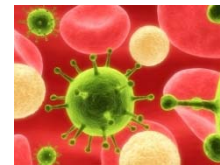




BIOSCIENCE IN THE 21ST CENTURY:

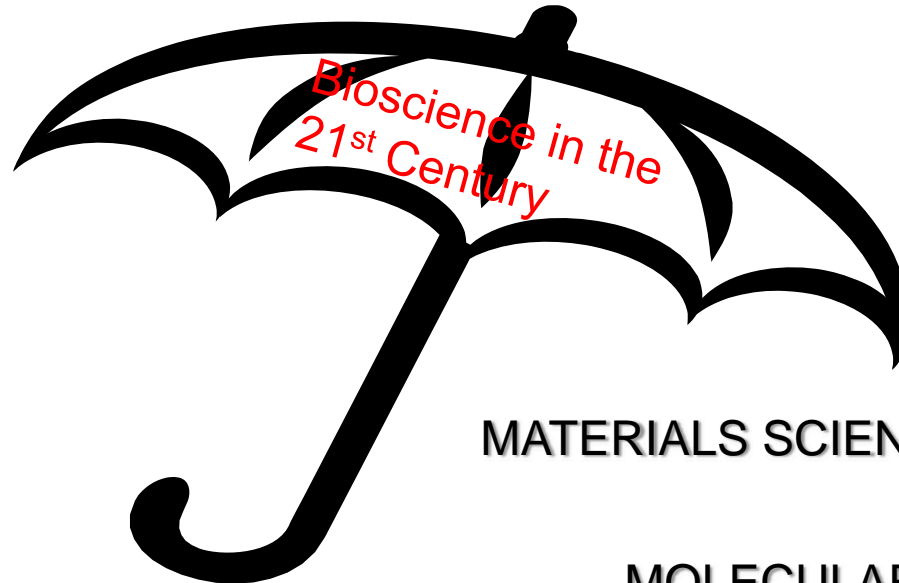
HIGHLIGHTS AND FUTURE PROSPECTS



BIOSCIENCE IN THE 21ST CENTURY

- What biologically-relevant problems confront society?
- What are the strategies for studying these problems?
- What are the prospects for solutions to these problems?

MULTIDISCIPLINARY APPROACHES



NEUROBIOLOGISTS

BIOCHEMISTS

BIOLOGICAL ENGINEERS

CHEMISTS

CELL BIOLOGISTS

PHYSICISTS

CLINICIANS

MATERIALS SCIENCE ENGINEERS

MOLECULAR BIOLOGISTS

MICROBIOLOGISTS

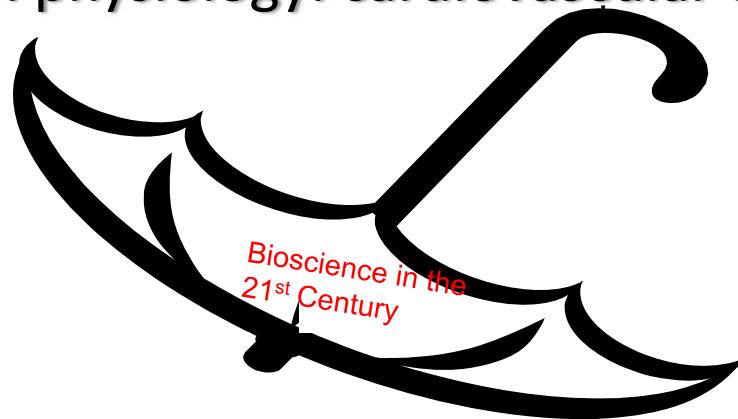
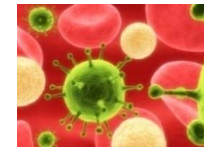
VIROLOGISTS

BUSINESS PERSONS

COMPUTER SCIENTISTS

SURVEY OF TOPICS IN BIOSCIENCE

- Neurophysiological processes
- Cancer and novel treatment strategies
- Genomics and bioinformatics
- Stem cell biology and disease treatment prospects
- Advances in engineered biosystems , biodevices, and bioimaging
- Ethical issues in biomedicine and clinical trials
- Infectious diseases
- Reproductive biology and contraceptive technologies
- Human physiology: cardiovascular disease, obesity



Study links fast-food TV ads to childhood obesity



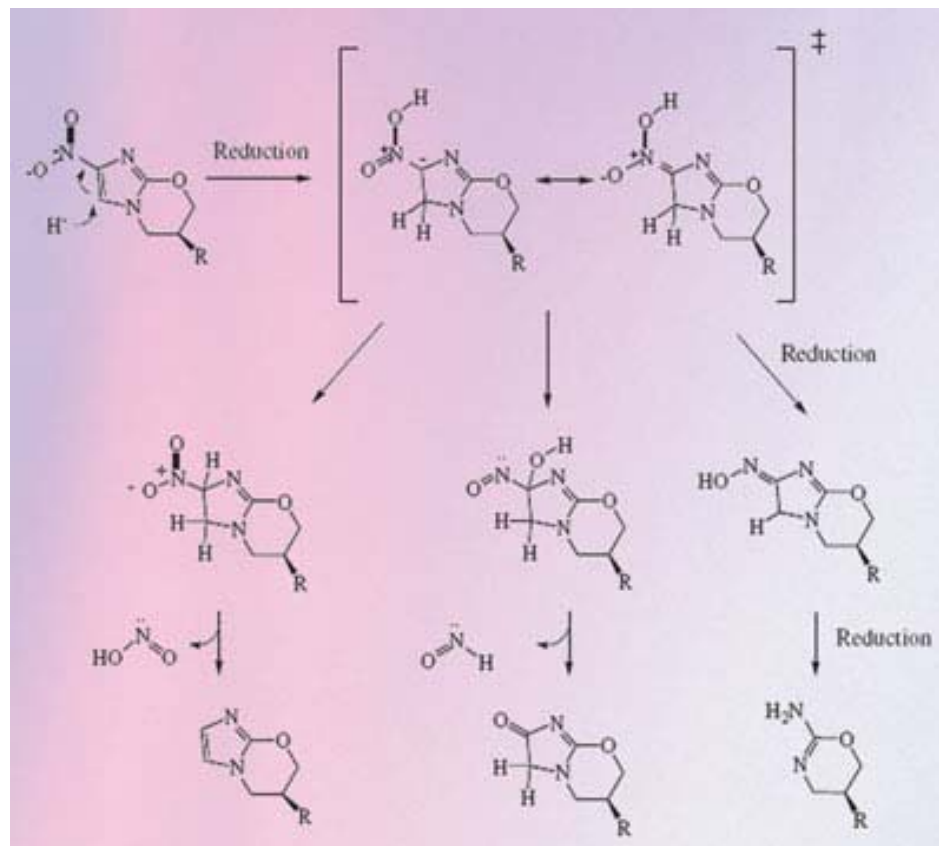
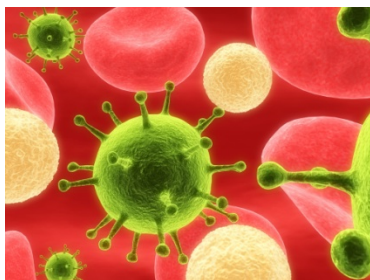
A ban on fast-food advertisements in the United States could reduce the number of overweight children by as much as 18 percent, according to a new study co-authored by [Shin-Yi Chou](#), the Frank L. Magee Distinguished Professor at Lehigh's College of Business and Economics.



Drug detonates nitric oxide inside tuberculosis bacteria

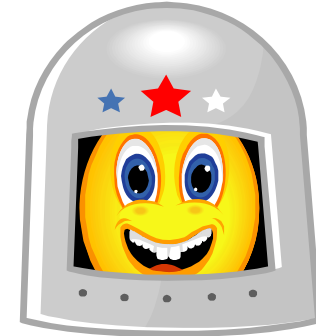
PA-824 belongs to a class of drugs active against bacteria ...in latent TB infections.... it is currently undergoing phase II clinical trials.

Study co-author Helena Boshoff, based at the National Institute of Allergy and Infectious Diseases, says PA-824 works like a missile, being metabolised to form reactive nitrogen intermediates, including nitric oxide, that explode latent cells from the inside.



<http://www.rsc.org/chemistryworld/News/2008/November/28110804.asp>

Evaluation of Autism Spectrum Disorders Using Magnetoencephalography (MEG)



Study results were prepared for release Monday at the Radiological Society of North America. In autistic children, response to each sound was delayed by one-fiftieth of a second. "We tend to speak at four syllables per second," said Timothy Roberts, the study's lead author.... If an autistic brain "is slow in processing a change in a syllable ... it could easily get to the point of being overloaded."

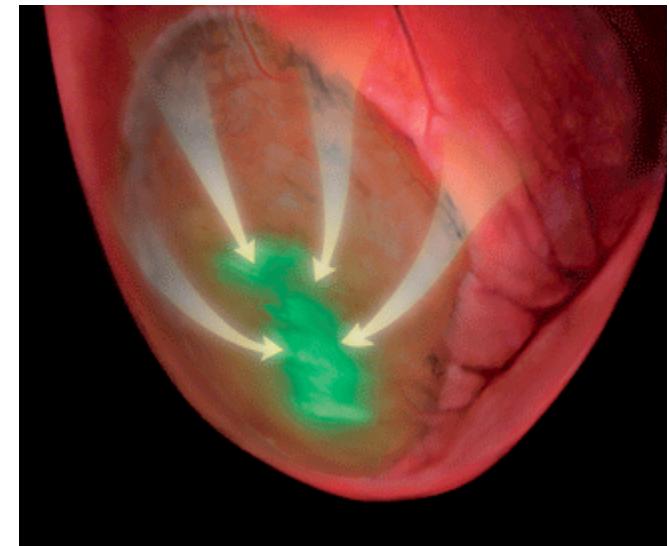
**Watch for
Geraldine
Dawson, CSO
for Autism
Speaks, coming
this spring**

<http://www.google.com/hostednews/ap/article/ALeqM5j71A7ZN9GaxtikP7Mo0ZmINil4aQD94QKJTO0>

Embryonic heart cells prevent mice with damaged hearts (after a heart attack) from suffering arrhythmia



Professor Guy Salama at the University of Pittsburgh School of Medicine was also able to map voltage signals across the surface of the hearts, establishing that the implanted cells improve conduction of electrical signals within the damaged heart tissue.researchers at the University of Bonn engineered skeletal muscle to express connexin43 and achieved the same restorative results as they did with the embryonic heart cells.



<http://www.news.cornell.edu/stories/Dec07/Arrhythmia.kr.html>

<http://www.sciencedaily.com/releases/2008/11/081125121240.htm>

Transplanted
embryonic heart
cells expressing
connexin 43

A Stem Cell Clinical trial announced in Germany

.... a 49 year old male was admitted to a community hospital and diagnosed with a haemorrhagic stroke.

...

The patient was treated as part of a twenty patient clinical trial approved by the Paul Erlich Institute, the regulatory institute of the Ministry of Health, and approved by the ethics committee.

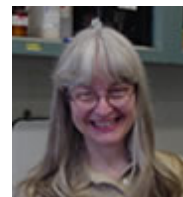
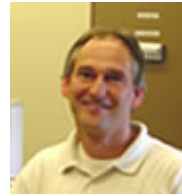
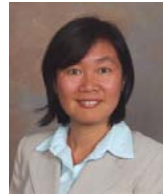
The patient made a good recovery from the surgery and there are clear signs of improvement from his condition prior to surgery. He has now been discharged from hospital. Professor Brinker commented: "We see a path of recovery as good as this only in the minority of patients, so it is an encouraging start. It is most important that we found definitively no side effects from the treatment." ...



<http://www.medicalnewstoday.com/articles/131565.php>

ACKNOWLEDGMENTS

Bioscience PLAYBILL: Lecturers



Lehigh University Participants: Barry Bean, R. Michael Burger, Xuanhong Cheng, Matthias Falk, Robert Flowers, Ned Heindel, M. Kathryn Iovine, Stefan Maas, Linda Lowe-Krentz, Daniel Lopresti, Jutta Marzillier, Jeffrey Sands, Jill Schneider, Neal Simon, Robert Skibbens, Jennifer Swann, Dimitrios Vavylonis, Bradley Walters, Vassie Ware

Guests: Robert Buckheit, Imquest Pharmaceuticals
John Glod, Robert Wood Johnson Medical School, UMDNJ
Ashleigh Palmer, Critical Biologics Corporation
Jay Reuben, BD Biosciences

Funding: Howard Hughes Medical Institute

THANK YOU!