As a part of our ongoing transition period, we will be moving our inpatient care to the New Neurosciences 9th floor units, starting in November 2008 with an expected completion of this transition in February 2009. This floor will include units specifically dedicated to Epilepsy and Stroke patients. Also, there will be an expansion of clinic space on the 6th floor of Rutledge Tower by the end of 2008.

Finally, we would like to bid farewell to Jerry Moses, Clinical Business Administrator. Jerry will serve in a similar position in the Department of Anesthesiology at the University of Washington in Seattle. We wish him luck in all his future endeavors and thank him for his contribution to our department’s success so far. We are pleased to announce that Monica Gardner, previously our Research Business Administrator, has stepped up to being the Department Business Administrator.

In this last quarter, the Department’s growth in research and clinical programs has been at an all-time high. While our research faculty growth has plateaued, we rank 4th in the nation for NIH funding in Neurosciences. Thanks to the addition of several new faculty and their efforts, several clinical programs have established themselves with regional and/or national recognition. These programs include: Cerebrovascular and Stroke, Epilepsy, Neuro-muscular, Spine, Neuro-oncology and Peripheral Nerve Disorders - to name a few! One outstanding example of this growth is what has happened with the assistance of our Stroke telemedicine program – REACH-MUSC: this Stroke Network now includes 4 other hospital Emergency rooms in the Low Country. This number will double by December of 2008! The Epilepsy Surgery program gained national status as a Level 4 Center - the highest designation for such centers, placing it in line with other major centers, such as the Cleveland Clinic.

Technological progress continues in Neuro-oncology with clinical trials using novel drug delivery techniques for patients with brain tumors. Also, minimally invasive neurosurgery has progressed with the addition and refinement of the trans-nasal endoscopic techniques that allow for the removal of brain tumors, which brings us into the group of the top ten centers in the country that do this.

Welcome New Employees!

New Additions to our Research Division:

Lab Techs -
Forrest Lowe

Administrative Assistants -
Joseph Cleveland
Kristen Prestigiacomo

Student Employees -
Stephen Harden
Kristin Martin

Graduate Assistant -
Amena Smith
Aram Parsegian
Ahmad Ramadan

Post Docs -
Jamee Nicoletti

Kate Reissner
RN II -
Genevieve Starr

Research Specialist I -
Samantha Russell
Priya Arapulisamy
Sarah Wade Boatwright

Program Assistant -
Erin Richard

New Additions to the Faculty:

Neurology
Christos Lazaridis, M.D.
Kenkichi Nozaki, M.D.

Pediatric Neurology
Jennifer Teeters, A.P.N.

Neurosurgery
Alexander Vandergrift, M.D.
Raymond D. Turner IV, M.D.
Eve Balows, R.N.

New Additions to Neurosciences Administration:

Administrative Assistants:
Lynn Harley - Epilepsy Program
Kari Tippens - Neuromuscular Program
Channon Jackson - Scheduling

Administrative Specialist II:
Denae Burke - Stroke Program

Practice Manager:
Kimberly McCormick
Goodbye and Good Luck!!!

We would like to thank these former employees and doctors for all of their hard work and wish them continued success in the future.

Doctors:
Kenneth Bergmann, MD -
Movement Disorders
William Tyor, MD -
Director of Multiple Sclerosis Center, Professor, & Chief of Neurology Service at VA

Business Administrator:
Jerry Moses

Research Specialists:
Ashley Bouknight -
Worked with Dr. Kalivas
Rolf Fritz -
Worked with Dr. McGinty
Alisha Henderson -
Worked with Dr. See
Robbie Jones -
Worked with Dr. Tyor
Paul Knackstedt -
Worked with Dr. Aston-Jones

Postdocs:
Will Berglind -
Worked with Dr. McGinty
Javier Quinto -
Worked with Dr. Pappolla & Dr. Sambamurti
Nahiro Sato -
Worked with Dr. Aston - Jones

Graduate Students:
Christina Demos -
Worked with Dr. Sambamurti
Chitra Venugopal -
Worked with Dr. Sambamurti

Program Coordinator:
Italia Duran -
Worked with Dr. Sambamurti

Lema Massi -
Worked with Dr. Aston - Jones

Lab Manager:
Janusz Rajkowski -
Worked with Dr. Aston - Jones

Student Employee:
Daniel Ravenel -
Worked with Dr. Mintzer

What’s Happening?!?!?

Don’t Miss This Year’s Department of Neurosciences Holiday Party!!!

Make sure your calendars are marked for this year’s Neurosciences Holiday Party, which promises to be a blast! This year the band The Fabulous Kays will be there to provide live music, so be sure to wear your dancing shoes! We will have an oyster roast outside and a delicious Southern style dinner inside. Your significant other and children are welcome!

Where? James Island County Park in the Edisto Hall

When? December 7th from 4pm-8pm.
*Feel free to wander around and enjoy the Holiday Festival of Lights, displayed throughout James Island County Park!!!

Weddings!!!

Congratulations to Dr. Istvan and Mrs. Tiffany Takacs on their recent marriage! The couple were wed on June 7, 2008 at the Charleston Wedding Chapel.

Congratulations to Sherri Gilbert and her new husband, Brian Avinger! The couple exchanged vows on October 3, 2008 on Folly Beach.
Congratulations!!!

To Our Neurology Residents on their Accomplishments!

We would like to congratulate the following Neurology Residents, Class of 2008, who were appointed Fellowships upon graduation:

Rima Ash, M.D. - University of California - San Francisco
(Movement Disorders)

Jim Couch, D.O. - Medical University of South Carolina
(Clinical Neurophysiology)

Ashok Patel, M.D. - Cleveland Clinic
(Neuromuscular Disorders)

Nicole Winston, M.D. - University of Texas - Dallas
(Neuromuscular Disorders)

We would also like to congratulate:


*Dr. Ercan has been appointed to the faculty at the Joan C. Edwards School of Medicine at Marshall University, Department of Neurosciences, following the completion of a fellowship in sleep disorders at the University of Chicago.

To Our Doctors and Postdocs Who Were Awarded These Outstanding Grants - All within this last Quarter!!!

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Award Count</th>
<th>Sponsor</th>
<th>Submission Type</th>
<th>Total Award</th>
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<tr>
<td>Byron Bailey</td>
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<td>Ronald See</td>
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Abbreviations Used for the Sponsors listed above:

NIH = National Institute of Health
NIDA = National Institute on Drug Abuse
NIMH = National Institute of Mental Health
NIGMS = National Institute of General Medical Sciences
NIA = National Institute on Aging
Seminars and Events:

The Department of Neurosciences offers many different seminars and events on nearly everything involving the nervous system, i.e. brain/spine surgery, brain/spine tumors, epilepsy, strokes, neuropathy, etc.

If you would like more information on the different seminars and events that are scheduled for the Department of Neurosciences, you can find them through the following link: [http://neurosciences.musc.edu/new/new.html](http://neurosciences.musc.edu/new/new.html)

A Shining Example of the Meaning of MUSC Excellence!

Below is a summary of a patient’s care given here at MUSC, shared with us from the perspective of Dr. Sunil Patel:

“About 6-8 months ago, Ian Johnson performed an operation on a Spanish-speaking patient with a glioblastoma. She was at near term with her 7th child at the time, making this a very high risk case for both mother and child. All went well in the OR - OB delivered the child, and Ian and I operated on the tumor. Both the mother and her baby did very well.

Following the surgeries, the patient did well with radiation and chemotherapy, but the tumor recurred recently. We decided to enroll her into the COTARA trial (convection enhanced delivery). Steve Glazier helped me place the catheters using Brain Lab (I needed help with this). It all went well. She got the infusion just fine. Glitches with the infusion pumps were tended to at all hours day and night by none other than Bonnie Muntz-Pope (our research nurse).

The study requires for the patient to keep coming back to the hospital for scans quite frequently. She has no means for transportation and speaks very little English.

On a Friday, Ian Johnson transported the patient after discharge to his PA’s HOME! Elizabeth Hapke, his PA, is from Panama and speaks fluent Spanish.

Elizabeth was caught by me on Saturday morning at 7am - she brought the patient back to the hospital for a CT scan and took her back to her home...all with a broad smile on her face, with compassion I was personally quite moved to witness. The following week, the patient had several more tests as required by the study and stayed with Elizabeth at her home through all of it.

Folks - this is what MUSC Excellence is all about... High technology, the best care, and all with smiles.”

-Dr. Sunil Patel

Above: Dr. Ian Johnson and Elizabeth Hapke, P.A.
Intracellular calcium plays a crucial role in diverse cellular processes. Surprisingly, these functions include rapid changes in synaptic plasticity as well as more enduring adaptations in gene transcription. How precisely do local elevations of Ca2+ regulate multiple processes with such specificity?

This question can be answered by the organization and temporal dynamics of calcium signaling. Neuronal membranes are organized with discrete microdomains. Ion channels localized to different parts of the cell carry out distinct functions. Intracellular Ca2+ (50 nM at rest) can increase to 1 uM during neuronal activation. This increase occurs in two steps. The rapid release (and resulting depletion) of Ca2+ stored within the endoplasmic reticulum (ER) triggers the plasma membrane to stimulate the relatively slow activation of Ca2+ channels on the plasma membrane, which allow entry of external calcium. This sustained Ca2+ influx mediates long-term cytosolic calcium signals (important for gene transcription) and provides a means to replenish intracellular stores.

In dopamine neurons, glutamate, norepinephrine and acetylcholine (Gq-coupled receptors) all initiate the release of calcium from the ER. This calcium activates hyperpolarizing (sK) potassium channels on dendrites that function as ‘kinetic filters’, allowing dendrites to respond effectively to small depolarizations at discrete locations. Our recent observations indicate that the sensitivity of this fast release of Ca2+, however, is regulated by other receptors (Gs-coupled) that activate adenyl cyclase and PKA. Thus, dopamine neuron dendrites have coincidence detectors that use Ca2+ to interface between Gq/Gs-coupled receptors and sK channels. This dynamic system is well positioned to correlate pre- and postsynaptic activity and thus regulate dendritic excitability.

How does this system impact an animal’s global behavior? Although answers to such larger questions remain incomplete, large phasic activation of dopamine neurons appear to encode reward. Slower activations encode reward uncertainty. Modest fluctuations in dopamine initiate movement. Thus, the regulation of dendritic excitability by intracellular Ca2+ provides an attractive cellular mechanism to explain encoding of decision-making, learning and approach behavior.

How might changes in Ca2+ release impact human health and disease? Our current studies investigate corticotrophin releasing factor (CRF), a neuropeptide important for cognition, arousal and addiction. CRF activates a Gs-coupled receptor on dopamine neurons. This triggers the fast release of intracellular Ca2+ and provides a powerful means to study cellular neuroadaptations. To determine if drug of abuse dysregulate Ca2+, studies are preformed in collaboration with the NARC. Rats learn to self-administer cocaine and are subjected then to withdrawal. This treatment is known to superactivate adenyl cyclase and PKA. Dopamine neurons are tested then for their sensitivity to the CRF-evoked fast release of intracellular Ca2+. It is predicted that superactivation of cyclase/PKA will 1) diminish or occlude the physiological actions of CRF, 2) downregulate fast release of intracellular Ca2+ and 3) enhance the activation of Ca2+ channels on the plasma membrane to facilitate a long lasting entry of external Ca2+. Results from these experiments are anticipated to provide a detailed understanding of the cellular changes underlying drug use and provide a logical construct to test functional aspects of stress on drug withdrawal and reinstatement.
Congratulations to Our Very First Employee of the Quarter:

Treva Simpson!!!

Treva Simpson, Administrative Coordinator, will receive $200 in recognition of her outstanding service in the Department of Neurosciences.

Here is the inspiring nomination for Treva Simpson, entered by Dr. Steven Glazier:

“There were four children in need of a specialized operation performed in America by myself and Dr. Lisa David from Wake Forest University. We have a large experience with these cases, and the minimally invasive operation changes the procedure from one that requires intensive intra and post-operative monitoring, blood transfusion, lengthy hospital stay and significant risk to the child, into one that is a short operation with an overnight stay and minimal risk. Treva was up against the odds when I saw the child who was getting very close to being too old for the operation. She ran up against every barrier possible in getting Dr. David licensed to practice in South Carolina, privileged at MUHA, and oriented into our system. At each barrier, she assessed and overcame the problem or found another way to refuse to take no for an answer. In this heroic effort, she exhibited MUSC Excellence at every turn. She truly put the patient's needs first and did so in a professional manner that impressed not only me, but the head of the South Carolina Medical Board, and the staff and physicians at Wake Forest University.

The families of the children are notably appreciative of their surgeries, all of which went well, but are unaware of the efforts that went on behind the scenes. This is because Treva made it seem nearly effortless.

I think that so much of what we can accomplish for patients is due to these background efforts that happen every day, and Treva is to be commended for a longstanding commitment to our Department.”

*REMINDER* Now is the time to nominate your co-workers for Employee of the (4th) Quarter AND Employee of the Year!!! The Last Day to Nominate for BOTH will be December 15, 2008.

The winner for Employee of the (4th) Quarter will receive $200, and the Employee of the Year will receive $1000 in recognition of their outstanding service and use of the MUSC Excellence pillars.

If you have information you would like to include in our next quarterly newsletter, please contact Rachel Beard at beardr@musc.edu.

**Please have your requests for inclusion sent in NO LATER THAN Friday, December 19, 2008.**