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Message from the Chair



The UAB Department of Pathology is recognized internationally as an innovative leader in academic pa-

thology. This past year witnessed the successful launch of our Community Practice Pathology Program in Montgomery and the further growth of the Division of Informatics which is developing a national reputation in computational pathology. Our department initiated the development of Molecular Tumor Boards to promote comprehensive cancer gene set testing to improve patient care and our faculty received acclaim for scientific advances in immunology, cancer research, free radical biology, and translational re-

search. These accomplishments arise from a dedicated and creative team of faculty, students and staff, committed to excellence.

The department continues to grow and evolve. New faculty in several divisions will soon be joining the department from numerous outside institutions and they will bring fresh ideas and approaches to UAB. We welcome their arrival and look forward to new residents, fellows and graduate students who will continue to revitalize the department. Academic pathology is under significant stress financially to meet its clinical mission while maintaining its educational and research goals. Our department is perhaps uniquely positioned to meet the future challenges facing academic departments

of pathology since we have embraced innovation and cost-effective patient care as a matter of practice. Opportunities abound in our department for inter-divisional scientific collaboration and inter-disciplinary cooperation across the UAB Health System. It is clear that experimental and clinical pathologists will play increasingly important leadership roles in research, teaching and clinical care at UAB. Our department is ready to take on these responsibilities and assist UAB in becoming the preferred academic medical center in the 21st century.

Best wishes,
Kevin A. Roth, M.D., Ph.D.

Pathology In Focus Editorial Team

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Majd Zayzafoon, M.D., Ph.D.
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Dr. Dejun Shen joined UAB Department of Pathology, Division of Anatomic Pathology as Assistant Profes-

sor in January 2012. Dr. Shen received both his M.D. and Ph.D. degrees from Zhejiang University College of Medicine in China. He received his postdoctoral training in molecular oncology at the Medical University of South Carolina in Charleston and at Charles R. Drew University of Medicine and Science in Los Angeles. He then joined the UCLA David Geffen School of Medicine as

research faculty and served as the research director of Gonda/UCLA Breast Cancer Research Laboratory. At the time, Dr. Shen's main research interest was in the molecular oncology/molecular pathology of breast cancer, more specifically in breast cancer biomarker research and breast cancer vaccine development. Much of his research effort was devoted to the application of high throughput gene expression and proteomic analysis and bioinformatics in efficient identification of breast cancer biomarkers and development of a BCG-based breast cancer vaccine. His postdoctoral re-

search on BRCA1 gene mutation won the AACR/Pharmingen Young Investigator award in 1998.

Dr. Shen received his AP/CP pathology residency training at the University of Southern California in Los Angeles from 2006 to 2010. He then completed a subspecialty Breast Pathology fellowship under Dr. Stuart Schnitt, Dr. Laura Collins and Dr. James Connolly at the Beth Israel Deaconess Medical Center (BIDMC), Harvard Medical School. Dr. Shen continued his breast cancer biomarker research during his residency and fellowship years and coauthored

Faculty Profile: Dejun Shen, M.D., Ph.D. Cont'...

eight peer-reviewed papers during this time. His breast cancer proteomic biomarker study won the prestigious Stowell-Orbison Award for the pathologist-in-training at USCAP 2009. Dr. Shen applies bioinformatics to his breast cancer research, but he is also interested in applying informatics to improve teaching and service work. During his chief residency year at USC, he created a reference/education website LACUSCPATH (<https://sites.google.com/site/lacuscpath/>) that enabled USC's residents and attending staff to instantly access important oncall references and documents, which became a great asset for the school's pathology residency program. During his fellowship year, Dr.

Shen built the BIDMC Breast Pathology webpage (<https://sites.google.com/site/bidmcbreastpathology/>) to facilitate resident teaching in breast pathology, which is now also available to UAB pathology residents and fellows.

At UAB, Dr. Shen's major clinical responsibility is surgical pathology diagnosis, primarily in the subspecialty of breast pathology, genitourinary pathology and gastrointestinal pathology. His current research interests are mainly in two areas: (1) precision oncology and cancer biomarkers and (2) rapid molecular imaging for surgical margin surveillance. For his breast cancer biomarker study, Dr. Shen has been working on mining whole genome

sequencing data from The Cancer Genome Atlas (TCGA) in order to characterize the genomic features of cancer histopathology. For his molecular imaging study, Dr. Shen has received a career development award from the UAB Comprehensive Cancer Center to develop a novel lectin-based, near infrared (NIR) optical imaging method that is capable of intraoperatively identifying positive surgical margins of breast lumpectomy.

Dr. Shen, his wife Jianbo, and his two daughters, Helen and Sarah, have enjoyed their new life in Birmingham, a city that offers pleasant weather, beautiful landscape, great restaurants, and excellent education.

Faculty Profile: Emidio Capriotti, Ph.D.



Dr. Emidio Capriotti is an Assistant Professor in the Division of Informatics

since September 2012. Dr. Capriotti's research interests involve various aspects of Computational Biology and Bioinformatics. Dr. Capriotti received his Ph.D. degree in Physical Sciences from the University of Bologna in Italy in 2004. During his PhD, he developed statistical and machine learning approaches for predicting protein three-dimensional structure, protein folding kinetics and thermody-

namics. He implemented I-Mutant, the first machine learning tool for predicting the protein stability change upon single point mutation. Dr. Capriotti was postdoc for two years in the Bologna Biocomputing Group where he worked to the development of methods for predicting functionally deleterious mutations in proteins under the supervision of Prof. Rita Casadio. The results of his research in Bologna were selected for oral presentation in the main international and European conferences for computational biology and bioinformatics (ISMB 2004 and ECCB 2005).

In 2006 Dr. Capriotti joined the Structural Genomics Unit at the *Centro de Investigacion Principe Felipe* in Valencia (Spain). In Valencia his research focused on the development of methods for the comparison and prediction of RNA three-dimensional structure under the supervision of Dr. Marc Marti-Renom. Dr. Capriotti's research on the analysis of RNA structure resulted in the implementation of a new method for the alignment of RNA three-dimensional structure (SARA) and a statistical potential for the evaluation of RNA structural models (RASP). The paper

Cont'd...

Faculty Profile: Emidio Capriotti, Ph.D. Cont'd...

presenting SARA algorithm was selected for oral presentation at the main European conference for computational Biology (ECCB 2008).

In 2009, Dr. Capriotti was awarded a Marie Curie International Outgoing Fellowship, funded by the European Community. He joined for 2 years the Department of Bioengineering at Stanford University in Palo Alto (California) under the supervision of Prof. Russ Altman. During this period he developed a new machine learning approach to predict the impact of deleterious vari-

ants using protein structure information (SNPs&GO). To complete the last stage of the Marie Curie Outgoing Fellowship, in 2012 Dr Capriotti returned to Spain where he was a contracted researcher at the University of Balearic Islands at Palma de Mallorca.

Dr. Capriotti joined the Division of Informatics in September 2012 where he established the BioFold (Biomolecules, Folding and Disease) group. The main research interest of the group consists in understanding the relationship between structural and functional bimolecular

changes and disease. In particular, Dr. Capriotti is developing methods for cancer genome interpretation. In addition, in collaboration with Dr. Basu, he is promoting research and training in computational biology and bioinformatics (CB2) at UAB organizing courses and journal club presentations (<http://www.uab.edu/cb2>).

From November 2012 Dr. Capriotti is also a F1000 faculty member in the section of bioinformatics.

Accolades:



Dr. John Chatham received the Graduate Dean's Excellence in Mentorship Award.

Dr. Chatham also received an award for distinction in scholarship in the *American Journal of Physiology—Heart and Circulatory Physiology* for the following article: Collins HE, He L, Zou L, Qu J, Zhou L, Litovsky SH, Yang Q, Young ME, Marchase RB, and Chatham JC: Stromal Interaction molecule 1 is essential for normal cardiac homeostasis through modulation of ER and mitochondrial function. 2014; 306:H1231-1239.



Dr. Silvio Litovsky was the 2014 recipient of the President's Award for Excellence in Teaching for the Joint

Health Sciences.



Drs. Silvio Litovsky and Robin Lorenz were inducted into the Alpha Omega Alpha Honor Medical Society (AOA) at University of Alabama School of Medicine. They were nominated based on their high academic achievements and accomplishments in leadership, pro-

fessionalism, research, teaching, and service.



Dr. Casey Weaver was elected to Fellowship in the American Academy of Microbiology.



Drs. C. Bruce Alexander, Gene P. Siegal, and John A. Smith were all appointed Delegates of the CAP House of Delegates.

UAB's Quality Enhancement Plan



UAB | QEP
DEVELOP AS A BLAZER.
SUCCEED ON ANY TEAM.

UAB's
new
Qual-

ity Enhancement Plan (QEP), which will begin implementation in 2015, will focus on "Learning in a Team Environment." Clarus Consulting Group started the theme selection process by collecting ideas from more than 525 faculty, staff and students at one of 17 meetings or through an online survey. President Ray Watts, M.D., and Provost Linda Lucas, Ph.D., made the final selection based on that input.

"Learning in a team environment is a perfect QEP topic for UAB because we have so many pockets that are doing great things with teams and education," Lucas said. "This QEP is a university wide effort that will share these practices and make them part of every student's experience. It is a great opportunity to improve how we teach, prepare students for a career and serve the community."

A QEP is a requirement of the Southern Association of Colleges and Schools Commission on Colleges, designed to improve an aspect of student learning and enhance the quality of higher education. UAB's first QEP emphasized writing, quantitative literacy, ethics and civic responsibility. The first-year experience, freshman book discussion, emphasis on general education and capstone courses are elements of the UAB undergraduate experience that are results of the 2005 QEP.

Co-facilitators Peter Anderson and Kristi Menear "The purpose of the QEP, from SACSCOC's standpoint, is that it becomes a new way of doing business," said Kristi Menear, Ph.D., chair of Human Studies in the School of Education and co-facilitator of the QEP steering committee. "This whole concept of learning in a team environment is something that will become a



Drs. Anderson & Menear

part of our student-recruitment materials; it will reach into each academic unit and eventually become part of our identity."

Co-facilitator Peter Anderson, D.V.M., Ph.D., said this QEP ties into real-world outcomes, because businesses are looking for employees who can work in a team environment to get projects completed. Teams in higher education and those in the corporate environment may be differently motivated, but both require members to work together toward a shared goal.

Anderson, professor and director of Pathology Undergraduate Education, said this QEP's emphasis will enable UAB graduates to hit the ground running.

An inclusive QEP

The new QEP encompasses all undergraduate, graduate and professional programs. In addition, Student Life, Career and Professional Services, Center for Teaching and Learning — and all entities that interact with students and faculty — are invited to participate.

"No one else is doing a QEP like this," Menear said. "This is the most comprehensive approach. Every academic unit and every support service will be involved."

The new QEP will focus on three outcomes:

- Teach students to succeed in all roles of a team.
- Use these skills to improve student learning.
- Take team skills out into the community to do service.

Many disciplines already use teams as learning tools, so the QEP will not be prescriptive.

"We're allowing the schools to decide how each of them will respond to a component of the QEP that speaks to them," Menear said. "So, it's not top down. What the School of Business does could look very different from what the College of Arts and Sciences does. There will, however, have to be some common assessment measures to ensure we've met common goals."

The QEP will provide support for instructors who would like to use team-based approaches to teaching, but it will neither

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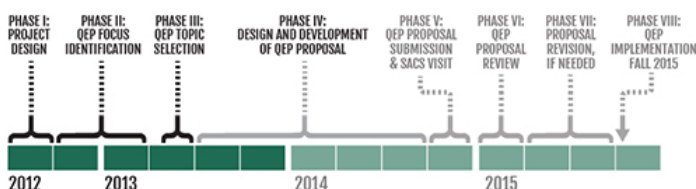
UAB's Quality Enhancement Plan Cont'd...

mandate a specific methodology nor require anyone to adopt one of them.

"We're saying, 'We want to make sure your students come out of here knowing how to talk to each other and work as a team,' but we're not going to tell you how you have to do that," Anderson said. "We will try to provide you the resources that will allow you to do it the way that works best for you."

Moving forward

QEP TIMELINE



The new QEP will not begin full implementation until August 2015, but the steering committee and its co-facilitators will be writing the five-year plan this year. The plan will be submitted to the SACSCOC visiting team for review, and the committee will then alter the plan according to those suggestions.

Writing the plan requires the committee to gather information across campus, and the Center for Educational Ac-

countability in the School of Education will help with the assessment. A Qualtrics survey was sent to faculty to determine the extent to which they already are addressing the three main goals of the QEP. "We'll use that baseline data to measure our progress over time with implementation of the five-year plan," Menear said.

More information about the QEP can be found at uab.edu/accreditation/qep, including answers to [frequently asked questions](http://uab.edu/accreditation/qep/frequently-asked-questions).

--This story was reprinted from the UAB Reporter website.

New Residents and Fellows for 2014-2015

We would like to welcome the new Residents and Fellows who will begin their service at UAB on July 1, 2014.

RESIDENTS

Tyler Clemmensen, M.D. – University of Tennessee

Joseph Drwiega, M.D. – Medical College of Georgia

Alexander (Alex) Feldman, M.D. – UASOM and UATuscaloosa

Zheng Ping, M.D. – Nanjing Medical University

Elizabeth (Liz) Staley, M.D., Ph.D. – UASOM

Scott Taylor, D.O. – Lincoln Memorial Univ-DeBusk College of Osteopathic Medicine

Virginia (Ginger) Duncan, M.D. – University Florida College of

Medicine

Note: Dr. Duncan is returning to our program as a PGY2 to complete her residency

FELLOWS

Molecular Genetic Fellow

Qian Dai, M.D., Ph.D.

Pathology Residency at UAB, 2008 - 2012

Fellowship, Hematopathology at UC San Francisco, 2012 – 2013

Fellowship, Surgical Pathology at UC San Francisco, 2013 - 2014

Hematopathology Fellows

Cameran Nguyen, D.O.

Pathology Residency at Baylor, 2009 – 2013

Fellowship, Molecular Genetics, Univ of Oklahoma Health Science Center, 2013 – 2014

Jason Wicker, M.D., Ph.D.

Path Residency at UAB, 2009–2013

Fellowship, Clinical Microbiology at Univ of Utah, ARUP Laboratories, 2013 – 2014

Cytopathology Fellows

Evan Alston, M.D.

Pathology Residency at UAB, 2009 – 2014

Courtney Alexandra (Alex) Hanna, M.D.

Pathology Residency at UAB 2009 – 2014

Blood Banking and Transfusion

Medicine Fellow

Ben Hill, M.D.

Pathology Residency at UAB, 2009 – 2014

Surgical Pathology Fellows

To be announced

From the Chief Residents:

First of all – thank you to Ben and Taylor for a great year!

We are pleased to soon welcome the new residents joining our program in July.

Jason Brazelton & Matt Cain
Chief Residents, 2014-2015

Boards

Best wishes to everyone taking board exams this summer. You have worked hard and will do well!

National Meetings and Publications

Dr. Xioyan Cui presented her poster entitled *"High FANCD2 expression is protective for patients with oropharyngeal carcinomas"* at USCAP 2014 in March with faculty mentor Dr. Brandwein-Gensler.

Dr. Abha Soni presented her poster entitled *"Breast cancer subtypes predispose the site of distant metastases"* at USCAP 2014 in March with faculty mentors Drs. Siegal and Wei.

Dr. Vishwas Parekh presented both an oral presentation entitled *"A histologic snapshot of multistep progression from nevus sebaceous to syringocystadenocarcinoma papilliferum"* at the ISDP 2014 meeting in March with faculty mentor Dr. McKay and fellow mentor Dr. Knapp, as well as a poster presentation entitled *"Peripheral T-cell lymphoma presenting as facial papules with a concurrent clonal B-cell proliferation"* with faculty mentor Dr. McKay and fellow men-

tor Dr. Wong.

Dr. Ben Hill presented his poster entitled *"Frequency of Unexpected Complications in a High-Volume Apheresis Service"* at the ASFA 2014 annual meeting in April with faculty mentors Drs. Marques and Williams, as well as blood bank technologist Pat Moon.

Dr. Erik Kouba had a manuscript entitled *"Skeletal muscle composition and its relation to exercise intolerance in older patients with heart failure and preserved ejection fraction"* recently published in the American Journal of Cardiology with a previous outside faculty member Dr. Kitzman, Chairman of the Department of Cardiology at Wake Forest.

Dr. Jason Brazelton had a case report entitled *"Temporomandibular joint arthritis as an initial presentation of acute myeloid leukemia with myelodysplasia-related changes and FLT3 mutation: a report of an unusual case"* and a review article entitled *"HIV-related Lymphoproliferative disorders"* recently published in the Journal of Oral and Maxillofacial Surgery and JSM Microbiology, respectively, both with faculty mentor Dr. Peker.

Dr. Ruby Ma had a case report accepted to the ACLPS 2014 meeting entitled *"Systemic Lupus Erythematosus complicated by macrophage activation syndrome, portal vein thrombosis and ischemic colitis – an autopsy case report"* with faculty mentors Drs. Reddy and Reilly.

Dr. Matt Cain had two projects accepted to the Pathology Informatics 2014 meeting entitled *"A real-time web 2.0 anti-biogram system for the clinical Microbiology laboratory"* with faculty mentors Drs. Moser and Park, as well as *"ETOX: a real-time web 2.0 Toxicology database"* with faculty mentors Drs. Davis and Park.

Dr. Jessica Levesque had an abstract accepted by the Pathology Informatics 2014 meeting entitled *"Cytologically Yours: The Utility of a Wiki as a Teaching Tool in Cytopathology and Informatics"* with faculty mentor Dr. Park.

Farewell To Our Departing Residents and Fellows

UAB Hospital and the Department of Pathology wish each of you success and happiness in your future endeavors. Best wishes to:

Taylor Deal: Hematopathology & Dermatopathology Fellowships, UCLA

Deyin Xing: Gynecologic Pathology fellowship, Johns Hopkins Hospital

Jessie Xu: Hematopathology fellowship, Brigham and Women's Hospital

We are pleased that the following graduating residents will be continuing their training here at UAB as follows:

Evan Alston: Cytopathology

Alex Hanna: Cytopathology

Ben Hill: Transfusion Medicine & Hematopathology

Catie Halverson: Dermatopathology

Residency Program Director:

C. Bruce Alexander, M.D.

Residency Program Support:

Karen Lewis
934-4060

From the Chief Residents Cont'd....

We would like to thank our 2013-2014 fellows for their teaching and hard work. We wish you the best of luck in your future careers:

Stephanie Simmons-Cytology

Jessica Levesque-Cytology

Charlie Knapp-

Dermatopathology

Alex Wong -Dermatopathology

Dan Atherton-Forensics

Frank Anderson-

Hematopathology

Kari Hooper-Hematopathology

Emanuel Agosto-Arroya-

Molecular

Barbara Herfel-Surgical Pathology

Alexandra Kovalovsky-Surgical Pathology

Radika Desraraju-Transfusion Medicine

Outgoing Reception

Primary faculty and residents and fellows are invited to

attend the 2014 Outgoing Reception from 6 pm to 8 pm on Thursday, May 22, at the Vestavia Hills Country Club. For more information, please contact Karen Lewis at 934-4060 or kflewis@uab.edu.

UAB School of Medicine Art Competition

The UAB School of Medicine, local Alpha Omega Alpha chapter, and the Alabama Museum of Health Sciences cosponsored the UABSOM Art Competition to benefit *VSA Alabama*, a statewide, non-profit organization dedicated to serving children and adults with chronic illnesses and disabilities through the arts. **Dr. Ona Faye-Petersen** serves on the Board of Directors of *VSA Alabama* and **Dr. Reilly** won third place for her painting in the faculty division of the art competition.

Dr. Abha Soni also submitted a painting towards this great cause.



Dr. Reilly's Painting



Dr. Soni's Painting

From the Graduate Students:

Accolades/Awards:

Kurt Zimmerman— Recipient of the Outstanding JHS/GBS student award for 2014 at the award ceremony on April 25th.

Jack M. Heath—recipient of the Department of Pathology Outstanding Student Award for 2014.

Angela Gullard— Angela is a 6th year DMD/PhD candidate who was selected to receive a \$15,000 P.E.O. Scholar Award given by the International Chapter of the P.E.O. Sisterhood, a philanthropic educational organization. This very

prestigious scholarship is a merit-based award given to women of the United States and Canada who are pursuing a doctoral level degree at an accredited college or university. Angela will use this scholarship to pay her dental tuition in the fall.

Publications/Presentations:

Stephanie Wall— Attended and presented a poster and oral presentation at the 2014 Gordon Oxygen Radicals conference and seminar in Ventura, CA February 8-14th. For the seminar program, my abstract was selected for an oral

presentation. The title of my presentation was, "Effects of Growth on Cell Adhesion and Modification of Rac1 by Electrophiles in Vascular Endothelial Cells."

General News:

Angela Gullard—served as Oral Session Chair of the Pulp Biology and Regeneration Research at the 2014 AADR Annual Meeting & Exhibition (March 19-22, 2014) in Charlotte, NC. She also gave an oral presentation (SMOC2 Expression in Normal and Abnormal Root Formation) in this session.

Graduate Program Director:

Rakesh Patel, Ph.D.

Graduate Program Support:

Cynthia Brown

934-2848

cinbrown@uab.edu



"We are using Research Gate as a tool to map networks and the impact of the Department of Pathology on the Scientific Literature."

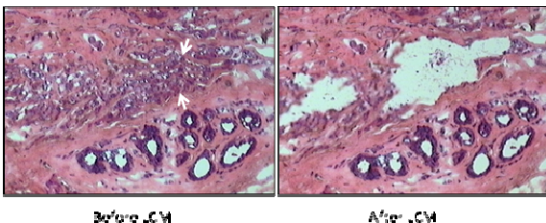
Pathology Research in Focus Cont'd....

Shacka among them, wrote a revised guide. In 2012, this was updated and an astonishing 1269 authors, including John and Jianhua, were involved in finalizing and endorsing the guidelines.

The second features a methods chapter from our faculty who were early adopters of the technique of Laser Capture Microdissection. It is consistently one of the highest downloaded from Research Gate every week.

Laser Capture Microdissection

Andra R. Frost, Isam-Eldin El-



The white arrows on the left show where the cells were dissected on the right.

toum, Gene P. Siegal.

Current protocols in molecular biology / edited by Frederick M. Ausubel ... [et al.] 07/2001;
DOI:10.1002/0471142727.mb25a01s55 ISBN: 9780471142720 In book: Current Protocols in Molecular Biology, pp.25A.1.1 - 25A.1.24

Andra Frost tells the story. "At the time that this methods paper for laser capture microdissection (LCM) was written, the LCM technology was still relatively new. The

Department of Pathology and the Comprehensive Cancer Center purchased UAB's first LCM system in 1998. The instrument, the Pixel II manufactured by Arcturus Engineering in collaboration with researchers at NIH, was one of the first 200 LCM instruments in the United States, so UAB was leading the field in the utilization of this technology. After acquiring the instrument, we worked extensively with formalin fixed, paraffin-embedded and frozen tissues to optimize the procedures for reliable microdissection of single and groups of specific cells from these tissues for subsequent analysis of their DNA, RNA and protein content. When Dr. John

Smith in our Department, an Editor for Current Protocols in Molecular Biology, asked if we would be willing to contribute a chapter on LCM, we were excited to share the methods that we had refined. The Pixel II instrumentation is simple to use, with limited automation and basic software integration, and is a reliable "workhorse" which is still operational. Now LCM instruments are much more automated and complex, but the basic tissue handling and requirements are the same, which no doubt explains the utility and popularity of the

chapter."

Evolution of Ideas. High impact papers or funding success do not come easily especially in this day and age. New concepts can emerge quite suddenly or evolve with many twists and turns before they mature. In the next story Joanne tells us how her studies of the TGF beta pathway resulted in recent funding success and the potential development of new therapeutics for myeloma.

Myeloma, Fibrosis and TGF-beta

This project is a great example of serendipity and the value of controls. We had recently shown that thrombospondin 1 (TSP1) causes focal adhesion disassembly in endothelial cells and asked whether this action affected endothelial growth. We saw BAE growth inhibition with TSP1 and did some controls with anti-TSP1 antibodies. These anti-TSP1 antibodies did not block. Another scientist suggested we try anti-TGF-beta antibodies and this led to us identify active TGF-beta in our TSP1 preps. Later we took our semi-clean TSP and saw that its growth inhibitory activity was still TGF-beta dependent. This got us thinking that there must be something more going on and we tested the possibility that TSP1 was converting latent TGF-beta to its active form. This was while I was still a Research Assistant Professor in

Cont'd...

Pathology Research in Focus Cont'd....

Biochemistry. The project has evolved and we are now working with Mark J. Suto at Southern Research to identify and optimize lead compounds that prevent TGF-beta activation by blocking interactions between thrombospondin 1 and latent TGF-beta. My first graduate student, Stacey Schultz-Cherry, identified a sequence in thrombospondin1 that was sufficient for TGF-beta activation. Subsequently, a post-doc and MCP faculty member, Solange Ribeiro, identified a 4 amino acid sequence (LSKL) in latent TGF-beta that recognized the thrombospondin activation sequence. The LSKL sequence was then shown by an MSTP student, Geoffrey Young, to be critical for maintaining TGF-beta latency. Over the years, multiple students and post-docs in the lab investigated the role of thrombospondin1 control of latent TGF-beta activation in multiple fibrotic diseases, particularly cardiac and renal complications of diabetes, and in osteoblast differentiation in vitro. Multiple myeloma is a cancer of plasma cells that is dependent on tumor cell-stromal interactions and which is associated with osteolytic bone disease. There was literature showing that TGF-beta impacts both osteolytic bone disease and accompanying immune dysfunction and

there were hints that thrombospondin1 is elevated in multiple myeloma. In 2011, a grant from the Alabama Drug Discovery Alliance (ADDA) provided resources to test the hypothesis that thrombospondin1 controls TGF-beta activity in the myeloma environment, to test whether treatment with LSKL reduced myeloma tumor burden and/or bone disease, and to perform high throughput screening for a small molecule analogue of LSKL. The Comprehensive Cancer Center also supported these studies. With the outstanding collaborative assistance of Ralph Sanderson and Yang Yang, we showed that LSKL treatment reduced myeloma tumor burden, decreased host IL-6 levels, and reduced osteolytic bone disease in mouse models of human myeloma. Our attempts at developing high throughput screening assays were not successful. However, Mark Suto, Vice-President for Drug Discovery at Southern Research, suggested we instead focus on optimizing the "small molecule" we had in hand. Dr. Suto has experience in optimizing peptide based compounds for drug applications and we have already identified several new lead compounds with excellent *in vivo* activity and significantly improved pharmacoki-

netics. With new funding from an American Society for Hematology Bridge grant and an NIH R01, we will explore the role of thrombospondin1 in immune competent models of myeloma in collaboration with Department of Pathology colleagues Yang Yang and Casey Weaver and identify and optimize our lead drug in collaboration with Mark Suto with the goal of having a drug candidate suitable for filing of an IND application to the FDA. It is particularly satisfying to see a path forward to clinical trials for this thrombospondin1-TGF-beta antagonist after over 20 years of study.

Lights...Camera...Cells???



**UAB
Mitochondrial Medicine
Laboratory
JOVE Video Shoot**

Have you ever found yourself reading a methods section over and over again in a manuscript hoping that you could figure out how they actually performed the experiment? OR Have you ever wished you could see how the experiment was performed step by step? Well now you can view an experiment from our laboratory: The Mitochondrial Medicine Laboratory, led by Dr. Victor Darley-Usmar! We recently published a video article entitled, "Bioenergetics and the Oxidative Burst: Protocols for the Isolation and Evaluation of Human Leukocytes and Platelets" in the *Journal of Visualized Experiments*. In this video we demonstrate our recently developed method for the isolation of peripheral blood cells from human samples to measure mitochondrial function and oxidative burst. The objective of developing this protocol was to expand translational research by using cellular bioener-

getics of blood leukocytes and platelets as a surrogate index of the overall bioenergetic health of an individual. We believe this technique could have the potential to monitor pathological processes and the impact of treatments in patients. This idea is pretty exciting to the lab but what was really exciting was filming this protocol and seeing my lab mates in rare form as "actors and actresses." It allowed us to be creative in another aspect aside from designing and performing experiments. According to my lab mate, Philip Kramer, "It was fascinating to participate in the video shoot and to later see how JoVE pieced the video together. It was a full day of shooting condensed into a handful of minutes." Our lab manager, Michelle Johnson stated that it was "nice to see her OCD come to fruition while directing this lab during each frame of each shot and that having a vehicle (JoVE video)

such as this will definitely facilitate reproducibility among other laboratories and help advance biomedical research". We hope that you find our acting skills and pipetting to be flawless! You can view our article whenever you have a moment away from doing experiments or writing grants here: <http://www.jove.com/video/51301/bioenergetics-oxidative-burst-protocols-for-isolation-evaluation>.

Kramer, P.A., Chacko, B.K., Ravi, S., Johnson, M.S., Mitchell, T., Darley-Usmar, V.M. Bioenergetics and the Oxidative Burst: Protocols for the Isolation and Evaluation of Human Leukocytes and Platelets. *J. Vis. Exp.* (85), e51301, doi:10.3791/51301 (2014).

—Dr. Tanecia Mitchell

"We believe this technique could have the potential to monitor pathological processes and the impact of treatment in patients."

Pathology Publications:

Yabing Chen—Heath JM, Sun Y, Yuan K, Bradley WE, Litovsky S, Dell'Italia LJ, Chatham JC, Wu H, Chen Y. Activation of AKT by O-Linked N-Acetylglucosamine Induces Vascular Calcification in Diabetes Mellitus. *Circ Res.* 2014 Mar 28;114(7):1094-102. doi: 10.1161/CIRCRESAHA.114.302968. PMID:24526702

This paper was selected as an Editor's pick in the March 28, 2014 issue, and also highlighted by an accompanying editorial.

Ralph Sanderson—A University of Alabama at Birmingham research paper on exosomes has been selected as a "Best of 2013" by The Journal of Biological Chemistry.

Camilla A. Thompson, Anurag Purushothaman, Vishnu C. Raman, Israel Vlodavsky, and Ralph D. Sanderson. Hepara-

nase Regulates Secretion, Composition, and Function of Tumor Cell-derived Exosomes. *J. Biol. Chem.* 2013 288: 10093-10099. First Published on February 21, 2013, doi:10.1074/jbc.C112.444562.

Lalita Shevde-Samant—Amable, L., Gavin, E., Kudo, K., Meng, E., Rocconi, R.P., Shevde, L.A., Reed, E. GLI1 up-regulates C-JUN through a specific 130 kDa isoform. *Int. J. Oncol.* 44(3): 655-661. PMID: 24366538.

Lalita Shevde-Samant and Rajeev Samant—Shevde, L. A. and Samant R. S. The role of osteopontin in the pathophysiology of cancer. Invited Review: *Matrix Biology* Mar 19. pii: S0945-053X(14)00044-4. doi: 10.1016/j.matbio.2014.03.001.

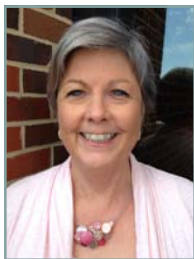
Rajeev Samant—Londoño-Joshi A.I., Arend R., Aristizabal L., Lu W., **Samant R.S.**, Metge B.J., Forero A., LoBuglio A.F., Li

Y., and Buchsbaum, D.J. (2014) *Enhanced Anticancer Effect of the Combination of Niclosamide and Anti-DR5 in Basal-like Breast Cancers.* Accepted for publication *Molecular Cancer Therapeutics* and *Manuscript chosen for the Journal Highlights*

Samant, R.S., Buchsbaum, D.J. (2014) Multi-targeted therapy of cancer by niclosamide: a new mission for an old drug. Accepted for publication *Cancer Letters*.

Arend R., Londoño-Joshi A.I., Lu W., Samant R.S., Li Y., Katre A.A., Kurpad C., Haygood C.W., Gangrade A., Metge B.J., Conner, M., Landen C.N., Straughn J.M. and Buchsbaum, D.J. (2014) *Inhibition of WNT/ β -catenin pathway by niclosamide: A therapeutic target for ovarian cancer.* Accepted for publication in: *Gynecology Oncology*

Spotlight on Administration: Dominga Toner



Ms. Dominga Toner is an OAI in the Division of Molecular and Cellular Pathology and as-

sists Drs. Yi-Ping Li, Joanne Murphy-Ullrich, Doug Hurst, and Wei Chen.

Before coming to Molecular and Cellular Pathology, Dominga was with the UAB Lung Health Center from 2005

until November 2010. She worked under Dr. Lynn Gerald, Co-Director of the LHC and Sue Erwin under the expert guidance of Dr. William Bailey, founder of the UAB Lung Health Center. Dominga gained significant experience working on a scientific study for asthmatic children in the Jefferson County school system.

In MCP, she expertly handles grant paperwork and a variety of tasks to support faculty and their respective research and

academic activities. She is a master trouble shooter for Oracle and faculty depend on her efficiency, dedication and professionalism.

Dominga stated, "My years at UAB have been very educational and rewarding. I enjoy helping the faculty in all aspects of their professional field. It is very exciting to me to be a part of their team. When they achieve funding, publish data or have a break-through on one of their research studies, I am proud to know that I had a

Cont'd...

Spotlight on Administration: Dominga Toner Cont'd...

small part in their professional success.

Before UAB, Dominga served as Curator and Executive Director of the Bessemer Hall of History Museum in Bessemer, Alabama. She enjoys gardening,

cooking, floral and home decorating, traveling and spending time with her family and friends. Dominga is active in her church, where she serves as an elder, helping anywhere there is a need.

Discovery on Cross-Talk Among Cancer Cells Hailed as Best Paper:



— tiny particles released by cells that interact with other cells.

“This is a way in which tumor cells talk to each other,” said Sanderson, senior scientist in the UAB Comprehensive Cancer Center. More so,

UAB research demonstrating the role of heparanase in regulating exosomes has been selected among the “Best of 2013” by The Journal of Biological Chemistry.

The paper, "[Heparanase Regulates Secretion, Composition and Function of Tumor Cell-derived Exosomes](#)," was chosen as the best paper in the Glycobiology and Extracellular Matrices category.

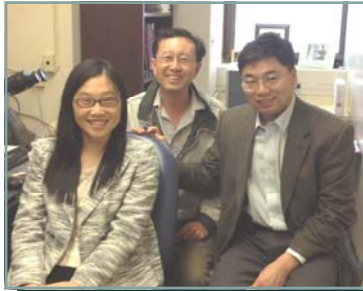
A team led by Ralph D. Sanderson, Ph.D., UAB Endowed Professor of Cancer Pathobiology, revealed that heparanase, an enzyme associated with tumor growth and metastasis, increased secretion of exosomes

tumor cells rely on exosomes to communicate with their environment as they grow and spread.

“Our studies provide the first evidence that heparanase can regulate exosomes — promoting tumor-host cross-talk and enhancing aggressive tumor behavior,” Sanderson said. The UAB team now is working to design and test new heparanase-inhibitors that will shut down exosome-mediated communication and tumor growth.

—This story was reprinted from the UAB E-Reporter. Please click [here](#) to access the story online.

Where are They Now?



Dr. Shuting Bai (center) and his colleagues Xiaojun and Zhengang.

Dr. Shuting Bai graduated from Beijing Medical University in 1990. He was an Orthopaedic Surgeon in China before he came to the USA. In 2002, he received his Ph. D. from the Molecular and Cellular Pathology Ph.D. program at the University of Alabama at Birmingham (UAB). He received his residency training in Anatomic and Clinical Pathology at UAB in 2007-2011. While finishing his residency training, he finished his gastrointestinal pathology fellow training at UAB in 2011. He worked with Dr. Brandwein-Gensler on several interesting salivary gland projects, and these works were presented at USCAP meetings and published in Head Neck Pathology. He was also involved in other several clinical research projects and published six papers with four of them as the first author. In 2011, Dr. Bai moved to Phila-

delphia for one year of general surgical pathology fellowship training at the Hospital of the University of Pennsylvania, where his training was concentrated in Genitourinary, Breast, and Endocrine Pathology. At the University of Pennsylvania, he studied thyroid pathology from Dr.

Virginia LiVolsi, a very famous surgical pathologist. He published eight papers there, with six as the first author.

In 2012, Dr. Bai joined the Department of Pathology at the New York University Langone Medical Center as an Assistant Professor and acted as an attending pathologist and the Director of Head and Neck Surgical Pathology service. In addition to signing out surgical pathology cases, Dr. Bai is actively involved in resident teaching and clinical research.

From his excellent training in both anatomic and clinical pathology at UAB, he felt competent to sign out difficult surgical pathology cases. His greatest memory of his stay in Birmingham is the party at Dr. Bruce Alexander's house with deliciously grilled food. Of course, during his residency training, attending Weekly Bone and Soft Tissue Tumor Board hosted by Dr. Siegal and

Dr. Klein kept his knowledge of bone and soft tissue tumors updated and greatly enriched his diagnostic skills and confidence.

FASEB Capitol Hill Day:



On March 5th Dr. John Chatham, MCP Division Director and member of the FASEB Science Policy Committee attend-

ed FASEB Capitol Hill Day along with Lou Justement (UAB Dept Microbiology), Elizabeth Brown (UAB Dept Epidemiology) and Joel Widder (FASEB). A total of 45 people from 21

states participated in FASEB Capitol Hill Day meeting with 89 congressional offices to re-

quest increased funding for NIH and NSF.

Pathology Grants Awarded:

YABING CHEN

NIH
"O-GlcNAcylation Regulates Vascular Smooth Muscle Cells in Diabetic Vasculopathy"
 \$1,308,300 04/01/14-02/28/18

VICTOR DARLEY-USMAR

UAB Comprehensive Diabetes Center
"Mechanisms of Dysfunctional Mitophagy in Beta Cells"
 \$30,000 01/01/14-12/31/14

VICTOR DARLEY-USMAR

NIH
"Training Program in Cardiovascular Pathophysiology"
 \$1,076,680 07/01/14-06/30/19

WILLIAM GRIZZLE

DoD/Tuskegee University
"Transcriptional Repressor Kaiso Promotes Metastasis Through Epithelial to Mesenchymal Transition"
 \$132,300 09/30/13-09/29/16

WILLIAM GRIZZLE

NIH/NCI
"Collaborative Human Tissue Network"
 \$3,702,810 04/01/14-03/31/19

ROBIN LORENZ

NIH
"Southeastern Medical Scientist Symposium"
 \$15,000 05/01/14-01/31/17

JOANNE MURPHY-ULLRICH

Eyesight Foundation of America
"Research Acceleration Initiative—Cell/Tissue TGFbeta/Thrombospondin Remodeling Pathways"
 \$50,000 01/01/14-12/31/14

RALPH SANDERSON

Sigma Tau
"SST0001 in Combination with Anti-Myeloma Drugs"
 \$100,000 01/01/14-03/31/15

LALITA SHEVDE-SAMANT

NIH
"Mechanisms of Resistance to Cancer Therapeutics"
 \$1,525,125 06/01/14-05/31/19

KEN WAITES

Cempra Pharmaceuticals, Inc.
"A Randomized, Double-Blind, Multi-Center Study to Evaluate the Efficacy and Safety of Intravenous to Oral Solithromycin (CEM-101)"
 \$203,820 01/21/14-01/20/16

KEN WAITES

Bangladesh Child Health Research Foundation
"Supplement to Aetiology of Neonatal Infection in South Asia"
 \$20,625 02/01/14-08/30/14

If anyone has any news items, accolades, etc. to be put in the quarterly newsletter, please send it to the Path In Focus e-mail address at: pathinfocus@uab.edu.

Thank you.

Angie Schmeckebier

Dear UAB Department of Pathology Friends and Colleagues:

The UAB Department of Pathology is recognized nationally for excellence in biomedical research, undergraduate and graduate medical education, and diagnostic pathology. This rise to prominence has been accomplished through the hard work and dedication of numerous Department of Pathology faculty and trainees who have made UAB a phenomenal environment for pathology education and clinical practice. Several decades ago, the former Departments of Anatomic Pathology and Clinical Pathology of the University of Alabama School of Medicine merged into a single Department of Pathology of the UAB Health System. More than 250 residents have received their graduate training in Pathology at UAB and have gone on to populate the state, region and the nation. In fact, the vast majority of Pathologists in the state of Alabama have received some or all of their training here at UAB. This program of excellence in graduate medical education has been appropriately balanced by a world-class graduate program that has similarly trained generations of scientists who fill academia, industry and government service. Our department has been bolstered in recent years by an ever increasing number of post-doctoral fellows, clinical fellows and junior faculty members who have achieved academic, research, and/or clinical excellence, and ascended to leadership positions at UAB or other institutions.

Please consider making a gift to the Department of Pathology at UAB to support our missions of clinical practice, teaching, research and service. Any amount would be most gratefully received and would be fully deductible*. One could direct it to a particular area of need, to fund current and future endowed professorships or create new awards, prizes or similar recognition opportunities to honor yourself, a family member, a favorite professor, etc.

We would be pleased to assist you and your professional advisors in including the UAB Department of Pathology in your estate plan or in exploring other giving strategies. A simple tear off sheet is found below.

* One should always check with their tax advisor.

Thank you for your serious consideration of this request.

Please fill out each of the 3 Sections:

A1—Enclosed, please find my contribution to the UAB Department of Pathology in the amount of:

___ \$50
___ \$100
___ \$500
___ \$1000
___ Other: _____

Please make all checks payable to the UAB Department of Pathology and return them to Ms. Lynne Roden, Departmental Administrator, 500 22nd Street South; Suite JNWB 404, Birmingham, AL 35294-0500.

Cont'd...

A2—Please contact me to discuss further:

Name: _____

Address: _____

Telephone Number: _____

E-mail Address: _____

*Please indicate your preferred means of communication.

B—I wish to direct this gift to the Department towards:

___ Where the need is the greatest

___ Teaching

___ Research

___ Named Chairs or Professorships

___ Awards for teaching/research/clinical excellence

___ Naming opportunities (Rooms, collections, equipment, etc.)

C—Person(s) and complete address to be acknowledged for tax purposes:

Do you want this gift to be anonymous? Yes ___ No ___

Do you want to honor a particular person or event?

Specifics: _____

D—If you prefer to donate via credit card, please call the UAB Development office at (205) 975-5659.