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IU research finds memory, thought-process training are promising breast cancer symptom management options

A new Indiana University study is the first of its kind to show it may be possible to improve memory and thought process speed among breast cancer survivors.

Diane M. Von Ah, PhD, RN, assistant professor at the IU School of Nursing and a researcher at the IU Simon Cancer Center, and colleagues studied two different treatment options for breast cancer survivors because they often report problems with memory or feelings of mental slowness, which can lead to depression, anxiety, fatigue and an overall poorer quality of life. These symptoms can be severe and may persist after cancer treatment ends. To date, there have been very few treatment options available for patients to deal with these problems. The IU researchers compared no treatment to two different training programs.



Von Ah

The results, recently published in the journal *Breast Cancer Research and Treatment*, showed that a memory training program improved memory performance, while a program called Insight, developed by Posit Science, improved both memory performance and the ability and speed in which the survivors processed information.

Memory training, for example, involved teaching participants strategies for remembering word lists, sequences, and text material.

Insight is a computer program in which study participants followed a series of progressively more difficult information tasks such as instruction following and time-order judgment to measure speed of processing.

“These results are encouraging in that both training programs led to positive improvements for breast cancer survivors. The results suggest that the Insight program may have a greater impact on these women,” Dr. Von Ah said. “Even though this was the largest cognitive training study in breast cancer survivors, we need to confirm our findings in a larger study.”

The study included 82 breast cancer survivors who reported concerns about their cognitive function, such as poor memory and mental slowness. All of the women had undergone chemotherapy. Each woman completed cognitive assessments prior to, immediately after, and two months after training.

The study was supported by the Robert Wood Johnson Foundation Nurse Faculty Scholar Program, an American Cancer Society Institutional Research Grant, the IU School of Nursing Center for Enhancing Quality of Life in Chronic Illness, and the Mary Margaret Walther Program of the Walther Cancer Institute.

Co-authors included the following IU Simon Cancer Center researchers: **Janet S. Carpenter**, PhD, RN, and **Michael Weaver**, PhD, RN, both of the IU School of

Nursing; **Andrew Saykin**, PsyD, **Patrick Monahan**, PhD, **Bryan Schneider**, MD, **Fred Unverzagt**, PhD, and **Jingwei Wu**, MS, of the IU School of Medicine; Menggang Yu, PhD, of the University of Wisconsin; George Rebok, PhD, of Johns Hopkins University; and Karlene Ball, PhD, of the University of Alabama at Birmingham.

The Posit Science exercises are available at www.BrainHQ.com.



iuscc research news

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Drs. Miller, Nakshatri named co-program leaders of breast cancer research program

Kathy Miller, MD, and **Harikrishna Nakshatri, BVSc, PhD**, have been named co-leaders of the [breast cancer research program](#) at the IU Simon Cancer Center.

[Dr. Miller](#) has an established track record of designing and leading breast cancer clinical trials. Currently, she's leading a clinical trial to reduce breast cancer recurrence in women with recently diagnosed breast cancer. The nationwide study will determine if anti-angiogenic treatment, in combination with standard breast cancer drugs, will reduce recurrence of the disease, particularly among high-risk women with early-stage disease. This treatment prevents new blood vessels from forming to nourish cancer cells.

Dr. Miller also recently launched a trial to evaluate the impact of breast cancer therapies on patients' energy expenditure and muscle function. Data from this study will guide interventions to improve the lives of breast cancer patients after diagnosis.



Miller

In 2007, she received the Young Investigator Award from the Eastern Cooperative Oncology Group (ECOG) for substantial scientific contributions. ECOG is a research network whose large-scale cancer treatment clinical trials for major diseases have changed the standard of care for adult cancer patients and helped to individualize their therapy.

Dr. Miller succeeds **George Sledge, MD**, who was a co-leader of the program.

First named interim co-leader of the program in 2011, [Dr. Nakshatri](#) isolates and studies breast cancer stem cells as potential targets for treatment. His research focuses on the theory that the stem cell is within the tumor mass but most likely escapes treatment because of its enhanced ability to survive.

Dr. Nakshatri also is working to determine if the type of stem cell present in a tumor predetermines where the cancer will metastasize (spread). If this theory is proven, physicians could predict, at the time of initial surgery, the chances of metastasis to the bone, the lungs or the brain. The goal of this research is to design treatments to prevent growth of cancer cells in those organs.



Nakshatri

Dr. Nakshatri and his colleagues also study why certain breast cancers do not respond to commonly used anti-estrogen therapies.



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Core spotlight

The Angiogenesis, Endothelial and Pro-Angiogenic Cell Core (AEPCC) conducts validated and highly reproducible *in vitro* and *in vivo* angiogenesis, endothelial, hematopoietic and polychromatic flow cytometry assays. These assays function as experimental platforms for understanding the basic mechanisms of angiogenesis, endothelial and hematopoietic cell biology and discovering compounds that inhibit new blood vessel formation in tumor microenvironments.

The specific duties of the AEPCC are:

- Provide consultation and guidance for the design and analysis of experiments to define cell subsets that participate in angiogenesis (biomarkers for a variety of human diseases).
- Prepare research and human clinical blood samples for analysis in the [Flow Cytometry Facility](#) and conduct detailed cell surface analysis using FlowJo software in AEPCC.

Angiogenesis, Endothelial and Pro-Angiogenic Cell Core

The core director is **Jamie Case**, PhD; Julie Mund, MS, is the core manager.

The core is located in Walther Hall, C343.

Questions? Call 278-7232

You can find all of the IU Simon Cancer Center cores [here](#).

- Perform *in vitro* and *in vivo* assays for angiogenesis.
- Perform *in vitro* clonal assays of hematopoietic progenitor cell function.
- Perform *in vivo* assays of hematopoietic stem cell function (in the context of ECFC vessel formation) in collaboration with the [In Vivo Therapeutics](#) core.
- Instruct interested investigators in the methods of hematopoietic stem and progenitor cell analysis and in a variety of angiogenesis assays.

- Develop new methods for detecting pro-angiogenic cells (but non-vessel forming) and angiogenic cells (vessel-forming) from patient blood and tissue samples.



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News briefs

IUSCC's Cancer Center Support Grant due in fall 2013

In September 2013, the IU Simon Cancer Center's National Cancer Institute Cancer Center Support Grant (CCSG) will be due.

Consequently, the cancer center's executive committee and research program leaders are currently undertaking a critical review of the program and its membership, as well as finalizing program themes, goals, and aims.



A Cancer Center Designated by the National Cancer Institute

All members are encouraged to assist their program leaders as they begin working on their respective narratives.

The program leaders will need assistance from their members on compiling research highlights for those narratives. Program leaders are also planning retreats and participation among members is important.

The CCSG is an important source of funding for the cancer center's [shared facilities](#). This support, along with IU Simon Cancer Center funding, assures that cancer center members have access to the highest quality technology for their research.

For a current overview of the cancer center, [watch](#) the "State of the Cancer Center" presentation that Patrick Loehrer, MD, director of the IU Simon Cancer Center, delivered on Sept. 6.

IU Simon Cancer Center unveils portrait of founding director

The IU Simon Cancer Center unveiled a memorial portrait of its founding director during a ceremony on Sept. 13.

Family and colleagues of the late Stephen D. Williams, MD – who served as the cancer center's inaugural director from 1992 until his death in 2009 -- gathered for the unveiling.

Dr. Williams tirelessly led efforts for the establishment of a cancer center. In 1992, the National Cancer Institute awarded a planning grant to the IU School of Medicine for a cancer center, thus, the Indiana University Cancer Center was formed under the direction of Dr. Williams.

In 1999, the IU Cancer Center earned its first

NCI designation. The cancer center – now the Indiana University Melvin and Bren Simon Cancer Center – has held that designation ever since, making it Indiana's only NCI-designated cancer center that provides patient care and one of only 67 NCI-designated cancer centers in the United States.

As a physician-scientist, Dr. Williams left his mark on the world. He earned

national recognition for his role in investigating the successful use of chemotherapy in the treatment of ovarian and testicular germ cell tumors. Because of that, thousands of men and women are alive today because of his contributions. He was consistently ranked among cancer care specialists in *America's Top Doctors for Cancer*, while during his tenure, the cancer center was consistently ranked among the top clinical programs in the country by *U.S. News & World Report*.

Indianapolis artist and Herron School of Art and Design graduate Rob Day was commissioned to paint the portrait of Dr. Williams.

The portrait will soon hang in the lobby of the cancer center's patient care building, the IU Health Simon Cancer Center, 1030 W. Michigan St.

Dr. Abonour completes 8th Miles for Myeloma

Rafat Abonour, MD, completed this year's ambitious Miles for Myeloma with a finish-line celebration on campus Sept. 29. This year's cycling tour began in the Cincinnati area before ending more than 200 miles later in Indianapolis. In its eight years, Dr. Abonour has covered at least 1,500 miles while raising \$2 million for myeloma research at the IU Simon Cancer Center.

New proposal writer/editor

Deborah MacDougall has been named the cancer center's proposal writer/editor. MacDougall begins Oct. 3 and will be located in R3-C528B. Her primary responsibility will be to work with principal investigators and project managers to assist in the writing of large multidisciplinary grant proposals.

BCOG conference is Nov. 8-9

Mark your calendars for this year's BCOG Annual Fall Conference on "Team Science." Held Nov. 8-9 at the JW Marriott, the conference is sponsored by the Behavioral Cooperative Oncology Group (BCOG), a consortium of four universities:



Indiana University, Michigan State, University of Michigan, and The Ohio State University. Co-sponsors are the Walther Cancer Foundation, IU Simon Cancer Center, Indiana Clinical and Translational Sciences Institute, and the Office of the Vice Chancellor for Research at IUPUI. Kara Hall, PhD, program director at the National Cancer Institute, will deliver the keynote address. Register online: <http://www.eventbrite.com/event/4219336148>.

Cancer center members in the news

- **Theresa Guise**, MD, received the Paula Stern Achievement Award from the American Society for Bone and Mineral Research (ASBMR) during its annual meeting Oct. 12-15 in Minneapolis. The award recognizes a woman in the bone field who has made significant scientific achievements and who has promoted the professional development/advancement of women in the field.
- **Daniela Matei**, MD, and colleagues wrote "ENMD-2076, an Oral Inhibitor of Angiogenic and Proliferation Kinases, Has Activity in Recurrent, Platinum Resistant Ovarian Cancer," which was published in the *European Journal of Cancer*.
- A study by **Zhong-Yin Zhang**, PhD, and colleagues is the first to provide evidence of an essential function for PRL2 and offers a biochemical basis for PRLs as oncoproteins to repress PTEN expression. The study appeared in the *Journal of Biological Chemistry*.



Guise

New members

[Reginald Hill](#), PhD

University of Notre Dame

Associate member, Tumor Microenvironment and Metastases

[Janaiah Kota](#), PhD

Department of Medical and Molecular Genetics

Associate member, Experimental and Developmental Therapeutics

[Jenifer Proseri](#), PhD

Department of Biochemistry and Molecular Biology

IU School of Medicine-South Bend

Associate member, Breast Cancer

[Chandru Sundaram](#), MD

Department of Urology

Affiliate member