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Center for Nanotechnology in Society
University of California, Santa Barbara

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WEEKLY CLIPS

March 10 – March 16, 2009



Posted: March 4, 2009

Nanomedicine researcher gets \$7 million for breast cancer research

(Nanowerk News) Mauro Ferrari, Ph.D., a nanomedicine scientist at The University of Texas Health Science Center at Houston and The University of Texas M. D. Anderson Cancer Center, has received a five-year, \$7 million Innovator Award from the U.S. Department of Defense (DoD) Breast Cancer Research Program to develop a targeted new delivery system for breast cancer drugs.

If this new approach proves successful, it could increase the efficiency of drug delivery by concentrating more drug at the site of a tumor. A more efficient drug delivery system has the potential to reduce side effects associated with these drugs.

In global competition, Ferrari was the sole recipient of the DoD Breast Cancer Innovator Award for his proposal submitted in 2008, making him the 17th recipient of this unique award in the last eight years. The Innovator Award is offered to support visionary individuals who have demonstrated creativity, innovative work and leadership in any field who will focus their talents on breast cancer.

"Dr. Ferrari is translating advances in nanotechnology into the prevention and treatment of human diseases; that is why we are here," said Larry Kaiser, M.D., president of the UT Health Science Center at Houston. "His work in the area of cancer is particularly promising and Dr.

Ferrari's leadership in this collaborative approach is significant."

Right now, when doctors inject a breast cancer drug, only a small percentage reaches malignant cells. The remaining drug circulates through blood vessels and can kill healthy, non-cancerous tissue. Side effects can include fatigue, hair loss and diarrhea.

With conventional chemotherapy, approximately one of every 100,000 drug molecules reaches its intended destination.

Ferrari's proposed solution to this problem is to package these drugs in miniaturized carriers engineered to search out, recognize and release their payload at the site of the tumor. These nanocarriers are about one hundredth the size of a strand of hair and their contents are measured in billionths of a meter (nanometer).

"Dr. Ferrari is developing new ways to deliver treatments to cancer cells without attacking normal tissue," said Capt. E. Melissa Kaime, M.D., director of the DoD Congressionally Directed Medical Research Programs, the funding agency. "Through the Innovator Award, Dr. Ferrari will have the funding and freedom to pursue these novel and visionary approaches toward eradicating breast cancer."

In 2008, an estimated 182,460 women in the United States were diagnosed with cancer breast and approximately 40,480 died.

<http://www.nanowerk.com/news/newsid=9495.php>



How To Destroy the World with Nanotechnology

By Aaron Rowe  March 10, 2009 | 6:35:28 PM Categories: [Chemistry](#), [Nanotechnology](#), [Video](#)

If you want to destroy the world, don't bother building a hydrogen bomb, just steal some self-replicating

nanobots and cover the Earth in a layer of all-consuming grey goo.

That's the moral of [a hilarious video](#), which appeared this morning on the *Mental Floss* website.

"It was created with cutting-edge motion capture technology (which is why it took so darn long), and it dramatizes one of my favorite chapters of the book: *How to Destroy Civilization with Nanotechnology*", says Ransom Riggs, who directed the dark cartoon.

His film may be a comedy, but it raises a serious question: Is anyone afraid of nanotechnology?

Several teams of social scientists are hard at work, [trying to answer that question](#), and movies like this could turn their world upside down.

Hat tip to Mark Frauenfelder at [BoingBoing](#), for throwing this gem into the spotlight.

<http://blog.wired.com/wiredscience/2009/03/evilnanotech.html>

AECOM Environment Collaborates with UC Santa Barbara on Sustainable Nanotechnology Initiative

AECOM Environment and the University of California at Santa Barbara (UCSB) are collaborating on the new Sustainable Nanotechnology Initiative (SNI) at UCSB's Bren School of Environmental Science and Management. AECOM Environment is the global environmental practice of AECOM, and a leader in environmental health and safety solutions.

Nanotechnology involves engineering at atomic-scale levels to create new materials, devices, and systems with unique properties and capabilities – the ability to manipulate matter roughly 1/100,000 the width of a human hair. While new nanotechnology-related products are brought to market daily and are impacting global industry and society, the environmental and human health risks are largely unknown. The goal of the SNI is to begin to understand the environmental risks associated with engineered nanomaterials.

AECOM's Environmental Toxicology Lab and risk assessment group will collaborate with UCSB to study nanomaterial fate and transport, assist in exposure assessment and risk quantification and modeling, develop outreach programs and related training materials for use by industry involved in handling nanomaterials, and conduct "real world" testing of methods and instrumentation for the detection and characterization of nanomaterials.

"New nanotechnology-related products are already impacting global industry and society, and the Bren School's SNI is critical to helping industry and the public understand the health and environmental implications of nanomaterials," said Robert Weber, AECOM Environment Group Chief Executive. "Our collaboration provides another platform to share expertise, and positions us to better assist our clients in addressing issues associated with some nanomaterials."

AECOM Environment is also working on nanotechnology projects for other public- and private-sector clients, including aquatic toxicity studies for a major commercial producer of carbon nanotubes which will help determine how wastewater discharge from the production of these materials affects aquatic species.

http://www.cemag.us/News_Articles.asp?pid=612



ScienceDaily (Mar. 10, 2009)

— Biomedical and materials engineers at the University of Michigan have developed a

nanotech coating for brain implants that helps the devices operate longer and could improve treatment for deafness, paralysis, blindness, epilepsy and Parkinson's disease.

Currently, brain implants can treat Parkinson's disease, depression and epilepsy. These and the next generation of the devices operate in one of two ways. Either they stimulate neurons with electrical impulses to override the brain's own signals, or they record what working neurons are transmitting to non-working parts of the brain and reroute that signal.

On-scalp and brain-surface electrodes are giving way to brain-penetrating microelectrodes that can communicate with individual neurons, offering hope for more precise control of signals.

In recent years, researchers at other institutions have demonstrated that these implanted microelectrodes can let a paralyzed person use thought to control a computer mouse and move a wheelchair. Michigan researchers' say their coating can most immediately improve this type of microelectrode.



FDA to speed nanomedical product creation

Published: March 10, 2009 at 2:43 PM

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WASHINGTON, March 10 (UPI) -- The U.S. Food and Drug [Administration](#) says it will collaborate with the Alliance for NanoHealth to speed creation of safe nanotechnology medical products.

The FDA said it and the alliance's member institutions will cooperate in a nanotechnology initiative to "expand knowledge of how nanoparticles behave and affect biologic systems, and to facilitate the development of tests and processes that might mitigate the risks associated with nanoengineered products."

"FDA's nanotechnology initiative with the Alliance for NanoHealth is an effort to engage resources and technical expertise in this rapidly advancing field and is a clear example of leveraging science and scientists to advance the public good," said the FDA's Acting Commissioner, Dr. Frank Torti. "Nanotechnology holds great promise for the advancement of novel medical products."

The alliance's eight academic institutions are the Baylor College of Medicine, the University of Texas' M.D. Anderson Cancer Center, Rice [University](#)

, the University of Houston, the University of Texas Health Science Center at Houston, Texas A & M Health Science Center, the University of Texas Medical Branch at Galveston and the Methodist Hospital Research Institute in Houston.



Posted: March 12, 2009

NanoReg, Keller and Heckman Host Nanotechnology Webinar Series

(*Nanowerk News*) Nanotechnology — the application of scientific knowledge to control matter at the nanoscale – has been leading revolutionary advances in medicine, electronics, energy and many other fields.

At the same time, as the National Resource Council recently warned, “The increasing use of engineered nanoscale materials in industrial and consumer products will result in greater exposure of workers and the general public to these materials.” Potential environmental, health, and safety (“EHS”) problems have led to proposed legislation, increasing regulation, and increasing attention from insurance and products liability experts.

Building on last year’s successful workshop on the regulation of nanotechnology, NanoReg & Keller and Heckman have announced *Nanotechnology Today*, a series of webinars designed to address the current industry outlook for nanotechnology under the new Administration and the challenges associated with the safe development of nano-enhanced products.

This series features respected experts on several important topics in the rapidly changing world of nanotechnology regulatory policy and safety.

The webinars will deliver live content via the internet and can be attended from the convenience of an attendee’s home or office where multiple attendees can participate for the cost of a single registration. The series offers small companies the assurance that they can keep abreast of science, policy, the law, and best practices.

<http://www.nanowerk.com/news/newsid=9629.php>



[FDA Initiative Will Emphasize Nano Safety](#)

Yesterday, the FDA announced a new nanotechnology initiative.

Wednesday, March 11, 2009

By Katherine Bourzac

Yesterday, the [U.S. Food and Drug Administration](#) (FDA) announced the creation of a nanotechnology initiative in collaboration with the eight Texas academic institutions that make up the Houston-based [Alliance for NanoHealth](#). (These include Rice University, the University of Texas, and the M.D. Anderson Cancer Center.)

So far, not many details have been released. The FDA's [announcement](#) describes the initiative's goal as "to help speed development of safe and effective medical products." The statement also emphasizes the need to "expand knowledge of how nanoparticles behave . . . and to facilitate the development of tests and processes that might mitigate the risks associated with nanoengineered products."

This is good news for environmental and consumer groups concerned that research on the potential toxicity of nanomaterials hasn't been keeping pace with research on their applications.

There are certainly large gaps in our knowledge about these materials, and filling them in will be no small task. The Environmental Protection Agency (EPA) has taken the stance that nanostructured materials shouldn't be regulated differently from conventional materials with the same chemical structure. But of course size matters in nanotech--that's the reason people are excited about its applications to begin with, and assuming that toxicity isn't affected by these materials' size and shape doesn't make sense. The diversity in size, shape, and composition of nanomaterials makes it impossible to make blanket statements about their safety. Hopefully, the FDA program will help make sense of these complex questions.

Information gathered under the FDA program, according to the statement, will be in the public domain. Let's hope this promise is one with more teeth in it than the EPA's. Much of the information submitted to that agency's voluntary nanomaterials program has been classed as "confidential business information" and is not available to the public.

Tags: [epa](#), [regulation](#), [fda](#), [nanomedicine](#), [nanotoxicity](#),

<http://www.technologyreview.com/blog/editors/23103/>

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