Dear McArdle Alumni and Friends:

It is an exciting time of year in Madison with the return of thousands of students to campus for the new academic year, the arrival of our newest class of graduate students, preparation for teaching fall classes and hopefully, the arrival of cooler and wetter weather. As usual, it has been a busy year for the McArdle faculty and staff, with many of us contributing to the renewal applications for several major NIH grants, including the cancer center support grant for the UW Carbone Cancer Center, the program project grant that supports our research program in tumor virology, and the training grant that supports our Cancer Biology Graduate Program.

Several changes have occurred within the McArdle Laboratory since our last newsletter, including the recruitment of Dr. Eric Johannsen, a physician scientist who directs a laboratory research program focused on Epstein-Barr Virus, to our faculty (joint with Department of Medicine). In addition, Drs. Bill Dove and Jeff Ross have transitioned to emeritus status. Although officially retired, both Bill and Jeff remain engaged in research and education. We are fortunate to have Bill and Jeff, in addition to our other emeritus faculty, Drs. Boutwell, Burgess, Kasper, Pitot and Szybalski, continue to share their expertise and wisdom with all of us.

Multiple changes have also occurred in our administrative core. As you will see from the story herein, Bette Sheehan retired earlier this year. Bette was a mainstay of our administrative team for more than three decades. She is greatly missed and we are grateful to her for her unwavering dedication and exemplary service to the McArdle Laboratory. Megan Maguire joined us this summer to manage our grant submission and faculty development activities. Megan worked as a researcher in Dan Loeb’s laboratory for ten years prior to accepting her current position. Katie Roemer also recently joined us to serve as our student services coordinator. Katie manages our three training grants and assists Dan Loeb in the oversight of our graduate program and Caroline Alexander with the postdoctoral training program. We are pleased to have Megan and Katie on board in these important positions.

I want to take this opportunity to acknowledge the other members of our administrative and research support teams, who rarely get the credit they deserve for their many contributions to our research, education and service missions. Randy Martinson, our department administrator, has been an invaluable member of the McArdle team since 1976 (start dates for other members will be indicated in parentheses). Assisting Randy in managing the department’s finances is Patty Swan (1993). Chris Martinelli (2008) serves as our building manager and has been indispensable as we plan our upcoming move to WIMR Tower II. Don Fechner (1957) continues to work part-time to keep our shared instrumentation operating. Our human resources office is ably staffed by Chris Carollo-Zeuner (2006) and Karen Schwarz (1986) who has continued on a part-time basis since her retirement a couple years ago. Mary Jo Markham (1980), Kristen Adler (1985), and Gaye Stantis (2006), provide critical support services to our faculty and administrators. Rounding out our dedicated support team is Tim Anderson (1998) who provides computer support to McArdle; Debra Stewart (2000) who staffs our glassware washing service; Bradley Stewart (1983) who serves in various research support roles, most recently as staff for our microarray core; and Darrell Bartlett (2004), who mans our stockroom. It would be difficult to find a more loyal, dedicated and experienced group of employees anywhere. On behalf of everyone here at McArdle, I express our gratitude to each of these individuals for their many years of service in support of our mission to develop more effective approaches for preventing, diagnosing and treating cancer.

James Shull
Director, McArdle Laboratory
Bette Sheehan has Retired!

The McArdle Laboratory for Cancer Research at the University of Wisconsin-Madison announces the retirement of a beloved employee, Bette Sheehan, after 33 years of devoted service. Bette has a long history with the McArdle Laboratory. As an undergraduate student, she worked under the direction of Ilse Riegel. Bette then joined the staff full time in 1979 where she proved to be an integral part of the team as Senior Administrative Program Specialist. In this position, Bette gained an expert’s knowledge on grants and assisted faculty with dozens of grant submissions every year. Being that grants are the lifeblood of McArdle, Bette’s extensive knowledge and efficiency in grants management allowed McArdle’s research to thrive. In addition, Bette managed three training grants which provide stipend support to numerous graduate students and postdocs.

Another large part of Bette’s impact came from her role as the Graduate Coordinator for the Cancer Biology Graduate Program. Bette managed the application process, organized the recruiting visits, and kept the students on track to obtain their PhD Degrees, but most importantly, she was the person that the students could trust and come to for advice. First and foremost, Bette always had the interests of the students and postdocs in mind. In return, students always kept Bette in mind. If you were to look at the acknowledgements at the beginning of students’ dissertations over the years, without a doubt, Bette’s name would be prominently featured. If you were to look through the notorious piles of work on Bette’s desk, you would find numerous thank you cards shuffled within.

These are small testaments to the enormous amounts of time, care and energy Bette has invested in the department and graduate program. Bette consistently went the extra mile to make sure things were done well, on time, and never ceased to help others in any way that she could.

“She is the unsung hero not because she did one extraordinary thing, but because she does so many things extraordinarily”

-Paul F. Lambert, PhD, Professor of Oncology
Bette’s long-term personal commitment and substantive impact on hundreds of graduate students, postdocs, faculty, and university staff did not go unnoticed. In 2011, Bette was a recipient of the Martha Casey Award for Dedication to Excellence, which is given annually to one member of the UW academic staff in recognition of his or her exemplary achievements and contributions.

We are forever indebted to Bette’s many contributions that help make McArdle and the University of Wisconsin-Madison so great. We wish Bette all the best in her retirement.

McArdle News 2011-2012

2011

• Dr. Jing Zhang named V Foundation for Cancer Research Scholar

• Dr. Yongna Xing named Shaw Scientist

• Dr. Rob Kalejta received Henry Vilas Associate Award

• Dr. Bill Dove selected to give Verne Chapman Memorial Lecture at the International Mammalian Genome Society Conference

• Dr. Eric Johannsen, Dr. Shigeki Miyamoto and Dr. Nate Sherer joined McArdle Faculty

• Dr. Bill Dove became Professor Emeritus of Oncology

• New postdoc training grant funded: Molecular and Cellular Mechanisms of Tumor Development

2012

• Dr. Chris Bradfield received Kellett Mid-Career Award

• Dr. Wei Xu received Henry Vilas Associate Award

• Dr. Paul Lambert named Howard Temin Chair

• “50 Years of Gene Therapy” Conference held to Honor Dr. Waclaw Szybalski in Krakow, Poland

• Dr. Jeff Ross became Professor Emeritus of Oncology

McArdle Mission:

“To pursue outstanding research programs directed toward understanding the causes and biology of cancer, the factors that regulate normal and neoplastic growth and differentiation, and to provide training of the highest quality in basic cancer research at the graduate and postdoctoral levels”
July 2012 marked the one-year anniversary for one of the newest faculty additions to the Department of Oncology and the Cancer Biology Graduate Program: Dr. Nate Sherer. Dr. Sherer received his PhD in Microbiology from Yale University and completed a postdoc in Mike Mali’s lab at King’s College in London. In July, Katie Roemer moseyed over to Bock Labs to ask Dr. Sherer about his first year in Madison.

KR: To start us off, what are you currently researching?

NS: Some interests of our group include the assembly and spread of HIV, virus-host interactions and retroviral gene regulation. We use murine cells to study HIV because there are at least three defects in the murine system to the post-transcriptional regulation of HIV. We recently published that the murine version of the Crm1 nuclear export factor is defective for HIV-1 Rev function. Rev regulates the nuclear export of the viral genome and is therefore essential for replication. We’re using that defect as a nice model system to try to figure out new features of how HIV gets its RNAs out of the nucleus. One of our questions revolves around how genomes are expressed and transported through the cytoplasm and another question is how they are packaged into virions that assemble at the cell surface; here we’re very interested, in particular, in the Matrix portion of the Gag protein that regulates Gag-membrane binding. Finally, we have a long-standing interest in how viruses go from cell to cell to spread infection. We probably have too many ideas at the moment.

KR: What made you decide to research HIV and retroviruses?

NS: I was interested in viruses as an undergrad and I did virus work during my PhD studies. I think that viruses are very simple and powerful systems for studying cell biology and I’ve always been interested in how pathogens get into cells and exploit cell biology. Viruses are parasites, they are gene poor organisms, and they must invade the cell. Some viruses have hundreds of genes, but some retroviruses only have three, so every bit of the virus has to be multifunctional and very well adapted to the cell. That gives you tools to study cell biology as well as to study infection and, potentially, to find ways to block infection. That’s one interest. The other is that I’ve always been fascinated by imaging systems, especially live cell imaging. Right around the time that I was starting grad school, it was becoming possible to fuse green fluorescent protein to most any protein in the cell. With more complex microscope configurations, it was possible to do time-lapse movies and watch how virions move and how cells change over time during infection. Therefore, my interest in viruses has been two-fold: understanding the microbial pathogenesis perspective and a love to see these things [infection] happen in real time.

KR: What types of methods and techniques are you using in your research?

NS: We primarily do a lot of molecular biology, so cloning, making mutations in viruses and potential cellular host factors. We’re trying to move into more sophisticated biochemical approaches. It’s been very fruitful to isolate proteins and see what their interaction factors are for proteins implicated in viral life cycles and we want to do that in a comparative sense. For example, we know that Crm1 doesn’t work [for the HIV-1 life cycle] in the mouse cell but does work in the human cell, so what’s different about the complexes that are formed between Rev and Crm1 and the viral RNA? So we’re working on isolating those complexes and finding out what the protein constituents are. As for imaging, we have short-term fast imaging to capture rapid events and long-term imaging to monitor the entire infection cycle. We’re going to have to do some more sophisticated imaging such as total internal reflection microscopy or superfast confocal imaging for a couple of our questions. With these techniques we can hone in specifically on events that are occurring at the plasma membrane like HIV assembly. This first year has really been testing the waters to see what’s possible, in terms of the
KR: What has been the most challenging part of starting up your lab over this past year?

NS: I think the challenge has been mostly psychological. I had a difficult time just adjusting from London to being back in the U.S. But overall, it’s an interesting transition. As a postdoc you go to the bench and really hone in on that benchwork. There’s nothing I love more than benchwork! But in transitioning to P.I., you live for your students, the department and the institution. That’s a wonderful challenge. It’s all gone very fast but it’s been a lot of fun.

KR: So, who are the current members of your lab?

NS: There’s Mounavya Aligeti who is a research specialist; she’s working on the nuclear export project. Then there’s Laura Dougherty, a Cancer Biology graduate student who is actually moving to Princeton, but she’s done beautiful preliminary work on the genome transport studies. There’s Jaye Gardiner, a Cancer Biology grad student who’s working predominantly on cell to cell spread. Finally, there’s Eric Mauer, an undergrad who’s working with Jaye and trying to image two different viral RNAs at the same time.

KR: How does your research fit into the cancer focus of McArdle?

NS: In McArdle, we study HPV, HBV, loads of herpesviruses, and other viruses that directly cause cancers. When I went on the job market, I didn’t necessarily think I would be a good fit for a cancer research institute, because I’ve typically thought about retroviruses from the perspective of the cell biology and pathogenesis aspects. But, traditionally retroviruses were studied as tumor viruses. The first oncogenes were identified because of retroviruses in animal systems. Thanks to Howard Temin and others, retrovirus research basically has an unparalleled history here at McArdle. It wasn’t until the early 80’s that they finally found a human retrovirus that caused cancer and that was HTLV-1. Then suddenly HIV showed up, which looked much like HTLV, but wasn’t the same. It didn’t directly cause cancer, but people who developed AIDS came in presenting with three different cancers: Kaposi’s sarcoma, Non-Hodgkin’s lymphoma, and invasive cervical cancer. These are caused by opportunistic infections and the reason this happens is that the immune system is suppressed and can’t fight off infection like it normally would. What that means is that HIV, even though it doesn’t directly cause cancer, leads to an immune system that makes the body very susceptible to cancer. The fact that upwards of 40 million people are infected with HIV worldwide means that HIV continues to be a huge cancer issue.

KR: What has been your favorite thing about Madison so far, both professionally and personally?

NS: Professionally, I love the campus, the collegial environment, the history, the quality of the students. That’s many things, but all are equally important. When I got the offer from UW, I jumped on it because my perception of this place in terms of the quality of science, the resources, and the overall environment is tremendous. I certainly haven’t been disappointed; it’s been above and beyond what I’ve anticipated. I must also mention the incredible support I’ve received from McArdle and the Institute for Molecular Virology. I really had no idea what this process of becoming a PI would be like. Coming from Britain, the structure of things there are somewhat different in terms of early career progression. Anyway, overall, it’s a great place to go to school and that makes it a great place to be a PI; you’re around motivated, hardworking, and brilliant people.

Personally, in Southeast London we lived in a one bedroom flat as a family of four with a 1.5 hour daily commute and dreary weather. It’s been nice to be back in the States, to be close to family, to be able to watch my girls, ages 2 and 4, run around. We’ve enjoyed taking them to the zoo and Children’s Museum and all the other great places that Madison has to offer.

KR: So I have to ask, were you sad that you were not in London for the Olympics this summer?

NS: No, not at all! If you’ve ever taken public transportation in London, you would understand why. I’m sure it would have been exciting. We actually lived close to Crystal Palace Park where they have a national sports center that one of the big countries was going to use as their launch pad. It would have been cool to see all the athletes running around, but no, my family and I are very happy to be in Madison.
I continue to maintain scientific connections and friendships with colleagues I met at McArdle. Perhaps more importantly, my time at McArdle also taught me the valuable lesson that Packers fans are people too, and hopefully, also allowed me to teach the reciprocal lesson that Vikings fans are people as well. We may not have been one big happy family on Sundays in the fall (or Monday morning after the Vikings/Packers games in the Farnham lab, where trash talking ensued), but for the other six days of the week, we all learned that our rooting interests did not define our scientific prowess or enthusiasm for research, which we all held in common.

Emily Powell, PhD
Postdoctoral Fellow, Washington University

I joined the Cancer Biology Graduate Program at the University of Wisconsin-Madison in the fall of 2005. I was immediately drawn to the dynamic and diverse interests of the team of collaborative McArdle researchers working to answer the most important questions facing cancer patients today. I joined the laboratory of Dr. Wei Xu and began my graduate thesis project examining the role of estrogen receptors in hormone dependent diseases such as breast cancer. Wei’s influence, as well as that of the entire McArdle team, taught me the value of carefully designed hypothesis-driven experiments, hard work, careful optimization, and collaboration.

The diverse research interests of the various McArdle labs provided a prolific scientific environment and afforded intimate collaboration with seasoned cancer biologists that allowed me to think about my project, and about cancer biology in general, from multiple vantage points. I feel incredibly fortunate to have received the assistance of these esteemed cancer biologists as they helped me to grow into an independent scientific researcher.

Amy Weinmann, PhD
Associate Professor, University of Washington

I performed my postdoctoral fellowship in Dr. Peggy Farnham’s laboratory from 2000-2003. My research in Peggy’s lab focused on developing new approaches to define transcription factor binding patterns within the context of the natural nuclear environment of living cells. The methods that we developed were at the cutting edge of coupling the chromatin immunoprecipitation (ChIP) assay with downstream approaches to analyze the DNA that is purified in this assay due to its association with a specific transcription factor. I utilized these novel methodologies and the knowledge gained from my postdoctoral studies to launch my independent career at the “other UW.”

I began my independent laboratory at the University of Washington in the fall of 2003 and I am currently an Associate Professor in the Department of Immunology. My laboratory studies how lineage-defining transcription factors establish cell-type specific gene expression programs in immune cell development. Importantly, defining the mechanisms by which the T-box transcription factor T-bet regulates immune cell differentiation has also provided new insights in understanding the role for the T-box family in regulating epigenetic events in a number of developmental systems.

My postdoctoral training at McArdle had a significant impact on my career and I have many fond memories of my time there. Scientifically, I benefited tremendously from the brilliant minds and great work ethic that was always present in McArdle. This created an atmosphere that was inspiring and made the hard work that is involved in cutting edge research very rewarding and also enjoyable.
As helpful as my McArdle faculty mentors were, I attribute at least as much of my McArdle success to scientific discussions with fellow students at the Terrace or The Library. Some of my fondest memories of my time at UW are of our times after lab celebrating the success of difficult experiments (or lamenting failed attempts!). Memories of camping in the beautiful Wisconsin countryside with great friends, warm summer evenings watching the sailboats on Lake Mendota, autumn on State Street and Camp Randall, getting to know more about my field and my travel buddies while away at conferences, and freezing my tail off in the subzero temperatures waiting for the bus (or sprinting after it in snow boots) grow fonder in my mind with each passing day.

It was very difficult for me to leave my best friends, McArdle, and Madison as I moved on to my postdoc at Washington University in St. Louis, but I am very happy with the direction my life and career seem to be taking. I currently live in St. Louis with my husband Greg and our 2-year-old son, Thomas. Being a postdoc mommy is challenging and demanding in the best way possible. It’s refreshing to have come from, and to be in, a healthy environment that supports a comfortable balance of family life and science life. Learning to juggle the two is an ongoing process, but I’m learning to be both a better parent and a more efficient scientist for it.

In the lab, I am currently using whole animal in vivo molecular imaging in conjunction with transcriptional profiling to identify factors required for breast cancer metastasis. I am funded by a DOD Breast Cancer Research Program postdoctoral fellowship and am working in the labs of Drs. Helen and David Piwnica-Worms in the BRIGHT Institute, which has a heavy emphasis on cancer biology and has close ties to the Siteman Cancer Center, providing a clinical vantage point for these studies. Upon the completion of my postdoc, I hope to continue to focus on breast cancer metastasis and to utilize my unique skill set provided by my experiences at UW and Wash U.
# Recent Graduates

## 2012

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<th>Graduate Name</th>
<th>Program</th>
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<tr>
<td>Laura Dougherty, MS</td>
<td>Cancer Biology</td>
<td>Nate Sherer</td>
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<td>Brandi Gancarz, PhD</td>
<td>CMB</td>
<td>Paul Ahlquist</td>
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<td>Yan Liu, PhD</td>
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<td>Chris Oberley, PhD</td>
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<td>Norman Drinkwater</td>
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<td>Myeong-Kyun Shin, PhD</td>
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<td>Heath Smith, PhD</td>
<td>Cancer Biology</td>
<td>Doug McNeel</td>
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## 2011

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<tr>
<td>Amanda Esch, PhD</td>
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<td>Dick Burgess/Janet Mertz</td>
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<td>Shruti Goel, PhD</td>
<td>CMP</td>
<td>Caroline Alexander</td>
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<td>Hao-Shun Huang, PhD</td>
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<td>Allison McDaniel, MS</td>
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<td>David Primer, MS</td>
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<td>Shannon Kenney</td>
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<td>Zhi Wen, PhD</td>
<td>Cancer Biology</td>
<td>Paul Ahlquist</td>
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**We greatly appreciate your generous support!**

"The McArdle File" is brought to you by the Department of Oncology at the University of Wisconsin-Madison.

A special thanks to Katie Roemer, Nate Sherer, Amy Weinmann, and Emily Powell for providing articles and photos.

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