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TGen partner, PBS-Bio, makes first breakthrough drug analysis

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Predictive Biomarker Sciences Inc. (PBS-Bio) has completed its first drug analysis, enabling Canadian biotech company PharmaGap Inc. to significantly advance a potentially significant anti-cancer medication.

PharmaGap is an early-stage biotech company based in Ottawa, Ontario developing novel peptide compounds for cancer. Its lead compound, GAP-107B8, exhibits potent cytotoxic characteristics against cancer cells and has recently completed screening at the National Cancer Institute in Bethesda, Md., and was the subject of a data poster by researchers at the Ottawa Hospital Research Institute at the recent American Association for Cancer Research meeting in Washington, D.C.

Proprietary real-time computer imaging technology from PBS-Bio has been instrumental in assisting PharmaGap to determine the drug's potential mechanism of action and thereby identifying suitable cancers to target for eventual clinical use.

As part of its pre-clinical development program, PharmaGap hired Phoenix-based PBS-Bio to analyze more specifically how the drug worked. PBS-Bio is a privately held, for-profit corporation owned in part by the non-profit Translational Genomics Research Institute (TGen).

Data from the PBS-Bio analysis indicated that GAP-107B8 rapidly compromises the outer membrane of colorectal cancer cells, leading to

either oncolytic or apoptotic cell death, while having significantly less affect on non-cancerous cells.

Unlike many protein kinase inhibitor drugs now in development, GAP-107B8 works within mere minutes through "an assault on the plasma membrane," said Dr. Isabella Steffensen, a PharmaGap pre-clinical development consultant. She said that GAP-107B8 appears to be reacting with surface receptors apparently more prevalent on cancer cells than normal cells.

By providing PharmaGap with a more accurate analysis of how the drug functioned, PBS-Bio saved the company months of research and an estimated $400,000 in costs.

Moreover, the PBS-Bio data has assisted PharmaGap to expand the scope of possible cancer targets for GAP-107B8, said Robert McInnis, the company's President and Chief Executive Officer.

McInnis said PharmaGap is now also better positioned with GAP-107B8 to run clinical trials, anticipated in 2012, and expand the scope of its intellectual property and business development potential.

"Based on the insights gleaned from working with the PBS-Bio team in Arizona, we have a much clearer idea of how this compound is acting," McInnis said. "Overall, it was a very successful collaboration. We certainly look forward to a continuing relationship with PBS-Bio"

Like plugging a computer diagnostic into a running car engine, PBS-Bio's technology uses live cancer cells to show pharmaceutical companies how their drugs work, or don't work, said Dr. Michael Bittner, Co-Director of TGen's Computational Biology Division.

"For the first time, we can show — at the molecular level — exactly how

drugs will affect cancer cells in real-time, identifying precisely along which cellular pathways drugs produce results, or fail," said Dr. Bittner, who also is a Principal Investigator at TGen for the PBS-Bio technology, and a Member of PBS-Bio's Scientific Advisory Board.

"The success of targeted oncology drugs can vary from tumor to tumor, and the range of the specific types of tumor molecular pathologies that are susceptible or resistant to a given drug are frequently unknown. The purpose of the PBS-Bio technology is to make pre-clinical research more predictive of actual patient outcomes," Dr. Bittner said.

The technology is expected to save pharmaceutical companies millions of dollars in drug development costs, especially by showing what drugs might not work, thereby avoiding costly clinical trials, said Dr. Edward Smith, founder and CEO of PBS-Bio.

The technology also is expected to show which drugs might work better in tandem with other drugs, thereby salvaging promising drug lines that otherwise might be shelved, said Dr. Smith, who also is an adjunct faculty member at TGen and at the University of Arizona College of Medicine.

"Specifically, the TGen-PBS-Bio technology shows, in real time, how drugs affect the genes and their signaling pathways within cells that cause cancers to grow out of control," Dr. Smith said.

The hope is that by using this technology, drug companies will be able to develop cancer drugs more quickly, and at lower costs, while giving researchers a better idea of which patients will best respond to the therapies, Dr. Smith said.

PBS-Bio is working with three large pharmaceutical companies on projects to: determine which of several similar compounds to move into

clinical trials, identify which drugs to add to their investigational drug to make it most effective, and identify biomarker tests that will identify patients most likely to respond to the new drug combination.

Provided by The Translational Genomics Research Institute