

## **A Study Of Environmental Compounds Reveals Links Between Gene Regulatory Pathways And Pathways Leading To Toxicity And Disease**

**RESEARCH TRIANGLE PARK, N.C., Feb. 16** -- Attagene Inc., a leader in developing innovative technologies for analyzing gene regulatory pathways, announced today the online publication of a paper in *Chemical Research in Toxicology*, a journal of the American Chemical Society, that highlights results of their collaborative work with the Environmental Protection Agency's National Center for Computational Toxicology (NCCT). The study, titled "Impact of Environmental Chemicals on Key Transcription Regulators and Correlation to Toxicity End Points within EPA's ToxCast Program," was authored by Dr. Matthew T. Martin of the NCCT that, together with the Attagene team and colleagues from University of North Carolina at Chapel Hill, describes a survey of gene regulatory pathways underlying the toxicity of environmental compounds using Attagene's proprietary FACTORIAL™ technology platform.

A major challenge facing today's toxicologists is the development of cost-effective test systems that can predict the toxicity of compounds in vitro, thus minimizing time consuming and expensive animal testing. To achieve this goal, the Environmental Protection Agency's ToxCast™ Program evaluates a broad based battery of screens. Attagene is contributing to the ToxCast program with two cell-based high-content assays: cis-FACTORIAL™, enabling profiling the effects of compounds on the activities of over 40 transcription factor families, and trans-FACTORIAL™, which enables profiling of compounds' impact on 25 human nuclear receptors.

"Toxicity pathways are at the heart of the new evolving paradigm in toxicology," says Dr. Alex Medvedev, Director of Research at Attagene and leader of the team that performed the screening of the 309 environmentally-relevant ToxCast compounds. "But the identities of these pathways are largely unknown for the lack of appropriate investigative tools. This is why we believed that Attagene's FACTORIAL™ technology that allows the interrogation of many cellular pathways at once should be particularly useful for the goals of the ToxCast project."

Having analyzed the screening dataset, Martin et al. established a link between known toxic properties of the compounds with changes in activities of specific regulatory pathways. Importantly, they identified regulatory pathways whose activation strongly correlated with carcinogenic properties, developmental defects, and reproductive toxicity in live animals. The results indicate that application of FACTORIAL reveals important links between gene regulatory pathways and pathways leading to toxicity and disease.

"The FACTORIAL™ is a revolutionary, first-in-class, technology that offers an entirely new view at functioning of cellular regulatory networks and provides wealth of previously unattainable information," says Sergei Makarov, President and CEO of Attagene and co-inventor of the FACTORIAL™. "Publishing our data and their independent analysis by our EPA and UNC collaborators is an important step in validating this groundbreaking technology."

### About Attagene

Attagene Inc. is biotechnological company located in the Research Triangle Park, North Carolina. The company has developed groundbreaking technology called FACTORIAL™ enabling quantitative assessments of activities of multiple transcription factors and nuclear receptors in a single-well format. Attagene is leveraging the predictive power of the FACTORIAL™ to provide data at the earliest stages of drug discovery and beyond, helping to streamline decision-making at key steps of the R&D process. Attagene provides evaluation of drug candidates and environmental compounds by assessing their impacts on multiple gene

regulatory pathways and human nuclear receptors in a variety of cell systems ranging from cell lines to intact organs of live animals.

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