Neuroscience, Behavior and Health (NBH) Initiative

Focus Groups – May 16-17, 2011

Addictive Behaviors

Addictive behaviors are activities that are harmful because they become a focus of an individual’s life to the exclusion of good health and/or normal relationships. Examples of addictive behaviors are compulsive eating, gambling, smoking, and drug and alcohol abuse. Adolescents may be particularly susceptible to developing harmful addictive behaviors and the long-term consequences of such behaviors produce a significant toll on human health and medical costs. Research within this area could encompass understanding fundamental mechanisms and genes that cause addictive behavior to processes that maintain them. Other areas may focus on identifying successful interventions that weaken the addictive behavior and educational outreach to prevent their initiation.

Diseases of Modern Society: Vascular Disease, Diabetes, Obesity and Cancer

With the industrial revolution came wealth, environmental pollution, processed food, and altered lifestyles. All of these changes have given rise to an epidemic of diseases attributable, in part, to behavioral choice. These include cardiovascular disease, high blood pressure, diabetes, obesity, and site-specific cancers. Integrated research efforts may seek to identify commonalities among these diseases as well as differences in fundamental processes that lead to them. Special consideration of the impact of these diseases on nervous system function may be an area of opportunity. In addition, NBH will promote effective interventions such as diet, exercise, and other healthy behaviors.

Stress, Trauma, Anxiety, Pain, and Mood Disorders

While stress is a normal part of life that is helpful in motivation, too much stress can lead to anxiety, physiological imbalance, and depression. These problems can be triggered by chronic pain and greatly exacerbated by trauma through learning processes that become so generalized that they become crippling, such as in post-traumatic stress disorder. An important component of the reaction to severe stress are autonomic reactions including sweating, nausea, chills, hot flashes, and increased heart rate mediated by brain circuitry triggered by cues from the traumatic event. NBH seeks to identify and characterize the causes of stress and anxiety that can lead to more crippling conditions that become harmful to health, with an eye towards preventing progression of the normal human responses into debilitating psychological problems. Furthermore, it will support basic science research into the biological and neurological basis for stress and anxiety, as well as psychopharmacological and behavioral interventions to promote more rapid healing.

Normal development of the nervous system and developmental disorders

From conception, it takes nearly 26 years for the human brain to complete development and mature. Biological development of the brain encompasses many molecular and cellular processes. It is also well understood that genes, environment, and gene by environment interactions are all essential in understanding risk for and resilience to challenges in normal and abnormal brain, emotional, and behavioral development. NBH seeks to identify key genes, molecules, cellular, social, psychological, behavioral and environmental processes and interactions that guide pre- and post-natal development of the nervous system and behavior. In addition, it will promote research identifying and characterizing environmental and behavioral interventional and rehabilitative strategies to treat individuals who suffer from a variety of disorders that compromise health and functioning.