

WAYNE STATE UNIVERSITY

news release

Date: September 14, 2007
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Wayne State professor recognized in top scientific journal for new approach in systems biology

DETROIT—Dr. Sorin Draghici, associate professor in the Department of Computer Science at Wayne State University, has another feather to add to his researcher's cap. Last week, Draghici's paper "A systems biology approach for pathway level analysis," which demonstrates a new method of analyzing pathways of gene expression, was published in the internationally reputed *Genome Research* scientific journal. Currently ranked in the top 1.6 percent of the 6,164 technical scientific journals tracked by the Institute for Scientific Research (ISI), *Genome Research* has an impact factor above ten—a high proxy indicating its importance to its field. With publications such as this, Draghici, already having amassed almost \$16 million in various grants as principal and co-principal investigator, and having a best-selling book in the field of bioinformatics, is finding a great deal of support for this breakthrough innovation.

"Any peer-reviewed journal filters their content through a panel of experts highly qualified in that particular scientific area," said Draghici, who's also the Scientific Director of the Bioinformatics Core at Karmanos Cancer Institute. "Prestigious journals with a very high impact factor such as *Genome Research*, have a very stringent editorial review process. The editors select only the papers that—in their opinion—can really have a significant impact in that research field. So, I'm obviously excited and honored for our work to be published in this journal."

Draghici's paper, a collaboration with world-renowned researchers from the National Institutes of Health's Perinatology Research Branch lead by Dr. Roberto Romero, describes his new analysis method and compares its results with the classical analysis approaches currently used. This novel analysis method can identify the

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(2) Draghici

significantly impacted gene regulatory pathways in a given condition, such as lung cancer. Where classical methods fall short - as demonstrated in Draghici's paper - is neglecting to take into consideration the roles the genes play in each pathway. In consequence, the classical methods can produce both false-positives — pathways that are reported as being relevant when in reality they are not — as well as false- negatives — relevant pathways that are not identified. These methods rely too heavily on the number of differentially regulated genes that fall on each pathway rather than taking into consideration where each gene is positioned and what each gene does. Draghici's method pays close attention to these aspects and can potentially identify regulatory pathways that can open the way to new therapeutic interventions in a large variety of conditions ranging from cancer, to pre-term labor and obesity.

Draghici's research in this area has produced a set of tools (Onto-Tools), which has been made available as a service to the community for the past five years. These tools were the first of their kind, and more than 5,000 valid registered users from over 50 countries currently use them. The Onto-Tools are available free of charge at <http://vortex.cs.wayne.edu>. There are currently ten tools available, including Pathway-Express, the most recent tool described in Draghici's recently recognized paper.

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Wayne State University is one of the nation's pre-eminent public research universities in an urban setting. Through its multidisciplinary approach to research and education, and its ongoing collaboration with government, industry and other institutions, the university seeks to enhance economic growth and improve the quality of life in the city of Detroit, state of Michigan and throughout the world.