The Department of Cell and Developmental Biology continues to shine. New discoveries from CBDB scientists have been emerging at a dizzying pace, and the number of high profile publications is impressive. Despite a difficult economic climate, grant funding remains strong and the educational environment is more vibrant than ever.

CBDB continues to grow, and we are pleased to welcome our latest Assistant Professor, Maya Capelson, to Penn. Maya will be a fantastic addition to the stellar Program in Epigenetics spearheaded by Shelley Berger and Ken Zaret. In order to accommodate our growing number of faculty and staff, CBDB will begin a major relocation this fall. Portions of the Epigenetics Program and the Institute for Regenerative Medicine will move to the new Smilow Center for Translational Research, where we will occupy the 9th floor. Another major portion of the department will consolidate on the 11th floor of the Biomedical Research Building, where our prized microscopy core facility will also be located. This new space plan will bring tremendous opportunity, and it includes some of the most up-to-date research space found at any academic institution. At the same time, this relocation will challenge us to remain as a tight-knit group with a unified mission. The continuation of our well-attended seminars, journal clubs, chalk talks, symposia and other departmental events will ensure our continued interactions and collaborations.

Education remains a critical focus of attention in the department. This year, Steve DiNardo took over as director of the Development, Stem cell and Regenerative Biology (DSRB) graduate group, and Dan Kessler remains the director of the overall Cell and Molecular Biology (CAMB) graduate program. Neal Rubinstein now directs the entire Module 1 program for medical students, and is the recipient of the 2012 Lindback Award. This is the highest award for educational excellence at the university. Jim White, adjunct associate professor of CBDB, has received the Basic Science Teaching Award for the third year in a row. All of our faculty participate in educational programs and courses and provide outstanding one-on-one teaching in their laboratories, preparing the next generation to continue the pursuit of scientific excellence.

CBDB has initiated a series of programs and activities that have helped to transform the basic science landscape at Penn. The creation of the Institute for Regenerative Medicine (IRM), the Program in Epigenetics, and a series of joint recruitments with other institutions and departments are examples of our collaborative leadership approach. The outstanding microscopy core facility that serves the entire Penn campus is a prime example of the contributions that we have made. Our front office also provides an example of excellence, and we are grateful for the outstanding personnel that help us every day to improve the already outstanding levels of scientific discovery and education that are hallmarks of CBDB.

Jonathan A. Epstein
Neal Rubinstein named recipient of The Christian R. and Mary F. Lindback Foundation Award for Distinguished Teaching

Neal Rubinstein has been named recipient of The Christian R. and Mary F. Lindback Foundation Award for Distinguished Teaching. Neal has taught at Penn since 1987. “Incredibly,” writes a colleague, “he has made Anatomy (traditionally a despised and feared course in medical schools) the most popular pre-clinical course, year after year. Since taking over Histology only a few years ago, this once floundering course has become the second most popular! In the process of revamping the curricula in these classes, he has modernized and enlivened these dreaded subjects by infusing them with his own enthusiasm for learning and discovery.” As the course director for two essential areas, he “constantly seeks new ways to improve the course” and has instituted a wide range of educational, curricular and technological enhancements.

As a result, reports one of those students, “he was much more than simply helpful and accessible; he managed to make my first exposure to Histology enjoyable. Even if I wasn’t entirely comfortable, he pointed out in fact two different cell types, I always left class having learned a lot and enjoyed myself in the process.” Echoes another professor, “As an educator, Neal is tireless, dedicated and innovative. He cares deeply about educating the next generation of physicians, and he takes this responsibility very seriously. He is always thinking about how to help the students learn, and what kind of knowledge our students need and how to best communicate that knowledge to the students. It is no wonder that the students appreciate him!”

Efefi Bi promoted to Professor of Cell and Developmental Biology

Dr. Bi has been promoted to Professor of Cell and Developmental Biology. He came to our department in 1998 with an outstanding training record as a graduate student in Dr. Joe Lutkenhaus’s lab at the University of Kansas Medical Center. As an independent investigator at Penn, Bi has emerged as an international expert in the function of the septin family of cell biology, and he is a terrific colleague.

Maya Capelson to join the CDB as an Assistant Professor

Dr. Maya Capelson will join the department as an Assistant Professor on January 1, 2013. During her graduate studies, Maya worked with Victor Corces at Johns Hopkins University where she published well-received papers in Molecular Cell, EMBO Journal, and Biology of the Cell, examining how the SUMO conjugation pathway modulates the function of chromatin modifiers. This is an intense area of investigation and bears upon our understanding of position effects as they occur generally and in gene therapy applications. Maya won three awards for teaching in an Epigenetics course, among others, and her didactic skills were in evidence during her job seminar here, where she made exceptionally clear her research problem and applications. For her postdoctoral studies, Maya worked with Martin Hetzer at the Salk Institute, where she published a groundbreaking, highly cited paper in Cell on the ability of nuclear pore components to regulate gene expression in higher eukaryotes. Previous genetic studies on the nuclear pore had been performed in yeast and suggested that genes regulated by the nuclear pore complex were physically located at the pore. Maya discovered that in higher eukaryotes, several genes involved in two essential areas, the genes that are part of the nuclear pore complex, and which are mutated in human disease, regulate gene expression distal to the site of the pore. That is, the pore components at the gene loci are ‘regulated’ by the pore components themselves. This finding has led to new thinking about the nuclear pore complex and how it becomes targeted for export, and provides novel insights into targets for future therapies of diseases caused by nuclear protein-related diseases.

Ben Garcia joins Penn Epigenetics

Ben Garcia, Ph.D. is the Presidential Associate Professor of Biochemistry and Biophysics and the Epigenetics Program at the Perelman School of Medicine. Ben joined Penn in these appointments effective June 1, 2012. Prior to joining Penn, he was the Assistant Professor of Molecular Biology at Princeton University. Ben’s innovative work in cell biology, proteomics, genomics, and bioengineering places him among the top in these fields. Ben is the recipient of the Presidential Early Career Award, which is the highest honor bestowed by the federal government on young scientists and engineers. It is our belief that Ben’s expertise will aid in collaborations in biochemistry, biophysics, epigenetics, cancer, genetics, and bioengineering and help Penn continue to flourish as a place of outstanding achievements in science and medicine.

Aaron Gitler to Stanford

Aaron Gitler, Assistant Professor with CDB, has accepted a faculty position with Stanford School of Medicine. We recruited Aaron in 2007 during his postdoctoral research at The Whitehead Institute under Dr. Susan Lindquist. Aaron quickly established a robust independent research program and an international reputation. He published numerous articles and his excellence was acknowledged with a vast array of awards and honors in addition to independent NIH R01 and other funding.

The CDB Microscopy Core was founded in 2006 when Dr. James White (then the Graduate Department and recruited Dr. Andrea Stout to serve as the Core’s technical director. At that time the Core was comprised of three microscopes in BRB that were used primarily by researchers from CDB or closely-affiliated departments. Since then the Core has added two staff members: a confocal specialist, Jasmine Zhao, and a scanning EM expert, Dr. Yun Velick. Our collection of instruments has expanded as well and now includes 2 confocal & widefield light microscopes plus one scanning electron microscope. Our instruments are located in BRB, the Richards building, and the new Smilow Center for Translational Research, and we serve over 300 individuals from 150 labs around the entire UPenn-CHop community.

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important because OSK was shown to directly enable M binding and assembly of the factors required for cooperative as there is greater than 2-fold enhancement of OSK binding at sites bound by all four factors as opposed to OSK alone, thereby increasing the efficiency and kinetics of reprogramming process. Further evaluation of the initial binding events revealed that many of the downstream targets of OSK are OSAM factors are involved in processes important to reprogramming as well as self-induced cell death. Cell death is often observed in reprogramming experiments, so perhaps activation of the genes associated with it serves as a protective mechanism to prevent unwanted transdifferentiation and metaplasia. In conclusion, this exciting new work from the Zaret lab provides key insights into the early mechanisms in the process of reprogramming cell fate. Contributions from fundamental research, such as this work from the Zaret lab, may be utilized to increase the efficiency and quality of IPS generation, so that the dream of patient specific iPS cells and eventual clinical translation may one day be realized.

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localization of Bmb and found it to be present at the blastomere membrane at metaphase and then surrounding the chromosomes as they separate. Bmb’s involvement in karyomere (chromatin body) fusion was further supported by live imaging, which revealed dynamic changes in Bmb foci over time, with the protein becoming enriched at karyomere-karyomere interfaces. Bmb is homologous to the yeast protein Smp1 known to be required for nuclear fusion during mating. In examining Bmb’s role in pronuclear fusion, they found Bmb to become enriched at the interface of the two nuclei similar to what was seen in karyomere fusion. Not surprisingly, maternally mutant Bmb embryos were defective in pronuclear fusion. This demonstrates a conserved role between Bmb and yeast KarSp. This paper highlights Brambleberry as a specialized protein required for a unique mechanism of nuclear fusion. Karyomere fusion is employed by large cells during early developmental cleavage events in multiple organisms and these findings open up the field for future work on identifying the proteins involved in this process.