

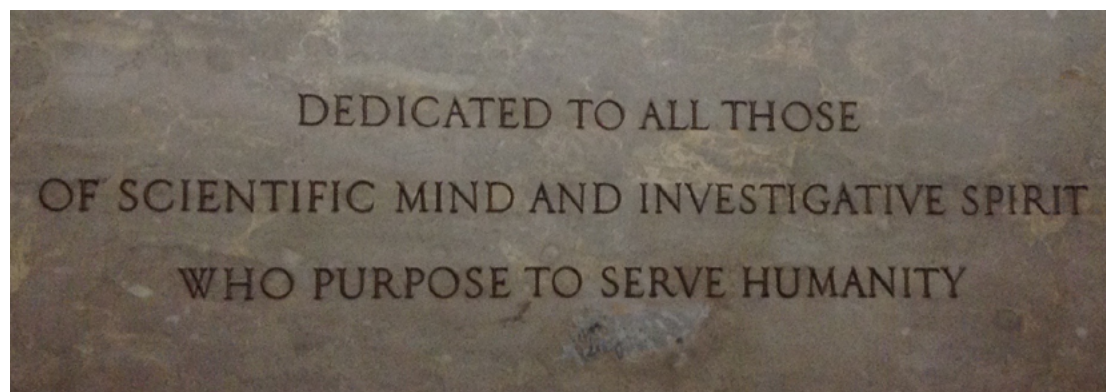
upstategrad update

transforming students from consumers of knowledge into producers of knowledge

may 2015

FROM THE DEAN

Recently, I was walking through the front hallway of Weiskotten Hall late in the evening, thinking about all the things I had to do in the next day, and looked up from my worry to see something I had missed after 21 years at Upstate. I am not sure how I missed it since it's 3 X 6 feet, hangs on the wall and is immortalized in bronze and 4 inch letters, but I did. When I saw it, it stopped me in my tracks as I read through it carefully and thought about it. First, it said that my observational skills had really narrowed, and I needed to start to open my eyes to the world. I would certainly think that we all need to do this much more, and since then I have consciously tried to do just that. Taking in the springtime for its rich beauty can make many of those worries go away. Literally what it said in those 4 inch letters is:



It was a WOW moment. Here I was looking at a plaque on the wall, clearly the biggest plaque at Upstate, which was dedicated to me, to the research faculty, to the graduate students and postdocs at Upstate. It defined who we are, and why we are here. It gave us purpose and a unified conscious goal. It brought me out of my slump and made me smile wide. Every time you pass by that plaque you should try to try to read it, knowing you are part of a great cause, and knowing that your mission is a noble one shared by many of us here at Upstate. It makes those worries seem much less significant, and what we do so much more meaningful.

in the lab with Dr. Bruce Knutson

WE ARE PLEASED TO WELCOME OUR NEWEST FACULTY MEMBER: **BRUCE KNUTSON, PHD!**



Dr. Knutson, is an assistant professor in the department of Biochemistry and Molecular Biology. Prior to moving to Upstate, Dr. Knutson was a postdoctoral researcher at the Fred Hutchinson Cancer Research Center in Seattle, WA and a PhD student in the Department of Biochemistry at Purdue University in West Lafayette, IN.

The major focus of our research is to elucidate the molecular mechanism of RNA polymerase I (Pol I) transcription and how its dysregulation leads to cancer and disease. Pol I transcription begins with the formation of the pre-initiation complex (PIC), a macromolecular assemblage of more than 20 different proteins that function coordinately to accurately position Pol I at the DNA promoter and to help initiate transcription (Figure 1). We are interested in the key structural facets of Pol I PIC formation and how it's altered in cancer and diseased cells. Our research uses an innovative cross-organismal and interdisciplinary approach that integrates bioinformatics, biochemistry, computational biology, genetics, proteomics and structural biology in yeast and human systems. This includes a sophisticated protein-protein interaction mapping technologies such as combined chemical crosslinking/mass spectrometry (CXMS) that is used to determine the spatial orientation of Pol I PIC components and how they change during the transcription cycle and in diseased states.

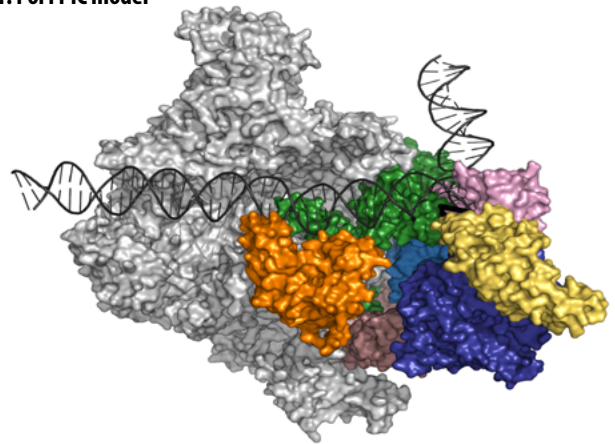
More than a century ago, an Italian pathologist, Giuseppe Pianese, made the landmark observation using a first generation light microscope that the nucleolus of a cancer cell is enlarged compared to normal cells. The nucleolus is a unique nuclear sub-compartment that is the site of Pol I transcription and ribosome biogenesis. In recent years, the importance of this simple observation has illuminated a fascinating and intimate connection between

cancer and dysregulated Pol I transcription. Therefore, it is an exciting time for the Pol I field because there is a new push to understand the basic and fundamental principles of the Pol I transcription process. This has been fueled by the realization that Pol I transcription and ribosome biogenesis are viable anti-cancer therapeutic targets.

In cancer cells, Pol I transcription and ribosome biogenesis are upregulated and their heightened activity increases the size of the nucleolus. Cancer cells have a tremendous demand for ribosomes in order to synthesize the high level of proteins necessary drive cancer cell progression and proliferation. We still know very little about the Pol I transcription process and how its dysregulation is linked to cancer. Therefore, my lab is motivated to better understand the Pol I transcription mechanism and its regulation so we can discover new and better ways to target the Pol I transcription system in cancer cells.

Besides cancer, mutations in Pol I cause an autosomal dominant craniofacial abnormality called Treacher Collins Syndrome (TCS). TCS is characterized by a severely underdeveloped lower jaw and cheekbones that is treated by an extensive multi-stage surgical reconstruction from childhood to early adulthood. We are interested in how these Pol I mutations cause TCS, how they affect Pol I activity, and how they can be suppressed to treat the disease. We believe this work will help us to understand the molecular basis of TCS and how it is related to other craniofacial dysmorphologies.

Figure 1. Pol I PIC model



Surface representation of the Pol I PIC model. A combination of bioinformatics, protein modeling, CXMS, and yeast biochemistry and molecular genetics was used to derive the architectural model of the Pol I PIC shown here. Pol I is colored in light grey and various Pol I transcription factors are colored in orange, blue, green, pink, and yellow. DNA is depicted as a black ribbon.

look mom, we've been published!

CONGRATULATIONS AUTHORS!

Check out some of the publications from the College of Graduate Studies in the last month:

Robinson B, **Geneva I**, Landas S, Michiel R, White K, Grage RA, Lutz C, Edwards WD. Novel association of elastofibroma with aortic stenosis: report of a case report interfering with a thoracotomy procedure and a reassessment of typical patient demographics and tumor location. *J Thorac Oncol*. 2015 Apr;10(4):e18-20

<http://www.ncbi.nlm.nih.gov/pubmed/25789839>

Jakovcevski M, **Ruan H**, Shen EY, Dincer A, Javidfar B, **Ma Q**, Peter CJ, Cheung I, Mitchell AC, Jiang Y, Lin CL, Pothula V, Stewart AF, Ernst P, Yao WD, Akbarian S. Neuronal Kmt2a/Mll1 Histone Methyltransferase Is Essential for Prefrontal Synaptic Plasticity and Working Memory. *J Neurosci*. 2015 Apr 1;35(13):5097-5108.

<http://www.ncbi.nlm.nih.gov/pubmed/25834037>

Liu Y, Wang X, Chen XJ. Misfolding of Mutant Adenine Nucleotide Translocase in Yeast Supports a Novel Mechanism of Ant1-induced Muscle Diseases. *Mol Biol Cell*. 2015 Apr 1;. [Epub ahead of print]

<http://www.ncbi.nlm.nih.gov/pubmed/25833713?dopt=Abstract>

Wright FA, Lu JP, Sliter DA, Dupre N, Rouleau GA, Wojcikiewicz RJ. A point mutation in the ubiquitin ligase RNF170 that causes autosomal dominant sensory ataxia destabilizes the protein and impairs inositol 1,4,5-trisphosphate receptor-mediated Ca²⁺ signaling. *J Biol Chem*. [Epub ahead of print]

<http://www.ncbi.nlm.nih.gov/pubmed/25882839?dopt=Abstract>

honors, accomplishments & awards

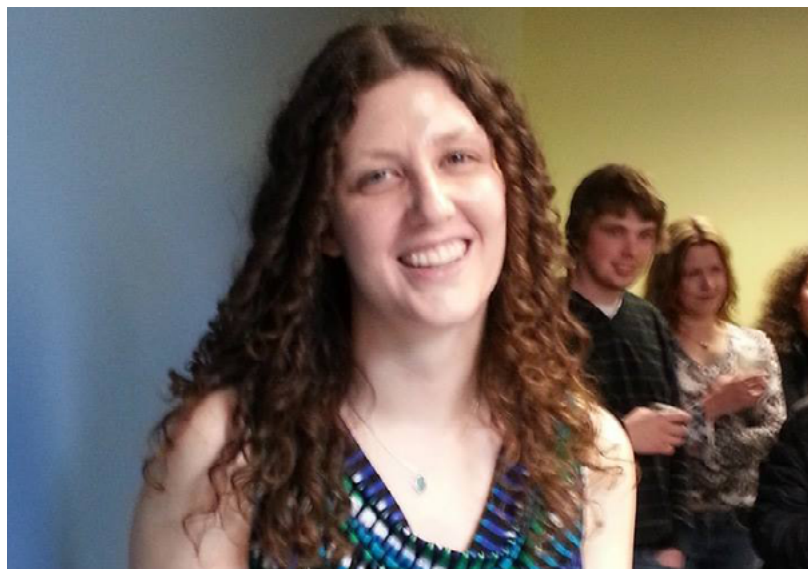


Chandrav along with his advisor Dr. Moffat

CHANDRAV DE, a PhD Candidate in Microbiology & Immunology, successfully defended his dissertation on April 13th. Chandrav's advisor is Dr. Jennifer Moffat.

Chandrav will be joining the Institute for Global Health & Infectious Diseases at University of North Carolina School of Medicine, where he will be doing his postdoctoral research with Dr. J. Victor Garcia-Martinez.

Congratulations and best of luck, Chandrav!



Dr. Neva Watson celebrates with fellow students, faculty and staff.

NEVA WATSON, a PhD Candidate in Microbiology & Immunology, successfully defended her dissertation on April 23rd. Neva's dissertation advisor is Dr. Paul Massa.

Neva will be headed for the College of Veterinary Medicine at Cornell University, where she will be doing her postdoctoral work with Dr. Brian Rudd in the Microbiology & Immunology department. Congratulations and best of luck, Neva!



Sean pictured outside Weiskotten Hall along with his advisor Dr. Margulies

SEAN DEBOYCE, a masters student in Anatomy, successfully defended his thesis on April 23rd. Sean's advisor is Dr. Bryan Margulies.

Congratulations, Sean – keep up the great work!

REBECCA SAGER, a graduate student in Biochemistry & Molecular Biology with Dr. Leszek Kotula, successfully passed her qualifying exam on April 2nd. Congratulations, Rebecca!

IVAYLA GENEVA, a postdoctoral fellow in Ophthalmology, was recently awarded one of ten 2015 Foundation Research Grants offered by the American Society for Cataract and Refractive Surgery. Eve's clinical project titled "Multicenter clinical trial to evaluate a new surgical approach for the prevention of negative dysphotopsia" is a collaboration with Bonnie Henderson, MD from Tufts University School of Medicine.

DANIEL TYLEE, an MD/PhD student in Neuroscience with Dr. Stephen Glatt, received an Autism Speaks Weatherstone Predoctoral Fellowship. Dan's proposal is titled: "Advanced Autism Genetics: Biological Subgroups, Diagnostic Classification, and Resilience." Congrats, Dan!

what we've been up to ...



GRADUATE STUDIES' DISTINGUISHED ALUMNI DAY

Every year, we devote one day to bringing back one of our "distinguished alumni." The day-long event featured a noon-time seminar by our visiting alumna. The rest of the day allowed students to network with her and gain advice in an informal setting. During her visit, our alumna met with faculty as well. A continual rotation allows each department the chance to bring one of their alumni back to campus for a day or two.

On **Monday, April 20th** we were proud to host: **Dr. Karlett J. Parra**. Dr. Parra is currently Associate Professor and Chair of the Biochemistry & Molecular Biology Department at the University of New Mexico. Dr. Parra presented: "V-ATPase: Adapted Sensor of Cellular Stress." Dr. Parra graduated from the Biochemistry & Molecular Biology Program in 1998. Her thesis sponsor was Dr. Patty Kane.

Career Development: The Process of Writing a Scientific Paper

On April 27th, the College of Graduate Studies offered a Career Development Workshop entitled "The Process of Writing a Scientific Paper" for graduate students and postdocs. The workshop was presented by Fred Wilson, Managing Partner of WilWrite LLC. WilWrite, a full-service writing and editing firm, has helped clients worldwide to communicate their medical and scientific information. They prepare manuscripts (for submission to peer-reviewed journals), book chapters, manuals, white papers, news articles, scientific reports, posters, and PowerPoint presentations. They also convert complex technical language into simplified English for readers who speak English as a second language.

**We've begun planning the career development workshop series for the 2015 - 2016 academic year!
If you have a suggestion for an upcoming career development workshop, please let us know!**

and in other news ...

The Ninth Annual International Festival was held on Friday, April 10th where we celebrated food, music, dance and culture from around the globe. Pictured: Weiyi Xu (CGS student), Xian Zhang (CGS student), John Yu (COM student), Guanqun Li (COM student), Hua Liu (COM student), Harsh Patel (CGS student), Jennifer Abbott (International Student Advisor), and Arijita Chakraborty (CGS student).



MARIA POPESCU, a PhD student in neuroscience, presented a poster at the 2015 American Society for Neural Therapy and Repair Conference, held April 29th through May 2nd in Clearwater Beach, FL.



CONGRATULATIONS, MR & MRS. RIPA!!

The former Krystal Smith, our Coordinator of Graduate Recruitment and Admissions and the MD/PhD Coordinator, is now officially Mrs. Krystal Ripa! Krystal and Michael married on Saturday, April 18th at a beautiful ceremony surrounded by family and friends. The newlyweds just returned home from their getaway in the Dominican Republic.

upcoming events



Pictured above: our 2014 graduating class with Dean of the College, Dr. Mark Schmitt

COLLEGE OF GRADUATE STUDIES COMMENCEMENT:

Sunday, May 17, 2015

1:45pm

Carrier Theater, John H. Mulroy Civic Center, OnCenter

Come out Sunday, May 17th to support our graduates!

Join us for a pre-ceremony brunch at 11:00 AM in the 9th Floor Cafeteria of Weiskotten Hall.

Then join us at the OnCenter for the College of Graduate Studies graduation ceremony at 1:45pm in the Carrier Theater.

We hope to see you there!

Don't forget to join us EVERY WEDNESDAY at 3PM

in the GRAD STUDIES CONFERENCE ROOM* for AFTERNOON TEA & SOME SWEET TREATS!!

***FIRST WEDNESDAY OF THE MONTH TEA IS AT THE NRB 3708. WATCH YOUR EMAIL FOR REMINDERS.**

IS THERE SOMETHING WE MISSED??

If you have something that should be included in our next issue, let us know!

Email Jennifer Brennan at brennanj@upstate.edu