

Agios and Whitehead Institute Collaborate on Nature Publication Revealing Altered Metabolic Pathway in Breast Cancer

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Further Validates the Power of Agios's Cancer Metabolism Research Capabilities

Cambridge, Mass. – July 14, 2011 – Agios Pharmaceuticals, the leading biopharmaceutical company focused on discovering and developing novel drugs in the rapidly emerging field of cancer metabolism, announced today a publication in the journal *Nature* that identifies dysregulated activity of the serine pathway as a novel metabolic target in certain breast cancers. The publication also demonstrates a powerful method to identify new and important metabolic targets in cancer. Taken together, this research provides important new validation for the emerging field of cancer metabolism.

The publication arises from collaborative work conducted between Agios scientists and the laboratory of David Sabatini M.D., Ph.D. (a member of Agios' scientific advisory board) at the Whitehead Institute and Massachusetts Institute of Technology. Agios applied its unique metabolomics capabilities to build on the novel functional genomic screening techniques developed at the Whitehead Institute in order to create fundamental insights into the role of the serine pathway in breast cancer.

"We are very excited by this important collaboration with Dr. Sabatini which once again demonstrates that alterations in metabolic pathways are a central recurring feature of cancer," said David Schenkein, M.D., chief executive officer of Agios. "This publication provides a window into the Agios approach to cancer metabolism research showing how our metabolic platform capabilities can fundamentally enable breakthrough scientific insights. Agios was founded to investigate metabolic pathways as a potentially rich source of unexploited cancer targets which are so desperately needed in the search for new therapies that can transform patients' lives."

The research published today online in *Nature* reports a high-throughput *in vivo* screen of more than 133 potential metabolic targets in breast cancer cells at the Whitehead Institute; the screen identified several metabolic enzymes for further follow-up, including a key regulatory enzyme in the serine biosynthesis pathway. Subsequent metabolomics and metabolic flux analysis by Agios and Whitehead Institute scientists provided evidence of the mechanism whereby the serine synthesis pathway supports malignant cell growth in estrogen-negative breast cancer. PHGDH, a key enzyme in this pathway, is amplified in many cancers, and this amplification may play a role in identifying patients who are likely candidates for therapies that target this enzyme. The paper, titled "*Functional genomics reveal that the serine synthesis pathway is essential in breast cancer*" is available today in the advanced online publication of *Nature* at <http://www.nature.com/nature/journal/vnfv/ncurrent/full/nature10350.html>.

"We are thrilled to have identified a new potential metabolic pathway for breast cancer," said Dr. Sabatini, senior author of the study. "This research strongly suggests a central role for metabolic pathways in driving the growth of certain breast cancer cells. The serine pathway, and in particular the enzyme PHGDH, present a promising area for further study in the search for new therapeutic targets in cancer."

About Cancer Metabolism

Cancer metabolism is a new and exciting field of biology that provides a novel approach to treating cancer. Cancer cell metabolism is marked by profound changes in nutrient requirements and usage to ensure cell proliferation and survival. Research in the field has demonstrated that cancer cells become addicted to certain fuel sources and metabolic pathways. In cancer, this metabolic reprogramming is coordinated with proliferative signaling and regulated by the same oncogenes and tumor suppressor genes to ensure efficient proliferation. Glycolysis (sugar metabolism), fatty acid metabolism and autophagy (self metabolism) are three pathways shown to play a critical role in cancer metabolism. Identifying and disrupting certain enzymes in these, and perhaps other, metabolic pathways provides a powerful intervention point for discovery and development of cancer therapeutics.

About Agios Pharmaceuticals

Agios Pharmaceuticals is the first biopharmaceutical company dedicated to the discovery and development of novel therapeutics in the emerging field of cancer metabolism. To support and drive these efforts, Agios has built a robust platform integrating cancer biology, metabolomics, biochemistry and informatics to enable target and biomarker identification. Agios' capabilities to interrogate differential cellular metabolism of diseased cells relative to normal cells may also be applicable to other therapeutics

areas including autoimmune, inflammatory and neurological diseases. The company's founders represent the core thought leaders in the field of cancer metabolism, responsible for key advances, insights and discoveries in the field. Agios Pharmaceuticals is located in Cambridge, Massachusetts. For more information, please visit the company's website at www.agios.com.