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## BioTechCircle News®

**June 2007**

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Featured June article:

### **Vaccinating with Rice**

A genetically modified strain of rice that expresses a vaccine for cholera; the rice can be stored at room temperature for at least 18 months and its protein body protects the vaccine from digestive enzymes that would otherwise render it ineffective.

<http://www.technologyreview.com/Biotech/18876/>

There are so many good articles each month, it's hard to select just one. If you subscribe to our free newsletter (sign up form is on our home page), you'll find links to our commentaries, posted at our blog.

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**In this articles section: links to 50 free Web articles in 14 major categories.**

Nine of this month's articles are in the energy and biofuel field. You will find them dispersed among the major categories of Agri-Biotech, Industry, Novel Applications and Platform Technologies – quite an unusual circumstance, which also highlights our challenges in selecting the single most appropriate category (and subcategory) when several could justifiably be applied.

The major categories are in alphabetical order and further subdivided to make it easy for you to locate news and developments in technology, the business and the markets in the life science areas of interest to you.

***Note: if the links don't connect you directly, please copy and paste the entire URL into your web browser.***

Here are the major categories and the page where each category starts:

Agri-Biotech (5 articles) – Page 2

Biobusiness Management (3 articles) – Page 3

Clinical Trials (3 articles) – Page 4



plants by degrading the cell walls and then using the resulting sugars for energy.  
<http://www.technologyreview.com/Energy/18958/>

### **From Leftovers to Energy**

Technology Review

18-Jun-07

An industrial-sized demonstration anaerobic digester is converting 8 tons of restaurant waste, cafeteria scraps, and lawn clippings into 300,000 to 600,000 liters of biogas a day, enough to power approximately 80 homes.

<http://www.technologyreview.com/Biotech/18937/>

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## **BIOBUSINESS MANAGEMENT**

### *Subcategory: Computing Systems*

#### **Paperless Manufacturing for Genzyme**

in-Pharma Technologist

28-Jun-07

With pressure to ensure regulatory and quality compliance and safe, cost-effective manufacturing techniques, an integrated management executions system (MES) can help provide an effective platform to handle various business and production processes.

<http://www.in-pharmatechnologist.com/news/ng.asp?id=77766>

### *Subcategory: Government/ Approvals*

#### **FDA Announces New Advisory Committee to Address Risk**

FDA News

04-Jun-07

New advisory committee is designed to counsel the agency on how to strengthen the communication of risks and benefits of FDA-regulated products to the public. Purpose is to help consumers and health care professionals make informed decisions.

<http://www.fda.gov/bbs/topics/NEWS/2007/NEW01648.html>

### *Subcategory: Privacy/ Records Management*

#### **Three-Dimensional Image Security**

Zheng Zhou, Brent Liu,  
H.K. Huang

Applied Clinical Trials

01-Jun-07

Describes why current IT solutions include utilizing SSL (secure socket layer) or VPN (virtual private network) can be inefficient for three-dimensional (3-D) trial image exams that acquire a large number of images, such as a multidetector CT exam.

<http://www.actmagazine.com/appliedclinicaltrials/article/articleDetail.jsp?id=431928>

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## CLINICAL TRIALS

### *Subcategory: Computing Systems*

#### **Data Integration: Past & Future**

Solomon Shacter Applied Clinical Trials 01-Jun-07

While there are many electronic clinical solutions to help simplify the clinical trials process, the issue of integrating the data collected through each of these solutions remains a major point of frustration. Discusses future trends.

<http://www.actmagazine.com/appliedclinicaltrials/article/articleDetail.jsp?id=431925>

### *Subcategory: Miscellaneous*

#### **EU Think Tank Takes on R&D Bottlenecks: Group Recommends Ways to Improve and Increase Clinical Research in New Report.**

Peter O'Donnell Applied Clinical Trials 01-Jun-07

Biomarkers, modelling & simulation, and emerging clinical trials methodology are areas the European Medicines Agency recommends for research focus to increase European drug innovation.

<http://www.actmagazine.com/appliedclinicaltrials/article/articleDetail.jsp?id=431919>

#### **Internet Resources**

Applied Clinical Trials 01-Apr-07

Lists, brief description and links to 23 clinical trial resources on the Web.

<http://www.actmagazine.com/appliedclinicaltrials/article/articleDetail.jsp?id=416542>

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## DIAGNOSTIC TOOLS

### *Subcategory: Spectroscopy*

#### **Picturing DNA On A Surface**

Chemical & Engineering News 04-Jun-07

A vibrational spectroscopy technique provides the first direct method for observing DNA base pairing and other basic biochemical processes that occur on surfaces, and it may lead to advances in biodetection technologies and medical diagnostics.

<http://pubs.acs.org/cen/news/85/i23/8523notw7.html>

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## DRUG DELIVERY

### *Subcategory: Food*

#### **Vaccinating with Rice**

Brittany Sauser Technology Review 13-Jun-07

A genetically modified strain of rice that expresses a vaccine for cholera; the rice can be stored at room temperature for at least 18 months and its protein body protects the vaccine from digestive enzymes that would otherwise render it ineffective.

<http://www.technologyreview.com/Biotech/18876/>

*Subcategory: Oncology*

**Researchers at UCLA Develop New Nanomaterials to Deliver Anticancer Drugs to Kill Cancer Cells**

UCLA 06-Jun-07

Researchers report a novel approach using silica-based nanoparticles to deliver the anticancer drug camptothecin and other water-insoluble drugs into human cancer cells.

<http://newsroom.ucla.edu/page.asp?RelNum=8001>

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**INDUSTRY**

*Subcategory: Biomanufacturing*

**Disposables: Biopharmaceutical Disposables as a Disruptive Future**

Eric S. Langer, Brandon J. Price BioPharm International 01-Jun-07

The future of single-use components in biopharmaceutical manufacturing processes is likely to become increasingly diverse and attractive as they prevent cross-contamination and help save money, manufacture products previously unprofitable.

<http://www.biopharminternational.com/biopharm/article/articleDetail.jsp?id=432391>

*Subcategory: Energy/ Fuel*

**Sweet Routes To Sustainability**

Rachel Petkewich Chemical & Engineering News 25-Jun-07

New catalytic methods do not rely on fermentation, which is currently used to manufacture bioethanol, thus and bringing the possibility of large-scale biofuel introduction one step closer to reality despite some economic and environmental drawbacks.

<http://pubs.acs.org/cen/news/85/i26/8526notw1.html>

**Biofuel Nations**

Steve Ritter Chemical & Engineering News 04-Jun-07

Brazilian and U.S. chemists forge stronger ties to advance biomass conversion to fuels and chemicals, seeking a collaboration in bioconversion. Both countries are the world's leaders in biofuel research and development and each has a 5-year plan.

<http://pubs.acs.org/cen/news/85/i23/8523notw4.html>

*Subcategory: General*

**Coming of Age**

Ted Agres Drug Discovery & Development 01-Jun-07

Based on results so far, analysts expect the biotech industry in 2007 to continue 2006's robust growth and break records for sales, venture capital and other financing, mergers and acquisitions and collaborations and alliances.

<http://www.ddmag.com/ShowPR.aspx?PUBCODE=016&ACCT=1600000100&ISSUE=0706&RELTYPE=PR&ORIGRELTYPE=BF&PRODCODE=00000000&PRODLETT=AG>

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**INVESTMENTS/ GOV. SUPPORT**

*Subcategory: State*

**State's Billion-dollar Biotech Question: Who Gets How Much?**

The Boston Globe 20-Jun-07

Biotechnology companies, research universities, and nonprofit groups are all interested in receiving a portion of the \$1 billion on biomedical research announced by the governor of the state of Massachusetts.

[http://www.boston.com/business/technology/biotechnology/articles/2007/06/20/states\\_billion\\_dollar\\_biotech\\_question\\_who\\_gets\\_how\\_much/](http://www.boston.com/business/technology/biotechnology/articles/2007/06/20/states_billion_dollar_biotech_question_who_gets_how_much/)

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**NOVEL APPLICATIONS**

*Subcategory: Energy/ Fuel*

**Greener Jet Fuel**

Emily Singer Technology Review 11-Jun-07

Scientists say they can now produce hydrocarbons with properties that rival the current jet-fuel industry standard, a kerosene-based product known as jet-A. The microbial factories ferment sugar to produce hydrocarbons. <http://www.technologyreview.com/Biotech/18842/>

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**ORGANIZATIONS**

*Subcategory: M&A Activities*

**Amgen Goes Chemicals**

Michael McCoy Chemical & Engineering News 11-Jun-07

Amgen, the world's largest biotechnology company, is acquiring two

small firms that are developing chemistry-based drugs. The purchase highlights an ongoing blurring of the lines between protein-based and small-molecule drugmakers.

<http://pubs.acs.org/cen/news/85/i24/8524notw9.html>

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## PATENTS

### *Subcategory: Bioethics*

#### **Patent Pending**

The Economist

14-Jun-07

Discusses patent application for the “minimal bacterial genome, a list of the 381 genes thought to be needed to keep an organism alive.”

Bioethics organization has requested that the application be withdrawn.

[http://www.economist.com/science/displaystory.cfm?story\\_id=9333408](http://www.economist.com/science/displaystory.cfm?story_id=9333408)

#### **Scientists Apply for First Patent on Synthetic Life Form**

Kristen Philipkoski

Wired

07-Jun-07

Cites e-mail of ETC group regarding J. Craig Venter Institute's patent application: "...company is positioning itself to become the 'Microbesoft' of synthetic biology...so we have given this syn organism a name too - Synthia."

[http://blog.wired.com/wiredscience/2007/06/scientists\\_appl.html](http://blog.wired.com/wiredscience/2007/06/scientists_appl.html)

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## PLATFORM TECHNOLOGIES

### *Subcategory: Biomanufacturing*

#### **Integrating the Monitoring of Bioprocesses**

Matt Wilkinson

in-Pharma Technologist

26-Jun-07

Researchers have developed a sensor array for monitoring fermentation in microwell plates to aid bioprocess design and scale-up.

<http://www.in-pharmatechnologist.com/news/ng.asp?id=77673>

#### **Greenovation Receives First Us Patent for Moss Technology**

Matt Wilkinson

in-Pharma Technologist

21-Jun-07

By genetically engineering mosses to produce specific proteins, biopharmaceutical products could reduce bioprocess costs by 50% because the moss only needs water, minerals and a light source rather than expensive cell culture media.

<http://www.in-pharmatechnologist.com/news/ng.asp?id=77568>

### *Subcategory: Disease Prevention*

## **Our Microbial Menagerie**

Technology Review

01-Jul-07

New ultrafast DNA-sequencing technologies allow scientists to study the genetic makeup of entire microbial communities, hoping to find out precisely how microorganisms lower or increase the risk of contracting certain diseases.

<http://www.technologyreview.com/Biotech/18889/>

### *Subcategory: Drug Discovery*

#### **DNA-Damage Test Could Aid Drug Development**

Whitehead Institute for Biomedical Rsch 14-Jun-07

Researchers have developed a cell culture test for assessing a compound's genetic toxicity that may prove dramatically cheaper than existing animal tests, as it allows genetic toxicity to be examined far earlier in the drug development process.

[http://www.wi.mit.edu/news/archives/2007/hl\\_0514.html](http://www.wi.mit.edu/news/archives/2007/hl_0514.html)

### *Subcategory: Energy/ Fuel*

#### **Transplanting a Genome**

Emily Singer

Technology Review

29-Jun-07

Describes technology leading to building genomes from scratch and transplanting them into bacterial cells in order to create custom-made, fuel-producing microorganisms.

<http://www.technologyreview.com/Biotech/18988/>

#### **Building a Bug to Harvest Oil**

Emily Singer

Technology Review

27-Jun-07

Microbes dwelling in oil fields and coal beds could inspire new methods of extracting fossil fuels from the depths of the earth, for example by breaking up hydrocarbons to make oil easier to move or change its surface-adherence properties.

<http://www.technologyreview.com/Biotech/18973/>

### *Subcategory: Genomics*

#### **Finding Function In The Genome**

Amanda Yarnell

Chemical & Engineering News

18-Jun-07

Scientists now suspect that the structure, not the sequence, of the genome's functional elements will have significant implications for efforts to identify the DNA sequences involved in many human diseases.

<http://pubs.acs.org/cen/news/85/i25/8525news4.html>

#### **Genes for Several Common Diseases Found**

Technology Review

07-Jun-07

A massive genetic study has pinpointed 24 genetic markers that

increase risk for illnesses such as diabetes, arthritis, and Crohn's disease. Illustrates the success of a new approach to gene hunting known as genome-wide association.

<http://www.technologyreview.com/Biotech/18834/>

### **Really New Advances**

The Economist

14-Jun-07

Genes were once thought of almost exclusively as repositories of information about how to build proteins. Now, they are seen for what they really are: RNA factories. MicroRNAs may help to explain why some creatures are more complex than others.

[http://www.economist.com/science/displaystory.cfm?story\\_id=9333471](http://www.economist.com/science/displaystory.cfm?story_id=9333471)

### *Subcategory: High Throughput Screening*

### **Creating More Content**

Mike May, PhD

Drug Discovery & Development

01-Jun-07

Most scientists in industry want more than high-throughput screening; they also want high-content screening (HCS). The growing list of approaches to HCS could prove extremely useful across biotech and pharma, says May.

<http://www.dddmag.com/ShowPR.aspx?PUBCODE=016&ACCT=1600000100&ISSUE=0706&RELTYPE=PR&ORIGRELTYPE=TADV&PRODCODE=00000000&PRODLETT=AK>

### *Subcategory: Nanotechnology*

### **Harvard Licenses Nanotech Patents**

Ann Thayer

Chemical & Engineering News

11-Jun-07

More than 50 issued and pending patents covering microfluidics and nanofabrication methods for making advanced materials and devices have been licensed to the start-up company Nano-Terra for all areas outside the biomedical field.

<http://pubs.acs.org/cen/news/85/i24/8524notw4.html>

### *Subcategory: Neurology*

### **Calcium Under Surveillance**

Sarah Everts

Chemical & Engineering News

25-Jun-07

Calcium ions' speedy entry into biological cells keeps the heart pumping, neurons firing, and even facilitates fertilization. Now, researchers have developed a small-molecule sensor that can track the location and dynamics of this essential ion in a cell.

<http://pubs.acs.org/cen/news/85/i26/8526notw6.html>

### *Subcategory: Oncology*

### **Cold Spring Harbor Laboratory Scientists Successfully Target Tumor**

## **Microenvironment to Stop Cancer Growth**

Cold Spring Harbor Laboratory

15-Jun-07

Researchers found that bone marrow (BM) derived endothelial progenitor cells (EPCs) play a critical role in the early stages of tumor progression and that eliminating EPCs stops cancer growth.

[http://www.cshl.edu/public/releases/07\\_tumor.html](http://www.cshl.edu/public/releases/07_tumor.html)

## **'Cryogel' Bioreactor Pumps out Antibodies Continuously**

Matt Wilkinson

in-Pharma Technologist

28-Jun-07

Researchers have developed a new 'supermacroporous cryogel' bioreactor for the long term continuous production of monoclonal antibodies (mAbs) that outperforms T-flask batch cultivators.

<http://www.in-pharmatechnologist.com/news/ng.asp?id=77716>

### *Subcategory: Proteomics*

## **Fast Route To Structures**

Stu Borman

Chemical & Engineering News

04-Jun-07

Researchers have found a way to determine protein structures by using only basic and easy-to-obtain data from nuclear magnetic resonance spectroscopy (NMR) chemical shifts, complemented by theoretical calculations.

<http://pubs.acs.org/cen/news/85/i23/8523notw6.html>

### *Subcategory: Tissue Engineering*

## **Stem Cell Researchers Reprogram Normal Tissue Cells into Cells with the Same Properties as Embryonic Stem Cells**

University of California,

07-Jun-07

Researchers took mouse fibroblasts and added 4 transcription factors that bind to special sites on the DNA, turning the fibroblasts into pluripotent cells. Major implications for tissue engineering and transplantation medicine.

<http://newsroom.ucla.edu/page.asp?RelNum=8015>

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## **RESEARCH ADVANCEMENTS**

### *Subcategory: Immunology/ Infectious Diseases*

## **Allergy Molecule Identified**

Institute of Food Research

01-Jun-07

Researchers have identified a molecule that is very important for the regulation of immune response and for the first time clearly represents a potential target for the therapy of allergy.

<http://www.ifr.ac.uk/Media/NewsReleases/070701IL12allergymolecule.html>

### *Subcategory: Neurology*

#### **Researchers Reveal Structure of Protein Altered in Autism**

University of California, San Diego 12-Jun-06

Mapping the structure of the protein complex implicated in autism spectrum disorders and understanding the 3-dimensional structure of the normal protein helps researchers predict how mutations in the gene affect the structure of the gene product.

<http://ucsdnews.ucsd.edu/newsrel/health/06-07ProteinAlteredInAutismDK-.asp>

### *Subcategory: Oncology*

#### **Researchers Discover Method for Identifying How Cancer Evades the Immune System**

American Assoc. for Cancer Research 02-Jul-07

Researchers describe a technique for determining a tumor's "immune signature," which could be useful for diagnosing and treating specific cancers. A small subset of genes is discovered integral in explaining immunological behavior.

<http://www.aacr.org/home/about-us/news.aspx?d=783>

#### **Cells Re-energize to Come Back from the Brink of Death**

St Jude Children's Research Hospital 01-Jun-07

Researchers found that abnormal cells lacking caspase activation disable the main suicide pathway called apoptosis and can also foil a backup self-destruct program, which allows them to survive and become cancerous.

[http://www.stjude.org/media/0.2561.453\\_2816\\_23198.00.html](http://www.stjude.org/media/0.2561.453_2816_23198.00.html)

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## **RESEARCH TOOLS**

### *Subcategory: Computing Systems*

#### **Team's Model Aids Understanding of Protein Networks**

MIT News 25-Jun-07

Researchers have developed a computational model that helps identify relationships between proteins and the enzymes that regulate them.

The method, NetworKIN, helps understand the complex protein networks that influence human disease.

<http://web.mit.edu/newsoffice/2007/cancer-0625.html>

### *Subcategory: Imaging*

#### **Peeking Into Live Cells**

Celia Henry Arnaud Chemical & Engineering News 04-Jun-07

Fluorescent imaging of single molecules in live cells uncovers details of gene expression, structural proteins, and molecular motors and reveals

important insights that are missed when capturing information representing averages of a population.

<http://pubs.acs.org/cen/coverstory/85/8523cover.html>

### **Chemists patent technique for quick ID of proteins**

University of Massachusetts

11-Jun-07

A patent has been issued for a process called “Multiplexed Tandem Mass Spectrometry” that will help scientists quickly identify many proteins at once, at a cost similar to current methods for identifying just one protein.

<http://www.umass.edu/loop/talkingpoints/articles/54053.php>

### *Subcategory: Lab-on-a-chip/ DNA Chips/*

### **Next-Generation Sequencing Invades Microarray Turf**

Kevin Davies

Bio-IT World

14-Jun-07

A next-generation sequencing method called ChIP-sequencing (ChIPSeq) is said to be an order of magnitude cheaper than microarray alternatives and can immediately be applied to any available genome, not just those for which microarrays are available.

<http://www.bio-itworld.com/newsitems/2007/june/06-13-07-chipseq>

### *Subcategory: Oncology*

### **Mathematics Reveals Genetic Pattern of Tumor Growth**

University of California Irvine

21-Jun-07

Scientists used a mathematical technique called optimal control theory in which they considered a tumor with set characteristics, then changed the cell mutation variable to see under which circumstances the tumor grew best.

[http://www.today.uci.edu/news/release\\_detail.asp?key=1628](http://www.today.uci.edu/news/release_detail.asp?key=1628)

### *Subcategory: Proteomics*

### **Extending Protein Detection**

Raychelle Burks

Chemical & Engineering News

18-Jun-07

Aptamers are short DNA or RNA oligonucleotides capable of binding different classes of targets. Researchers used 3 aptamers to detect a single target protein over a detection range of about 5 orders of magnitude.

<http://pubs.acs.org/cen/news/85/i25/8525notw6.html>

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## **THERAPEUTIC CATEGORY**

### *Subcategory: Cardiology/ Vascular Diseases*

### **Healing Blood Vessels**

Describes a product designed to be wrapped around the artery at the site of a balloon angioplasty procedure and to release biochemical factors to promote the healing of the vessel's inner lining.

<http://www.technologyreview.com/Biotech/18971/>

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