



*Located at the heart of the North Carolina Research Campus (NCRC), David H. Murdock Research Institute (DHMRI) bridges the research gap between academics and industry by providing research solutions in a customer-based, yet collaborative environment. DHMRI is a public-private partnership that supports research collaborations both on the NCRC as well as across the globe. The Institute leverages state-of-the-art research technologies to provide robust yet integrated solutions to researchers in the life sciences and beyond.*

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— LATEST NEWS & EVENTS —

### *DHMRI Wins Contract with Government Partner*

On September 27, 2011, David H. Murdock Research Institute (DHMRI) landed its first long-term project commitment with an off-campus government partner since opening its doors back in October 2008.

This project is contracted collaboration between DHMRI and the National Institute of Environmental Health Sciences (NIEHS), an organization directed toward preventing human illnesses and disability caused by environmental factors. DHMRI is working specifically with the National Toxicology Program (NTP), an interagency program within the NIEHS, to determine changes in cells and tissues in response to toxic chemicals. After the first year of research, the project award is then renewable for up to an additional two years.

The contract is the result of long-term discussions between DHMRI and NIEHS dating back to 2009. In August 2011, NIEHS released an RFQ for a project combining next-generation sequencing, bioinformatics, proteomics, and metabolomics, prompting DHMRI to submit a response in hopes of winning the contract. The result turned out favorable for DHMRI as the project is currently underway by the Institute.

The cross-laboratory project is a significant step for DHMRI, as it underscores the very mission of the Institute which is for a single study to combine components from genomics, analytical sciences, cellular sciences, and bioinformatics in order to provide solutions. This multidisciplinary, integrated approach allows the Institute and its newly formed governmental partner to conduct the highest quality research in a cohesive multifaceted environment. The collaboration opens the door to further discussions and projects with other NIEHS programs looking to utilize the same cross-laboratory research methods approach.



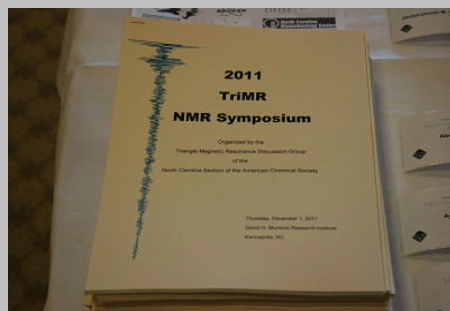
### *DHMRI Welcomes: Dr. Steven Maranz*

Steven Maranz, PhD, is the most recent scientist to bring his independent research project to DHMRI. Joining the Institute as a visiting scientist in September of 2011, Dr. Maranz has continued to conduct research for his *Pro-Vitamin A Biosynthesis by Gut Microbiota* project, expecting to remain for approximately a year. Dr. Maranz looks to reduce mortality rates that result from a lack of Vitamin A and other nutrients in infants and pregnant mothers within sub-Saharan Africa.

The project is based on the idea that probiotic bacteria can be bioengineered to synthesize the pro-vitamin A carotenes that are required for vitamin A to be produced in the human body. Since the bacteria involved are also used in yogurt cultures, yogurt can serve as an economical means for multiplying and delivering the enhanced microbes. The objective of the research is to bypass the bottleneck of poverty and poor diet by directly supplying the missing nutrients via gut microbes. "Vitamin A is essential not only for normal, healthy growth and development," states Dr. Maranz, "but also for priming the immune system against infectious diseases, which are also a major problem in developing countries."

Vitamin A deficiency leads to an impaired immune system which in turn causes infants and young children in sub-Saharan Africa to become susceptible to infectious disease, the most common of which is malaria. In addition, these same children run the risk of stunted physical and psychological growth and development. Studies show that ninety percent of children in this region receive inadequate amounts of vitamin A due to dry climate and poor soil conditions. As a result, the average dietary consumption consists of a single crop which lacks the sufficient nutritional value needed particularly for children under the age of five as well as pregnant women.

Dr. Maranz was recently awarded with a \$100,000 Grand Challenges Explorations Grant, a program initiated by the Bill and Melinda Gates Foundation. The grant is issued to a selected group of researchers throughout the world who are interested in creating an innovative solution to specific global health problems. The grant will allow Dr. Maranz to further explore long-term ways to combat vitamin A deficiency.



### *The 2011 TRIMR NMR Symposium*

The Triangle Magnetic Resonance (TRIMR) Discussion Group brought nearly fifty scientists to a conference held at the David H. Murdock Research Institute on Thursday, December 1, 2011.

The TRIMR Discussion Group of the NC American Chemical Society hosted the '2011 TRIMR NMR Symposium' where experts were invited to come speak about the advancements taking place in the area of nuclear magnetic resonance (NMR) spectroscopy.

The free, day-long event began with an introduction from the DHMRI NMR Project Leader, Dr. Kevin Knagge, on the background of the North Carolina Research Campus and the mission of the Institute. Following Dr. Knagge's introduction, the program continued with a series of eight speakers from various universities and organizations including the keynote speaker, Dr. Chad Rienstra, from the University of Illinois and session chair, Dr. Geoffrey Mueller, from the National Institute of Environmental Health Sciences. "The idea behind

the program," states Dr. Knagge "is to have guest lecturers discuss various applications involving the use of NMR technology in researching protein structures."

At the noon break, attendees were invited to tour the DHMRI facility, specifically taking time to visit the NMR laboratory amongst other areas in the Institute. This is the second year in a row that the TRIMR Organizing Committee has hosted this symposium at DHMRI and the group hopes to continue its annual conference in the future.



### *Budding Scientists: DHMRI Awards Science Fair Winner*

Cadence Olszewski, a second grader from the A.T. Allen Elementary School in Concord, North Carolina, received the 2011 science fair award for Outstanding Scientific Achievement on November 21, 2011.

DHMRI awarded Cadence with the certificate, after she received the honorary school plaque for her science project, "The Mystery of the Rotting Apple." The reward was based on the clarity and convictions that Cadence demonstrated in her project. Two researchers from DHMRI sat as judges on the science fair panel and congratulated the second grader on a job well done. One judge commented that Olszewski "demonstrated the true definition of 'simple logic' and an absolutely wonderful appreciation of the concepts of principle." The local event is just one of many that DHMRI looks forward to becoming part of in the future.

David H. Murdock Research Institute  
Contact: [News@dhmri.org](mailto:News@dhmri.org)  
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