National Children's Study Hypotheses

Pregnancy Outcomes		
Birth defects from impaired glucose metabolism	Among women without diabetes before pregnancy, impaired glucose metabolism during pregnancy is associated with risk of major congenital malformations of the heart, central nervous system, musculoskeletal system, and all birth defects combined.	Page A2-1
Increased risk of preterm birth from intrauterine exposure to mediators of inflammation	Intrauterine exposure to mediators of inflammation due to infection of either vaginal, cervical, or uterine sites or of more distal sites (e.g., periodontal disease) is associated with an increased risk of preterm birth.	Page A2-13
Increased risk of fetal growth restriction, preterm birth, birth defects and developmental disabilities in children born through assisted reproductive technologies	Children whose conceptions were aided by assisted reproductive technology (ART) are at increased risk of fetal growth restriction, birth defects, and developmental disabilities in comparison to children who were conceived without ART.	Page A2-25
Maternal subclinical hypothyroidism and neurodevelopmental disabilities/adverse pregnancy outcomes	Maternal subclinical hypothyroidism is associated with adverse pregnancy outcomes and neurodevelopmental disabilities.	Page A2-39

National Children's Study Hypotheses (continued)		
Neurodevelopment and Behavior		
Non-persistent pesticides and poor neurobehavioral and cognitive skills	Repeated, low-level exposure to nonpersistent pesticides, including carbamates, organophosphates, and pyrethroids in utero or postnatally increases risk of poor performance on neurobehavioral and cognitive examinations during infancy and later in childhood.	Page A2-49
Prenatal infection and neurodevelopmental disabilities	Prenatal infection and mediators of inflammation are risk factors for neurodevelopmental disabilities such as cerebral palsy and autism.	Page A2-61
Gene-environment interactions and behavior	Exposures to adverse psychosocial, chemical, and physical environments and other stressors during vulnerable periods of pregnancy and early childhood can interact with genotype to cause or modulate behavioral problems in childhood.	Page A2-71
Prenatal and perinatal infection and schizophrenia	Prenatal infection and mediators of inflammation during pregnancy and the perinatal period are associated with increased risk of schizophrenia.	Page A2-87

National Children's Study Hypotheses (continued)		
Child Health and Development		
Family influences on child health and development	Family resources and processes shape the structure and quality of children's home, childcare, and school experiences and economic opportunities. These resources and processes affect children's developmental and health trajectories and mediate and/or moderate other environmental influences on children's outcomes.	Page A2-101
Impact of neighborhood and communities on child health	Geographic area of residence is associated with exposure to social, physical, psychological, and environmental factors that increase the risk of developing health problems and decrease access to protective resources.	Page A2-113
Impact of media exposure on child health and development	Exposure to media from stationary and mobile sources can have both positive and negative short- and long-term effects on children. Home- or school-based media include television, video, and interactive media such as electronic games and the Internet. Multimedia mobile devices including cellular phones, portable digital music players, and portable computers integrate traditional radio, television, print media and film. The amount, type, content, and context of media exposure from infancy through adolescence influence brain and neurological development; cognitive and social development; and risk-behavior factors related to aggression, injury, substance use, sexual health, obesity, and other aspects of physical development. Exposure to specific media content will lead to developmental trajectories along a continuum of prosocial to antisocial behavior.	Page A2-125
Social institutions and child health and development	Interactions between children and families and the formal child care, school, and religious institutions in their communities influence children's cognitive, social, and emotional development.	Page A2-137
Influences on healthy development	Positive influences and protective factors in children's development, including family processes and parenting, biologically based child characteristics, and access to and use of high quality community services, have direct and indirect positive effects on development. These positive influences promote competence and buffer the negative effects of social, environmental, and biological risk (e.g., poverty, stress, birth weight/gestational age, integrity of cognitive, sensory, and motor systems, genetic polymorphisms) on development, leading to healthy cognitive, social, and physical child outcomes.	PageA2-149

National Children's Study Hypotheses (continued)

Asthma		
The role of prenatal maternal stress and genetics in childhood asthma	Prenatal, maternal stress increases the risk of childhood asthma. Genetic and environmental factors that influence immune development and lung growth/airway inflammation in early life modify the association between maternal psychological stress and the development of asthma.	Page A2-165
Exposure to Indoor and outdoor air pollution, aeroallergens and asthma risk	Exposures to indoor and outdoor air pollution. aeroallergens, and other environmental agents are associated with increased risk of asthma onset and progression in children, and is modified by genotype and other risk factors.	Page A2-177
Dietary antioxidants and asthma risk	Intake of antioxidants in diet affects the risk of asthma.	Page A2-193
Social environmental influences on asthma disparities	Disparities in the prevalence, severity, and effective management of asthma by race and socioeconomic status are explained, in part, by social environmental factors and processes that influence exposure to physical environmental risk factors, psychosocial stress, and health-related behaviors.	Page A2-209
Early exposure to structural components and products of microorganisms decreases the risk of asthma	Early exposure to heterologous structural components and products of biologics (microorganisms, e.g., viruses, bacteria, fungi, and parasites, and common indoor aeroallergens) significantly decreases or increases the risk of asthma and other atopic diseases (e.g., eczema, allergic rhinoconjunctivitis), and/or this will be mediated by genetic and other risk factors.	Page A2-223
Environmental exposures interact with genes to increase the risk of asthma and wheezing in children	There will be a significant association with gene-environment, gene-gene, and genotype-phenotype relationships that contribute to wheezing and asthma in children.	Page A2-239

National Children's Study Hypotheses (continued)

Obesity and Growth		
Obesity and insulin resistance from impaired maternal glucose metabolism	Impaired maternal glucose metabolism during pregnancy is directly related to risk of obesity and insulin resistance in offspring.	Page A2-251
Obesity and insulin resistance from intrauterine growth restriction	Intrauterine growth restriction (IUGR) is associated with subsequent risk of central-body obesity and insulin resistance in offspring, independent of subsequent body mass index.	Page A2-259
Breastfeeding associated with lower rates of obesity and lower risk of insulin resistance	Breast milk feeding compared with infant formula feeding is associated with lower rates of obesity and lower risk of insulin resistance.	Page A2-275
Fiber, whole grains, high glycemic index and obesity and insulin resistance	Consumption of a high glycemic load diet, during childhood, is associated with obesity and subsequent insulin resistance in childhood.	Page A2-287
Genetics, environmental exposures, and Type I Diabetes	The development of beta cell autoantibodies and subsequent type 1 diabetes is causally associated with the interaction between genetic susceptibility, early exposure to viral infections, and early exposure to cow's milk protein or other dietary components.	Page A2-295

National Children's Study Hypotheses (continued)		
Injury		
Repeated Mild Traumatic Brain Injury and Neurocognitive Development	Repeated mild traumatic brain injury has a cumulative adverse effect on neurocognitive development.	Page A2-303
Behavioral exposures, genetics, and childhood or adolescent onset aggression	Biological, physical, and psychosocial components of the environment and their interactions with specific genetic variations are associated with and determine patterns of increased onset and maintenance of antisocial physical aggression.	Page A2-313
Antecedents and resiliency to traumatic life events in childhood	Antecedent factors such as genetic risk, family structure, neighborhood and community factors, interact with traumatic life events to predict the risk of anxiety disorders.	Page A2-325

National Children's Study Hypotheses (continued)		
Reproductive Development		
Hormonally active environmental agents and reproductive development	Prenatal and postnatal (including peripubertal) exposure to hormonally-active environmental agents can alter development of the reproductive system resulting in multiple types of outcomes that can occur at various stages of development and may result in cumulative effects over time.	Page A2-343