

## SYNTHETIC PEPTIDE INHIBITORS OF THE WNT PATHWAY

### SUMMARY

The National Cancer Institute's Cancer and Inflammation Program seek parties interested in co-developing selective peptide inhibitors of the Wnt signaling pathway, a pathway that is activated in many cancer types.

### REFERENCE NUMBER

E-021-2011

### PRODUCT TYPE

- Therapeutics

### KEYWORDS

- Research tool
- Peptide inhibitor
- Beta-catenin
- Wnt

### COLLABORATION OPPORTUNITY

This invention is available for licensing.

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### DESCRIPTION OF TECHNOLOGY

To date, there are few small molecules that target canonical Wnt/beta-catenin signaling and those that have been discovered have low potency and do not directly target beta-catenin, the pathway's key signal mediator.

NCI investigators have developed peptide inhibitors that selectively target a conserved region in beta-catenin essential for promoting cell growth but not cell adhesion and differentiation. Furthermore, these peptides have been synthetically modified to enhance cell penetration and structure stability thereby increasing their potency and efficacy. Interestingly, these peptides inhibit the canonical Wnt signaling pathway but not non-canonical Wnt signaling. As a result, these inhibitors potentially provide effective chemotherapies for tumors, such as colon and cervical, which depend upon canonical Wnt signaling. Moreover, as these inhibitors do not disrupt non-canonical Wnt signaling, which plays a role in kidney,

lung, and vascular development, and they are likely to have minimal negative side effects. Additionally, these peptides can serve as an effective tool for research to elucidate the roles of Wnt canonical and non-canonical signaling in development and many pathological conditions.

### **POTENTIAL COMMERCIAL APPLICATIONS**

- Cancer therapeutic
- Research tool to study the canonical Wnt signaling pathway

### **COMPETITIVE ADVANTAGES**

- Selective inhibitors that target cell growth but not differentiation reducing negative side-effects
- Synthetic molecules with increased stability and cell penetration that can be manufactured in large quantities under GMP conditions

### **INVENTOR(S)**

- [Nadya Tarasova, PhD](#) (NCI)
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### **DEVELOPMENT STAGE**

- Pre-clinical (in vivo)

### **PUBLICATIONS**

S. Tanigawa, et al. Wnt4 induces nephronic tubules in metanephric mesenchyme by a non-canonical mechanism. *Dev Biol.* 2011 Jan 20; E-pub ahead of print. [PubMed: 21256838]

### **PATENT STATUS**

- **U.S. Filed:** Provisional Application No. 61/422,857 (12/14/2010)
- **Not Patented:** PCT Application No. 13/917,958 in preparation

### **THERAPEUTIC AREA**

- Cancer/Neoplasm