



# THE NEUROSCIENCES INSTITUTE

- 
- 
- 
- 

[HOME](#)  
[ABOUT US](#)  
[NEURAL MODELING](#)  
[CONTACT US](#)

The Neurosciences Institute is a non-profit scientific research organization dedicated to learning about the brain for the benefit of humankind. Founded by the late Nobel Laureate Gerald M. Edelman, the Institute focuses its research on the principles underlying how we perceive and act upon the world, how we learn and remember, and how consciousness arises.

---

---

The Neurosciences Institute is dedicated to increasing knowledge about how the brain works at the most fundamental levels. By that, we mean defining the fundamental principles of anatomy and physiology that enable the brain and nervous system to carry out their myriad functions. Although many facts are known about the nervous system from the molecular to the cellular to the tissue levels and new information is being discovered every day, a generally agreed-upon set of basic overall principles that would explain how we see, how we move, or how we are conscious remains elusive.

For three decades, The Neurosciences Institute has developed a theoretical approach called synthetic neural modeling, where large-scale computer simulations of nervous systems based on realistic approximations of anatomical and physiological data are used to learn about the brain. The functions of the nervous system arise only as it interacts with the rest of the body and as an animal engages in a behavior in the world, so we engage our synthetic neural models with behavioral tasks and embody them in robot-like devices. These brain-based devices (BBDs) learn from their own experience in their environment, just like we do. They have been used to study the neural bases of perception, operant and fear conditioning, episodic and spatial memory, navigation, and motor control. This approach has yielded a number of important insights and led to predictions that have been confirmed in studies of living animals.

Dr. Gerald Edelman, the Institute's founder, proposed a broad general theory of how the brain works beginning in 1979. Key aspects of his Theory of Neuronal

Group Selection have been confirmed experimentally in a number of laboratories around the world. Much of the Institute's approach is based on this theory, which uses principles of evolution by selection known to be applicable to biology in general and also, for example, to the immune system.

On October 1, 2012, The Neurosciences Institute moved to new quarters in the village of La Jolla, where a vigorous theoretical research program continues. The focus is on understanding how consciousness arises from the activity of the nervous system, one of the most challenging subjects in neuroscience.

From 1995 until the recent move, the Institute also carried out laboratory research in a number of areas including molecular biology of gene regulation, cellular and systems neurophysiology, neural plasticity, genetics of behavior, syntactic processing of music and language, and the temporal dynamics of auditory perception. During this period, the Institute was housed in an architecturally renowned complex on the campus of The Scripps Research Institute on Torrey Pines Mesa in San Diego. The complex includes an acoustically superb auditorium, which, through the Performing Arts at The Neurosciences Institute program, was made available at no charge for some 16 years to many non-profit performing arts groups in San Diego. Use of the auditorium is now controlled by its owner, The Scripps Research Institute. For current information see the [Auditorium at Scripps](#) website.

From its founding in 1981 until its move to San Diego, the Institute was located on the campus of The Rockefeller University in New York City. In addition to its own research efforts, the Institute acted as a unique center in which visiting scientists could meet, exchange ideas, and plan new research. Over 900 visiting scientists from 140 institutions and 24 countries participated in conferences, workshops, symposia, or courses at the Institute or were Visiting Fellows for periods of several weeks to several months.

The Institute is also the home of the Neurosciences Research Program (NRP), an informal college founded to promote interdisciplinary studies of the brain. At any one time, there are 36 NRP Associates from institutions around the world; these distinguished scientists serve seven-year terms before becoming Honorary Associates. The group meets each year and celebrated its 50th anniversary in 2012.

Neurosciences Research Foundation, Incorporated, is the public charity that is the Institute's parent organization. Originally formed in 1962, the Foundation carries out its scientific research and educational programs under the name of The Neurosciences Institute. The Foundation is exempt from tax under Section 501(c)(3) of the Internal Revenue Code.