

Northwestern Research Newsletter

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Falk Center Acts as New Model for Treating Brain Disorders

With one foot in McCormick and another foot inside the entrepreneurial world, it seems rather fitting that the Falk Center for Molecular Therapeutics is located just off-campus inside the ITEC Building on the corner of Maple Ave. and Clark St. on the Evanston campus. The Center is close enough to the University to take advantage of all of the resources that an academic community has to offer, while staying relatively independent.

"I didn't just want to be an entrepreneur with the main goal of getting rich. And I didn't just want to be a professor because I didn't think I'd be able to make a product that way," says Joseph R. Moskal, professor of biomedical engineering and director of the Falk Center. "I wanted to create a new 'hybrid' model of a translational research institute."

Moskal brought an already well-established, stand-alone institute to Northwestern nearly six years ago. Now the University acts as an administrative umbrella, while allowing Moskal to continue to seek outside support from the private sector and funding that is not available for non-profits. Accompanying Moskal and his Center were his research team and intellectual property.

With Northwestern's new alliance with Baxter Healthcare Corporation, Moskal's group hopes to receive funding to help his drug-discoveries for brain disorders enter human clinical trials.

"Support from Baxter would go a long way as proof of concept that this new Center model does work," Moskal says.

He has completed the research and development for a novel class of learning and memory enhancers for treating Alzheimer's patients and continues research and development for two other projects: a new approach for creating novel antidepressants based on resilience to depression models and a novel, gene-based therapeutic for the treatment of brain tumors. All three programs are the result of a molecular therapeutic approach, which involves investigating the changes in gene expression in various model systems and validating them using both test tube and animal models.

For example, when examining brain cancer, instead of looking at the structure and trying to fix it, Moskal figured out what genes turned on the enzymes to cause the cells to mutate and invade. Then by altering the enzyme activities through gene manipulations, he found that the cells no longer became invasive.

Story continued on the next page >>



Joseph Moskal stands in his laboratory at the Falk Center for Molecular Therapeutics, next to an oligonucleotide synthesizer, which is used to create probes for measuring messenger RNA expression in cells and tissues.

Photograph by Amanda Morris

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"I have a background in developmental neurobiology, which means examining normal brain behavior," says Moskal. "So, to me, cancer is development gone awry."

After working on these projects for the past 30 years, Moskal is excited to have reached the cusp where these treatments have been successful in animal testing and are moving to the next level. His tool for improving learning and memory has recently received Investigational New Drug approval by the FDA.

"The memory enhancers will be useful for delaying memory loss due to Alzheimer's disease and may even have real interesting importance in schizophrenia as well," he says.

It is this practical approach to research that Moskal values the most -- creating therapeutics with real potential to treat devastating diseases.

"Our Center is aimed at something practical," he says. "My favorite scientist is Thomas Edison, not Albert Einstein. I'd like to make a 'lightbulb' rather than develop a new theory. I am perspiration oriented, not inspiration oriented."

Moskal intends that if the funds arrive from patenting and marketing his drug discoveries, then they will cycle back into the Falk Center to finance research for even more novel therapies.

For more information about molecular therapeutics and the Falk Center, please visit <http://falk.mccormick.northwestern>.

Honors Corner

Kimberly A. Gray, civil and environmental engineering, has been named one of **Sigma Xi's distinguished lecturers** for 2009-10.

Chad A. Mirkin, chemistry and biomedical engineering, was elected a member of the **National Academy of Engineering**.

Dale T. Mortensen, economics, was one of three economists chosen as **distinguished fellows** of the American Economics Association in 2008.

Jennifer Richeson, psychology and Center for Technology and Social Behavior, is the 2009 recipient of the American Psychological Association **Distinguished Scientific Award for Early Career Contribution**.

Nitasha Sharma, African American Studies and Asian American Studies, was named one of 2009's **"emerging scholars"** by *Diverse Education* magazine.

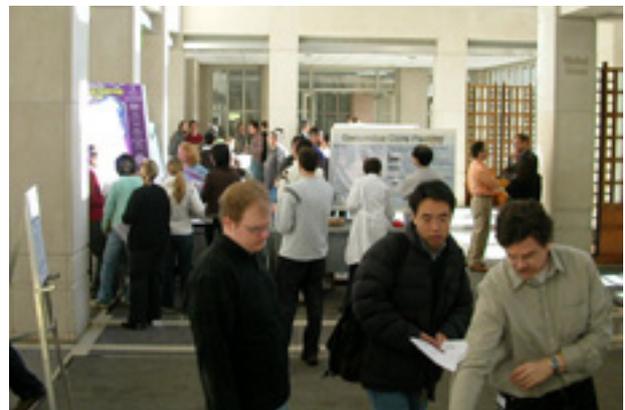
Cynthia Thompson, communication sciences and disorders and neurology, received the **2008 Editor's Award** from the *American Journal of Speech-Language Pathology*.

Nature: Shea, Woodruff Have Top Paper



Nature Medicine polled 40 experts to ask which papers have provided the most interesting advances in reproduction research over the past three or four years. A 2006 publication by **Institute for Bionanotechnology in Medicine (IBNAM)** members Lonnie Shea, chemical and biological engineering, and Teresa Woodruff, obstetrics and gynecology, along with their colleagues Min Xu and Pamela Kreeger, received top honors. This work grew out of a 2001-02 IBNAM Incubator Award for the project "*In Vitro* Maturation of Primary Ovarian Follicles." The full *Nature Medicine* article can be found [here](#).
Photograph by Sam Levitan

Doors Open at Core Facilities



Graduate students, post-docs, and research faculty visited presentation booths at the First Annual Research Facilities Fair held Wednesday, Jan. 28, on the Chicago campus. "The goal is to give visibility to the various shared facilities at Northwestern, so people will know what's available and how to take advantage of them," says Philip E. Hockberger, director of core facilities. Twenty cores were on display and offered various information as well as ways for attendees to sign up for facility open houses.

A similar fair showcasing Evanston's core facilities will take place Tuesday, March 24 from 10 a.m. to noon in the second floor lobby of the Pancoe Life Sciences Building. Open houses will follow from noon to 3 p.m. For more information, please visit the [Core Facilities web site](#). *Photograph courtesy of Philip E. Hockberger*