Children are the future of our family, our community and our planet. They deserve the best start to put them on a path for a long and healthy life. Providing the right nutrition to infants and children is crucial for brain development and overall health.

The Baby Connectome Project will analyze the brains of healthy children from birth through age five. The findings of the research will enable physicians and parents to:

- Better understand children’s mental, emotional, and behavioral development
- Offer parents guidance for enhancing healthy interaction with their child
- Understand the brains of children with learning disabilities and disorders to improve diagnosis and treatment
- Support policymakers in shaping positive health services and intervention programs

The collaboration will seek to unravel many facts still unknown to the scientific and medical community:

**THE PHYSICAL CHANGES TAKING PLACE IN A BABY AND YOUNG CHILD’S BRAIN?**
- size
- structure
- brain signals
- changes in blood oxygenation flow

**THE FACTORS THAT INFLUENCE HOW A CHILD BEHAVES AND LEARNES?**
- motor skills
- play and social skills
- writing
- self-care and organization
- language development
- speech awareness
- cognitive thinking
- sensory processing

**THE SURROUNDINGS AND SENSORY EXPERIENCES THAT MOST IMPACT EARLY CHILDHOOD DEVELOPMENT?**
- **Biological:** Gender, general health, mental health
- **Experiences:** Touch, smell, taste, sight, hearing, learning, physical activity, sleep
- **Interpersonal Relationships:** Parenting styles and social networks
- **Environmental:** Housing, income, employment, education
Identifying and assessing pediatric brain function is not simple because of infants' small brains, rapidly changing physiology, and a high degree of brain plasticity. Patient motion, increased metabolism, and an incomplete understanding of brain development contribute to these challenges.

But new magnetic resonance imaging (MRI) technology is making previous challenges now possible by answering questions about structural and functional organization and development using new physiological/anatomical measurements in a non-invasive and safe way.

Different forms of non-invasive MRI will include:
- Diffusion weighted MRI (dMRI) to measure structural connections, inferred from the motion of water particles.
- Perfusion MRI (pMRI) to monitor blood perfusion by tagging fast moving hydrogen protons in the blood stream and monitoring the tissues to which they are deposited.
- Functional MRI (fMRI) to obtain blood oxygen level-dependent signal which is associated with brain activity and is an important method for monitoring brain function.

About the Human Connectome Project

The Baby Connectome Project builds upon the research from the Human Connectome Project (HCP), which analyzed 1900 healthy adult brains including twins and non-twin siblings. The goal of the HCP is to provide a better understanding of brain connectivity, its relationship to human behavior, and contributions from environmental and genetic factors that account for differences in individual brain circuitry.

Did you know?
Data from the HCP project revealed that bundles of nerves within the brain are laid out much like Manhattan streets, running in two directions. In flat areas of the grid, the brain fibers overlap at precise 90 degree angles and weave together much like a fabric.

Wyeth Nutrition

By closing this vast knowledge gap, together researchers, pediatricians and policymakers worldwide can better understand childhood development and help parents raise future healthy generations.

ABOUT WYETH NUTRITION
For the past 100 years, Wyeth Nutrition has pioneered innovative nutrition science with premium-quality products that meet the needs of infants, young children and adults. Through innovative discovery research, high-quality clinical trials, world-class manufacturing and product safety standards, we deliver scientifically sound solutions that offer parents confidence, help nourish children and support healthy futures. By partnering with mothers, doctors and scientists, we continue to discover and learn what is needed to ensure the best advancement for the health and well-being of future generations. To learn more about Wyeth Nutrition, visit www.wyethnutrition.com.

ABOUT THE FOUNDATION FOR THE NATIONAL INSTITUTES OF HEALTH
The Foundation for the National Institutes of Health creates and manages alliances with public and private institutions in support of the mission of the NIH, the world’s premier medical research agency. The Foundation, also known as the FNIH, works with its partners to accelerate biomedical research and strategies against diseases and health concerns in the United States and across the globe. The FNIH organizes and administers research projects; supports education and training of new researchers; organizes educational events and symposia; and administers a series of funds supporting a wide range of health issues. Established by Congress in 1990, the FNIH is a not-for-profit (501(c)(3)) charitable organization. For additional information about the FNIH, please visit http://fnih.org.