

Biomed Highlights



DEPARTMENT of
BIOMEDICAL SCIENCES

Quillen College of Medicine

EAST TENNESSEE STATE UNIVERSITY

*T J Neal—Editor
Vol. 9 August 2016*

MESSAGE FROM...

THE CHAIR

**THEO HAGG, MD, PhD, PROFESSOR
DEPARTMENT OF BIOMEDICAL SCIENCES**



Dear Colleagues

Welcome back to a new academic year. I trust that everyone had a chance to rest during the summer months and is excited about a new year filled with opportunities.

Many of us are back in the middle of teaching and we welcome the new graduate and medical students. I believe that, because of your efforts and commitment, we will see continued improvement to our already outstanding preclinical medical teaching. We also witnessed a very successful medical summer student research program and I want to commend Drs. Hoover and Wright for their leadership. We will have an opportunity to see the results at the upcoming symposium on October 21, which I encourage everyone to attend.

I am especially grateful to the Faculty Recruitment Committee and Mary Lou Hawk, for their hard work. Our newest recruit, Dr. Aaron Polichnowski will join us officially on October 1. His expertise in Physiology is complementary to that of our existing Faculty, and will strengthen both our research and teaching efforts. We are currently scheduled to interview for another position, and expect to advertise soon for two additional Faculty slots. All in all, I am excited about our continued success in attracting excellent new colleagues who will help us to thrive in fulfilling our research and teaching mission in the decades to come.

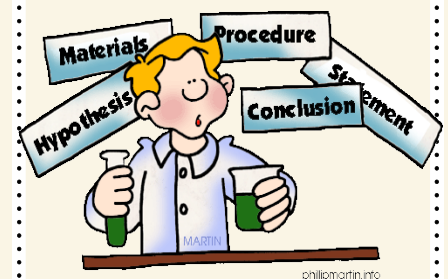
Lastly, congratulations to Dr. Jenny Hall for getting her R15 grant.

Wishing everyone continued satisfaction and pride in their work as part of the DBMS team.

INSIDE THIS EDITION

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*Please submit news to
TJ Neal - neal@etsu.edu*



Employees and students are encouraged to occasionally check the departmental web site for updates and changes. Please contact Tonya Ward (439-2001) if you have questions regarding the site.

www.etsu.edu/com/dbms.



**Dr. Uta Schambra, Associate Professor, Retires
After 23 Years of Service to the College of Medicine**

Congratulations are extended to Dr. Uta B. Schambra upon her retirement from the Department of Biomedical Sciences effective January 5, 2016. Dr. Schambra (Uta) joined the Department of Anatomy and Cell Biology, James H. Quillen College of Medicine, September 1993, as Assistant Professor. She served as Associate Professor from July 2006 until retirement. Before coming to ETSU, she was Assistant Research Professor, Department of Anesthesiology, Duke University Medical Center, Durham, NC.

Uta was born and educated in Germany as a Registered Pharmacist. After receiving her license, she came to tour the US on a \$ 99/99 days Greyhound bus ticket, worked at UC Berkeley for a year in Plant Pathology, then returned to Germany after a 3 months tour on \$5/day through Asia, India and the Middle East. She then married the Post doc she had met in Berkeley in Germany, and they moved to Bethesda, MD, where he took a position at NIH and she in an analytical lab. After the birth of her son, she stayed home to raise him and his two sisters. Her son is autistic and his struggles inspired her to return to graduate school with focus on neurosciences. By then she was a single parent and life was not easy.

Her research interests centered on normal and abnormal brain development and function. Her studies focused on normal development dealing with the changing anatomy of the developing mouse brain, which was documented with two atlas books and three websites, as well as publications on the cholinergic, serotonergic, dopaminergic and adrenergic neurotransmitter systems. Studies on abnormal brain development and functional outcome relate to the teratological effects of acute gestational drug exposure and/or maternal gestational hormone dysfunction. She used developmental, quantitative neuroanatomical, histological and behavioral methods to investigate these effects.

Dr. Schambra Retirement (Cont'd)

She was an NIH funded researcher, and other granting agencies, for many years. This funding resulted in several publications to her credit throughout her tenure. Her publications just surpassed 2,600 citations. She was actively involved in many service related activities on the University and College of Medicine levels, served as medical student advisor, journal reviewer, and other external community activities. She was a nominee for Professor of the Year in Neuroscience.

Her responsibilities on a regular basis included teaching Clinical Neuroscience, Physical Therapy Neuroscience, Medical Neurobiology, and Advanced Neurobiology to medical and physical therapy students. She participated in graduate and undergraduate supervision and served as a Preceptor for Minorities in Science Program, McNair Program, and Summer Projects for MS1 students.

A major accomplishment during her tenure was the authorship of two books, "Atlas of the Prenatal Mouse Brain, Academic Press, San Diego, 327 pages (1992), and "Prenatal Mouse Brain Atlas." Springer, New York, 534 pages (2008) with around 1100 chapter downloads a year. Uta still continues to work diligently on writing papers on the behavioral outcome of mice prenatally exposed to sporadic low and moderate doses of alcohol.

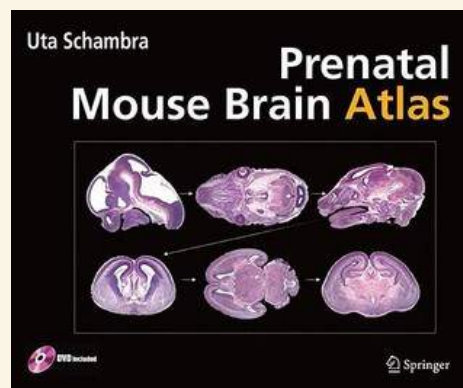
Uta's roots are in Johnson City now, where she plans to revive her ceramic studio and be happy making pots, work in the garden, and enjoy visits from her children, grandchildren and friends, while hoping for a new kidney.

The Department of Biomedical Sciences wishes Uta the best as she plans for her retirement. Many thanks are extended to Dr. Schambra for her biographical input.

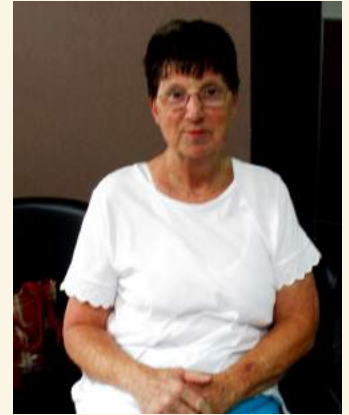
Dr. Schambra's most recent publication:

Schambra UB, Nunley K, Harrison TA, Lewis CN (2016) Consequences of low or moderate prenatal ethanol exposures during gastrulation or neurulation for open field activity and emotionality in mice. *Neurotoxicology and Teratology* (In press). PMID:27297969.

A retirement reception was held for Dr. Schambra on August 11, 2016 (Some pictures from this event on following pages).









Dr. Rasch in her laboratory that was located in the Mini-Dome (Photo compliments of Debbie Lee)

**IN MEMORY OF DR. ELLEN RASCH
TEACHER, RESEARCHER, SCHOLAR**

There is an old saying that if you do what you love, you will love what you do. Such was the legacy of Dr. Ellen Rasch. She was bold, determined, and good-hearted. She loved being a teacher and researcher. She was much respected by all who knew her. Her passing has greatly saddened many faculty and staff throughout the University and College. Her passing is a great loss to the scientific community as well.

As mentioned in the internal announcement, she joined the faculty of the College of Medicine in 1978 as a Professor in the Department of Biophysics. Ellen was educated at the University of Chicago, receiving her Ph.D. in 1950. Working closely with Dr. Rasch for many years as her Research Assistant was Debbie Lee. She recalls that Ellen was a kind and wonderful person. Dr. Monaco who also worked closely with Ellen for many years and comments, "Dr. Rasch served as a mentor and on graduate advisory committees for students (at Marquette and at ETSU) too numerous to mention and she was a friend and colleague to many as the College of Medicine was developing. She always gave selflessly of her time and talents and I will always remember her comment that "If it's good for the institution, it's good for me." Ellen was a teacher and mentor and a friend. She will be missed."



Dr. David Wagner, Associate Professor (University of Colorado-Denver Medical Center), Ingrid Laitinen, Debbie Lee, Cindy Ballard, Dr. Paul Monaco, Dr. Ellen Rasch (Center)
(Photo compliments of Debbie Lee)



FUNDING— CONGRATULATIONS!

RDC GRANT AWARDS:

Name	Project Title	Grant Type	Amount	Dates
Dr. Eric Beaumont Associate Professor	The gut microbiome: A novel mechanism underlying the beneficial effects of vagus nerve stimulation	Interdisciplinary	\$ 23,350	7/1/2016 – 6/30/17
Dr. Cuihong Jia Research Assistant Professor	Focal adhesion kinase regulates regeneration of adult olfactory neurons	Major	\$ 10,000	7/1/2016 – 6/30/17
Dr. Diego Rodriquez-Gil Assistant Professor	Characterization of gene regulation during olfactory sensory neuron maturation	Major	\$ 10,000	7/1/2016 – 6/30/17
Dr. Sanjay Singh Research Assistant Professor	Antimicrobial function of C-reactive protein (CRP) in the fight against common bacterial infections	Major	\$ 10,000	7/1/2016 – 6/30/17
Dr. Thewke Professor	Effect of extracellular ubiquitin on atherosclerosis	Major	\$ 10,000	7/1/2016 – 6/30/17

SCHEDULE FOR INTERNAL SEMNARS

[Presentations will be on Friday at Noon in Room B-06, Building 1.
Dr. Brian Rowe, Seminar Coordinator.]

August 19, 2016	Dr. Theo Hagg, Professor & Chair
September 2, 2016	Dr. Alok Agrawal, Professor
September 16, 2016	Dr. Qian Xie, Associate Professor
September 30, 2016	Dr. Russell Brown, Professor
October 14, 2016	Dr. Zachary Walls, Assistant Professor, Pharmaceutical Sciences
October 28, 2016	Dr. Kalpita Banerjee, Research Associate
November 10, 2016	Dr. Uta Scahmbra, Professor Emerita (Thursday)
December 2, 2016	Dr. Nishant Visavadiya, Research Associate





JOURNAL PUBLICATIONS

Dalal S, Zha Q, **Singh M, Singh K** (2016) Osteopontin-stimulated apoptosis in cardiac myocytes involves oxidative stress and mitochondrial death pathway: role of a pro-apoptotic protein BIK. *Mol Cell Biochem*; Jul;418 (1-2):1-11. doi: 10.1007/s11010-016-2725-y; Jun 4. PubMed PMID: 27262843.

Daniel LL, Scofield SL, Thrasher P, Dalal S, Daniels CR, Foster CR, **Singh M, Singh K** (2016) Ataxia telangiectasia-mutated kinase deficiency exacerbates leftventricular dysfunction and remodeling late after myocardial infarction. *Am J Physiol Heart Circ Physiol* Aug 1;311(2):H445-52; Jun 10. PMID: 27288435.

Deng M, Tufan T, Raza MU, Jones TC, **Zhu MY** (2016) MicroRNAs 29b and 181a down-regulate the expression of the norepinephrine transporter and glucocorticoid receptors in PC12 cells. *J Neurochem*; Aug 8 [Epub ahead of print] PMID: 27501468.

Garst C, Fulmer M*, **Brown S, Thewke D** (2016) Optimized extraction of 2-arachidonyl glycerol and anandamide from aortic tissue and plasma for quantification by LC-MS/MS. *Eur J Lipid Sci Technol* May;118(5):814-820. PMID:27274705.

Habecker BA, Anderson ME, Birren SJ, Fukuda K, Herring N, **Hoover DB**, Kanazawa H, Paterson DJ, Ripplinger CM (2016) Molecular and cellular neurocardiology: development, and cellular and molecular adaptations to heart disease. *J Physiol*. 2016 Jul 15;594(14):3853-75. PMID: 27060296.

He Z, Forest F, Gain P, Rageade D, Bernard A, Acquart S, Peoc'h M, **Defoe DM**, Thuret G (2016) 3D map of the human corneal endothelial cell. *Sci Rep Jul 6;29047*. PMID: 27381832.

Keasey MP, Lemos RR, **Hagg T**, Oliveira JR (2016) Vitamin-D receptor agonist calcitriol reduces calcification in vitro through selective upregulation of SLC20A2 but not SLC20A1 or XPR1. *Sci Rep* May17;6-25802. PMID:27184385.

Monroe LL, Armstrong MG, Zhang X, **Hall JV**, Ozment TR, Li C, Williams DL, **Hoover DB** (2016) Zymosan-induced peritonitis: effects on cardiac function, temperature regulation, translocation of bacteria and role of dectin-1. *Shock* Jul 1 [Epub ahead of print] PMID:27380533.

Phillips Campbell RB, Duffourc MM, Schoborg RV, Xu Y, Liu X, KenKnight BH, **Beaumont E** (2016) Aberrant Fecal Flora Observed in Guinea Pigs with Pressure Overload is Mitigated in Animals Receiving Vagus Nerve Stimulation Therapy. *Am J Physiol Gastrointest Liver Physiol*. Aug 25 PMID: 27562060 [Epub ahead of print].

Raza MU, Tufan T, Wang Y, Hill C, **Zhu MY** (2016) DNA Damage in Major Psychiatric Diseases. *Neurotox Res* Aug;30(2):251-67. Epub Apr 28. Review. PMID: 27126805

Schambra UB, Nunley K, **Harrison TA**, Lewis CN (2016) Consequences of low or moderate prenatal ethanol exposures during gastrulation or neurulation for open field activity and emotionality in mice. *Neurotoxicology and Teratology* (In press). PMID:27297969.

Salavatian S, **Beaumont E**, Longpré J-P, Armour J, Vinet A, Jacquemet V, Shivkumar K, **Ardell J** (2016) Vagal stimulation targets select populations of intrinsic cardiac neurons to control neurally-induced atrial fibrillation. *Am J Physiol Heart Circulatory Physiol*. Aug 30 (accepted).

Slade J, Vanover **Hall J**, Kintner J, **Schoborg RV** (2016) Host Nectin-1 Promotes chlamydial infection in the female mouse genital tract, but is not required for infection in a novel male murine rectal infection model. *PLoS One* Aug 3;11(8). PMID: 27486990

PRESENTATIONS AT SCIENTIFIC MEETINGS

Donald Ngwa, graduate student, presented a paper at the “Immunology 2016” meeting sponsored by the American Association of Immunologists in Seattle, WA. The poster presentation and oral presentation were on May 14 and May 17, respectively. The title of the paper, coauthored by Toh Gang, Sanjay Singh and Alok Agrawal, was “Engineered C-reactive protein with improved protective action against pneumococcal infection.”

Asmita Pathak, graduate student, presented a poster at the “Immunology 2016” meeting sponsored by the American Association of Immunologists in Seattle, WA, on May 15. The title of the paper, coauthored by Sanjay Singh, Avinash Thirumalai, Peter Armstrong and Alok Agrawal, was “Evolution of host-defense function of C-reactive protein from horseshoe crab to humans.”

Dr. Patrick Bradshaw. Title: “Aging-induced metabolomics and proteomic changes in *C. elegans*.” Copes N*, Edwards-Canfield C*, Chaput D*, Stevens Jr, SM, Bradshaw PC. Keystone Symposium Entitled Epigenetic and Metabolic Regulation of Aging and Aging-Related Diseases. Santa Fe, NM, May 2016.

Dr. Richard Kostrzewa. Title: “L-DOPA effects on striatal microdialysate levels of hydroxyl radical in parkinsonian rats.” Invited oral presentation, 2nd Central European Biomedical Congress (CEBC). Chairman, symposium on Processes and Mechanisms Associated with Parkinson’s Disease, Krakow, Poland, 15-18 June 2016.

Dr. Ming-Yang Zhu. Title: “Effects of chronic social defeat and glucocorticoids on norepinephrine transporter expression and underlying molecular mechanisms Invited Seminar Speaker, GuangJi Mental Hospital, Soochow University, May 11, 2016.

Dr. Russ Brown. Title: “Neonatal quinpirole enhances nicotine self-administration and motivation to consume nicotine in adult rats.” Invited talk at the College of Problems in Drug Dependence, Palm Springs, CA, June, 2016.

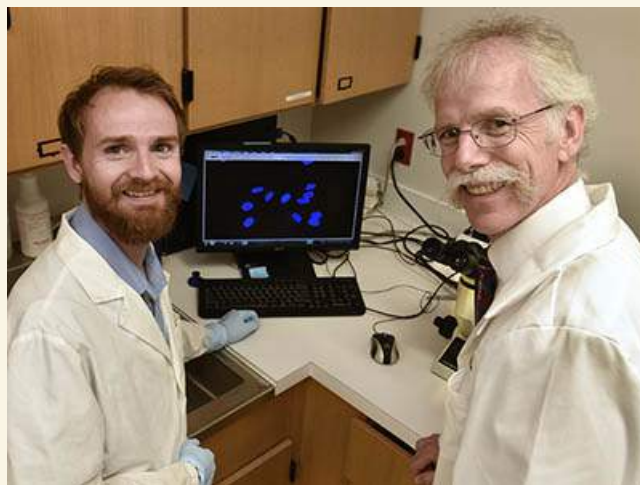
Dr. Eric Beaumont. Title: “Effect of Neuromodulation on visceral processing.” Guest speaker, Neuromodulation Meeting. San Francisco, CA, May 25-29, 2016.

Dr. Diego Rodriguez-Gil. Title: “Axon guidance in the olfactory system.” Seminar speaker, Southern Connecticut State University, New Haven, CT, February 29, 2016.

RESEARCH FINDINGS

New research efforts utilizing CRISPR (Clustered regularly interspaced short palindromic repeats) led by Dr. Matt Keasey and Dr. Theo Hagg has discovered important information relating to Vitamin D relationships to soft tissue calcification. Vitamin D helps to protect bone density, but may reduce age-related soft tissue calcification in arteries and the brain. This soft tissue calcification can be a concern especially as individuals age. This research was a featured article in the July 26th ETSU Accent. As noted, this research effort involves an international team which is led by Drs. Keasey and Hagg. We can expect more important developments that will impact the way we view the importance of Vitamin D from this team as research continues.

Findings to date published in Science Report.
CITATION: Keasey MP, Lemos RR, Hagg T, Oliveira JR (2016) Vitamin-D receptor agonist calcitriol reduces calcification in vitro through selective upregulation of SLC20A2 but not SLC20A1 or XPR1. *Sci Rep* May17;6-25802. PMID:27184385.



DR MATT KEASEY AND DR. THEO HAGG
FEATURED IN ETSU ACCENT JULY 26, 2016
(Photo above from ETSU Accent)

**Biomedical Sciences
Graduate Student Award**

Congratulations to **Dr. Alok Agrawal** who was the recipient of the 2015-2016 Biomedical Sciences Graduate Students' "**Course Director of the Year**" Award.



We welcome **Liza Hernandez (pictured left)** to the Department. Liza has joined the laboratory of Dr. Russ Brown as a temporary Lab Assistant. She acquired her Bachelor of Science Degree with a major in Psychology from East Tennessee State University. Liza is originally from Boone, North Carolina.



We welcome **Westley Ongtengco (pictured left)** to the department. Westley is an undergraduate student who is currently working on a degree in Microbiology at East Tennessee State University. He will be gaining valuable research experience while working in Dr. Ordway's laboratory that will supplement his academics.

CONGRATULATIONS to **DR. JESSICA CRAWFORD (pictured right)** for completing the requirements in the Accelerated Masters of Business Administration program through the College of Business and Technology, East Tennessee State University in August 2016. During this program, Jessica was selected to represent ETSU in the Regional Certified Financial Analyst Research Challenge, where her team took 3rd place. She also participated in Study Abroad in Spannocchia, Italy. The focus of this study was on international business. Jessica previously earned her PhD in Biomedical Sciences and accepted the position of Research Associate with the laboratory of Dr. Greg Ordway. She will participate in graduation exercises again to be held in December of this year.

Congratulations to Kimberly Johnson who has accepted a full-time position as Technical Clerk 1. Kim has been a temporary employee for a few months to provide clerical support for course administration. She will continue to assist Dr. Schoborg in this capacity.

Congratulations to **Christopher Ardell** who has accepted a full-time position as Research Assistant 2 in the laboratory of Dr. Valentin Yakubenko. Chris obtained his Bachelor of Science Degree in Biochemistry, Cellular and Molecular Biology, from the University of Tennessee. He has been working in the laboratory of Dr. Yakubenko as a temporary research assistant since December of 2015.



INTERNAL GUEST SEMINAR SPEAKERS



Dr. Theo Hagg, Professor & Chair, was invited guest speaker at the Internal Seminar Series on August 19, 2016. Title of presentation: Integrin signaling as a therapeutic target for neurological disorders.

CONGRATULATIONS to **Crystal Maupin** who has been elected to serve as a member of the ETSU Staff Senate.



Dr. Alok Agrawal, Professor, was invited guest speaker at the Internal Seminar Series on September 2, 2016. Title of presentation: Protection against pneumococcal infection by using engineered C-reactive protein.

ETSU PRIDE WEEK



Crystal Maupin has ETSU P-R-I-D-E and S-P-I-R-I-T. Her decorations consisted of calendar of events held throughout the year at ETSU. This definitely caught the eye of the judges.

Katharina Ruebel

Field Application Specialist

Invited guest speaker at the Internal Seminar Series in Conjunction with the Department of Internal Medicine, September 9, 2016.



DBMS Graduate Students—2016-2017



Rudy Chapman graduated from Tennessee Technological University with a B.S. Degree in Biology. His hometown is Oakdale, a small town located in Morgan County, Tennessee. He is working with the laboratory of **Dr. Diego Rodriguez-Gil**.

Kui Cui received his B.S. Degree in Pharmacy from Xuzhou College, and Master of Medicine in Pharmacology from Soochow University in China. He is working with the laboratory of **Dr. Valentin Yakubenko**.



Wesley "Drew" Gill graduated from Davidson College with a B.S. degree in Biology. His hometown is Knoxville, Tennessee (Home of UT Football) He is working with the laboratory of **Dr. Russ Brown**.

Jeddidiah Griffin graduated from Carson-Newman University with a B.A. Degree in Biology and B.S. Degree in Biochemistry and Applied Physics. He is originally from Bryson City, North Carolina. He is working with the laboratory of **Dr. Patrick Bradshaw**.



Asmita Pathak received her B.S. Degree in Biochemistry from Delhi University, and M.S. Degree in Biochemistry from Jamia Millia Islamia. Asmita is working in the laboratory of **Dr. Alok Agrawal**.