



## BioTechCircle News®

December 2009

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**In this articles section: links to 60 free Web articles in 11 major categories.**

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:

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For a brief explanation of how we categorize the articles, please see "Express Guide to Monthly Web Articles at: [http://www.techmanage.net/expressguide\\_articles](http://www.techmanage.net/expressguide_articles)

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### AGRI-BIOTECH

*Subcategory: Energy/ Fuel*

**UCLA Researchers Engineer Bacteria to Turn Carbon Dioxide into Liquid Fuel**  
University of California Los Angeles 10-Dec-09

Genetically modified cyanobacterium consumes carbon dioxide and produces the liquid fuel isobutanol, a gasoline alternative. The reaction is powered directly by energy from sunlight, through photosynthesis.  
<http://newsroom.ucla.edu/portal/ucla/ucla-researchers-engineer-bacteria-149726.aspx>

**Wet Ethanol Production Process Yields More Ethanol and More Co-**  
Esha Khullar University of Illinois 09-Nov-09

Using a wet ethanol production method that begins by soaking corn kernels, rather than grinding them, results in more gallons of ethanol and more usable co-products by about 20%.  
<http://www.aces.uiuc.edu/news/stories/news4946.html>

*Subcategory: Food*

**Reagentless Bidirectional Lateral Flow Bioactive Paper Sensors for Detection of Pesticides in Beverage and Food Samples**  
S. M. Zakir Hossain, Roger Analytical Chemistry 29-Sep-09  
E. Luckham, Meghan J. McFadden and John D. Brennan

Portable colorimetric biosensing papers could be extremely useful in remote settings or developing countries where simple bioassays are essential in early disease detection and for monitoring environmental- and food-based toxins.  
<http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/ac901714h>

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## BIOBUSINESS MANAGEMENT

*Subcategory: Financial Management (not funding)*

**Subsidized Science**  
Alissa Poh The Scientist 14-Dec-09

Champions Biotechnology uses revenue from premium services offered to wealthy clients to subsidize risky—and hard-to-fund—research. The company creates “personalized tumorgrafts” for cancer-stricken individuals who are willing to pay \$100,000.  
<http://www.the-scientist.com/2009/12/1/18/1/>

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## DRUG DELIVERY

*Subcategory: Personalized Medicine*

**New Computer Models Could Lead to Personalized Stents**  
MIT News 02-Dec-09

Computer models predicting physiologically realistic drug delivery patterns from stents in branched arterial vessels demonstrate that spatial variation in drug distribution can be significant when appreciated from a 3-dimensional perspective.

<http://web.mit.edu/press/2009/personalized-stents.html>

*Subcategory: Proteomics*

**The Final Hurdle**

James Netterwald

Bioscience Technology

23-Nov-09

The use of RNAi as a therapeutic approach has developed faster than anyone can imagine, but one challenge remains: siRNA (small interfering RNA ) delivery. Netterwald explains why chemical modification of siRNA is important.

<http://www.biosciencetechnology.com/Articles/2009/11/The-Final-Hurdle/>

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**INDUSTRY**

*Subcategory: Environment*

**Report: Science Not Faked, but Not Pretty**

Associate Press

R & D Magazine

14-Dec-09

E-mails stolen from climate scientists show they stonewalled skeptics and discussed hiding data — but the messages don't support claims that the science of global warming was faked, according to an exhaustive review by The Associated Press.

<http://www.rdmag.com/News/2009/12/Environment-Report-Science-not-faked-but-not-pretty/>

*Subcategory: General*

**Timely Transformation**

Susan Ainsworth

Chemical & Engineering News

07-Dec-09

Ainsworth reviews the business strategies of drug and biopharma companies as they focus on deflecting mounting market pressures and accelerating market expansion into new geographies.

<http://pubs.acs.org/cen/coverstory/87/8749cover.html>

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**INVESTMENTS/ GOV. SUPPORT**

*Subcategory: Energy/ Fuel*

**Biorefiners Win Government Funds**

Michael McCoy

Chemical & Engineering News

14-Dec-09

Grants totaling \$564 million from the Department of Energy will go

to 19 projects: the large-scale production of fuels and chemicals from cellulosic and other nonfood agricultural sources.

<http://pubs.acs.org/cen/news/87/i50/8750notw5.html>

***Subcategory: Federal***

**New NIH Forms Raise Concerns**

Bob Grant

The Scientist

08-Dec-09

Shorter, 12-page (down from 25 pages) forms for R01 grants will favor better writers, making it more difficult for younger investigators to compete for NIH funding, say critics.

<http://www.the-scientist.com/blog/display/56209/>

***Subcategory: Geographic focus***

**Cuts for British Science**

ECN Magazine

18-Dec-09

Reports that Britain's physics community is reeling from a "disastrous" day of funding cuts that will force scientists to withdraw from major research facilities and see PhD studentships fall by a quarter.

<http://www.ecnmag.com/News/2009/12/Cuts-for-British-Science/>

***Subcategory: Nanotechnology***

**Nanomedicine: Ending 'Hit and Miss' Design**

Rice University

10-Dec-09

Describes grant for developing a systematic understanding of how to design a nano particle to accomplish a certain goal in terms of where it goes in a cell or if it even goes into a cell.

<http://www.media.rice.edu/media/NewsBot.asp?MODE=VIEW&ID=13456&SnID=1933144768>

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**NOVEL APPLICATIONS**

***Subcategory: Energy/ Fuel***

**Robot Goes All the Way in Space Elevator Competition**

R & D Magazine

05-Nov-09

A robot powered by a ground-based laser beam climbed a long cable dangling from a helicopter, demonstrating that beaming power works. Space elevators are envisioned as a way to reach space without the risk and expense of rockets.

<http://www.rdmag.com/News/2009/11/General-Science-Robot-goes-all-the-way-in-space-elevator-competition/>

***Subcategory: Environmental***

**The Seat of Power**

Economist

30-Dec-09

Several groups are testing ways of making the process by which feces are digested into methane more efficient. Capturing the resulting methane yields energy and prevents what is a potent greenhouse gas from being released into the atmosphere.

[http://www.economist.com/sciencetechnology/displayStory.cfm?story\\_id=15172621](http://www.economist.com/sciencetechnology/displayStory.cfm?story_id=15172621)

***Subcategory: Microorganisms***

**Bacteria-Powered Machines!**

Jonathan Fahey

Forbes.com

21-Dec-09

Hundreds of a 5-micron-long bacterium called *Bacillus subtilis* have been coaxed to turn tiny gears 1 million times heavier than themselves. Researchers hope is a step toward creating new materials and devices that mix tiny chemical cocktails.

<http://www.forbes.com/2009/12/19/physics-gears-energy-technology-breakthroughs-bacteria.html>

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## PLATFORM TECHNOLOGIES

***Subcategory: Cell Therapy***

**Lack of Diversity in Stem Cells Is a Concern**

Robin Erb

Freep Press

17-Dec-09

Stem cell research is done mostly those with northern and western European ancestry. Raises social justice questions about the fairness of the benefits of stem cell research, although how much the lack of diversity limits research is unclear.

<http://freep.com/article/20091217/NEWS06/912170604/1008/Lack-of-diversity-in-stem-cells->

**New Skin Stem Cells Surprisingly Similar to Those Found in Embryos**

Howard Hughes Medical Institute

08-Dec-09

A new type of stem cell discovered in the skin acts surprisingly like certain embryo stem cells: both can generate fat, bone, cartilage, and even nerve cells. May be useful for treating neurological disorders and persistent wounds such as diabetic ulcers.

<http://www.hhmi.org/news/miller20091208.html>

**Technique to Determine Ethnic Origin of Stem Cell Lines**

Scripps Research Institute

29-Dec-09

The availability of genetically diverse cell lines for cell replacement therapy and drug development is important. Discordance between the ethnic origin of organ donors and recipients can influence medical outcomes for tissue transplantation.

<http://www.scripps.edu/news/press/122909.html>

### *Subcategory: Computing Systems*

#### **Researchers Make Significant Advances in Molecular Computing**

University of Kent

10-Dec-09

Research demonstrates that the speed of bio-molecular computers is fundamentally limited by the living organisms' metabolic rate or their ability to process energy. This energy may be derived from food sources.

<http://www.kent.ac.uk/news/stories/dchu/2009>

### *Subcategory: Drug Discovery*

#### **Tiny Injector to Speed Development of New, Safer, Cheaper Drugs**

EurekAlert!

04-Nov-09

Researchers have fabricated a palm-sized, automated, micro-injector that can insert proteins, DNA and other biomolecules into individual cells at volumes exponentially higher than current procedures, and at a fraction of the cost.

[http://www.eurekalert.org/pub\\_releases/2009-11/mu-tit110409.php](http://www.eurekalert.org/pub_releases/2009-11/mu-tit110409.php)

### *Subcategory: Environmental*

#### **Metalloprotein Made To Order**

Stu Borman

Chemical & Engineering News

07-Dec-09

Researchers have created a synthetic metalloprotein with an active site that looks and acts like that of the native version. The ability to re-create nitric oxide reductase (NOR) activity in another protein may help understand greenhouse effect, others.

<http://pubs.acs.org/cen/news/87/i49/8749notw4.html>

### *Subcategory: Evolution Research*

#### **The Genomic Ark: Collecting the Genomes of 10,000 Species**

Allison Proffitt

Bio-IT World

04-Nov-09

Proffitt describes the Genome 10K Project, which aims to sequence the genomes of 10,000 vertebrate species, male and female. Results will help predict how species will respond to climate change, pollution, emerging diseases, and invasive competitors.

<http://www.bio-itworld.com/2009/11/4/genome10K.html>

### *Subcategory: Genomics*

#### **The Birth Place of Asia is South East Asia**

Asia Observer

11-Dec-09

The most recent common ancestors of Asians arrived first in India; later, some of them migrated to other Asian countries in the South. The first group of settlers include the Malay Negritos, Philippine Negritos, the East Indonesians. Color-coded map.

[http://www.asiaobserver.com/component/option.com\\_fireboard/Itemid,453/func.view/id,12067/c](http://www.asiaobserver.com/component/option.com_fireboard/Itemid,453/func.view/id,12067/c)

### *Subcategory: Human Therapeutics*

#### **Newly Discovered Mechanism Allows Cells To Change State**

Brown University

09-Dec-09

Learning why and how cells can shed their old identity and take on a new one may help better understand why many different cells, such as stem cells or cells that become cancerous, transform. Controlling process may lead to new treatments for diseases.

<http://news.brown.edu/pressreleases/2009/12/yeast>

### *Subcategory: Nanotechnology*

#### **Behavior Modification Could Ease Concerns about Nanoparticles**

EurekAlert!

12-Nov-09

Scientists are reporting development of technology for changing the behavior of nanoparticles in municipal sewage treatment plants, their main gateway into the environment.

[http://www.eurekalert.org/pub\\_releases/2009-11/acs-bmc111109.php](http://www.eurekalert.org/pub_releases/2009-11/acs-bmc111109.php)

#### **Recent Studies Show How Far Magnetic Nanoparticles Have Come in**

R & D Magazine

06-Nov-09

With the design of 'theranostic' molecules, magnetic nanoparticles (mNPs) could play a crucial role in developing one-stop tools to simultaneously diagnose, monitor and treat a wide range of common diseases and injuries.

<http://www.rdmag.com/News/2009/11/Life-Science-Recent-studies-show-how-far-magnetic-nanoparticles-have-come/>

### *Subcategory: Oncology*

#### **Researchers Show How to Divide and Conquer 'Social Network' of Cells**

University of Montreal

09-Nov-09

Researchers have divided cell networks down to their genesis. Discovery could have applications for diseases such as cancer, where blood-thirsty cells could be decoupled to curb their multiplication in the human body.

<http://www.nouvelles.umontreal.ca/udem-news/press-releases/researchers-show-how-to-divide-and-conquer-social-network-of-cells.html>

### *Subcategory: Proteomics*

#### **Grooving Down the Helix**

Brookhaven National Laboratory

03-Dec-09

Describes how molecules locate the genetic information in DNA that is necessary to carry out important biological processes: by sliding along one of the grooves of the DNA double helix in a spiraling fashion.

[http://www.bnl.gov/bnlweb/pubaf/pr/PR\\_display.asp?prID=1038](http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=1038)

#### **Chemical Basis for Extra "Quality Control" in Protein Production**

Scripps Research Institute 09-Dec-09  
Even small errors made by cells during protein production can have profound disease effects, and nature has developed ways to uncover these mistakes and correct them. Have discovered the chemical basis for why these efforts are necessary.  
<http://www.scripps.edu/news/press/120909.html>

### **Mystery of Protein's Dual Function**

Scripps Research Institute 10-Dec-09  
Researchers have discovered how a single protein from an ancient family of enzymes can have two completely distinct roles in the body. Protein's possible use is for combating diseases including cancer and macular degeneration.  
<http://www.scripps.edu/news/press/121409.html>

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## **RESEARCH ADVANCEMENTS**

### *Subcategory: Immunology/ Infectious Diseases*

#### **Scientists at the Genome Institute of Singapore and 26 Institutes in China Identify Leprosy Genes**

A-Star Singapore 17-Dec-09  
Researchers found 7 genes that can cause people to become susceptible to leprosy: CCDC122, C13orf31, NOD2, TNFSF15, HLA-DR, RIPK2 and LRRK2. Highlights the important role of the innate immune response in the development of leprosy.  
<http://www.a-star.edu.sg/?TabId=828&articleType=ArticleView&articleId=1165>

#### **Screen Nets Self-Destruction Stoppers**

Carmen Drahl Chemical & Engineering News 07-Dec-09  
Small molecules have been found that specifically bind to the surface of a mouse's autoreactive T cells, immune cells that attack their host. May lead to new treatments for multiple sclerosis (MS), other conditions involving autoreactive T cells.  
<http://pubs.acs.org/cen/news/87/i49/8749notw3.html>

#### **Scientists Discover Natural Flu-fighting Proteins**

ECN Magazine 22-Dec-09  
Researchers have discovered antiviral proteins in cells that naturally fight off influenza infections, a finding that may lead to better ways to make vaccines and protect people against the flu.  
<http://www.ecnmag.com/News/2009/12/natural-flu-fighting-proteins/>

#### **Researchers Find Human Protein that Prevents H1N1 Influenza**

Howard Hughes Medical Institute 17-Dec-09

Human cells respond to infection by the H1N1 influenza virus by ramping up production of proteins that have unexpectedly powerful antiviral effects, blocking the replication of H1N1 influenza virus, West Nile virus, and dengue virus.

<http://www.hhmi.org/news/elledge20091217.html>

### **New Review Questions Oseltamivir Data**

Michael Smith

MedPage Today

08-Dec-09

There's not enough evidence to conclude that the antiviral drug oseltamivir (Tamiflu) has any benefit for the complications of influenza in otherwise healthy patients, according to an updated Cochrane review of the drug.

<http://www.medpagetoday.com/InfectiousDisease/URItheFlu/17392>

### **Crossing the Line: How Aggressive Cells Invade the Brain**

R & D Magazine

06-Nov-09

The movements of immune cells "live" under the microscope has been witnessed for the first time. Several new behavioral traits of the immune cells have been identified, helping to understand complex diseases such as multiple sclerosis.

<http://www.rdmag.com/News/2009/11/Life-Science-Crossing-the-line-how-aggressive-cells-invade-the-brain/>

### **Parasite Evades Death by Promoting Host Cell Survival**

Tufts University

08-Dec-09

A protein called parasite-derived neurotrophic factor (PDNF) has been found to prolong the life of the T. cruzi parasite by activating anti-apoptotic (or anti-cell-death) molecules in the host cell. Helps to explain why host cells continue to survive.

<http://news.tufts.edu/releases/release.php?id=138>

### **Cells Defend Themselves from Viruses, Bacteria with Armor of Protein**

University of Chicago

25-Nov-09

“Regulated error” comprise a novel non-genetic mechanism by which cells can rapidly make important proteins more resistant to attack when stressed.

<http://www.uchospitals.edu/news/2009/20091125-protein-armor.html>

### ***Subcategory: Metabolism: Obesity, Diabetes***

### **Study: Missing DNA Can Promote Childhood Obesity**

Malcolm Ritter

Bioscience Technology

07-Dec-09

Some children get severely obese because they lack particular chunks of DNA on chromosome 16, which kicks their hunger into overdrive, researchers report. It removes a gene that the brain needs to respond to the appetite-controlling hormone leptin.

<http://www.biosciencetechnology.com/News/FeedsAP/2009/12/study-missing-dna-can->

[promote-childhood-obesity/](#)

***Subcategory: Microorganisms***

**Bacteria Provide New Insights Into Human Decision Making**

University of California

08-Dec-09

Scientists studying how bacteria under stress collectively weigh and initiate different survival strategies say they have gained new insights into how humans make strategic decisions that affect their health, wealth and the fate of others in society.

<http://ucsdnews.ucsd.edu/newsrel/science/12-09BacteriaDecision.asp>

***Subcategory: Musculoskeletal***

**Unraveling the Mechanisms Behind Organ Regeneration in Zebrafish**

Salk Institute

02-Nov-09

Researchers have identified an essential cellular pathway in zebrafish that paves the way for limb regeneration by unlocking gene expression patterns seen during embryonic development.

[http://www.salk.edu/news/pressrelease\\_details.php?press\\_id=390](http://www.salk.edu/news/pressrelease_details.php?press_id=390)

***Subcategory: Nephrology/ Urology***

**Scientists Identify New Genetic Culprit for Intellectual Disability**

Howard Hughes Medical Institute

11-Dec-09

Intellectual disability in 3 siblings has been traced to a change in a single “letter,” or base pair, in the TRAPPC9 gene. Both copies of the gene must be faulty to cause the disability, and the mutation’s effects occur only in the brain.

<http://www.hhmi.org/news/walsh20091211.html>

***Subcategory: Neurology***

**New Source Discovered for the Generation of Nerve Cells in the Brain**

Helmholtz Zentrum

25-Nov-09

Researchers have discovered progenitor cells which can form new glutamatergic neurons following injury to the cerebral cortex. Particularly in Alzheimer’s disease, nerve cell degeneration plays a crucial role.

<http://www.helmholtz-muenchen.de/en/press-and-media/press-releases/press-releases-2009/press-releases-2009-detail/article/12525/9/index.html>

**"Lifeless" Prions Capable of Evolutionary Change and Adaptation**

Scripps Research Institute

30-Dec-09

Prions can develop large numbers of mutations at the protein level; These mutations can eventually bring about such evolutionary adaptations as drug resistance, a phenomenon previously known to occur only in bacteria and viruses.

<http://www.scripps.edu/news/press/123109.html>

### ***Subcategory: Oncology***

#### **Tiny RNA Has Big Impact on Lung Cancer Tumors**

EurekaAlert!

07-Dec-09

Researchers reversed the growth of lung tumors in mice using a naturally occurring tumor suppressor microRNA called let-7. Tumors in mice that received let-7 were not eliminated, but reduced by 66%.

[http://www.eurekaalert.org/pub\\_releases/2009-12/you-trh120409.php](http://www.eurekaalert.org/pub_releases/2009-12/you-trh120409.php)

#### **Wistar-led Research Team Discovers Genetic Pattern That Indicates Early-stage Lung Cancer**

Bioscience Technology

01-Dec-09

Researchers have identified immune system markers in the blood which indicate early-stage lung tumors in people at high risk, e.g. smokers and ex-smokers, for developing lung cancer.

<http://www.biosciencetechnology.com/News/Feeds/2009/12/products-cell-biology-wistar-led-research-team-discovers-genetic-pattern/>

#### **For Some Metastatic Cancer Cells, There's No Place Like Home**

Howard Hughes Medical Institute

25-Dec-09

Metastasis can also operate in reverse, scientists find: a small but aggressive fraction of the renegade cancer cells can circle back through the bloodstream to re-infiltrate the original tumor, boosting its malignant potential.

<http://www.hhmi.org/news/massague20091225.html>

#### **Princeton Scientists Find Way to Catalog All That Goes Wrong in a**

Kitta MacPherson

Princeton University

10-Dec-09

Scientists are able to systematically categorize and pinpoint the alterations in cancer pathways and to reveal the underlying regulatory code in DNA, a powerful tool that eventually could make possible new, more targeted therapies for patients.

<http://www.princeton.edu/main/news/archive/S26/04/69Q40/index.xml?section=topstories>

#### **MicroRNAs in Development and Disease**

Frank Slack, Ph.D.

Yale University

01-Dec-09

C. elegans is used to find the important genes and molecules that control developmental timing, extrapolate findings to understand underlying mechanisms of how tissues and organs are specified at the correct time during development of higher animals.

<http://www.biology.yale.edu/facultystaff/slack.html>

### ***Subcategory: Reproduction***

#### **Monogamouse**

Economist

30-Dec-09

While prairie voles are sociable and monogamous, meadow voles prefer a solitary, promiscuous existence. These behavioral differences between the 2 species have been linked to a hormone called vasopressin and the protein molecule that acts as its receptor.

[http://www.economist.com/sciencetechnology/displayStory.cfm?story\\_id=15172631](http://www.economist.com/sciencetechnology/displayStory.cfm?story_id=15172631)

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## RESEARCH TOOLS

### *Subcategory: Biomarker*

#### **Bottom-Up or Top-Down?**

Enrique A. Dalmasso,  
Amanda Bulman

Drug Discovery & Development

01-Dec-09

Discusses advances for both “top-down” and “bottom-up” profiling approaches to biomarker discovery. Includes table of features, application and strengths and weaknesses of each approach.

<http://www.dddmag.com/article-Bottom-Up-or-Top-Down-120709.aspx>

#### **Scientists Use Nanosensors for First Time to Measure Cancer**

Yale University

14-Dec-09

Nanowire sensors have been used to detect and measure concentrations in blood of specific biomarkers for prostate cancer and breast cancer.

Whole blood is a complicated solution containing proteins and ions and other things that affect detection.

<http://opa.yale.edu/news/article.aspx?id=7160&s=t>

### *Subcategory: Computing Systems*

#### **Simplifying Sample and Compound Management**

Mike May, PhD

Drug Discovery & Development

01-Dec-09

As collections of compounds and biological samples expand, May describes how biotechnology and pharmaceutical companies are seeking more-efficient ways to keep track of these libraries, including improved automation.

<http://www.dddmag.com/article-Simplifying-Sample-and-Compound-Management-120709.aspx>

#### **Capturing Those In-Between Moments: NIST Solves Timing Problem in Molecular Modeling**

NIST

22-Oct-09

Ost describes a mathematical technique that overcomes a longstanding timing gap in modeling nanometer-scale materials and many other physical, chemical and biological systems at atomic and molecular levels.

[http://www.nist.gov/msel/materials\\_reliability/timing\\_110309.cfm](http://www.nist.gov/msel/materials_reliability/timing_110309.cfm)

### *Subcategory: Diagnostic Test Systems*



## THERAPEUTIC CATEGORY

*Subcategory: Metabolism: Obesity, Diabetes*

**Surgery Is Effective for Some Type 2 Diabetes**

ECN Magazine

30-Dec-09

Surgery is a legitimate and effective treatment for type 2 diabetes, say medical experts. Removing portions of the jejunum or duodenum or even inserting a tube in that part of the intestine to allow food to bypass the area leads to improvement.

<http://www.ecnmag.com/News/Feeds/2009/12/blogs-the-cutting-edge-surgery-is-effective-for-some-type-2-diabetes/>

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