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Dr. Nicolas G. Bazan,
 director of the Louisiana
 State University Medical Center
 Neuroscience Center

PHOTO BY DEBBIE GIBNEY

Probing the depths

Groundbreaking research in the field of neuroscience may help local doctors unlock some secrets of the brain

By Barbara Higgins Contributing Writer

THE LOUISIANA STATE UNIVERSITY Medical Center Neuroscience Center is working on some of the most serious challenges facing scientists today: understanding the complicated workings of the brain, unlocking the secrets of maintaining a healthy brain and discovering interventions and treatments for the brain if it is damaged.

As the population ages, research on such diseases as Alzheimer's and Parkinson's will become increasingly important. And new drugs that could limit the damage inflicted by head injury could not only restore the ability to work to injured people but save millions of dollars in rehabilitation costs.

The center operates in about 38,000 square feet of research space made possible in part by a \$14 million grant from the Department of Defense for the study of brain injuries. Dr. Nicolas G. Bazan, director of the Neuroscience Center, has been one of the main forces behind the center since its inception

11 years ago.

Since it was established, the center has attracted more than \$30 million in research grants. Its interdisciplinary approach has permitted research on a variety of diseases, including stroke, Alzheimer's disease, epilepsy, brain and spinal cord injury, Parkinson's disease, retinitis pigmentosa, age-related macular degeneration and other retinal degenerative diseases, depression, alcohol and drug addiction, mental retardation and hearing and speech disorders.

"Devastating diseases such as Alzheimer's, Parkinson's and those which cause blindness, leave their victims with little hope," Bazan says. "By developing our Alzheimer's disease research into a program that also reaches our community, we could attract clinical trials of the latest drugs and therapies."

Unfortunately, Bazan says, many of the newer drugs targeted at Alzheimer's aren't available in New Orleans, although some pharmaceutical companies are thinking of starting up facilities in New Orleans. "The fostering of the pharmaceutical/biotech

Medical debate: Who should be allowed to prescribe drugs for the mind?

By Christi Daugherty Contributing Writer

A PROGRAM THAT educates Louisiana psychologists about prescribing medication has raised the dangle of the state's psychiatrists.

Federal and state laws allow only medical doctors to prescribe medication. Psychologists have struggled against that restriction for years. The growing popularity of a slate of mood-altering pharmaceuticals, designed to be used in concert with psychotherapy, has only sharpened the debate over just who should be allowed to dispense drugs.

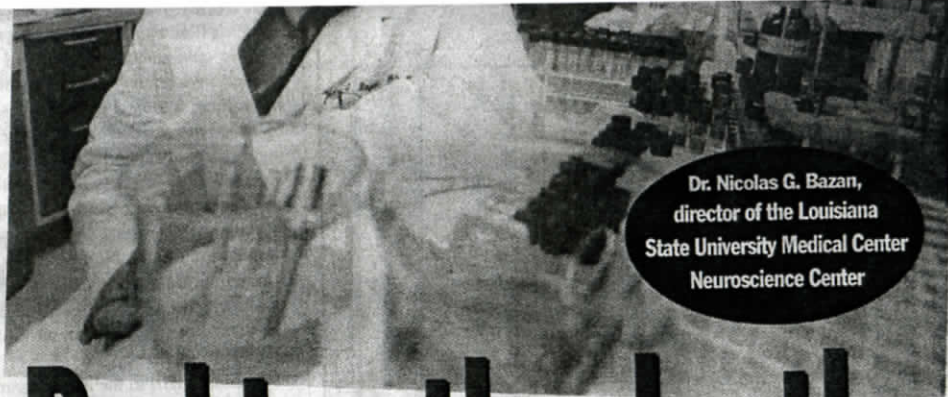
Psychologists complain that some psychiatrists have centered their entire practices around prescribing such popular drugs as Prozac to patients referred to them by psychologists who cannot themselves write prescriptions for their own patients.

The only other alternative available to psychologists is to send their clients to general practitioners, who essentially rubber-stamp the psychologists' prescription recommendation. This extra step is expensive and time-consuming for patients, psychologists argue.

But a great many medical and psychiatric associations nationwide stand firmly against opening the prescription doors to psychologists. Such a move, these groups say, would be dangerous for patients.

The battle has been waged for nearly a decade now, and a new psychopharmacology program in Baton Rouge has only added fuel to the fire. That was not the intention of Baton Rouge neuropsychologist John Bolter, who developed the program for the Louisiana Psychological Association. Instead, he says he was simply helping psychologists fill the needs of their patients.

"Over the past decade, doctorate-level psychologists have become much more active in treating patients with more serious mental illness problems," Bolter explains. "They are independently diagnosing and treating all mental disorders in all areas of the country."



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PHOTO BY CHERYL GIBBER

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Institutes of Health.

"The facilities at LSU are state of the art, and the environment is one which promotes creativity and growth," Erickson says.

The center's most recent award was a four-year, \$3 million grant from the Department of Transportation for a joint research program to be conducted by the Neuroscience Center and George Washington University in Washington, D.C. George Washington University will carry out engineering research on the design of auto safety features, such as air bags, while the Neuroscience Center will study the mechanisms of cell injury and try to develop drugs that would prevent or limit disabilities resulting from spinal cord or brain trauma.

This combination of effort and expertise is exciting because it opens up important opportunities to deal with the consequences of car crashes, which are currently the leading cause of death and disability of individuals below the age of 42, Bazan says. After an accident involving head injury, the brain releases chemicals that can cause significant damage or death. Neuroscience Center researchers are working on a compound that could be administered in an ambulance, minutes after the accident, en route to the emergency room.

Breakthroughs in the field of neuroscience include the research being done in the area of Alzheimer's and Parkinson's diseases. Alzheimer's is a rapidly progressing brain disease that kills brain neurons, or cells. Five mutated genes have been identified, but it only takes one to cause the disease. If researchers could locate a protective gene and synthesize the protein it produces, they might one day create a drug to delay the onset of Alzheimer's, Bazan says.

Parkinson's disease is a degenerative nervous system disorder. Researchers know that many of the neurological diseases are caused by faulty neurotransmitters in the brain, but they don't know why some neurons stop making the chemical transmitters that allow neurons to communicate with each other, Bazan says.

Brain cells that die, such as those destroyed during a stroke, cannot be replaced, Bazan says. But scientists at LSU and other research centers are looking at ways to help surviving brain cells compensate and replace the lost function.

Another research project targets epileptic seizures. Seizures are disturbances in the electrical activity in the brain that can impair normal function. Bazan and his colleagues have discovered a drug to prevent seizures by blocking activation of the destructive genes that promote seizures.

The Neuroscience Center has become a nucleus of academic excellence. Bazan cites several other areas targeted by the center, including education, community outreach

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programs, research, summer undergraduate programs and a human brain tissue bank.

The center's educational programs offer specialized training to medical students, scientists and other health-related personnel. The center has one of the few interdisciplinary doctoral programs in the U.S. and offers opportunities in extensive postgraduate work.

Community outreach programs are a main focus of the Neuroscience Center. In addition to hosting seminars on interdisciplinary approaches to basic and clinical aspects of neurological diseases, the center conducts Brain Awareness Week activities to educate children and adults about brain diseases.

The summer undergraduate neuroscience program gives Louisiana's undergraduate and high school students hands-on experience in laboratory research and education in neuroscience.

The brain tissue bank, established in 1992, enables scientists and clinicians to study the unique anatomical structure, neurochemical makeup and functions of the human brain. Each year, Bazan says, millions of people die or are disabled by neurological and psychiatric diseases.

The current and expected future operations of the Neuroscience Center will generate an estimated economic impact that could be as high as \$99 million annually in jobs created and equipment purchased, according to a 1998 report by Dr. Timothy Ryan, dean of the School of Business Administration at UNO. •