



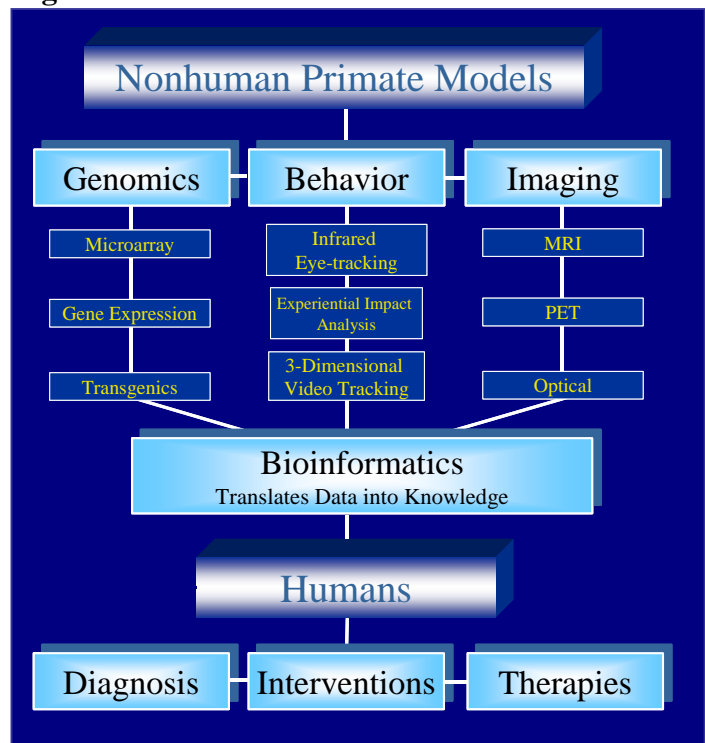
The Yerkes National Primate Research Center (YNPRC) is one of only eight NIH-designated primate centers in the world. In many ways, the YNPRC is the glue that binds major components throughout the University of our basic research and our applied, translational missions. Additionally, Yerkes is emerging as a major academic force at Emory for training and educating undergraduate, graduate, and postdoctoral students, including minorities and women, for careers in research. Our vision is to be recognized internationally as a leading center for both basic and applied research, capitalizing on the unique aspect of using nonhuman primates in the service of humanity.

During the next five years of our strategic plan, Yerkes will have emerged as the only facility in the world where comparative behavior, genomics, and imaging all can be combined with the technology of nonhuman primate transgenics (i.e., monkeys in whom a gene from another species has been implanted, e.g., the human gene associated with abnormal production of proteins that make up the plaques and tangles of Alzheimer’s disease) in studies directed at clarifying the biology of health and disease. These ideas are illustrated in figure 1.

Discovery moves from work carried out initially in nonhuman primates, capitalizing on all of the technologies indicated, including the field of bioinformatics where all of the information derived from the technologies can be combined and made sense of, to work subsequently translated to humans where we then will have extraordinarily powerful tools for diagnosis, intervention, and all aspects of predictive health.

In this context, nonhuman primates will become uniquely valuable for identifying genetic and phenotypic specializations of humans in a wide area of programs that are delineated in our strategic plan, including the of vaccine development for infectious diseases (e.g., AIDS) and noninfectious diseases (e.g., Alzheimer’s disease), women’s health issues, and addictions. This is a matter of great biomedical significance because the human disease profile differs from that of chimpanzees (and other nonhuman primates), for example, in several important respects. Specifically, certain cancers appear to occur at much higher rates in humans than in other primates. Humans are uniquely vulnerable to neurodegenerative diseases. Alzheimer’s disease, with its characteristic neuropathological hallmarks (neuritic plaques, neurofibrillary tangles, and neuronal loss), is only known to occur in humans. Similarly, the neuropathological and/or behavioral changes associated with Parkinson’s disease, multiple sclerosis, and schizophrenia have been observed rarely, if at all, in nonhuman primates. It is likely these human-specific disease characteristics reflect, at least in part, physiological and anatomical differences that have a genetic basis. Because human specializations are, by definition, features of humans that evolved subsequent to the separation of the

Figure 1.



human and nonhuman primate lineages, identification of human specializations is possible only by comparing humans to other nonhuman primates, including chimpanzees. The rapid development of genomic methods and resources (including the sequences of the human and nonhuman primate genomes) makes it possible for the first time to conduct a comprehensive survey of human specializations of chromosomal organization, gene sequence, and gene expression (proteomics).

A second area of focus embedded in our strategic plan has to do with our educational and training mission. During the next five years, Yerkes will increase its profile as a major academic contributor to training and educating undergraduate, graduate, and postdoctoral students at Emory. Three training and education programs will have grown to substantial portions by 2010.

1. Yerkes currently is the focal point for a substantial portion of the Neuroscience Graduate Program. The Neuroscience Program Director, Chair of Admissions, Director of the Frontiers in Neuroscience Seminar series, and the Neuroscience Program's Chief Administrator all reside at Yerkes. Additionally, a majority of graduate students in the Neuroscience Program are carrying out their dissertation research in Yerkes laboratories. Also, we have two institutional training grants, developed and administered at Yerkes. With the growth and recognition of Yerkes as a world-class research training center, we will have the luxury of and the reputation for having the best and the brightest students compete for acceptance to our programs.
2. The National Science Foundation sponsored multi-institutional Center for Behavioral Neuroscience (CBN) has a major component of its faculty and student research as well as an educational component at Yerkes. The program is unique in its accomplishment of providing a pipeline into the field of behavioral neuroscience for minority students and women. During the next five years, the opportunity provided to minority students and women to be trained in neuroscience, from undergraduate to postdoctoral levels, will gain still more success and distinction, and will become a prominent differentiator for Emory University, with Yerkes as its foundation.
3. In April 2005, the Yerkes Research Center developed a memo of understanding with the Center for Conservation and Behavior at Georgia Tech (GT). The GT program is led by Dr. Terry Maple, previously the Director of Zoo Atlanta, and has a national reputation for producing some of the best behaviorists in the field. This agreement provides for an exchange of students between the two centers and, importantly, provides to Yerkes investigators a source of high-quality graduate students interested in all aspects of research on primate behavior, including studies of cognition, socioemotional behavior and primate cultures. Yerkes provides unique resources to the program, including a colony of great apes (chimpanzees), seven species of monkeys, and genomics and imaging capabilities to study and type nonhuman primates. During the next five years, this agreement could evolve into a prominent differentiator for Emory and Yerkes, i.e., a joint Emory-GT program in Behavior and Conservation. Additionally, because the Yerkes and GT faculty have significant links to many countries in Africa and South America, we will have the opportunity to establish a significant program focused on conservation of endangered primate species. This will become a major differentiator for Yerkes, relative to other national primate centers, and an important differentiator for Emory that will converge on many of the University's themes.