Dr. Gregory Ordway, Interim Chair  
Department of Biomedical Sciences

The new year has begun with much to do. Positioning ourselves to prosper and grow with new grants and grant renewals may be a major challenge as we approach the upcoming months and economic uncertainties. We all need to remain proactive in seeking out avenues and opportunities for submission of grant applications.

Renovations to labs in Building 119 are progressing. We expect to maintain our projected schedule for completion. (Note photos included within this newsletter).

Five of our faculty have recently received accolades by receiving the Scarlet Sash Award from the fourth-year medical students. Kudos! to these faculty.

It is time for us to start preparing for annual faculty activity reports/reviews (FAR); also ensuring CV’s are up-to-date. Specific guidelines on these processes are currently underway.

Ms. Sandra Davis-Osterhaus assumed responsibilities as Information Research Technician 1, effective March 1.

We warmly welcome our newest staff member, Ms. Crystal Maupin, Information Research Technician 1, who joined the department effective March 1.

PAPERS/ABSTRACTS/PUBLICATIONS:


**PAPERS/ABSTRACTS/PUBLICATIONS—Cont’d.**


**Dr. Robert Schoborg, Professor, was chosen to serve as Chair of the “Chlamydia Plasmids and Genetics” session at the Chlamydia Basic Science Research Society in San Antonio, Texas, March 19-22, 2013.**

**Duffourc Receives Travel Award**

Dr. Michelle Duffourc, Associate Professor, is one of two recipients of the Annual ASPET Division of Pharmacology Education Travel Award for Pharmacology Educators. Only two awards were given out in the entire country this year. One of the primary goals of this award is to foster career development in pharmacology education. She will also receive a plaque in recognition of this award at the Pharmacology Education Business Meeting. Congratulations and many thanks to Dr. Duffourc and her efforts put forth to obtain this award.

**NIH Study Section Reviewers**

Dr. Alok Agrawal, Professor, served as Ad Hoc reviewer for the National Institute of Health (NIH) “Innate Immunity and Inflammation” Study Section, February 7-8, 2013.
Scarlet Sash Society Awards Bestowed

The SCARLET SASH SOCIETY Awards for 2013 was a pleasant surprise for five Biomedical Sciences teaching faculty. This student-based award is presented by the students of the fourth year medical class to those faculty they deemed as outstanding educators in their field of study. In addition, faculty are selected based upon their mentorship qualities—providing an influential and guiding force in the quality of education as well as personal growth in students. Out of 14 faculty considered, the following five were selected to receive this award. Congratulations are extended to:

- Dr. Michelle Duffourc
- Dr. Fred Hossler
- Dr. Thomas “Tom” Kwasigroch
- Dr. Paul Monaco
- Dr. Robert Schoborg

Natalie Burke, Graduate Assistant, Prepares for Dissertation Defense

Natalie Burke, Candidate for the Degree of Doctor of Philosophy in Biomedical Sciences, will present her defense on Thursday, March 21, 2013, at 9:00 a.m., Stanton-Gerber Hall, B-003. Dr. Jack Rary, Professor of Pediatrics, and Adjunct Faculty, Department of Biomedical Sciences, has served as the Chair of her defense committee. Dr. Scott Champney, Professor of Biochemistry, is Co-Chair of her defense committee. The title of her dissertation is, “Genomic Imbalances in Endometriosis Detected by Oligonucleotide-Array Based Comparative Genomic Hybridization.”

Mr. Rees Burt Semi-Finalist in EB 2013 “Robert Gunn Student Award”

Mr. Rees Burt was selected as a semi-finalist in, The Cell and Molecular Physiology Section Robert Gunn Student Award competition, Experimental Biology 2013. He will present his poster in the regular session at EB 2013 meeting in Boston, and also at another session for his competition. Also, this award includes $300 plus reimbursement of registration fee. Only one award is given each year to a deserving undergraduate researcher. We congratulate Rees on this recent accomplishment! Rees has been conducting undergraduate research in the laboratory of Dr. Robert Wondergem.

Burt and Perry Receive ETSU Honors College Student Travel Grant Program Awards

Rees Burt and Evan Perry were awarded an undergraduate travel grant by The Honors College in the amount of $900, to be applied toward travel to the Experimental Biology Conference in Boston, MA, in April 2013, where they will present research posters.

Rees and Evan have been conducting undergraduate research in the laboratory of Dr. Robert Wondergem and Dr. David Johnson, respectively. We commend our faculty for serving as mentors and for their support of future researchers.
Dr. Agrawal Invited Guest Speaker at International Symposium in Santiniketan, India

Dr. Alok Agrawal, Professor, was an invited guest speaker at the “International Symposium on Molecular Signaling” at the Visva-Bharati University, Santiniketan, India, February 18-21, 2013. The title of his presentation was, “Evolutionary Conservation and Structure-Function Relationships of C-Reactive Protein.”

Dr. Agrawal was also invited to serve as Chairperson of one of the scientific sessions of the Symposium on February 19, 2013.

Dr. Kostrzewa Invited Guest Speaker at International Symposium in Valdivia, Chile

Dr. Richard Kostrzewa, Professor, is an invited speaker at the VI Neurotoxicity Society Meeting on “Mechanisms of Neurodegenerative Disorders,” Valdivia, Chile, March 21-24, 2013. His presentation title is, “The dopamine D2 agonist quinpirole as a non-neurodegenerative neurotoxin.”

Dr. Musich and Dr. Zou Presenting at the 7th Progeria Research Foundation International Workshop

“Hand in Hand: Basic & Clinical Science Working Together Toward the Cure”

Dr. Yue Zou, Professor, will present a talk at the 7th Annual Progeria Research Foundation International Workshop, to be held on April 24-26, 2013, in Bethesda, MD. Dr. Phil Musich, Professor, will also be presenting a poster at the same meeting.

S.O.S. Meeting

Next Session: Friday, March 22, 2013 at 12:00 p.m. – Small Auditorium, Stanton-Gerber Hall. Presenter: Dr. Fred Hossler.

Anyone interested in being a presenter, please contact Dr. Mike Kruppa, Seminar Committee Chair, to schedule a date.

Corrections to January Newsletter

Dr. Southerland’s grant was a continuing funding of R01 in association with Ithaca College—not a no-cost extension as stated.

Dr. Donald Hoover should have been listed as Co-PI on research project, “Acute and Chronic Evaluation of VNS for Treatment of Epilepsy.”

Remember to donate your trash bags to the Bags to Benches Recycling Program
After 11 years of dedicated service, Maria Schell, Director, will be retiring on May 10, 2013. Maria’s expertise in Microbiology has been a valuable asset to the Department and she will be missed. Further details about retirement arrangements will be forthcoming soon.

FAREWELL... Good bye, good luck!

We must say farewell to Dr. Yan Fan, She has been a dedicated employee and worked in the laboratory of Dr. Meng-Yang Zhu for the last five years as his Postdoctoral Assistant. Dr. Fan has accepted a position in China and will be returning there. Her last day is March 21st. We all join together in wishing her the best in her future endeavors.

SANDRA DAVIS-OSTERHAUS, assumed responsibilities of Information Research Technician 1, effective March 1, 2013. Sandra will continue to handle the functions relative to grant management and assist with course administration for Building 178. Her office is located in Stanton–Gerber Hall, Room B204. Sandra was previously Executive Aide in Biochemistry.

Welcome New Staff Member

CRYSTAL MAUPIN joins the Department effective March 1, 2013, as Information Research Technician I. Crystal will primarily handle functions associated with grant management and assist with course administration for VA Building 1/119. Her office is located in Building 1, Room 141.
The Biochemical Nature of Disease Journal Club has been established. This club meets at noon on Thursdays and is a brown bag lunch. Topics are of speaker’s choosing. The paper to be discussed is sent via email on Monday. Topics that have been discussed thus far related to antibiotic resistance, autophagy, translation control, DNA repair, lipid metabolism, apoptosis, mechanisms of cancer, heart disease and neuropathology. Any interested parties may contact Dr. Sharon Campbell if they would be interested in giving a presentation.

Below is a tentative schedule for Spring 2013:

March 7    Jaime Parman
March 14   Sharon Campbell
March 21   Laura Daniel
March 28   Hui Wang
April 4    Appalachian Student—Research Forum
           (No meeting)
April 11   Mitch Robinson
April 18   Annie (Yan Wang)
April 25   Maya Breitman
May 2      You Zou

Remember to provide updates to Tonya Ward for the DBMS website pages!

Microbiology Journal Club — Meets Alternating Thursdays at 9 a.m.—Year round except holidays. Faculty Contact: Dr. Robert Schoborg.
Pharmacology Graduate Students Journal Club — Meets Mondays at 3:30 pm, Bulding 1, Room B06. Faculty Contact: Dr. Don Hoover.
**RECENT PUBLICATIONS**

**Gene Expression Deficits in Pontine Locus Coeruleus Astrocytes in Men with Major Depressive Disorder**


**ABSTRACT**

Norepinephrine and glutamate are among several neurotransmitters implicated in the neuropathology of major depressive disorder (MDD). Glia deficits have also been demonstrated in people with MDD, and glia are critical modulators of central glutamatergic transmission. We studied glia in men with MDD in the region of the brain (locus coeruleus; LC) where noradrenergic neuronal cell bodies reside and receive glutamatergic input. Methods: The expression of 3 glutamate-related genes (SLC1A3, SLC1A2, GLUL) concentrated in glia and a glia gene (GFAP) were measured in postmortem tissues from men with MDD and from paired psychiatrically healthy controls. Initial gene expression analysis of RNA isolated from homogenized tissue (n = 9-10 pairs) containing the LC were followed by detailed analysis of gene expressions in astrocytes and oligodendrocytes (n = 6-7 pairs) laser captured from the LC region. We assessed protein changes in GFAP using immunohistochemistry and immunoblotting (n = 7-14 pairs). Results: Astrocytes, but not oligodendrocytes, demonstrated robust reductions in the expression of SLC1A3 and SLC1A2, whereas GLUL expression was unchanged. GFAP expression was lower in astrocytes, and we confirmed reduced GFAP protein in the LC using immunostaining methods. Limitations: Reduced expression of protein products of SLC1A3 and SLC1A2 could not be confirmed because of insufficient amounts of LC tissue for these assays. Whether gene expression abnormalities were associated with only MDD and not with suicide could not be confirmed because most of the decedents who had MDD died by suicide. Conclusion: Major depressive disorder is associated with unhealthy astrocytes in the noradrenergic LC, characterized here by a reduction in astrocyte glutamate transporter expression. These findings suggest that increased glutamatergic activity in the LC occurs in men with MDD.
Team-taught grand rounds promote horizontal and vertical integration in a discipline-based medical curriculum

Michelle M. Duffourc, Robert V. Schoborg, Ramsey McGowen, Cynthia Lybrand, and Reid B. Blackwelder, Biomedical Sciences, Psychiatry, Academic Affairs, Family Medicine, Quillen College of Medicine, East Tennessee State University, Johnson City, TN.

ABSTRACT (#3350) - Presenter—Dr. Michelle M. Duffourc
Poster Session Title: Teaching, Learning and Testing in the Biological and Biomedical Sciences 1

Discipline-based medical curricula face the challenges of promoting horizontal (across course) and vertical (across years) integration, as well as providing opportunities for student physicians to build the skills needed for their upcoming roles as “residents-as-teachers”. To address these issues, we developed an Integrated Grand Rounds (IGR) series in which cases are co-presented by clinical and basic science faculty. Sub-topics relevant to the case are expanded upon by means of patient interviews and small group breakout sessions led by M3/M4 students. IGR effectiveness is measured by comparison of pre-/post-test scores and student attitude questionnaires.

Overall, student post-test scores improved by 23% and greater than 95% of all students felt that this activity was an effective way to both integrate information across the basic science and highlight clinical applications of basic science material. Additionally, all M3/M4 students polled felt that the IGR provided a valuable opportunity to review important basic science concepts and practice clinical teaching skills.

The IGR series has proven to be a highly successful tool for cross-course integration and is enthusiastically supported by both faculty and students. We are in the process of expanding its use in our curriculum.
**Cardiac Sensory Consequences of Low-Amplitude Autonomic Regulation Therapy**

Jeffrey L Ardell1, Eric Beaumont1, Bruce H KenKnight2, David Gibbons1, Marie Southerland1, John Andrew Armour1. 1Biomedical Sciences, East Tennessee State University, Johnson City, TN, 2Emerging Therapy Research, Cyberonics, Houston, TX.

**ABSTRACT (#4144) - Presenter—Dr. Jeffrey Ardell**

*Poster Session Title: Neural Control of Cardiovascular Function: The Heart*

To determine if vagus nerve stimulation (VNS) or spinal cord stimulation (SCS) affects the capacity of cardiac afferent neurons to transduce myocardial ischemia (MI).  Methods: Using extracellular recordings in anesthetized canines, cardiac-related dorsal root (DRG; T1-T3 spinal levels) or nodose ganglia neurons were identified by touch/chemical activation in their epicardial sensory fields located adjacent to the left anterior descending (LAD) coronary artery. Neuronal responses to 1 min LAD coronary artery occlusion (CAO) were then evaluated prior to and following SCS [T1-T3 spinal level; 50Hz, 90% motor threshold; 20 min] or left cervical VNS [20 Hz; current amplitudes (CA): CA1 (1-1.9 mA) or CA2 (2-3.5 mA); 3 min].  Results: LAD CAO activated cardiac afferent neurons in nodose and DRG ganglia, enhancement that persisted for up to 30 min into reperfusion. Following SCS or CA2 VNS, LAD CAO failed to alter their neural activity.  VNS at CA1 did not mitigate MI-induced activation of nodose neurons.  Conclusions: Transient myocardial ischemia activates primary afferent inputs to the central nervous system (CNS), responses that persist into reperfusion. Pre-emptive VNS or SCS obtunds sensory transduction of the ischemic myocardium to the CNS, in part accounting for the anti-anginal and broader cardioprotective effects of such therapy being evaluated clinically. (HL71830).

**Network interactions within the intrinsic cardiac nervous system: Implications for reflex control of regional cardiac function**

Eric Beaumont1, John Andrew Armour1, Siamak Salavatian2, Alain Vinet2, Vincent Jacquemet2, Jeffrey L Ardell1. 1Biomedical Sciences, East Tennessee State Univ, Johnson City, TN, 2University of Montreal, Montreal, QC, Canada.

**ABSTRACT (#4093) - Presenter—Dr. Eric Beaumont**

*Poster Session Title: Neural Control of Cardiovascular Function: The Heart*

To determine how aggregates of intrinsic cardiac (IC) neurons transduce the cardiovascular milieu vs respond to changes in central drive. Also to determine how IC network interactions, subsequent to induced neural imbalances, subserve the genesis of atrial fibrillation (AF).  Methods: Activity from multiple IC neurons within the right atrial ganglionated plexus was recorded from anesthetized canines. Induced changes in IC neuronal activity were evaluated in response to:  (1) cardiac touch; (2) electrical activation of the cervical vagus or stellate ganglia; (3) occlusion of the inferior vena cava or thoracic aorta; (4) focal left ventricular ischemia and (5) neurally induced atrial arrhythmias (AF).  Results: The majority of IC neurons were local circuit in nature and in basal states displayed low level functional interconnectivity. The majority of IC neurons received indirect central inputs (vagus and stellate) and a lesser proportion transduced the cardiac milieu including responding to multimodal stressors applied to the great vessels and heart. In response to mediastinal nerve stimulation most IC neurons became excessive excited and their functional interconnectivity enhanced; such network behavior preceding and continuing throughout AF.  Conclusion: Stochastic interactions among IC neuronal populations underlie control of regional cardiac function. (Supported by HL71830).
Innovative Technology Expands Student Laboratory Experience During Medical Gross Anatomy Course: Addition of iPads in lab revolutionizes how anatomy is taught

Caroline L. Abercrombie1,2, Niti P. Yogesh, Lorenzo Q. Olive, Jonathan A. Miller, James W. Denham1,2, Brigitte M. Browe1, Thomas E. Kwasigroch1 Department of Biomedical Sciences1, Department of Medical Education2, East Tennesse State University James H. Quillen College of Medicine, Johnson City, TN 37614.

ABSTRACT (#792) - Presenter—Dr. Caroline L. Abercrombie
Poster Session Title: Anatomy Education: Teaching Methods and Innovations

The Quillen College of Medicine at East Tennessee State University has reinvented the laboratory experience for the Medical Gross Anatomy & Embryology course. With cutting-edge iPad technology at every dissection table, medical students are empowered to have high-yield learning experiences. The central hub of information, armed with educational Apps, has optimized time efficiency by lessening time spent flipping through books to more time spent dissecting. Students are also given early opportunities to present clinical cases in the lab, which improves peer-peer performance and heightens team-based learning. Student feedback has indicated that this technology gives them added ownership in their education and improves the dissection experience. Similar enthusiasm is seen in other disciplines that use our facility: Physical Therapy and Nursing Anesthesia. Cell & Tissue Biology and Clinical Neuroscience have also implemented this tool in their teaching labs. The College of Medicine strongly believes the integration of this technology into the curriculum furthers the University’s goal of strengthening the student-learning environment and overall professional development.
Cadaver Presentations: An Integrative, Clinical Approach to Anatomy

James W. Denham¹,², Franchesca Robichaud, Caroline L. Abercrombie¹,², Brigitte M. Browe¹, Thomas E. Kwasigroch¹, Paul J. Monaco¹ Department of Biomedical Sciences¹, Department of Medical Education², East Tennessee State University James H. Quillen College of Medicine, Johnson City, Tennessee 37614

ABSTRACT (#3959) - Presenter—Ms. Bridgitte M. Browe

Poster Session Title: Anatomy Education: Clinical-Based Approaches

The current standard for medical human anatomy courses includes a didactic and laboratory component where medical students learn about the human body through traditional lectures and laboratory dissection or prossection. At the Quillen College of Medicine, the Medical Human Gross Anatomy and Embryology course includes the traditional elements of lecture and laboratory dissection, but recently incorporated a longitudinal element that starts with the cadaver dissection during the traditional course. From the first day of class, students are encouraged to look at the cadaver as their first patient, keeping a chart of abnormal findings and determining likely health problems present—one of which will become their presentation topic. The first year of study is marked by an end of the year “mini-grand rounds” where students present not only the anatomy, but also the biochemistry, physiology, histology and genetics involved in the cause of death or pathology findings related to their first patient. This project fuses classroom learning with clinical medicine, challenging students to look at their cadaver less as a tool for academics and more as their patient. This project is planned to be projected into the second year, where an additional presentation encompassing elements of pathology, pharmacology, microbiology, immunology, neuroscience and lifespan and development (introduction to psychiatry) can also be presented, as appropriate.

Expression of recombinant human neutrophil Cathepsin G in Pichia pastoris

Evan Thomas Perry, Eliot Smith, David Johnson., Biomedical Sciences, East Tennessee State University Quillen College of Medicine, Johnson City, TN

ABSTRACT (#1465) - Presenter—Mr. Evan Perry

Poster Session Title: Proteases in Cell Regulation and Disease

Cathepsin G (CatG), a serine protease found in the azurophil granules of neutrophils, participates in killing engulfed microorganisms. CatG has dual specificity for chymotrypsin-like and trypsin-like substrates. CatG is a poorly understood enzyme and is currently only commercially available as mature enzyme purified from human sources. The yeast Pichia pastoris is being used to express CatG to study its dual specificity and its C-terminal processing. The full length (C-terminus present) human CatG amino acid sequence was modified to remove one glycosylation site and eight dibasic sites to avoid potential cleavage by yeast kexin protease. The construct was engineered to have an N-terminal 6-His-cytochrome B5 (CytB5) heme binding fusion domain linked to the modified human CatG by an enterokinase cleavage site for activation. The amino acid sequence was used to generate a codon-optimized gene that was placed in the pPICza secretion vector. After transforming Pichia pastoris strain X-33, 48 Zeocin-resistant clones were screened for relative levels of CatG activity. Recombinant CatG has been partially purified from fermentation media by nickel affinity chromatography and its activity has been confirmed by assays using synthetic substrates. Supported by a Student Faculty Collaborative Grant from the ETSU Honors College and ETSU Office of Research and Sponsored Programs and by NHLB grant R15HL091770.
Eggshell Calcium Influences Embryonic Growth in *Pantherophis guttatus*

Tom W. Ecay¹, James R. Stewart², and Rebecca A. Pyles². ¹Department of Biomedical Sciences, Quillen College of Medicine, East Tennessee State University, Johnson City, TN 37614, ²Department of Biological Science, East Tennessee State University, Johnson City, TN

**ABSTRACT (#7820) - Presenter—Dr. Tom W. Ecay**

**Poster Session Title: Comparative and Evolutionary Physiology: Osmotic and Ion Regulation, Metabolism and Development**

The eggshell of oviparous reptiles provides structural stability during development and is a significant source of embryonic calcium. Hatchling corn snakes (*Pantherophis guttatus*) obtain approximately 25% of their calcium from the shell, primarily in the last stages of development. Removing shell calcium by peeling away the outer eggshell at early stages results in hatchlings that are shorter and lighter than siblings from intact eggs. To test whether embryos can access environmental calcium to compensate for shell calcium lost to peeling, we incubated peeled and intact eggs in media with increasing calcium content and monitored egg uptake of media calcium with a calcium electrode. Intact eggs lose calcium in low calcium media (≤ 5 mM calcium) until about 10 days before hatching when they begin to accumulate media calcium. The timing of calcium accumulation is consistent with the expression of calcium transport pathways in the tissue that lines the inner shell. Peeled eggs slowly accumulate calcium at early stages in low calcium media and uptake accelerates in parallel to intact eggs at late stages. In high calcium media (20 mM) peeled and intact eggs exhibit a parallel pattern of increased calcium uptake at all stages. We conclude from this study that corn snake eggs can access environmental calcium and that eggshell peeling and subsequent supplementation is an experimental model to study the impact of shell calcium on embryonic development and metabolism.
Osteopontin Stimulates Cardiac Myocyte Apoptosis Via the Involvement of ER Stress and Mitochondrial Death Pathway

Suman Dalal¹, Qingin Zha¹, Christopher R. Daniels¹, Rebecca J. Steagall¹, Bhudev C. Das³, Alain-Pierre Gadeau⁴, William L. Joyner¹, Mahipal Singh¹ and Krishna Singh¹,²² Department of Biomedical Sciences, JHQ VA Medical Center, East Tennessee State University, Johnson City, TN; ³ACBR Delhi University, India; ⁴INSERM U 1034, France.

ABSTRACT (#3591) - Presenter—Ms. Suman Dalal
Poster Session Title: Apoptosis and Cell Death

Increased osteopontin (OPN; matricellular protein) expression associates with myocyte apoptosis and myocardial dysfunction. The objective of this study was to identify OPN receptor, and understand the mechanism by which OPN induces myocyte apoptosis. Adult rat ventricular myocytes (ARVM) and transgenic mice expressing OPN in a myocyte-specific manner were used for in vitro and in vivo studies. Treatment with purified OPN (20 nM) protein or adenoviral-mediated OPN expression induced apoptosis in ARVM. OPN co-immunoprecipitated with CD44 receptor. Neutralizing anti-CD44 antibodies inhibited OPN-stimulated apoptosis. OPN activated JNKs, and increased expression of Bax and levels of cytosolic cytochrome c suggesting involvement of mitochondrial death pathway. OPN increased endoplasmic reticulum (ER) stress, as evidenced by increased expression of Gadd153 and activation of caspase-12. Inhibition of JNKs using SP600125 or ER stress using salubrinal or caspase-12 inhibitor significantly reduced OPN-stimulated apoptosis. Expression of OPN in adult mouse heart associated with increased myocyte apoptosis and LV dysfunction. In the heart, OPN expression increased JNKs and caspase-12 activities, and expression of Bax and Gadd153. OPN, acting via CD44 receptors, induces apoptosis in myocytes via the involvement of ER stress and mitochondrial death pathway. Supported by NIH and Department of Veterans Affairs.

9-Phenanthrol Inhibits Calcium Oscillations in HL-1 Mouse Cardiomyocytes

Rees Burt¹, Bridget M. Graves², Chaunfu Li², David L. Williams², Santiago P. Fregoso¹, Donald B. Hoover¹, Robert Wondergem¹. ¹Biomedical Sciences, ²Surgery, East Tennessee State University, Johnson City, TN

ABSTRACT (#1666) - Presenter—Mr. Rees Burt
Poster Session Title: Ion Channels in Health and Disease

Transient Receptor Potential Melastatin 4 (TRPM4) is functionally expressed throughout the heart and has been implicated as a calcium-activated nonselective cation channel that mediates membrane depolarization. The functional significance of TRPM4 in regards to Ca²⁺ signaling and its effects on cellular excitability and pacemaker function remains inconclusive. We show by Fura2 Ca-imaging that pharmacological inhibition of TRPM4 in HL-1 mouse cardiac myocytes by 9-phenanthrol (10 μM) decreases Ca²⁺ oscillations followed by an overall increase in [Ca²⁺]i. The latter occurs also in HL-1 cells in Ca-free solution and after depletion of sarcoplasmic reticulum Ca²⁺ with thapsigargin (10 μM). Furthermore, by whole-cell voltage clamp we show that 9-phenanthrol reversibly inhibits TRP-like membrane current; by fluorescence immunohistochemistry we demonstrate that HL-1 cells display punctate surface labeling with TRPM4 antibody. We conclude that 9-phenanthrol inhibits TRPM4 ion channels in HL-1 cells, which in turn decreases Ca²⁺ oscillations followed by a compensatory increase in [Ca²⁺]i from an intracellular store other than the sarcoplasmic reticulum. We speculate that the most likely source is the mitochondrion. RB supported by APS summer undergrad fellowship.
VA Building 119 Renovation Underway... will help to pave way to growth in research
(photos compliments of Mr. Kenton Hall)
VA Building 119 Renovation Underway... will help to pave way to growth in research (photos compliments of Mr. Kenton Hall)