



TECH TO BUSINESS

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Novel proteins with anti-bacterial and anti-eukaryotic activity

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Background

Researchers at the University of Calgary have identified a large set of proteins from the type 6 secretion system (T6SS) with anti-bacterial or anti-eukaryotic proteins.

The T6SS is a delivery system used by Gram-negative bacteria to inject effector proteins and virulent factors into target eukaryotic or bacterial cells. The effectors kill or inhibit the growth of their targets and thereby promote the survival of the cells that are secreting them. **Identification of these effectors enables their use as anti-bacterials or in oncolytic viruses.**

Systematic identification of effectors has been challenging due to diversity in structure and lack of conserved signature motifs in effectors. However, University of Calgary researchers have devised a strategy to identify these effectors by associating them with conserved domains found in a chaperone protein located on the same operon.

In addition to the effector proteins, the corresponding immunity proteins that enable the cell to escape its own toxin have been identified.

Areas of Application

- Oncolytic viruses
- Topical anti-bacterials
- Anti-bacterial surface coatings
- Molecular cloning (positive and negative selection)
- Probiotics

Competitive Advantages

- Potentially effective against drug resistant bacterial strains
- Complementary immunity proteins enable protection of non-target cells
- Additional effectors can be found as novel bacterial genomes are sequenced

TECHNOLOGY



Stage of Development

- Over 100 novel effectors have been identified using this approach
- Currently screening putative effectors for activity

Intellectual Property Status

Provisional patent application filed

Publications

Liang,X., Moore,R., Wilton,M., Wong,M., Lam,L. and Dong,T. (2015) **Identification of divergent type VI secretion effectors** . Proc. Natl. Acad. Sci. U. S. A. 112:9106-11