

the cell

FALL 2006
VOLUME 26 ISSUE I
NORTHWESTERN UNIVERSITY
BMBCB

UPCOMING SEMINARS

Thursday, Nov. 9, 12:30pm
Pancoe-ENH Abbott Auditorium
Dr. Ursula Jakob
Univ. of Michigan, Ann Arbor

Friday, Nov. 10, 4:00pm
Cook Hall 3118A/B
Dr. Jim Bardwell
Univ. of Michigan, Ann Arbor

Thursday, Nov. 16, 12:30pm
Pancoe-ENH Abbott Auditorium
Dr. Richard Anderson
Unv. of Wisconsin, Madison

Thursday, Nov. 30, 12:30pm
Pancoe-ENH Abbott Auditorium
Dr. Marc Vidal
Harvard Medical School

Please check out the BMBCB website for a complete list of seminars in the department and related research centers.

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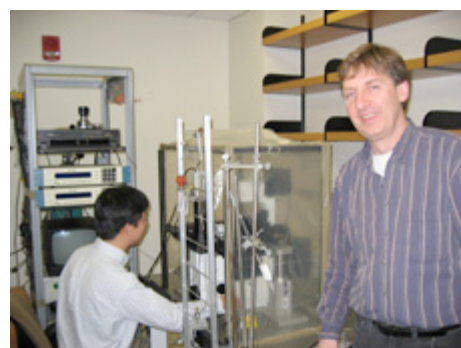
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Dr. John Marko Joins BMBCB and the Physics Department

Kelly Fust
BMBCB Project Coordinator

BMBCB is pleased to welcome **Dr. John Marko** to Northwestern University in a joint appointment with the Department of Physics. Dr. Marko comes to BMBCB from the University of Illinois at Chicago, where he was a faculty member in their Physics Department. He came to Northwestern in part because of the unique opportunity to bring his interests in physics and biochemistry together in this combined position. In fact, Dr. Marko is the first faculty member in BMBCB to join together with physics. The Marko lab uses ideas from polymer physics and statistical mechanics to solve biological problems. This concept includes using micromanipulation to study the organization of individual DNA molecules and to investigate DNA-protein interactions and chromosome structure. Their approach has led to several new, cutting-edge techniques for experiments not often seen in biochemistry labs. The lab focuses on both experimental and theoretical research.

Dr. Marko received his B.S. from the University of Alberta and his PhD in physics from the Massachusetts Institute of Technology and was the recipient of the NSF Faculty Early Career Development Award.



John Marko in his new lab with graduate student Ryo Kawamura.

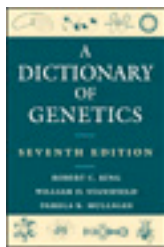
The Marko lab members, also coming from UIC, include postdoctoral researchers Dr. John Graham and Dr. Ranjith Padinhateeri and graduate students Hua Bai, Ryo Kawamura, Botao Xiao and Houyin Zhang, all of whom will join the graduate program in physics. Dr. Marko looks forward to interacting with the other members of BMBCB and learning more about the exciting research being done in our biochemistry labs. So, stop by their lab on the fourth floor of the Pancoe-ENH building to introduce yourself!

For more information on the Marko lab, including live images of chromosome micromanipulation and movies of single-DNA and single-chromosome experiments, please visit their website: <http://markolab.bmbcb.northwestern.edu>.

FACULTY NEWS AND PUBLICATIONS

A Dictionary of Genetics Comes Out in 7th Edition

Professor Emeritus Dr. Robert King recently saw his *A Dictionary of Genetics* released in its seventh edition by the Oxford University Press. It was coauthored by Dr. William D. Stansfield and Dr. Pamela K. Mulligan. The OUP describes the book as "unique in that it includes terms from a wide range of disciplines, which now intertwine with genetics, including molecular biology, cell biology, medicine, botany, and evolutionary studies...*A Dictionary of Genetics* [is] a lexicon unparalleled in the field."



Dr. Carthew Reappointed as Owen L. Coon Professor

Dr. Richard Carthew has been reappointed as the Owen L. Coon Professor of Molecular Biology. Carthew's lab currently studies how microRNAs and short interfering RNAs regulate gene expression. If you would like to learn about the work being done in the Carthew lab in more detail, check out their website: <http://www.biochem.northwestern.edu/carthew/>.

Work in Jardetzky Lab Published in Journal of Virology

Dr. Ted Jardetzky's and grad student Austin Kirshner's work with Dr. Richard Longnecker's lab at Feinberg was published this month in the *Journal of Virology*. The article can be found online at <http://jvi.asm.org/>

And in other news, Dr. George Leser finds fame in print ads. (Asking for his autograph is encouraged.)

"I can Research More because I use Fujifilm's LAS-3000."

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Senior Research Associate
Northwestern University
Robert Lamb Laboratory

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Work in Widom lab Makes Nature Cover

Research from the lab of Dr. Jon Widom made the cover of *Nature* over the summer. The work was also written about in the *New York Times*. *A genomic code for nucleosome positioning* came out of work done in collaboration with Dr. Eran Segal from the Weizmann Institute in Israel. Using the yeast genome, they were able to discover a pattern for nucleosome arrangements that allowed them to predict with 50% accuracy the placement of nucleosomes in other organisms. A full text of the *Nature* article can be found online at <http://www.nature.com/nature/journal/v442/n7104/full/nature04979.html>.



Fate of a Species Could be Decided by NU Researchers

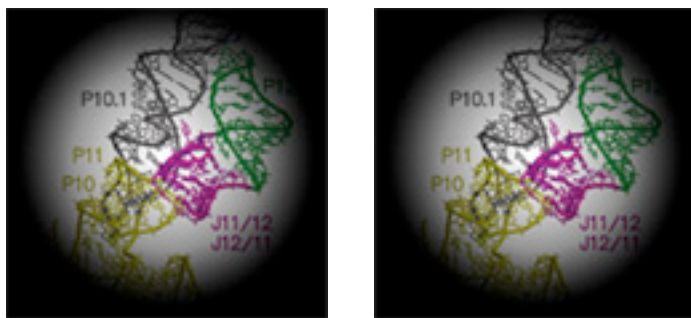
The recent work of Dr. Gary Galbreath and Dr. John Mordacq has been widely covered by such news outlets as CBS and the *New York Times*. The Kouprey, a forest ox, has been considered, since its discovery seventy years ago, one of the rarest mammals in Asia. But Galbreath believes that his recent DNA studies of Kouprey skulls reveal that the animal is not an independent species but a hybrid between the domestic banteng and zebu cattle. The full text of their research, in the *Journal of Zoology*, can be found by doing a search at: <http://www.blackwell-synergy.com>.



MOLECULAR BIOPHYSICS TRAINING PROGRAM APPOINTS NEW STUDENTS

Five graduate students have received the honor of being appointed to the **Molecular Biophysics Training Program** for the 2006-2007 academic year. This training program provides a unique interdisciplinary mode of study, bringing together faculty from several departments, including many of our faculty members in BMBCB. Graduate students in the program have specific course requirements, must participate in programs such as the Molecular Biophysics Club, various journal clubs and the Biophysics Seminar series and provide annual progress reports. We congratulate the following students for the academic honor achieved with this appointment.

For more information on this training program, please visit their website: www.biochem.northwestern.edu/biophysnew.



(Student bios written by Annie Topliff, program coordinator for the Center for Structural Biology.)

Sorabh Agarwal

Sorabh is currently studying structural biology in the Rosenzweig lab. He grew up in Madison, Wisconsin and completed degrees in biochemistry and biophysics at UW-Madison. He is interested in understanding the chemistry and biophysics behind biology. Sorabh is not sure what he wants to do upon graduating but hopes to figure it out in the next few years. In his spare time, he enjoys playing the violin, playing tennis, working with computers and reading.

Kristen Dietrich

Kristen Dietrich is a third-year graduate student in the Integrated Graduate Program on the Chicago campus. She is doing her thesis work in Dr. Sarah Rice's lab in the Department of Cellular and Molecular Biology, where she is researching the mechanism in which the motor protein kinesin is self-inhibited. Kristen attended Northwestern University for her undergraduate studies and received a B.A. in environmental sciences and chemistry in 2003.

Minjung "Alison" Kim

Alison obtained her undergraduate degree in chemistry at Bryn Mawr College in Pennsylvania. Under the guidance of Dr. Teresa Woodruff and Dr. Tom O'Halloran, she is currently studying inorganic physiology of the female reproductive system and the relevance of transition elements to meiotic maturation, fertilization, and embryonic development. Outside of the lab, Alison enjoys downtime at the coffee shop and unwinds with a game of tennis or volleyball.

Mike Linaeus

Mike studies the structure and function of potassium channels, a group of integral membrane proteins critically involved in cellular processes. His work focuses on the structural basis of cardiac potassium channel blockade. Cardiac potassium channels are responsible for bringing an end to the cardiac action potential and readying individual myocytes for the next heart beat. Pharmacologic interruptions to this process, such as those caused by inadvertent blockade of the hERG potassium channel, can have disastrous and sometimes fatal consequences. He uses crystallographic techniques to study the interactions that occur within the potassium channel pore and lead to high affinity blockade. Currently, he is investigating the role hydrophobic interactions may play in the stabilization of cardiotoxic potassium channel blockers.

Yoriel Marcano

Yoriel is a fourth-year graduate student in the Chemistry Department. She received her B.S. in 2003 from Northeastern Illinois University in chemistry and mathematics. Her research interests include biophysical (NMR, CD, UV, AUC, computational, etc.) methods to perform detailed studies of structured peptoid helices and other folded structures.

OFFICE/LAB MOVES

Elizabeth Hill, program coordinator for the Center for Cell and Developmental Biology, has moved offices. You can now find her in Pancoe-ENH 3107. Her phone number has not changed.



The Matouschek lab has moved from Cook to the fourth floor of the Pancoe-ENH building. You can find them now in Pancoe-ENH 4221.

BOB & RUBY MacDONALD BID FAREWELL TO BMBCB



Professor Bob MacDonald gave one his famous teaching demonstrations for those who attended his and Ruby's going away party last month. Ruby retired last month and Bob is on leave until August 2007, when he will also retire. But this dynamic duo won't be away from work for long; they are hoping to set up a research lab in the garage of a house in California. All the members of BMBCB thank them for their years with the department and wish them luck as they begin this new journey.

BMBCB'S NEW PROGRAM ASSISTANT

BMBCB welcomes **Chris Crooks** as the new department program assistant. He will be helping with the department seminar series, faculty search, facilities issues, and other department-related projects.



Chris comes to us from California where he had been doing office temp. work for several companies, including the LA Times. Chris graduated from Colgate University, where he majored in music and Japanese. Today, he enjoys playing jazz piano and hopes to one day have a career writing music for movies or video game soundtracks.

NEW GENOMICS CORE

The genomics core is a new shared resource facility that consolidates the capabilities of Microarray and Genotyping cores along with the DNA sequencing services previously offered by the Northwestern Biotechnology Laboratory. Located in the Ward building on the Chicago campus, the facility provides the Robert H. Lurie Comprehensive Cancer Center members, NU researchers and external users access to gene expression profiling using three platforms: genotyping and SNP analysis using three different technologies, automated high-throughput DNA extraction and DNA-sequencing services. This consolidation produces a more efficient and cost-effective operation.

The core houses 8 major instruments, including a Gentra Systems AUTOPURE LS, Illumina BeadChip 500GXDW system, Affymetrix GeneChip instrument system, ABI 7900HT, 400XL ScanArray, MicroGridII, ABI 3100 and an 3730 DNA analyzer. In addition, the genomics core will continue sponsoring educational talks and workshops to help maintain a high level of knowledge amongst NU investigators regarding state-of-the-art genomics research technologies to help facilitate their research. Please contact the director, Dr. Nadereh Jafari, n-jafari@northwestern.edu, for more information.

WINNER OF THE BMBCB COSTUME CONTEST!

Congratulations to IBiS assistant director, Dr. Sacha Patera, on winning the dept. costume contest by bringing the Old West to NU with her cowboy costume.



MEET THE NEW IBiS STUDENTS!

The new IBiS graduate students are already hard at work in classes and in their first lab rotation. These twenty three men and women were selected from a competitive field of over three hundred applicants. Also an interesting statistic, this is the first time since the fall of 1996 that the class has had more men than women.

These students will be completing three rotations this year, so take some time to learn more about them as they may be coming to a lab near you!



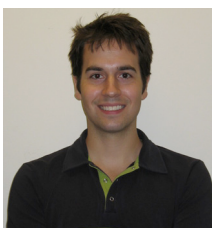
Meyke Ausman comes to us from Purdue, where she worked as a research technician for Dr. Dennis Savaiano and Dr. Cindy Nakatsu, helping to “evaluat[e] changes in the human intestinal microflora in response to different dietary treatments.” She utilized the techniques

of DNA extraction, PCR, and DGGE. Currently in Dr. Qingshen Gao’s lab, she is “finding phosphorylation site(s) on the centrobilin protein and the kinase responsible.” Meyke looks forward to a career in cancer research.



Sayantan Bose is working in the Brickner lab to determine the “role of the transcription factor, Reb1 binding, in the recruitment of the Histone variant H2AZ to promoter regions of highly expressed amino acid biosynthesis genes.” Previously he has “tried to investigate

the role of TAF9 in the recruitment of different factors (other TAFs and TBP) to the eukaryotic promoter during activated transcription.” Sayantan comes to IBiS from the University of Calcutta and enjoys writing freelance pieces when he has the time. He would like a career in academic research perhaps centering on transcription and gene expression.



Justin Cassidy is working in the Evanston Northwestern Healthcare lab of Dr. Hamid Band. He is a transfer student from the University of California, Berkley.

Arlise Andress did her undergraduate work at the University of Chicago with Dr. Jonathan Staley and Dr. Chip Ferguson. She is now conducting research on expression pattern and molecular interaction of E3 ligase in Dr. Rich Carthew’s lab here in BMBCB.



Jason Bant has been enjoying his time in the Morimoto lab investigating “chaperone regulation through quantitation of fluorescent reporter fusions.” After graduating from the University of Illinois, Jason worked as a lab tech there in a soybean pathogen-response genomics lab and later in the UIC medical center’s Cytogenetics Dept. While interested in computational modeling and systems biology, he “[doesn’t] want to stray completely from the lab.” After IBiS, he hopes to do a postdoctoral study abroad.



Kristin Brogaard is happy to be a part of Northwestern’s IBiS program; she is spending her first rotation in Neurobiology and Physiology—in the lab of Dr. Catherine Woolley. Kristin is researching “the acute effects of estrogen on mini EPSCs in the CA1 hippocampal neurons.” She graduated from Occidental College, where she studied “Synaptic development in *C. elegans* and the electrophysiological characteristics of the Girk2a and Girk2c ion channels.” As for her future, she thinks it would be a fun choice to work both in industry and as a professor.

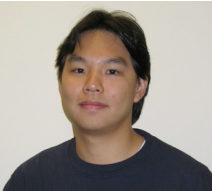


While an undergraduate at Technische University in Munich, **Stephen Fischboeck** got experience in the fields of biochemistry, molecular biology and biophysics. His undergraduate thesis focused on the “determination of the heterodimer dissociation constant of MRP8/14 using FRET and fluorescence anisotropy.” Currently in Dr. Thomas Bozza’s lab in Neurobiology and Physiology, he is studying the molecular neurobiology mechanism of axon guidance in the olfactory system. He looks forward to a career in the biotech industry.





Kristine Gjul Gaustad has worked as a lab tech at the Norwegian School of Veterinary Science and the University of Oslo, Norway on projects that have included "prio expression analysis, bovine in vitro fertilization, reprogramming of cells and epigenetic analysis related to muscle cell differentiation." She is currently studying vesicle transport in epithelial cells in the Folsch lab. She looks forward to a future academic position where she can study biological processes "that are still not well characterized."



Jonathan Hsu, comes from the Johns Hopkins Medical School, where he looked at the "role of a Ras-GAP SH3-domain binding protein in cytokinesis in Dictyostelium cells." Currently, he is in the Weiss lab investigating the "interaction of RAM network proteins and the PBD domain of Cdc5." Jonathan would like his career to further his research in cytokinesis. During those rare moments of spare time, he likes to watch movies, play DDR, and perform magic.



Sujit Jangam is currently rotating in the Biomedical Engineering Dept. for Dr. Guillermo Ameer, working on the "design and development of an immobilized protein...reactor system for purification of blood plasma." Sujit did his undergraduate work at the Indian Institute of Technology Karagpur. His previous research has ranged through the fields of Virology, Bioinformatics, Developmental Biology, and Neurobiology. After graduation, Sujit hopes to work in the private sector for a company that develops prosthetics and therapeutics.



Will Light worked as a research tech in the LaBonne lab before starting in IBiS. Two of the projects he worked on there involved "investigating the role that Id3 plays in the early inductive events in neural crest" and "investigating the partial degradation of Xenopus and Rat Smad1." Currently in the Mayo lab, he is researching the "role of FoxL2 in pre-granulosa cells and granulosa cells in the developing ovary." A future career in academic research may focus on stem cell biology. Will doesn't leave the University to pursue non-work interests; he has been an instructor for the NU Aikido Club for the past two years.



Laura Guichelaar is researching circadian rhythm and metabolic gene expression this quarter in Dr. Joe Bass's lab. During her undergraduate study at Calvin College in Michigan, she worked in Dr. Arlene Hoogewerf's lab investigating the interactions between macrophages and biofilm bacteria and with Dr. David DeHeer, "studying the binding and uptake of hyaluronic acid by the macrophage receptor CD44 in activated macrophages."



Wei Huang is doing her first rotation in the Chemistry Department, working with Dr. Chad Mirkin. She received her undergraduate degree from Tsinghua University in Beijing, China.



Beomkyu Kim graduated from Yonsei University in Seoul, South Korea. He is doing his first rotation in the lab of Dr. Annelise Barron, in the Chemical and Biological Engineering department. He is investigating "enzymatically cross-linked protein polymers as a novel tissue engineering scaffold." Previously, he has researched the structure of TA0743 by NMR. He looks forward to his other rotations and to learning more about the different labs so that he can decide in what scientific area he would like to focus his career.



In Dr. Vimla Band's lab, **Matt Massich** is studying ADA2, which is "bound and targeted for degradation" by the human papilloma virus E6 oncogene. He is "creating an ADA2b-KO construct...[which] will allow us to examine the role of ADA2b in cell growth, differentiation, development, and oncogenesis." His previous research includes studying the development of nanometer scale wire using G-DNA and working to synthesize an isotopically labeled anti-viral compound, which could be used to improve HIV medications. And as a fun fact- Matt shares a hometown with Bob Dylan—the small town of Hibbing, Minnesota. Matt went to school in Minnesota as well, at the University of St. Thomas in St. Paul.

New IBiS cont'd.



Kevin Nelson's current work in the Klein lab may advance the study of Alzheimer's disease. They are investigating the "isolation and identification of a possible receptor for the ADDL neurotoxin, from which the pathogenic cascade of Alzheimer's disease may stem." Kevin graduated from Augustana College here in Illinois, where he looked at "forward genetic screens for deficiencies in spermatogenesis in *C. elegans*." Although currently considering all options, Kevin is interested in a career in academia.



Sean Riordan, a graduate of William Jewel College in Missouri, is doing his first rotation in Dr. Andreas Matouschek's lab. There he is studying "partial protein digestion by the proteasome, in particular the structural motif that is thought to be responsible in signaling the partial degradation of a protein." As an undergraduate, he studied a gene within the endosymbiont *Caedibacter taeniospiralis* that was suspected of having the killing trait that *C. taeniospiralis* confers onto its host *Paramecium tetraurelia*. After completing the IBiS program, he plans to spend his career in academia.



After a summer stint in the Weiss lab, **Sally Salvador** is currently doing research in the lab of Dr. Andy Dudley, concerning the "role of the wnt/camKII pathway in limb development." At the University of Notre Dame, she worked with Dr. JoEllen Welsh investigating breast cancer and vitamin D metabolism, and at Indiana University in Bloomington, she explored retinal development in *Drosophila* with Dr. Justin Kumar.



Adam Seluzicki got his B.S. from Lewis & Clark College in Portland, Oregon. He is now conducting research in Neurobiology and Physiology, under the direction of Dr. Fred Turek.

Steven Philips is currently rotating in BMBCB, in Dr. Ted Jardetzky's lab. He completed his undergraduate degree at the University of Illinois, Urbana-Champaign.



Gabriel Rosanio, a Notre Dame graduate, hopes to find a career that incorporates research into social activism or government consulting. While an undergraduate, he worked in the lab of Dr. Goodson, concentrating on CLIP-170 plus-end tracking interactions. In the Widom lab, he is investigating H1 histone regulation.



Amy Sebeson is also rotating in Dr. Jon Widom's lab this quarter. She was an undergraduate at the University of Wisconsin.



Noelle Wakefield graduated from Chicago State University and is doing her first rotation in the Hirsch lab, which is a part of Evanston Northwestern Healthcare.



SEND US YOUR NEWS AND UPDATES!

If you ever have any information that you would like in *The Cell*, such as updates about organizations or facilities, faculty or student news or notices about upcoming events, please contact Kelly Fust at K-Fust@northwestern.edu or 847.491.5068.

Keep in mind when sending date-sensitive information that the newsletter now comes out quarterly instead of monthly. We look forward to hearing from you!

The Cell is published quarterly by the Department of Biochemistry, Molecular Biology and Cell Biology, at Northwestern University.

If you think you would enjoy receiving *The Cell* or would like to be removed from the mailing list, please refer to the following:

The Cell

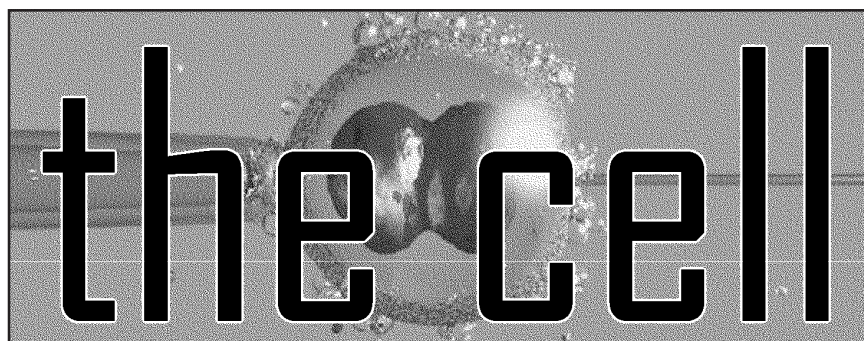
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