

Nicolas Bazan, M.D., Ph.D.

He has been called 'a true renaissance man', as a research scientist, teacher, mentor, community leader, administrator, author, patron of the arts, and entrepreneur. Born in Los Sarmientos, Tucuman, Argentina, Dr. Nicolas Bazan's defining moment was witnessing an aunt suffer a seizure while walking him to a piano lesson when he was a young boy, putting him on the path to becoming a medical doctor and one of the world's premier neuroscientists.

Nicolas G. Bazan, M.D., Ph.D., is the founding Director of the Neuroscience Center of Excellence at the Louisiana State University Health Sciences Center, School of Medicine, New Orleans. He is also the inaugural founder of The Ernest C. and Yvette C. Villere Chair for Research in Retinal Degeneration (1984-present) and has been appointed to the highest academic rank in the LSU System, a Boyd Professor (1994-present).

He devoted his life to study fundamental cellular and molecular signaling underlying Alzheimer's disease, stroke, pain, epilepsy, Parkinson's disease, traumatic brain injury, and retinal degenerations, discovering multiple potential therapies (several of which are now-patented) to slow down disease progression. He has developed innovative concepts for the use of omega-3 fatty acids for the prevention of traumatic brain injury, cerebrovascular diseases (mainly stroke) and epilepsy. He is extending his discoveries on the significance of omega-3 fatty acids to aging. He has uncovered cellular and molecular principles that provide guidance for the potential utilization of omega-3 fatty acids as preventive approaches for age-related macular degeneration, Alzheimer's disease, Parkinson's disease and mainly for the association between neurotrauma and the onset of dementia. His discoveries on the brain regarding early stages of Alzheimer's disease, in experimental stroke and on the human retinal pigment epithelial cells (relevant to age-related macular degeneration) are allowing for the realization of therapeutic strategies utilizing omega-3 fatty acids and bioactive derivatives. Dr. Bazan received his medical degree from the University of Tucuman in Argentina in 1965. Afterward, he trained at Columbia University College of Physicians and Surgeons in New York and Harvard Medical School, where he was appointed faculty at age 26 at the University of Toronto, Clarke Institute of Psychiatry. During his time there, Dr. Bazan conducted seminal studies on responses of the brain to experimental seizures, electroconvulsive shock or ischemia. In the 1970s, he established a research institute in Argentina, and in 1981, Dr. Bazan joined the faculty of the LSU Health Science Center, where he later established and now heads the Neuroscience Center of Excellence.

In the late 1960's, in his first laboratory at the Clarke Institute of Psychiatry in Toronto, Canada, Dr. Bazan discovered that brain ischemia, seizures or electroconvulsive shock trigger the rapid release of unesterified essential fatty acids (docosahexaenoic and arachidonic acids) from membranes through phospholipase A2. Soon after, his lab

extended these seminal observations to the retina. These findings became a citation classic ("Neural Stimulation or Onset of Cerebral Ischemia Activates Phospholipase A2", Bazan NG, *Current Contents/Life Sciences*, 30:10, 1991). Based upon this early work, he then discovered that release of the lipid mediator, platelet activating factor (PAF), is a major signaling event of inflammatory responses in the eye and brain, and he identified PAF binding sites in synaptic and intracellular membranes.

He then uncovered that DHA supply to the photoreceptors and synapses is liver-regulated (1989), and that in photoreceptor cell renewal, retinal pigment epithelium recycling retains DHA within photoreceptors by a "short loop" (RPE-to-photoreceptors) after the "long loop" (liver-to-retina) (1985). He found that Usher's Syndrome patients have DHA shortage in the blood, implicating the long loop in retinal degenerations (1986). He discovered enzyme-mediated formation of DHA derivatives in the retina (1984) and coined the term docosanoids. He and his colleagues then discovered the synthesis and bioactivity of the first docosanoid, neuroprotectin D1 (NPD1, 2003-4), which arrests apoptosis in retinal pigment epithelial cells at the pre-mitochondrial level, and is neuroprotective in brain ischemia-reperfusion and in cellular models of Alzheimer's disease. Then he found a decrease in DHA-derived NPD1 in the CA1 area of Alzheimer's disease patients, and that NPD1 promotes down-regulation of pro-inflammatory genes and of pro-apoptotic Bcl-2 proteins, and neuronal and glial cell survival from A β toxicity. Dr. Bazan holds more than 20 patents, which include novel analgesics, PAF antagonists that protect the eye and the brain from inflammation and damage, and applications for NPD1 in retinal disease models, aging, and neurodegenerative diseases.

Among Dr. Bazan's awards and recognitions are the Javits Neuroscience Investigator Award from the National Institute of Neurological Diseases and Stroke (1989); elected to the Royal Academy of Medicine, Spain (1996); elected fellow of the Royal College of Physicians of Ireland, Dublin (1999); President, American Society for Neurochemistry (1999-2001); Doctor Honoris Causa, Universidad de Tucuman, Argentina (1999); Endre A. Balazs Prize, International Society of Eye Research (2000); the Proctor Medal, the highest honor awarded by the Association for Research in Vision and Ophthalmology (ARVO) (2007); the Alkmeon International Prize (2011); the Chevreul Medal, Paris, France (2011); the Excellence Award, Annual European Association for Vision and Eye Research, Nice, France (2013); and the Mossakowski Medal, Polish Academy of Sciences, Warsaw, Poland (2013).

Since 1981, Dr. Bazan has been one of the first to effectively promote the idea that a key driver for the New Orleans region's future is knowledge-based economic development. He led by example, performing cutting-edge science and displaying a transformational entrepreneurial drive. He was one of the founders of In Site Vision, Alameda, CA (1986), a pharmaceutical company that then did an IPO in 1989 and since then is publicly traded. Nationally, he was a member of the Cardiovascular Drug Discovery Board, GLAXO (1988-1990); Interdisciplinary Development Advisory Board on Alzheimer's disease,

SEARLE (1998-1999); and the Department of Transportation Automotive Highway Safety Initiative (1999-2003) among others. He was also the Chair of a Task Force on “Research as an Economic Force for the Future,” LSU Medical Center, (1988-1990); Chair of Bioscience Committee, New Orleans New Business Initiative, City Hall, New Orleans, (1989-1991); and President, Louisiana Alliance for Biotechnology, Baton Rouge (1998-2002). He designed and competitively attracted a major National Institutes of Health Centers of Biomedical Research Excellence (COBRE) grant in 2002 to mentor junior researchers, the first major program of its kind in the State of Louisiana; serving thereafter as a model to others. This COBRE grant is now in its third phase of funding (2012-2017).

For his contributions to creating a culture that inspires novel ideas and opens a path for translating concepts into reality—from the lab to the development company, to the clinic to the community—he received many recognitions, which include: Role Model, Young Leadership Council of New Orleans (1994); The Alzheimer’s Association Greater New Orleans Award (2002); Family Services of Greater New Orleans (Ten Outstanding Persons) Award (2003); and induction into the Junior Achievement Business Hall of Fame of New Orleans (2010).

He is the Founder and Editor-in-Chief of *Molecular Neurobiology* (Springer) (1986-present), a Senate Member (2009-2016) for the German Center for Neurodegenerative Diseases (DZNE), a nationwide research program on Alzheimer’s disease in Germany, Member of the Biology of the Visual System Study Section, NIH (2009-2014), and Chairman of the Board of Governors for the Association for Research in Vision and Ophthalmology (ARVO) Foundation (2011-2014).

His civic and artistic community involvement includes being a patron of the New Orleans Opera, contributing to the development of some of New Orleans’ finest restaurants, restoring and reopening an historic jazz club, creating his own Oregon wine label, and authoring *Una Vida: A Fable of Music and the Mind* (just produced as a feature film) in New Orleans, as well as *The Dark Madonna: A Fable of Resiliency and Imagination*—novels exploring his lifelong intellectual quest to understand the interface between science and religious belief. His goal with both novels, and others in the planning stages, is to enlist readers in this exploration for a better understanding of the deep beauty and complexity of the human experience.

Dr. Nicolas Bazan is married to Dr. Haydee Bazan, and they have five children: Patricia, Andrea, Nicolas, Hernan and Maria. The children have given his wife and him eleven grandchildren.