

## **Monoclonal Antibodies and Immunoconjugates Directed to the Non-Shed Portion (“Stalk”) of Mesothelin are Excellent Candidates for Developing Therapeutic Agents**

### **Summary**

Antibodies that specifically recognize and bind to the unshed portion (“stalk”) of human mesothelin are strong therapeutic candidates because they maintain contact with the cancer cell for a longer duration than other anti-mesothelin antibodies that are currently available. The National Cancer Institute (NCI) has developed such antibodies that specifically recognize and bind to the stalk of human mesothelin with high affinity. The NCI seeks licensing and/or co-development research collaborations to advance the development and commercialization of these antibodies.

### **NIH Reference Number**

E-106-2017

### **Product Type**

- Therapeutics

### **Keywords**

- Antibody, Mesothelin, Cancer, Therapeutic, Diagnostic, Immunoconjugates, Immunotoxins, Chimeric Antigen Receptor, CAR, Pastan

### **Collaboration Opportunity**

This invention is available for licensing and co-development.

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### **Description of Technology**

Human mesothelin is overexpressed by various cancers such as synovial sarcoma, mesothelioma, and ovarian, lung, esophageal, and gastric cancers. This selective expression on certain cancers suggests that mesothelin is an excellent target for anticancer therapeutics. However, a large fragment (“the shed portion”) of mesothelin is constantly shed from cells, and all current anti-mesothelin antibodies bind to the shed portion. As a result, the therapeutic efficacy of these antibodies has been low because

they are unable to exert their therapeutic effect on the cell before their binding region is shed.

Fortunately, a piece (“the stalk”) of mesothelin remains attached to the cell surface after shedding. Since antibodies to the stalk would remain bound to diseased cells, they can be more effective in killing cancer cells than currently available anti-mesothelin antibodies. Scientists at the National Cancer Institute (NCI) have invented antibodies that specifically recognize and bind to the stalk of human mesothelin with high affinity. These antibodies represent excellent candidates for development of therapeutic agents and are available for licensing and/or co-development opportunities.

### **Potential Commercial Applications**

- Therapeutic Uses
  - As an unconjugated antibody
  - As a targeting moiety for CARs, antibody-drug conjugates (ADC), immunotoxins, bispecific antibodies, etc.
- Diagnostic agent for detection and monitoring levels of mesothelin-expressing cancer cells

### **Competitive Advantages**

- This is the only antibody that binds to the stalk portion of mesothelin, allowing the antibody to remain attached to the cell to exert a therapeutic effect
- Specific binding to cancer cells allows selective killing, potentially limiting drug side effects and improving patient quality of life

### **Inventor(s)**

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### **Development Stage**

- Pre-clinical (in vivo)

### **Publications**

Awuah et al., Reduced Shedding of Surface Mesothelin Improves Efficacy of Mesothelin-Targeting Recombinant Immunotoxins. [[PMID 27196771](#)]

### **Patent Status**

- **U.S. Patent Filed:** U.S. Patent Application Number PCT/US2018/033236

### **Related Technologies**

- E-262-2005
- E-292-2007

### **Therapeutic Area**

- Cancer/Neoplasm

**Updated**

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