

# **Arrowhead Research Subsidiary, Insert Therapeutics, Treats First Patient with Nano-Engineered Anti-Cancer Therapeutic**

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PASADENA, Calif.--(BUSINESS WIRE)--July 19, 2006--

Arrowhead Research Corporation (Nasdaq:ARWR), announced today that its majority-owned subsidiary, Insert Therapeutics, a company commercializing delivery-enhanced therapeutics using a patented class of polymeric systems, has treated its first patient in a Phase I study of IT-101, Insert's lead anti-cancer compound.

"The initiation of the clinical development phase for IT-101 is an important milestone for Insert Therapeutics. It demonstrates our commitment to bringing innovative therapies to the clinic that address significant, unmet patient needs," said Dr. Thomas Schluep, Chief Scientific Officer at Insert Therapeutics.

The study is an open-label, dose-escalation Phase I study in patients with inoperable or metastatic solid tumors and has been designed to evaluate the safety, tolerability and pharmacokinetics of IT-101. Insert expects that between 24 and 48 patients will be enrolled in the study during its course. The study is currently being conducted at The City of Hope Cancer Center (COH) in Duarte, CA, where Yun Yen, MD., Ph.D. will lead the study.

"We congratulate the team at Insert on this latest success," said R. Bruce Stewart, Arrowhead's Chairman. "While the Phase I study is underway, Insert will continue preparations for IT-101's further clinical trials and the development of its next therapeutic candidates."

Animal studies using IT-101 showed excellent anti-cancer activity, including complete remission of certain kinds of lung cancer, among others. For more information about Insert and IT-101, please visit Insert's website at [www.insertt.com](http://www.insertt.com).

## About IT-101

IT-101 is a combination of its patented polymer technology, Cycloset(TM), and the anti-cancer compound camptothecin. Insert's proprietary Cycloset delivery system is based on small cyclic repeating molecules of glucose called cyclodextrins. Using modified cyclodextrins as building blocks, Insert has developed an entirely new proprietary class of materials called linear cyclodextrin-containing polymers. To the company's knowledge, Cycloset is the first nanoparticulate drug delivery platform to be designed de novo and synthesized specifically to overcome limitations in existing delivery technologies used for the systemic delivery of therapeutics. The polymers were invented at Caltech in the lab of Dr. Mark Davis, a professor in Chemical Engineering and founder of Insert, and licensed exclusively to Insert.

Cyclosert polymers have been synthesized over a broad range of molecular weights providing tunable properties for systemic drug delivery that improve localization of active drug at the target tissue. This feature of the Cyclosert technology provides great flexibility for overcoming multiple hurdles encountered in formulation and delivery.

Discovered in the 1960s, camptothecin is a naturally occurring, water-insoluble alkaloid that has established potent activity against a broad spectrum of cancer types. Although analogues of camptothecin (e.g., irinotecan and topotecan) continue to realize nearly \$1 billion in worldwide sales annually, camptothecin itself has not been commercialized due to its poor solubility and unfavorable pharmacokinetics. In numerous animal studies conducted by Insect, treatment with IT-101 result in protracted anti-tumor activities that are substantially more effective than irinotecan or camptothecin administered alone.

About Insect Therapeutics, Inc.

Insect Therapeutics, Inc., a majority-owned subsidiary of Arrowhead Research Corporation (NASDAQ:ARWR), is using its proprietary, nano-engineered, polymeric delivery system, Cyclosert(TM), to design, develop and commercialize drug-delivery-enhanced small-molecule therapeutics and nucleic acids. Cyclosert uses cyclodextrins as building blocks to create an entirely new class of biocompatible materials -- linear cyclodextrin-containing polymers that are nontoxic and nonimmunogenic at therapeutic doses. The company is pursuing this goal through its internal research and development, and also through collaborations and partnerships with pharmaceutical and biotechnology companies.

About Arrowhead Research Corporation

Arrowhead Research Corporation ([www.arrowheadresearch.com](http://www.arrowheadresearch.com)) is a diversified nanotechnology company structured to commercialize products expected to have revolutionary impacts on a variety of industries, including materials, electronics, life sciences, and energy.

There are three strategic components to Arrowhead's business model:

- Outsourced R&D Program: Arrowhead identifies patented or patent-pending technologies at universities or government labs and funds additional development of those technologies in exchange for exclusive rights to commercialize the resulting prototypes. Leveraging the resources and infrastructure of these institutions provides Arrowhead with a cost-effective development pipeline. Currently, Arrowhead is supporting efforts in drug discovery tools, stem cell technology and nanoelectronics at the California Institute of Technology, Stanford University and Duke University, respectively.
- Commercialization Program: After prototypes have been sufficiently developed in the laboratories, Arrowhead forms or acquires majority-owned subsidiaries to commercialize the technology and provides the subsidiaries with strategic,

managerial and operational support. By doing so, each research team is able to maintain focus on its specific technology and each management team can focus on specific markets, increasing the likelihood of successful technological development and commercialization. At present, Arrowhead owns majority interest in subsidiaries commercializing diverse technologies, including anti-cancer drugs, RNAi therapeutics, compound semiconductor materials and nanotube technology.

- The Patent Toolbox: Arrowhead has acquired or exclusively licensed patents and patent applications covering a broad range of nanotechnology. The Company actively adds to its intellectual property portfolio.

#### Safe Harbor Statement under the Private Securities Litigation Reform Act of 1995:

This news release contains forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. These statements are based upon our current expectations and speak only as of the date hereof. Our actual results may differ materially and adversely from those expressed in any forward-looking statements as a result of various factors and uncertainties, including the recent economic slowdown affecting technology companies, the future success of our scientific studies, our ability to successfully develop products, rapid technological change in our markets, changes in demand for our future products, legislative, regulatory and competitive developments and general economic conditions. Our Annual Report on Form 10-K and 10-K/A, recent and forthcoming Quarterly Reports on Form 10-Q and 10-Q/A, recent Current Reports on Forms 8-K and 8-K/A, our Registration Statements on Form S-3, and other SEC filings discuss some of the important risk factors that may affect our business, results of operations and financial condition. We undertake no obligation to revise or update publicly any forward-looking statements for any reason.

Source: Arrowhead Research Corporation

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