MBC INSIDE

Volume 9, April 2006
Special Retreat Issue

MEDICAL BIOTECHNOLOGY CENTER -UNIVERSITY OF MARYLAND BIOTECHNOLOGY INSTITUTE

Twenty Years of Research Excellence

Inside:

In the Fairway

The morning of the Fourth Annual Medical Biotechnology Center Retreat was not particularly inspiring as the Baltimore area was treated to snow showers and gusty winds. Despite the freakish start, by the time most participants arrived at the Turf Valley Resort and Golf Course in Ellicott City, the weather was much more accommodating and it looked like the sun might also show up.

Upon arrival, everyone was greeted by fresh coffee, fruit and pastries. They also found a sapphire blue commemorative pencil holder with gold lettering (shown below) at all the seats, in honor of the twentieth anniversary of the Medical Biotechnology Center. The room was extremely spacious (see the pictures on the back), designed for a much larger gathering, but the layout allowed everyone plenty of room and an excellent view of the screen and speakers, including UMBI Central guests: Industrial Liaison Rob Powell, Communications Director Alicia Moran, and Development Director David Bobbitt. Vice President for Academic Affairs Marian Jackson, who was in attendance, cannot be considered a guest since she is still an MBC faculty member.

After a brief welcome by MBC Director, W. Jonathan Lederer, Dr. Xuehong Xu from the Program in Cell Structure and Development gave the current status of their work on hemicentin, an extracellular matrix protein which has been implicated in macular degeneration. He was followed by Dr. George Rodney, one of the newest members of the faculty at the Institute of Molecular Cardiology, who spoke on his work with calmodulin in skeletal muscles. The head of the Program in Prion Diseases, Dr. Ilia Baskakov, discussed the latest findings on the structure of prion amyloid fibrils, which has become an increasingly more complex and interesting story of protein folding. The first session ended with the first guest speaker, Dr. Frank Robb from the Center of Marine Biotechnology. Dr. Robb works with the Archaea, strange and wonderful microbes that seem to be evolutionary relicts found in extreme environments. Their unique chemistry has already revolutionized molecular biology and may prove to be a source of many other useful compounds.

After a break, Dr. Mervyn Monteiro, head of the Institute for Neurodegenerative Diseases, discussed his laboratory's work on their most recent protein find, Erasin. This protein is part of the disposal pathway in cells. He was to be followed by Dr. Long-Sheng

Continued next page

Retreat Schedule

Time	Presenter	Title
8:00-8:30		*Arrival/Continental Breakfast*
8:30-8:40	W. Jonathan Lederer	Welcome
8:40-9:00	Xuehong Xu	What is the Function of the ECM Protein Hemicentin in Mammali
9:00-9:20	George Rodney	Modulation of SR Ca^{2+} Release by Calmodulin and the Calmodul Skeletal Muscle Calcium Release Channel
9:20-9:40	Ilia Baskakov	Substructure of PrP Amyloid Fibrils
9:40-10:20	Frank Robb (COMB)	Protein Folding (and Life) *in Extremis*
10:20-10:50		*Break (30 min)*
10:50-11:10	Mervyn Monteiro	A Ubiquitin-containing Protein Involved in the Disposal of Misfold
11:10-11:30	Long-Sheng Song	Calcium Signaling Dysfunction in Heart Failure
11:30-12:10	Alan Cross (UMMS)	ICE-ing Anthrax: The Role of Caspase-1 in the Innate Immune R
12:10-1:40		*Lunch (90 min)*
1:40-2:00	Gerald Rosen	EPR Imaging of Brain Physiology
2:00-2:20	Chris Geddes	Ultra Fast and Bright Assays Using Plasmonics
2:20-3:00	Vikram Vakharia (CBR)	Development of birnavirus Vaccines and Diagnostic Reagents fo
3:00-3:30		*Break (30 min)*
3:30-3:50	Shengyun Fang	Mechanisms of the ER-associated degradation: exceptions to the
3:50-4:10	Joseph Kao	Spatial and Temporal Control of Gene Expression
4:10-4:50	George Lewis (IHV)	How to Build a Primary Human Immune Response *In Vitro* - One

Song, who could not make it due to an appendectomy. He probably would have preferred being at the retreat! He di Dr. Lederer, who ably filled in, so the audience did hear about Dr. Song's remarkable discoveries on a molecular basis last speaker of the session was another guest, this time from the University of Maryland School of Medicine, Dr. Alan MBC's Les Baillie and MBC affiliated faculty member Dr. Gerald Rosen. Dr. Cross's fascinating work on the immune r unexpected pathways involved was very well received.

A delicious buffet lunch followed. Though the weather was now sunnier, it was still somewhat cold so most partic Turf Valley does not have the extensive gardens of previous locations, but the avid golfers in the group were eying the side of the entrance!

The afternoon sessions started with Dr. Rosen discussing his new approach to measuring oxygen, real-time, in the potential in stroke diagnosis, among other uses. He was followed by Dr. Chris of Fluorescence, who amazed the assembly with the seemingly endless uses o His work led into the next guest speaker, a collaborator of Dr. Geddes, Dr. Vi for Biosystems Research. Dr. Vakharia is a virologist and immunologist special Not only did he discuss his "regular" viral work, he also presented his work w

Another short break led into the last session of the day. Dr. Shengyun Fan Cancer Biology, gave us an overview of his new findings of alternate pathways He and his colleagues have started to tease apart several conflicting reports ar how proteins are degraded or recycled in cells. These pathways are involved acterized by protein accumulation. The last MBC faculty member to speak wa Program in Nanobiology. Dr. Kao discussed the recent advancements his labo molecules. These are biologically active molecules which are kept inactive unt Once these molecules are inside a cell, they can be triggered in either a spatial manner. The retreat ended with the last guest speaker, Dr. George Lewis fro

Editor and Designer: Pamela B. Wright
Assistant Editor: Tim Hughes

Publisher: W. Jonathan Lederer, Director MBC
Assistant Publisher: Joseph Kao, Assoc. Director MBC

Contact us at: wrightp@umbi.umd.edu
or 1-410-706-8181

Medical Biotechnology Center
725 West Lombard Street
Baltimore, MD 21201 USA

Back issues of Inside MBC are available on the web at:
http://www.umbi.umd.edu/~mbc

an Cells?
lin Binding Domain of the
ded Proteins from Cells
Response to *B. anthracis*
r Poultry Viruses
e rules
e Cell at a Time

d managed to get his slides to
for heart arrhythmias. The
Cross who is a collaborator of
response to anthrax and the

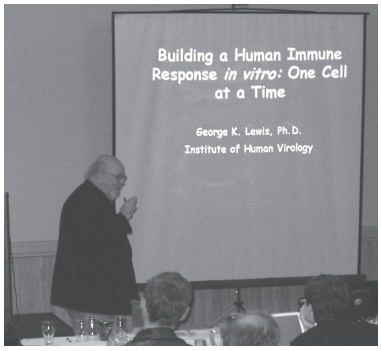
cipants did not wander outside.
course that lay on the other

brain. The technique has great
s Geddes, head of the Institute
f plasmonics for biosensing.
kram Vakharia from the Center
izing in bird and fish viruses.
ith avian flu vaccines.
g, head of the Program in
s for ER-associated degradation.
nd build a new understanding of
in a cancer and diseases char-
as Dr. Joseph Kao, head of the
ratory has made to "caged"
til released by a light pulse.
lly or temporally controlled
m the Institute of Human

Guest Speakers

Dr. Alan Cross, M.D.
Professor, Center for Vaccine Development, Department of Medicine, University of Maryland School of Medicine. Dr. Cross has three major areas of interest: the development of a vaccine for the prevention and treatment of sepsis; the early interactions of *B. anthracis* (BA) with the host immune system and the role of sialic acid in innate and adaptive immunity. Currently the laboratory is focusing on the mechanisms by which human neutrophil sialidase regulates cellular trafficking in both *in vivo* and *in vitro* model systems. These studies rely on endothelial cell culture systems as well as murine models of inflammation.

Dr. George Lewis, Ph.D.
Professor and Head, Division of Vaccine Development, Institute of Human Virology, University of Maryland Biotechnology Institute. Dr. Lewis has extensive experience in the preclinical development and testing of vaccines. His division has created an AIDS vaccine candidate that, for the first time, demonstrates an ability in the laboratory to elicit antibodies that block the infection of multiple HIV strains. Lewis' team also has patented innovated approaches to vaccine delivery that are being used in HIV/AIDS and beyond.



Dr. Frank Robb, Ph.D.
Professor, Center of Marine Biotechnology, University of Maryland Biotechnology Institute. Dr. Robb's research encompasses a wide range of biological systems, including both bacterial and eukaryotic molecular biology. Recent work has focused on the Archaea, a group of microbes that lies intermediate between bacteria and eukaryotes, and includes many organisms from extreme environments, including hyperthermophiles.

Dr. Vikram Vakharia, Ph.D.
Professor, Center for Biosystems Research, University of Maryland Biotechnology Institute. Dr. Vakharia studies the molecular biology of economically important viruses of poultry and fish, and focuses on developing rational strategies for the diagnosis and control of viral infections.

Virology. He is old friend of the MBC. Originally a Professor of Microbiology and Immunology at the University of Maryland Baltimore, he was on the original Scientific Advisory Committee for the MBC and an early faculty member until the IHV split from the MBC in 1996. He continued on the theme of vaccines initiated by Dr. Cross. This time he discussed the development of human monoclonal antibodies without the human! Using human immune cells, which have not been exposed to a particular antigen, he and his laboratory are trying to make them produce specific antibodies which could then be used therapeutically without having to actually immunize anyone. It could revolutionize antiviral therapeutics.

The meeting ended with everyone amazed at how much fascinating and innovative work was going on right down the hall! Again, the MBC has shown itself to be moving the frontiers of science even farther out, along with her sister centers.

Twenty Years of Research Excellence

1. Xuehong Xu
2. George Rodney
3. Ilia Baskakov
4. Participants
5. Mervyn Monteiro
6. W. Jonathan Lederer
7. Gerald Rosen
8. Chris Geddes
9. Shengyun Fang
10. Participants
11. Joseph Kao