

NEWS

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Genomas Awarded \$1.4 Million NIH SBIR Grant to Develop MRI+DNA Guided Biomarker System for Mental Illness

Pioneering Product Integrates Brain Imaging and Physiogenomics for Clinical Neuroscience and Personalized Psychiatry

HARTFORD, CT – Genomas®, a biomedical company advancing DNA-Guided medicine, today announced the award of a 3-year Phase II Small Business Innovation Research (SBIR) Grant totaling \$1.4 Million. The grant, entitled *MRI DNA Biomarkers for Neuropsychiatric Disease*, was awarded by the National Institute of Mental Health¹ as part of its program on *Development of Biomarkers for Mental Health Research and Clinical Utilities*.

Phenomenology-based diagnostic systems in psychiatry have serious limitations resulting in disease classifications that are heterogeneous, lack clear boundaries, and match biological constructs poorly. Diagnostic imprecision is particularly evident with respect to mood and thought disorders where there is extensive overlap on many dimensions, including symptoms, neurophysiology, cognition, and pharmacotherapy. New biomarkers for classifying these diseases could advance psychiatry with applications ranging from personalized prescription of existing psychotropics to development of novel drugs for treatment of mental illness.

Endophenotypes are known subclinical biological deficits, including those in brain anatomy or function. These vulnerability phenotypes are more strongly associated to genes than clinical syndromes. Functional magnetic resonance imaging (fMRI) of the brain is a versatile technique for measuring important psychiatric endophenotypes. Physiogenomics is a technology platform that analyzes DNA variation within a patient population and compares these differences to physiological characteristics or reactions. This Program will utilize fMRI endophenotypes for association screening with physiogenomics to identify MRI DNA markers relevant to the diagnosis and treatment of thought and mood disorders.

In announcing the award, Gualberto Rúaño, M.D., Ph.D., President/CEO of Genomas and Director of Genetics Research at Hartford Hospital commented: “The interface of fMRI and physiogenomics provides a powerful platform for DNA Guided Medicine in mental health. We believe this program will add new efficacy and drug selection components to our existing and future DNA-guided systems for personalized prescription of antidepressants and antipsychotics. It will open significant new venues for interdisciplinary translational research and commercial strategic partnering in clinical neuroscience.”

“By integrating complex neurophysiological reactions to fMRI and genomics, we can translate the variability observed in clinical practice into fundamental mechanistic discoveries. Our ongoing research in clinical neuroscience addresses a high impact medical need in mental health and will be significantly advanced with this major SBIR award”, commented Godfrey Pearlson M.D., Director of the Olin Neuropsychiatry Research Center at the Institute of Living and Professor at the Department of Psychiatry of Yale University School of Medicine.

This Phase II program enhances the physiogenomics technology of Genomas with the leading fMRI research of Dr. Pearlson and the advanced neuro-informatics capabilities of Vince Calhoun Ph.D., at the Mind Research Network and the University of New Mexico. The research leading to this award has been published* by this collaborative group in the renowned journals *Human Brain Mapping* and *Annals of Biomedical Engineering* in 2008 and 2009. Drs. Pearlson and Calhoun were co-authors of the publications and are co-investigators in the grant.

Harold I. Schwartz, M.D., Psychiatrist-in-Chief and Vice President, Behavioral Health, Institute of Living at Hartford Hospital observed: "Functional MRI screening has rapidly become the most promising tool on psychiatry's nosological horizon. The capacity to associate the functional imaging patterns among patients to their own genome establishes the cornerstone for personalized medicine. Combining imaging and genomics at IOL is leading the way to the future of psychiatric diagnosis and therapy."

To date, Genomas has secured \$4.8 Million of NIH SBIR funding for PhyzioType™ product development. These programs have been anchored by the pioneering partnership the company established in 2004 with Hartford Hospital for translating DNA-guided medicine into clinical practice and patient care. PhyzioType™ Systems are composed of an ensemble of inherited DNA polymorphisms genotyped by arrays and interpreted by a bioclinical algorithm in order to convey to physicians predicted comparisons of efficacy and side effect risk among drugs for the individual patient. They are currently available for DNA-Guided Medicine in the prescription of antidepressants and in advanced development for antipsychotic, lipid-lowering, and hypoglycemic drugs.

ABOUT GENOMAS

Genomas is a biomedical company advancing DNA-Guided Medicine and personalized healthcare. The company develops revolutionary *PhyzioType™* Systems for DNA-guided management and prescription of drugs used to treat heart disease, mental illness, and diabetes. PhyzioType Systems are designed to provide physicians with an unprecedented capability to select for each patient the safest and most effective drug treatment to achieve treatment goals and enhance patient compliance. The company's clinical pharmacogenetic tests and consultation service are provided through its Laboratory of Personalized Health (LPH), an accredited and licensed high-complexity molecular diagnostic center. Genomas is located on the campus of Hartford Hospital. Please visit www.genomas.com for more information.

ABOUT THE INSTITUTE OF LIVING AT HARTFORD HOSPITAL

Founded in 1822, The Institute of Living (IOL) was one of the first mental health centers in the United States, and the first hospital of any kind in Connecticut. Today, as part of Hartford Hospital, it is one of America's leading centers for comprehensive patient care, research and education in the fields of behavioral, psychiatric, and addiction disorders. As a research center, IOL conducts clinical trials of investigational new drugs and is a leader in outcome studies. In 2009, and for the third consecutive year, *U.S. News & World Report* named The Institute of Living among the nation's top psychiatric facilities, ranking at number 19. For more information please access www.instituteofliving.org

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* **PUBLICATIONS** – The articles can be accessed at www.genomas.com in the [Publications](#) section.

- Liu J, Pearlson G, Windemuth A, Ruaño G, Perrone-Bizzozero NI, Calhoun V. Combining fMRI and SNP Data to Investigate Connections Between Brain Function and Genetics Using Parallel ICA. *Human Brain Mapping*, 30: 241-255, 2009
- Windemuth A, Calhoun V, Pearlson G, Kocherla M, Jaganathan K, Ruaño G. Physiogenomic Analysis of Localized fMRI Brain Activity in Schizophrenia. *Annals of Biomedical Engineering*, 36 (6): 877-88, 2008

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