

### Keywords

- Chk2 Inhibitors, Anti-cancer Therapeutic, Sensitizing Agent for current DNA-damaging cancer therapeutics

### Collaboration Opportunity

This invention is available for licensing.

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### Description of Technology

Chk2 is a protein kinase activated in response to DNA double strand breaks. In normal tissues, Chk2 phosphorylates and thereby activates substrates that induce programmed cell death, or apoptosis, via interactions with p53, E2F1, PML proteins. In cancer tissues, where apoptosis is suppressed, Chk2 phosphorylates and inactivates cell cycle checkpoints (via interactions with Cdc25, phosphatases and Brca1 proteins), which allows cancer cells to repair and tolerate DNA damage. Hence, Chk2 inhibitors would be

expected to protect normal tissues by reducing apoptosis, and to sensitize cancer cells to DNA-targeted agents.

Researchers at the National Cancer Institute discovered small molecule inhibitors of Chk2 for the treatment of cancer; they seek licensees to develop, evaluate, or commercialize this technology.

### **Potential Commercial Applications**

- Combining Chk2 inhibitors with DNA targeted chemotherapeutic agents for the treatment of cancers
- Single agents therapy for cancers with endogenously activated ("addicted to") Chk

### **Competitive Advantages**

- Selective enhancement of the antiproliferative and proapoptotic activities of DNA targeted chemotherapeutic agents in tumors with inactivated p53, while protection of normal tissues by blocking p53-mediated apoptosis ("side effects") induced by the DNA targeted agents

### **Development Stage**

- Discovery (Lead Identification)

### **Patent Status**

- **U.S. Patent Issued:** U.S. Patent Number
- **U.S. Patent Filed:** U.S. Patent Application Number
- **Foreign Filed:** - Patent Application

### **Related Technologies**

- [E-211-2005 - Sensitizing Cancer Cells to DNA Targeted Therapies](#)

### **Therapeutic Area**

- Cancer/Neoplasm

### **Updated**

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