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**Center for Nanotechnology in Society**  
**University of California, Santa Barbara**

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**WEEKLY CLIPS**

February 24 – March 2, 2009



[Making Safer Nanomedicine](#)

Nontoxic silicon nanoparticles soak up drugs like a sponge and break down into smaller particles that are cleared by the kidneys

Some nanomaterials can ferry cancer drugs to tumors; others can act as bright contrast agents for infrared or magnetic-resonance imaging.

While researchers are working to make these materials even more efficient tumor targeters and imaging agents, they will also need to make sure they are safe. But until now, "there has been little effort to engineer the self-destruction [of nanomaterials]...into non-toxic, systemically-eliminated products," write researchers in this week's issue of [Nature Materials](#).

The researchers, from MIT and University of California, have now developed nanomaterials and carefully characterized their degradation into non-toxic breakdown products that are cleared from the body in urine. Because the materials are photoluminescent, it's possible to see whether or not they've reached a tumor. Mouse studies demonstrate that the particles are not only harmless, but that they soak up cancer drugs like sponges. The particles, which range in size from about 130 to 180 nanometers (the ideal size for getting into tumors via

leaky blood vessels) are riddled with 5 to 10 nanometer holes. As the the particles break down inside a tumor, the drugs come out.

The nanoparticles haven't been tested in clinical trials yet, but there is good reason to suspect they'll be harmless in people. For one thing, earlier this month researchers presented results at the American Association for the Advancement of Science meeting of a gene expression study demonstrating that exposing human immune cells to silica particles with a range of different surface areas didn't harm the cells. And the researchers felt comfortable enough to expose themselves for the above photo, which shows the nanoparticles emitting fluorescent light under UV.

<http://www.technologyreview.com/blog/editors/22997/?a=f>

## SCIENCE BUSINESS

26 February 2009

### New EU nanomedicine project aims to separate fact from fiction

Science|Business reporting

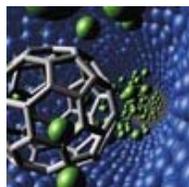


Image courtesy ORNL

The EU is funding a one year programme, Nanomed, to stake out the potential applications of nanomedicine and inform the investments it makes in the field through Framework Programme 7.

Nanomed will bring together experts from Europe and further afield to consider economics, patient attitudes, regulatory aspects, ethics and communication of nanomedicine. The project will be chaired by John Beringer, who also chaired a similar UK investigation.

“Even if we don't see the nanorobots of *Fantastic Voyage* fame for a few years, nanomedicine still has immense short term potential to impact all of our lives,” said Beringer. “Working at the nanoscale is already leading to new highly targeted medicines, improved imaging and diagnostics of disease, and to a new generation of implantable sensors for monitoring health.”

It is encouraging that the EU recognises the importance of having a strategic approach to the development of nanomedicine, said Beringer. “In this project I believe we have managed to assemble a team with both the experience and understanding to create what I believe will be a unique report covering all aspects.”

One aim is to make the first accurate projections of market size and potential. To date this has not been possible, since many companies developing and applying nanomedicine do not describe themselves as such.

Beringer said discussions on regulatory aspects of nanotechnology are now reaching the stage where the project can reach meaningful conclusions as to whether there is a need to extend existing regulations, or to create new ones.

“A further interesting aspect is that the current economic crisis seems certain to increase public interest in policy making and funding priorities and a case will need to be made for nanomedicine,” Beringer added.

The final members of working parties are being recruited and the report will be presented at the end of the year.

<http://www.nanomed.org>

<http://bulletin.sciencebusiness.net/ebulletins/showissue.php3?page=/548/3269/12948&ch=1>



## **Genetic Immunity, Retrospective: Next Generation DNA Vaccine - DermaVir nanomedicine for the Treatment of HIV/AIDS**

February 26, 2009: 10:18 AM ET

Power of the Dream Ventures, Inc. (OTCBB: PWRV), Hungary's premier technology acquisition and development company, is pleased to present this Genetic Immunity release based on a previously announced agreement whereby Power of the Dream Ventures will issue communications for Genetic Immunity on a going forward basis.

**Genetic Immunity's next generation of DNA vaccine - The DermaVir Patch**

"We have been developing the DermaVir Patch as our lead product candidate for the treatment of HIV/AIDS," Julianna Lisziewicz begins telling her Company's story. "The DermaVir Patch is the next generation of DNA vaccine patented for the treatment of chronic diseases. Based on FDA classification, it is a combination of our new biologic product (DermaVir) and our new medical device (DermaPrep). DermaVir contains a novel plasmid DNA that encodes most, but not all HIV genes. It is administered topically using our DermaPrep medical device. The discovery behind DermaVir began with clinical observations and extensive examinations of one particular patient known as the 'Berlin Patient.' He showed us that (i) induction of long-term immune control in HIV-positive individuals is feasible, and (ii) antiviral T-cells

can control HIV replication in HIV-positive individuals. Shortly after he become infected we treated the Berlin Patient with antiretroviral drugs, followed by two interruptions in his drug therapy, which resulted in controlled viral load rebounds. By Christmas of 1996, although he permanently interrupted his therapy, his viral load remained undetectable because his HIV-specific immune response was capable of killing virus infected cells. Blood tests showed that he developed gag-specific memory T-cell responses that were capable of controlling virus replication. To date, he has not resumed antiretroviral treatments, and his immune system still keeps viral replication in bay. This initial observation, and subsequent primate studies, provided the rationale for our next generation nanomedicine-based immune therapy," added Dr. Lisiewicz, finishing the origins of Genetic Immunity's work

<http://money.cnn.com/news/newsfeeds/articles/marketwire/0477678.htm>

## Russians sign agreement on nanotech safety

**February 24, 2009:** The Russian nanotech business group RUSNANO and regulators have signed an agreement to cooperate on nanotechnology health and safety issues.

An agreement was signed by Anatolij Chubais, CEO and director general of the [Russian Corporation of Nanotechnologies \(RUSNANO\)](#), and Gennady Onishchenko, head of the Russian Agency for Health and Consumer Rights.

They agreed to work together to confirm the safety of nanotech products and to create methods and regulatory provisions for their safe production.

RUSNANO said in a news release that it also works with groups in other countries to ensure its standards are recognized internationally.

[http://www.smalltimes.com/articles/article\\_display.cfm?ARTICLE\\_ID=354271&p=109](http://www.smalltimes.com/articles/article_display.cfm?ARTICLE_ID=354271&p=109)



# Human Enhancement & Nanotechnology Conference to Convene at Western Michigan University

March 28-29 Ethics Meeting to Cover Issues in Sports, Military, Policy, Religion, and More

Last update: 12:00 a.m. EST March 2, 2009

KALAMAZOO, Mich., Mar 02, 2009 (BUSINESS WIRE) -- The Nanoethics Group today announced its upcoming conference on the ethical and social impacts of human enhancement technologies, especially related to nanotechnology. Held on March 28-29 at Western Michigan University (WMU), the event is free and open to the public.

For instance, bionic limbs (e.g., for greater strength or vision) and neural chips implanted into one's head (e.g., for on-demand access to the Internet and software applications) may give significant advantages to the individual in many areas, from sports to jobs to academia. But these technologies may hold health risks -- similar to steroid or Ritalin use for enhancement purposes, as distinct from therapy -- and raise ethical concerns related to fairness, access, and general societal disruption.

"Who wouldn't want to be stronger, smarter, and healthier -- which is what we strive for now through exercise, academics, diet, and medicine?" asked Dr. Fritz Allhoff, assistant professor at WMU's philosophy department and co-founder of The Nanoethics Group. "But using new, powerful technologies to achieve the same result seems to push our bodies and minds beyond their natural limits, opening the possibility of unintended or unforeseen results and harms."

The conference will offer presentations by leading researchers and rising stars in the field, from such organizations as: Albany School of Medicine, Arizona State Univ., Carnegie Mellon, General Dynamics, IBM, Indiana Univ., Michigan State Univ., Northeastern Univ., Oxford Univ., Pacific Lutheran Theological Seminary, Trinity College, Univ. of North Carolina-Chapel Hill, and Yale.

<http://www.marketwatch.com/news/story/human-enhancement--nanotechnology-conference/story.aspx?guid=%7B748B0>



## **Georgia Tech will push boundaries of nanotechnology research with innovative low-temperature carbon nanotube fabrication tool**

processing temperatures of ~350 C supports growth on flexible polymer substrates

carbon-nanotube heatsink structures for thermal management are one major design goal

*Atlanta, Georgia, March 2, 2009*

--- The leading research university, Georgia Institute of Technology, has ordered a nanomaterial growth tool from Surrey NanoSystems.

The NanoGrowth 1000n equipment chosen incorporates an innovative low-temperature growth module that will allow precision carbon nanotubes and related nanomaterials to be grown repeatably at much lower temperatures than normal - down to 350 degrees C initially and potentially even lower. The capability will help researchers to explore growth on a very wide range of target substrates from active silicon devices to flexible polymer substrates.

One of Georgia Tech 's major research aims is to investigate the development of carbon nanotube (CNT) heatsink structures to dramatically increase heat conduction and dissipation capability - combating a prime cause of silicon chip failure and supporting further advances in integration density and performance.

Georgia Tech chose Surrey NanoSystems' NanoGrowth tool primarily for the flexibility of research opened up by its low-temperature capability, and its ability to grow material across large substrate areas of up to 4 inches (100 mm).

<http://www.wordsun.com/release.php?id=732>

# **Manufacturers'** MONTHLY

2 March 2009



Nanotechnology will have a strong local future if industry and community can agree on the type of technologies that should be adopted, according to one of a number of findings from a nanotechnology report released by Innovation Minister, Senator Kim Carr.

The report is based on a workshop on social inclusion and engagement on nanotechnology held in Canberra in December.

"This workshop and subsequent report demonstrate the power of big ideas for small and exciting technologies," Senator Carr said. "In particular it has found the pressing need for increased dialogue between interest groups.

"Industries of the future will be based on the convergence of nanotechnology with biotechnology, information technology and cognitive technologies – all of which will have a significant impact across our economy and society.

"The Government will continue to work hard to facilitate this dialogue between researchers, industry and the general public."

The report shows that different interest groups sometimes have strongly differing perspectives on the adoption of new technologies. It also shows how it is possible for different voices to come together.

<http://www.manmonthly.com.au/Article/Nanotechnology-report-released/469453.aspx>

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