

NEURO MESSENGER

Inaugural Issue of the Newsletter of the LSU Neuroscience Center of Excellence

November 1999

On the Occasion of the Tenth Anniversary of the
LSU Neuroscience Center



10th Anniversary Celebration

Honorary Co-Chairpersons

Dr. Mary Ella Sanders

Mr. Roger Ogden

Neuroscience Center Community Advisory Committee

E. Johann Bultman

Edward Diefenthal

Nancy Diefenthal

Joseph A. Grace, Jr.

Paul Nalty

Paige Sensenbrenner

Academic Lectures

Master of Ceremonies
Mervin L. Trail, M.D.

November 8, 1999
11:00 AM - 12:50 PM

1st Floor, Medical Education Building
LSU Health Sciences Center
Lecture Room B
1901 Perdido Street
New Orleans, LA 70112

Open House & Reception

Portrait Unveiling & Dedication
Master of Ceremonies
Robert L. Marier, M.D.

November 8, 1999
1:00 PM

8th Floor, LSU-Lions Research Building
2020 Gravier Street
New Orleans, LA 70112



Message from the Director

Nicolas G. Bazan

In 1988, I was honored with the responsibility of building a comprehensive Neuroscience Center at the LSU Medical Center in New Orleans. It thrills my colleagues and me to tell you about the Tenth Anniversary of our center that serves the people of Louisiana and beyond. The Neuroscience Center has definitely contributed to the enhancement of academic excellence at the LSU Health Sciences Center, strengthened fundamental neurosciences and pioneered the transfer of breakthroughs into the clinical arena. It is also the site of several educational and community outreach activities.

Our research teams are guided by a quest for knowledge and a common desire to help end the suffering caused by Alzheimer's disease, blinding eye diseases, stroke, Parkinson's Disease, schizophrenia, mental depression, epilepsy, head injury, spinal cord injury and other diseases of the nervous system. These scientists are smartly pursuing intensive research that is key to unlocking the mystery of how and why these diseases occur.

The Neuroscience Center of Excellence is the state's only interdisciplinary program that incorporates behavioral, clinical and basic neurosciences. This synergy in science has led to the development of a new analgesic drug. We have also identified the mechanism responsible for producing the inflammatory protein, COX-2, known to precede brain cell damage in conditions of injury or disease - and discovered how to switch it off. Our discovery of this novel mechanism to inhibit the expression of pathological genes has led to the development, in collaboration with organic chemists, of a family of drugs that renders these genes inactive in our experimental models of head trauma, preventing the damage of brain cells.

The most important component of the Center is the people. We are fortunate to have outstanding people associated with the Center. Our most recent additions to the faculty are: Dr. Rene Anand (University of Pennsylvania), Dr. Jeffrey Erickson (National Institutes of Health), Dr. Jeffery Magee (Baylor College of Medicine), Dr. Cindy Morris (Tulane University) and Dr. Anthony Ricci (University of Wisconsin).

The solid academic programs have served as the foundation to establishing a preeminent reputation as a center of learning and discovery. The interdisciplinary Neuroscience PhD Program is shaping the future of the neurosciences by ensuring that new generations of scientists and clinicians have the depth and breadth of knowledge to advance the understanding of the human brain and diseases that affect it. Other activities include annual scientific retreats, cooperative research initiatives, effective faculty development, incentive grant awards and a Seminar Series for faculty, fellows, residents and students at the LSU Health Sciences Center. As a global resource for other scientists and physicians, this collaborative environment fosters the exchange of information and ideas that is essential to scientific progress. Outreach is also a critical part of our mission to help the community-at-large understand neurological and psychiatric diseases.

As we approach the new millennium, and as I look back and reflect upon the past ten years, I am pleased with the progress we have made. Although we have made great strides in understanding the most challenging frontier in medical science - the human brain - much remains to be done!

Everyone in our community should take great pride in the first decade of the Neuroscience Center of Excellence and its accomplishments. Medical science progresses because people dedicate themselves to finding new solutions to complex conditions and because they are afforded the resources necessary to carry out their research. You have shared our vision. You lent your mind, your voice and your support. You made this happen.

The progress made is a promise of renewed persistence, dedication and hard work toward the understanding of how the brain functions, how diseases affect the brain and for advancing the discovery of new treatments for neurological and psychiatric diseases.

Thank you for offering assistance and hope to those suffering from these devastating diseases. And thank you for helping us to remain at the forefront as we enter into our next decade, and century, of discovery.

Master of Ceremonies

Mervin L. Trail, M.D., Chancellor

LSU Health Sciences Center

11:00 am

Dr. Jacques MalletCentre National de la Recherche Scientifique, Laboratoire de Génétique
Moléculaire de la Neurotransmission et des Processus Neurodégénératifs**Gene Transfer in the Nervous System**

The discovery of major neurodegenerative mechanisms has opened the way to the development of novel therapeutic approaches. Gene therapy now enables researches to overcome certain problems inherent to pharmacotherapy and to the grafting of embryonic cells. The production of recombinant adenoviruses offers a promising strategy for *in vivo* gene therapy involving neuroprotective as well as restorative strategies due to its ability to infect postmitotic cells, its high efficacy of cell transduction and its low pathogeneticity. Recombinant adenoviruses encoding therapeutic agents can be delivered *in vivo* after direct intracerebral injection into specific brain areas. They can be transported in a retrograde manner from the injection site to the projection cell bodies offering promising applications for the specific targeting of selected neuronal populations not easily accessible by direct injection such as the motor neurons in the spinal cord. Adenoviral vectors are also efficient tools for *ex vivo* gene therapy such as the genetic modification of cells prior to their transplantation into the nervous system. We will describe the clinical value of adenoviral vectors with particular attention to Parkinson's disease as well as motor neuron degeneration and spinal cord injury.

12:00 pm

Dr. Edmond H. Fischer, Nobel Laureate

1992 Nobel Prize in Physiology or Medicine

Professor Emeritus, University of Washington

Department of Biochemistry, Seattle, Washington USA

Cell Signaling in Health and Disease

Protein phosphorylation can be considered the most prevalent mechanism by which eukaryotic cellular events are regulated, and phosphorylation of tyrosine residues in proteins has been directly implicated in the regulation of cell growth, differentiation and transformation. Receptors for mitogenic hormones and growth factors are tyrosine kinases. Their signal is transduced by a variety of adapter proteins interacting with one another through binding modules (SH2, SH3, WW, PH, PDZ, etc.) thereby initiating diverse signaling pathways. Their mutations can lead to a number of pathological conditions such as non-insulin dependent diabetes or oncogenicity. Of course, Regulation must also involve protein tyrosine phosphatases (PTPs), an expanding family of transmembrane and intracellular enzymes that catalyze the reverse reaction. Most receptor forms contain two cytoplasmic catalytic domains and highly variable external structures that display all the hallmarks of cell adhesion molecules, suggesting that they are involved in - or regulated by - cell-cell interaction, with the very exciting possibility that they might be directly implicated in contact inhibition. Likewise, the intracellular PTPs display a great diversity of regulatory/localization segments, attached to conserved catalytic domains. The data indicate that kinases and phosphatases cannot be viewed as simply providing opposing "on/off" signals: depending on their structure and where they localize within the cells, tyrosine phosphatases can act either positively or negatively in eliciting a particular physiological response.

The Neuroscience Center of Excellence within the LSU Health Sciences Center represents the commitment of our institution and state to understand the brain, nerves, spinal cord and retina, as well as the diseases that affect these important components of the nervous system. While not everyone in the general public knows exactly what neuroscience is, virtually everyone has heard of Alzheimer's disease, Parkinson's disease, stroke, alcohol and drug addiction, and depression. These are just a few of the many devastating diseases of the brain for which the researchers at the Neuroscience Center are searching for a new understanding leading to cures. Imagine the impact this research could potentially have on victims of these debilitating illnesses and their families. This is not to mention the major economic burden that could be saved. We are proud to be on the forefront of medicine in the neuroscience discipline, and we would like to share our recent activities with you in this issue of the Neuro Messenger.

The First Decade of the Neuroscience Center

During the early 1980's, neuroscience, the study of the brain, spinal cords, nerves and retina and their disorders rapidly grew as a discipline of biology and medicine. Various departments of the Medical School had neuroscientists as faculty, but these investigators, physically dispersed throughout basic science and clinical departments, had little to draw them together. The late Dr. Morris Schaefer, former director of the Office for Research at LSU School of Medicine, New Orleans, brought together a number of LSUHSC neuroscientists as a Neuroscience Steering Committee. The charge of this committee was to explore ways in which the research environment for those interested in the exploration of the brain, spinal cord, nerves and retina could be enhanced. The first outgrowth of this committee was the initiation of a neuroscience seminar series supported by the Medical School Dean's Office.

In 1985, Dr. Nicolas Bazan was elected chair of the Steering Committee and opened a discussion of how we could further enhance the academic environment to support neuroscience research and related activities. Shortly thereafter, a decision was made to create a Neuroscience Center. This concept of an interdepartmental, interdisciplinary unit was new to the LSU system. It was thought that a Center would provide an important umbrella of identity for all neuroscientists on campus. In addition, it was thought that the Center could coordinate activities related

to neuroscience in such a way that investigators would be drawn together, thereby creating a more stimulating and productive environment in which they could pursue their research. With the help of the Steering Committee and the guidance and support of Dean Daniels, Drs. Bazan and Kratz wrote and submitted, on behalf of the Committee, a proposal to the Board of Regents for the creation of a new unit within the Medical School, the Neuroscience Center. Approval was given in 1987, and in 1988, Dr. Bazan was appointed Director of the Center. During the first few years of organization of the center, as well as after its official establishment, (1985-1992) all the activities of the Center were funded through grants and donations. Operating funds for the Center were provided in the Health Sciences Center's budget since 1992 under the state's Centers of Excellence program. Since that time, an Advisory Committee of the Center has been established and neuroscientists from the University of New Orleans have joined our ranks. An External Advisory Committee, comprised of distinguished neuroscientists from around the country, has helped guide the Neuroscience Center to the position of being one of the premier neuroscience communities in the world. An Advisory Board of Community Leaders has also been established to help guide the Center in its community outreach, fund raising and public relations efforts. Members of these Committees are listed on the front and back covers.

Interview with

Dr. Bazan

Director of the Neuroscience Center

By Kenneth Kratz, Ph.D.

Q & A

Dr. Nicolas Bazan has been the driving force behind the creation and development of the LSU Neuroscience Center of Excellence. He was appointed as the first Director of the Center in 1988. He is also Professor of Ophthalmology, Biochemistry and Molecular Biology, and Neurology at the LSU School of Medicine. Dr. Bazan also holds the Yvette C. and Ernest C. Villere Endowed Chair for the study of Retinal Degeneration and the Boyd Professorship, the highest academic honor in the LSU system. He has a distinguished research career and has published more than 400 scientific papers and book chapters and has edited 16 books. One of his research papers, published in 1970, was recognized by the Institute of Scientific Information as a Citation Classic. In 1989 Dr. Bazan received the distinguished Jacob Javits Neuroscience Investigator Award from the National Institutes of Health. Dr. Bazan has served as editor of or on the editorial board of 15 scientific journals. His research has centered on basic science issues regarding signal mediation within neurons and the relationship of these signals to gene expression by neurons. He has been interested in stroke, retinal degeneration, trauma, Alzheimer's disease and epilepsy as models for the clinical focus of his research. I sat down with Dr. Bazan to talk to him about the Neuroscience Center and the critical role it is playing in advancing research into brain diseases.

Dr. Bazan, please tell us something of your personal history.

"As I like to joke sometimes, I am from the true "Deep South" -Argentina, that is. I received a MD degree in 1965 from the University of Tucuman, Argentina. From 1965-1968 I was a post-doctoral fellow at Columbia University's College of Physicians and Surgeons and Harvard Medical School. I have lived in the "south" and have been at LSUHSC since 1981.

What is the LSU Neuroscience Center of Excellence?

The Neuroscience Center of Excellence is an interdepartmental, interdisciplinary unit of the Health Sciences Center. The Center brings together neurobiological research and the clinical neurosciences. The faculty members have their academic appointments in the various basic science and clinical departments of LSU Medical School and at the University of New Orleans. The Center creates an umbrella of identity for these investigators.

In this context, the Center conducts research, graduate and postgraduate teaching, and community outreach programs, and has just completed the organization of clinical multidisciplinary units.

As you see it, what is the purpose of the Neuroscience Center?

Our primary purpose is to create a stimulating research environment so those neuroscience investigators can maximize their creativity and productivity. We want to not only stimulate basic science research but also invigorate what is now called translational research, the movement of basic science findings into clinical application. We accomplish this through the sponsorship of numerous activities, such as an annual retreat and, a seminar series, and programs such as the incentive grant program, grant writing workshops and a Ph.D. training program. We feel we also have a responsibility to the community to inform them of what is known about the brain and its disorders and the progress that is being made toward preventing and curing these disorders. We accomplish this goal through our community outreach programs such as our public symposia in which we discuss such things as what the brain is composed of and many of the things that it does. Many questions, such as how memory is stored and recalled, remain unanswered. Second we don't know what causes many of the disorders and diseases of the

brain. For example, we still have little idea what ultimately causes Alzheimer's dementia or Parkinson's disease. And third, and perhaps most importantly, we have no cure for neurological or psychiatric disorders, that is, brain diseases. For example, each year over half a million people in this country suffer from stroke or "brain attack." About 150,000 of these individuals die each year, making stroke the third leading cause of death. This means then that at any one time there are around two million stroke survivors in the US. While many of these strokes can be prevented, once they occur, we can do very little at the present time to prevent the development of the harmful consequences of brain dysfunction that follows. The paralysis, the loss of speech, the loss of memory and changes in personality are just a few of the awful results of stroke. The impact on individuals and families is chilling, and this places a tremendous economic burden on society. Unfortunately, this is just one devastating neurological disorder. We must continue to intensify our research efforts to learn how the brain works, to learn what causes brain diseases and to find cures.

What are the financial underpinnings of the Neuroscience Center?

Currently, the Center is supported by the state's Centers of Excellence Program and by numerous principal investigator grants from the National Institutes of Health and private industry. We have been able to procure funding from the Department of Defense (DOD) which allowed us to build our new physical space in the Lions/LSU Clinic Building. However, we desperately need additional funds to continue our programs. Although we are a state institution, it is important to remember that we are state assisted and not solely state supported. Because of our excellent faculty, we have received numerous scientific grants from the National Institutes of Health and other research funding sources. But the need for research funds, particularly those that allow for novel investigations and for testing new ideas, is tremendous. The need far outweighs the current supply. We seriously need additional funds to continue our programs. This is why private contributions to the LSU Health Sciences Center Foundation in the name of the Neuroscience Center of Excellence are so critical to our ability to conduct cutting-edge research.

Has the Neuroscience Center had an impact on the Health Sciences Center and state?

Certainly. Beyond the name recognition and visibility the Neuroscience Center has brought to LSUHSC and Louisiana, it has also brought, and continues to bring, new money into the Health Sciences Center and state from the federal government and from private industry. Dr. Timothy Ryan, Dean of the School of Business Administration at UNO, estimated that our Department of Defense Grant will have a \$99 million impact on the state. As I mentioned before, it was the DOD money that allowed us to construct the headquarters of the Health Sciences Center. Most importantly, as the Center grows and our reputation throughout the world expands we should be able to attract biomedical industry to Louisiana. Numerous startup and established biomedical companies, particularly those in the pharmaceutical/biotech industry, invest billions of dollars each year in neuroscience research for the very reasons I mentioned earlier. These companies need to have working relationships with preeminent neuroscience communities and want to be located in their proximity. The LSU Neuroscience Center of Excellence research can help bring those companies to New Orleans.

What is your vision of the Neuroscience Center for the second decade of its existence?

In the short term we need to solidify our graduate program. We need resources to continue to bring in the best graduate students interested in careers in neuroscience. Graduate students invigorate a research environment through their youth and vitality. I also see expanding our faculty by hiring additional investigators in collaboration with clinical and basic science departments of the Medical School to expand on the model we have created with Drs. Magee, Erickson and Anand. This will further enrich the intellectual environment of the Center. And, of course, I see our Center making significant contributions toward our understanding of normal brain function and treatments and cures for brain dysfunction and diseases. That is my greatest hope and vision, that we will solve the riddles of brain disorders.

The LSU Neuroscience Center Welcomes Five New Faculty Members

The opening of the LSU Neuroscience Center's new research laboratories marks a time of unprecedented growth for research in the neurosciences here at LSU and throughout the nation. With the expansion of the physical space completed, the Center has begun expanding its faculty, bringing to Louisiana the best and brightest minds in the neurosciences. The Center has recently recruited five new faculty members who have brought with them a depth and breadth of knowledge that will help us push the limits of science and advance understanding of how diseases of the brain develop and progress.



Rene Anand, Ph.D. is an Assistant Professor in the departments of Biochemistry, Molecular Biology and the Neuroscience Center. After receiving his Ph.D. from Ohio State University in 1989, Dr. Anand pursued his postdoctoral training at the Salk Institute in San Diego. In 1990, he joined the University of Pennsylvania where he later became a Research Assistant Professor in 1994.

Dr. Anand's research focuses on ion channels that play a critical role in synaptic signaling in the central and peripheral nervous system. The major focus of the research program is to study the synaptic architecture of nicotinic and glutamate receptors. Nicotinic receptors mediate addition to nicotine, are the target of autoimmune antibodies in the human autoimmune disease myasthenia gravis, and are the genetic basis of at least one human epileptic disorder. Glutamate receptors have been implicated in epilepsy, neurodegenerative diseases, Rasmussen's encephalitis (an autoimmune disease) and neuronal cell death during a stroke. Synaptic proteins associated with these two classes of ion channels will be identified using a combination of genetic, molecular, and biochemical approaches. These studies will better our understanding of how ion channels are targeted to

presynaptic or post synaptic endings of neurons, what proteins mediate their clustering at synaptic subsites, and how this sublocalization might allow Ca^{++} ions entering through these channels to activate specific intracellular signaling pathways.



Jeffrey D. Erickson, Ph.D. came to our Center by way of the National Institutes of Health. His work here at the Neuroscience Center is a continuation of his research in which he and his colleagues cloned the gene that encodes the protein responsible for the packaging of dopamine into vesicles and have shown that several neurotoxic drugs can directly interact with this protein. A reduction in the amount has shown that several neurotoxic drugs can directly interact with this protein. A reduction in the amount of the dopamine packaging protein in neurons greatly increases their susceptibility to neurotoxins such as those known to cause Parkinson's disease. One of the projects Dr. Erickson and his research team are currently pursuing is to understand how the expression of the dopamine-packaging gene is regulated and how to specifically increase its activity.

In addition, using genetic techniques, Dr. Erickson and his research team are working to immortalize the dopamine-containing neurons that degenerate Parkinson's disease. This will be done in an attempt to develop a new model to study the regulation of this gene and the role it plays in neurotoxicity and neuronal degeneration.

Dr. Erickson and his team have also cloned the gene that encodes the protein responsible for the packaging of acetylcholine into vesicles. Interestingly, this gene is contained within another gene encoding the enzyme that makes acetylcholine. Such a gene arrangement is unprecedented in mammals and has important implications in Alzheimer's disease. Normally, these genes are expressed in similar amounts. In patients with Alzheimer's disease, however, the level of the enzyme that makes acetylcholine is greatly reduced while the acetylcholine packaging gene is unchanged. We have shown that the amount of acetylcholine, which can be packaged in vesicles, is directly proportional to the amount of acetylcholine made by the enzyme. The second major effort in Dr. Erickson's laboratory is to understand how the regulation of these genes can affect the amount of acetylcholine released from these neurons. In addition, using genetic techniques, Dr. Erickson would like to develop an animal model to determine where a reduction in the expression of these genes can lead to impaired cognition and neuronal degeneration as seen in Alzheimer's disease. He is jointly appointed in the Department of Pharmacology and Experimental Therapeutics

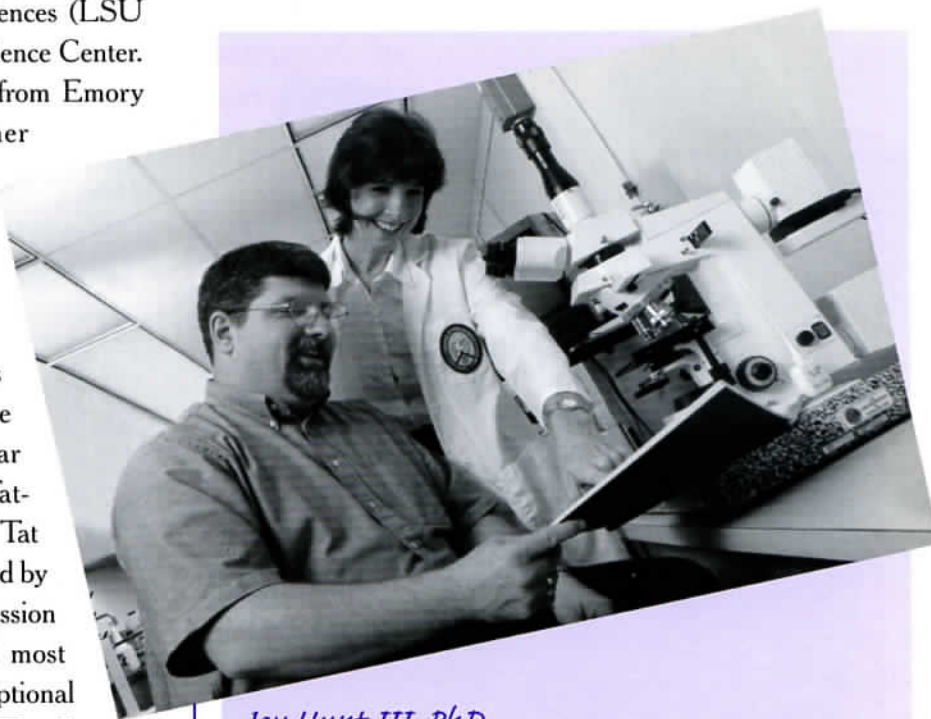


Jeffery C. Magee, Ph.D. earned his doctorate at Tulane University after which he pursued his postdoctoral work at Baylor Medical College in Texas. This past year, Dr. Magee returned to New Orleans to join the faculty of the LSU Neuroscience Center with a joint appointment in the Department of Anatomy and Cell Biology.

Epilepsy and Alzheimer's disease are two pathological situations where the individual neurons of the brain are highly dysfunctional. Because of this dysfunction, the brains of patients with these diseases find it difficult to perform many of the basic cognitive tasks. Dr. Magee's research is specifically directed at uncovering the fundamental alterations within the central nervous system that are responsible for these pathological conditions. His laboratory is one of the few in the world capable of recording electrical signals directly from even the smallest, most distant dendritic regions of individual neurons. Dr. Magee's laboratory is using this technology to establish how the complement and distribution of ion-channels shape the generation and propagation of electrical signals within both normal and pathological neurons. Dr. Magee and his colleagues have discovered that ion-channels are adversely affected during both epilepsy and Alzheimer's disease. His future research at the Neuroscience Center will help to identify exactly which dendritic components are altered by these diseases, providing an opportunity for the development of therapeutic agents. Dr. Magee's goal of attaining a thorough understanding of fundamental neuronal processes has and will continue to provide valuable insight into the normal and pathological functioning of the human brain.

Dr. Cindy Morris, Ph.D. is jointly appointed in the Department of Clinical Laboratory Sciences (LSU School of Allied Health) and the Neuroscience Center. Dr. Morris received her doctoral degree from Emory University in Atlanta, Georgia and her post-doctoral training from the National Institutes of Health, National Cancer Institute in Bethesda, Maryland. Her primary area of expertise is in the field of Molecular Virology. She is particularly knowledgeable about the molecular properties of the human immunodeficiency virus. The focus of her research is on the molecular mechanisms of HIV gene regulation, Tat-induced angiogenesis and AIDS dementia. Tat is best known as a regulatory protein encoded by HIV-1 that is essential for viral gene expression and replication. The predominant and most potent functional role of Tat is as a transcriptional transactivator. During acute infection of T cells by HIV-1, Tat is released extracellularly in a biologically active form that may be taken up by a wide variety of cells. Dr. Morris and her colleagues aim to understand how extracellular Tat and Tat that has been taken up by cells affect cellular gene expression, growth and differentiation. Her goal of elucidating the molecular mechanisms of Tat-mediated regulation of viral and cellular genes is providing a greater understanding of HIV-1 replication, angiogenesis and AIDS dementia.

Our newest faculty member, Anthony Ricci, Ph.D. is also returning to New Orleans, where he obtained his doctoral degree in Neuroscience from Tulane University. He pursued his postdoctoral work at the University of Texas Medical Branch at Galveston as well as the University of Wisconsin where he was most recently an Assistant Scientist in the Department of Physiology. As a sensory physiologist, Dr. Ricci uses electrophysiologic and imaging techniques to study signal processing in the sensory hair cells of the inner ear. Although his present focus is on biophysical and cellular processes which regulate membrane excitability and synaptic transmission, he aims to relate cellular and synaptic processing to overall hearing function. Dr. Ricci's laboratory is exploring the



Jay Hunt III, PhD

Assistant Professor of Biochemistry & Molecular Biology

Cindy Morris, PhD

Associate Professor of Clinical Laboratory Sciences

biochemical regulation of membrane excitability, sensory integration and synaptic transmission. Dr. Ricci's laboratory is gaining insight into the timing, strength, and location (in terms of anatomical and processing hierarchy) of brain processes underlying normal and disordered human percepts of auditory sensations such as loudness, frequency/pitch, duration, location, and perception of speech. His work is elucidating the physiology underlying normal and impaired hearing, speech, and language in humans. Dr. Ricci joins the Neuroscience Center with a joint appointment in the Department of Otorhinolaryngology.

We are thrilled to have these five top-notch scientists on our team. Together, they will generate new knowledge that will lead to a better understanding of the mechanisms of diseases of the brain. The hope they provide for the future in helping to develop new therapies for these devastating diseases is spectacular. Please help us welcome Drs. Anand, Erickson, Magee, Morris and Ricci to their new home!

Selected Current Publications

of Neuroscience Faculty

located at the headquarters of the Neuroscience Center

Wells, G B, **Anand, R**, Wang, F, and Lindstrom, J (1998). Water-soluble acetylcholine receptor formed by $\alpha 7$ subunit extracellular domains. *J. Biol. Chem.* 273, 964-973.

Anand, R, Gerzanich, V, Wells, G B, Nelson, M, and Lindstrom, J (1998). Determinants of channel gating located in the N-terminal domain of nicotinic $\alpha 7$ receptor. *J. Pharmacol. Exp. Ther.* 287, 469-479.

Lindstrom, J, Peng, X, Kuryatov, A, Lee, E, **Anand, R**, Gerzanich, V, Wang, F, Wells, G, and Nelson, M (1998) Molecular and antigenic structure of nicotinic acetylcholine receptors. *Annals of the New York Academy of Sciences*, Vol. 841, 71-86.

Lukiw WJ, Palacios Pelaez R, Martinez J, **Bazan NG**: Budesonide epimer R or dexamethasone selectively inhibit PAF- or IL-1 β -induced DNA-binding activity of cis-acting transcription factors and cyclooxygenase-2 gene expression in human epidermal keratinocytes. *Proceedings of the National Academy of Sciences, USA* 95:3914-3919, 1998.

Ogden F, DeCoster MA and **Bazan NG**: Recombinant plasma-type platelet-activating factor acetylhydrolase attenuates NMDA-induced hippocampal neuronal apoptosis. *J Neurosci Res* 53:677-684, 1998.

Mukherjee PK, DeCoster MA, Campbell FZ, Davis RJ, **Bazan NG**: Glutamate receptor signaling interplay modulates stress-sensitive mitogen-activated protein kinases and neuronal cell death. *J Biol Chem* 274:6493-6498, 1999.

Lukiw WJ, Martinez J, Palacios-Pelaez R and **Bazan NG**. The interleukin-1 type 2 receptor gene displays immediate early gene responsiveness in glucocorticoid-induced human epidermal keratinocytes. *J Biol Chem* 274:8630-8638, 1999.

Lukiw WJ, **Bazan NG**. Strong nuclear factor- κ B-DNA binding parallels cyclooxygenase-2 (COX-2) gene transcription in aging and in sporadic Alzheimer's disease (AD) superior temporal lobe neocortex. *J Neurosci Res* 53:583-592, 1998.

Chandrasekhar G, Bazan NG, **Bazan HEP**: Selective changes in protein kinase C (PKC) isoform expression in rabbit corneal epithelium during wound healing. Inhibition of corneal epithelial repair by PKC antisense. *Exp Eye Res* 67:603-610, 1998.

Hurst J, Ma X, **Bazan HEP**: PAF binding to a single receptor in corneal epithelium plasma membrane. *Invest Ophthalmol Vis Sci* 40:790-795, 1999.

Chandrasekhar G and **Bazan HEP**: Corneal epithelial wound healing increases the expression but not long lasting activation of the p85 subunit of PI-3K. *Curr Eye Res* 18:168-176, 1999.

Gilmor, ML, **Erickson, JD**, Varoqui, H, Hersh, LB, Bennett, D, Cochran, L, Mufson, EJ, and Levey, AI Preservation of nucleus basalis neurons containing choline acetyltransferase and the vesicular acetylcholine transporter in the elderly with mild cognitive impairment and early Alzheimer's disease. *J. Comp. Neurol.* 411: 693-704 (1999)

Miller, GW, **Erickson, JD**, Perez, JT, Penland, SN, Mash, DC, Rye, DB, and Levey, AI Immunochemical analysis of vesicular monoamine transporter (VMAT2) protein in Parkinson's disease. *Exp. Neurol.* 156, 138-148 (1999).

JC Magee (1999). Dendritic Ih normalizes temporal summation in hippocampal CA1 neurons. *Nature - Neuroscience* 2:508-514.

JC Magee (1998). Dendritic hyperpolarization-activated channels modify the integrative properties of hippocampal CA1 pyramidal neurons. *J. Neurosci* 18: 7613-7624.

JC Magee and M Carruth (1999). Dendritic voltage-gated ion currents regulate the action potential firing mode of hippocampal CA1 pyramidal neurons. *J. Neurophysiol.* 82: (1895-1901).

Barillari, G, Gendelman, R, Fiorelli, V, **Bohan Morris, C**, Samaniego, F, Colombini, S, Manzari, V, Modesti, A, Nair, BC, Markham, P, Gallo, RC and Ensoli, B. Inflammatory Cytokines Synergize with the HIV-1 Tat protein to promote angiogenesis and Kaposi's sarcoma via induction of basic fibroblast growth factor and the $\alpha v \beta 3$ integrin. *J. Immunol* 22:1930-1935, 1999.

Robinson, WR, Adams, J, Dumestre, J and **Morris, CB** Detection of Human Papilloma Virus (HPV) and Human Immunodeficiency Virus (HIV) in Vaginal Washings from HIV infected Women. *J Immunol* (In press).

Leung, W-C and **Morris, CB** Bcl-2 family of genes and their roles in apoptosis, oncogenesis chemoresistance. *Oncogene-Directed Therapies* (Ed. Freeman, S.M. and Marrogi, A.J.; Humana Press) 1999.

Current Events

Dr. Jay Rao Appointed as the Dr. Carl Baldrige Professor of Neurology and Neuroscience

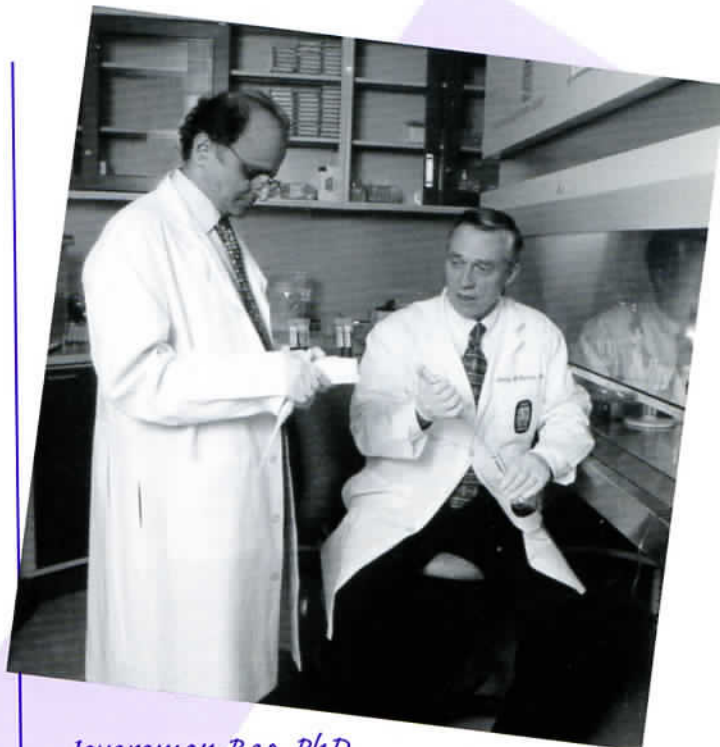
Friends, family and colleagues of Dr. Jay Rao recently gathered at the Plimsoll Club in New Orleans to celebrate his appointment as the Dr. Carl Baldrige Professor of Neurology and Neuroscience.

In the 1980s, Dr. Rao and Dr. Baldrige crossed paths when Dr. Baldrige became a patient of Dr. Rao's. Committed to helping others who were also suffering from Parkinson's disease, Dr. Baldrige became one of Dr. Rao's biggest supporters and championed his fight in the war against this debilitating disease. Armed with a vast supply of talent, skill and compassion, Drs. Rao and Baldrige created the first Parkinson's support groups throughout Louisiana and neighboring states.

A dentist, banker, farmer, and civic leader, Dr. Carl Baldrige embodied the entrepreneurial spirit. Having grown up on a farm in Marrow, Louisiana, he expanded his horizons and took on life with excitement and determination that resulted in tremendous personal and professional success. While living, he shared the fruits of success generously. In his death, Dr. Carl Baldrige's tremendous legacy lives on.

Dr. Carl Baldrige and his wife, Beulah Landry Baldrige, bequeathed more than \$3.1 million to the LSU Health Sciences Center Foundation to support endowed chairs, research and scholarships in the LSUHSC Schools of Medicine and Dentistry. Once matched with Board of Regents funds, the donation totaled nearly \$4 million, the largest single gift ever received by the LSU Health Sciences Center Foundation. Dr. and Mrs. Baldrige also left a considerable legacy to his local Shrine Temple, to Shriners Hospital for Children in Shreveport, Louisiana, and to numerous organizations with which he was affiliated in and around the Baton Rouge community.

Stricken with Parkinson's disease, Dr. Baldrige understood the need for investing in research to find a



Jayaraman Rao, PhD

Carl Baldrige Professor of Neurology
Director, Parkinson's Disease Center

Larry Carver, MD

Associate Professor of Psychiatry
Director, Brain Tissue Bank
Assistant Director, Neuroscience Center

cure. The funds he provided will ensure that research in Parkinson's disease continues with greater force and increased tenacity at the LSU Health Sciences Center.

Almost exclusively because of the work of Dr. Jayaraman Rao, the LSU School of Medicine is a state and regional leader in the fight against Parkinson's disease. In 1978, he created the Parkinson's disease and Movement Disorders Center in the Department of Neurology. It is the only one of its kind in the entire state of Louisiana and draws patients from Louisiana, Mississippi, Alabama, Florida and Texas.

Dr. Rao combines the talent of a compassionate physician with that of a skilled researcher dedicated to finding new treatments for Parkinson's disease and other movement disorders. As a rare "clinician-scientist" he bridges the art of caring with the science of discovery. He has published more than 100 papers and presentations. Dr. Rao travels extensively throughout



David Kline, MD

Boyd Professor and Head
Department of Neurosurgery

the state to be personally available to the support groups he and Dr. Baldrige founded. These support groups provide patients and caregivers with the latest information available on the treatment of their disease. Dr. Rao utilizes telemedicine to monitor his patients who cannot travel to New Orleans for regular care.

Spanning a 20-year-career, in his quiet and unassuming way, Dr. Jay Rao has undoubtedly touched more lives than he will ever know. Dr. Carl Baldrige, with care and concern for humankind, left a legacy that will live on forever. In the Dr. Carl Baldrige Chair in Neurology and Neuroscience, Dr. Baldrige's spirit and hope for a cure endures. Dr. Rao's appointment to this chair is a fitting tribute to his work thus far and to what is still to come.

Neuroscience Center is Awarded \$1,200,000 DOT Grant

Recently, at the Technology Deployment Initiatives and Partnerships Program in Washington, D.C., the Department of Transportation announced that the LSUHSC Neuroscience Center will be awarded a total of \$1,200,000 for five years (1999-2003). The Neuroscience Center and the George Washington University/VA have formed a unique inter-university research and development program to conduct cutting edge research in pre-crash, crash and post-crash phases of serious accidents. Their research will aim to refine and improve current technologies, as well as to provide information on lessening the severity of a crash and on improving design technologies to reduce the number of injuries. This collaboration, "The Automotive Highway Safety Research Initiative," is the most advanced crash analysis initiative anywhere in the country, combining the expertise of scientists in the fields of engineering, medicine and public policy.

The current research will utilize state-of-the-art transportation and medical technologies to improve existing automotive safety systems, to accelerate testing on the advanced "smart" air bag deployment, and to develop new medical technologies to prevent irreversible head and spinal cord injuries. The proposed research initiative is aimed at reducing the number, costs and long-term consequences of fatal or disabling brain injuries resulting from automobile accidents. The most significant aspect of this proposed research is the potential for future savings and improved quality of life. According to the National Safety Council, the cost of brain-related deaths and injuries in just one year – 1996 – was \$124.4 billion.

At the meeting in Washington, D.C., the LSU Neuroscience Center was recognized as an important contributor to the common goal of reducing head injuries. This provides us a "foot in the door" with regards to further research funding from the Department of Transportation.



Dennis Paul, PhD

Associate Professor of Pharmacology

Harry Gould, MD

Associate Professor of Neurology

Daughters of Charity Help Fund Alzheimer's Day Care Center

The Daughters of Charity have just awarded \$750,000 to the LSU Neuroscience Center to develop an Adult Day Care Center for the Underserved as well as a support program for caregivers. This program is the first of its kind in the country; it is unique not only in the clinical care provided to the patient but also to the caregiver. Furthermore, this program incorporates a clinical training program into a comprehensive approach to Alzheimer's disease, in which medical students, residents and fellows in geriatrics and geriatric psychiatry will have a unique opportunity to train in our Day Care Center. This is an exciting opportunity to develop a comprehensive approach to providing care for Alzheimer's patients, and one with the possibility of significant health consequences not only in New Orleans, but worldwide.

One of the main goals of the Neuroscience Center is to provide community service, including community outreach programs such as Brain Awareness Week, the Summer Undergraduate in the Neurosciences (SUN) program, and the Brain Bank. In keeping with

this goal, we aim to open our Alzheimer's Adult Day Care Center within the next few months. To this end, several outstanding faculty of the LSU Health Sciences Center are participating in this program:

- I. Dr. Nicolas G. Bazan (Program Director), Boyd and Villere Professor of Ophthalmology, Biochemistry and Molecular Biology and Neurology, LSUHSC, Director, LSU Neuroscience Center of Excellence
- II. Dr. Charles Cefalu, Professor and Chief of Geriatrics, as well as Vice-Chair of the Department of Family Medicine, LSUHSC
- III. Dr. Larry Carver, Associate Professor, Department of Psychiatry, Director of the Brain Tissue Bank, and Medical and Clinical Director, Mental Health Services, Medical Center of Louisiana
- IV. Dr. Kenneth Sakauye, Professor of Clinical Psychiatry, Director, Geriatric Psychiatry, LSUHSC, Director of the Geriatric Psychiatric Fellowship, and PI for the Poydras Adult Care program emphasizing family training within adult daycare.

These individuals have a wealth of experience and knowledge which will further the success of this program. In addition, our basic research program into novel mechanisms such as the COX-2 gene in Alzheimer's disease provides a new approach to the Alzheimer's Day Care Center in which we will truly bridge the basic neurosciences with clinical medicine.

Neuroscience Center is Granted \$750,000 from Eye, Ear, Nose, and Throat Foundation

On March 3, 1999 the Eye, Ear, Nose and Throat Foundation of New Orleans provided the Neuroscience Center with \$750,000 to establish new, effective research programs and to obtain preliminary data on eye diseases. This gift has allowed us to purchase critical equipment and supplies to support laboratory work, to help recruit a new faculty member who is an expert in molecular biology, to provide laboratory support for researchers who are working to gain a greater understanding of the mechanisms of these diseases, and to advance studies of new experimental drugs identified by the Neuroscience Center. The gift has also provided the leverage to raise funds and to dramatically increase our chances for additional research funding from the National Institutes of Health.

The grant application was entitled "Fundamental Mechanisms of Aging of the Retina and Brain: Age-related Macular Degeneration and Alzheimer's Disease." In the last few months, we have made significant progress in our studies on retinal degeneration and have a clearer understanding of the mechanisms that promote the progression of this devastating disease. In addition, we have developed several novel drug targets that have great promise in retarding the progression of the disease.



Rhoda Reddix, PhD
Assistant Professor of Pharmacology

Reha Erzurumlu, PhD
Professor of Cell Biology & Anatomy

The proposed retina research explores unknown causative mechanisms of blindness and aims to uncover targets for therapy. The research supported by the EENT Foundation will have a significant impact on eye diseases that we intend to present to the National Institutes of Health with the hopes of obtaining additional funding.

Dr. Nicolas Bazan Accepts Presidency of the Society for Neurochemistry

The 30th Annual meeting for the American Society for Neurochemistry, a division of the Society for Neurochemistry, was held in New Orleans, LA from March 14-17. The convention, which was held at the Downtown Sheraton Hotel, was an unequivocal success, due largely to the dedication and enthusiasm of several new members and newly elected officers, including Dr. Nicolas Bazan, who assumed the office of the Presidency.

Dr. Bazan's vision for the society includes conducting vigorous and creative recruitment that focuses on promising investigators, graduate students, and post-docs, both as members and as active participants in annual meetings. Furthermore, he will work to forge links and promote channels of communication between the ASN and neurochemistry organizations throughout the world, such as those in Japan, the Asian/Pacific Rim, Argentina, and Europe, and the International Society for Neurochemistry. To accomplish this goal, he intends on establishing a new office of the ASN to serve as a liaison between the various societies. By combining the strength of each society, he foresees an exciting amalgam of research and vision that will result in unsurpassed achievements in fundamental neurochemistry, as well as exceptional clinical advances.

Although the ASN is a relatively small group, it carves a unique niche in the field of Neuroscience with its cellular and molecular approach. Furthermore, its

clearly established mission, effective leadership of elected officers, and firm foundation places its members on the threshold of a new age in neurochemical and biological research.

1999 Brain Awareness Week Symposia

On April 26, 1999 (in New Orleans) and on May 17, 1999 (in Baton Rouge), Drs. Nicolas Bazan, Ken Kratz, Daniel Rodriguez and Austin Sumner joined forces to educate the public about stroke "brain attack" and head injury during the LSU Neuroscience Center's 1999 Brain Awareness Week. Brain attacks are the third leading cause of death in our nation and the number one cause of disability. Each year, more than 500,000 suffer from a new or recurring brain attack. Vehicle accidents, falls, blows, and gun shot wounds account for the majority of traumatic brain injuries. Among young Americans age 15 to 25, traumatic brain injury is the leading cause of death and neurological disorders. Head injury affects more than two million people per year. Combined, these diseases cost our nation more than \$55 billion per year. The cost in human suffering caused by brain attacks, head injuries and other neurological disorders are incalculable.

For this reason, the LSU Neuroscience Center of Excellence actively participates in this nationwide effort to educate the public about the functioning of our most complex organ - the human brain. These public symposia help people understand how the brain functions, what neurological diseases do to the brain, what can be done to help prevent these devastating diseases, and why research in the neurosciences is so important to eliminating some of the most horrific diseases known to humankind.



R. Ranney Mize, PhD

Head of Cell Biology & Anatomy

Co-Director,

Interdisciplinary Neuroscience Training Program

In addition to our public symposia in New Orleans and Baton Rouge, we also presented a series of school programs to help young people gain a greater understanding of the brain and how it functions. As you can imagine, the chance for students to see a human brain first-hand was quite an experience. As always, the excitement and enthusiasm the students exhibited was delightful. We are pleased that all of our events for Brain Awareness Week 1999 were a big hit with both adults and kids. We extend our thanks to everyone who helped make this event a success!

YES, I would like to support the LSU Neuroscience Center for Excellence.
My contribution is enclosed.

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Checks should be made payable to: LSU Health Sciences Center Foundation

And be mailed to: Dr. Nicolas Bazan, Director
LSU Neuroscience Center of Excellence
LSU Health Sciences Center
2020 Gravier Street, Suite D
New Orleans, LA 70112

* Significant donations will be permanently recognized by the naming of a laboratory, lecture room, research program, professorship, etc. after the patron. For more information about this, please call the Director of the Center who will provide details about the impact of significant donations to conquer neurological and psychiatric disorders.



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