

# 2012 PEDIATRIC RESEARCH FACTS

## Scientific Discovery

- The American Heart Association funds research related to heart health and heart disease in children, including congenital heart disease.
- During the past fiscal year, we funded over \$14.8 million in new research awards broadly related to children's heart disease. This was part of the \$116.9 million we funded in all aspects of cardiovascular diseases and stroke. Much of the funds go to basic biomedical research, and the outcomes of these studies can ultimately be applied to many types of congenital and acquired heart and blood vessel diseases.
- Across the country, 138 applications related to cardiovascular development and pediatrics were submitted in 2011–2012. We funded 110 of these projects, for a success rate of 80 percent in the pediatrics categories. This compares favorably with an overall funding success rate of 17 percent of all AHA applications.
- The American Heart Association funds more pediatric cardiac research than any U.S. organization except the federal government.
- Many of these awards fund research projects aimed at determining how the heart develops before birth and how congenital heart defects develop.
- The American Heart Association supports research related to acquired children's heart disease, such as Kawasaki disease, acute rheumatic fever, stroke and sickle cell anemia.
- The association funds awards related to maintaining heart health in children.
- American Heart Association research awards mirror the proportion of applications received within each science topic.
- The AHA classifies research into more than 40 categories. Most pediatric-related science falls into the two categories for Cardiovascular Development (see next column).

## Cardiovascular Development — Basic Science

- Animal Models of Cardiovascular Development — e.g., Mouse Models-Drosophila-Zebrafish-Avian and Xenopus
- Bioinformatics-Systems Biology
- Cardiovascular Cell Fate: Lineage and Differentiation — e.g., Vascular Smooth Muscle-Endothelial Cells and Cardiomyocytes
- Cardiovascular Congenital Malformations
- Cardiovascular-Molecular Signaling Pathways During Development — e.g., Cardiovascular Transcription Factors-Growth Factors and Cardiovascular Protein
- Cardiovascular Morphogenesis
- Developmental Bioengineering — e.g., Blood Flow-Shear Stress
- Development of Conduction System — e.g., Electrophysiology
- Epicardium
- Gene Regulation — e.g., Cardiovascular microRNA-Promoter Analysis and Epigenetics
- Genomics and Genetics of Cardiovascular Development
- Neural Crest
- Pediatric Cardiovascular Disease
- Proteomics — e.g., Protein Biochemistry and Structural Biology
- Pulmonary Development
- Stem Cells — iPS Cells — Regenerative Science
- Valve Development and Morphogenesis

## Cardiovascular Development—Clinical/Translational

- Cardiovascular Congenital Malformations — Adult
- Cardiovascular Congenital Malformations — Pediatrics
- Cardiovascular-Molecular Signaling Pathways During Development — e.g., Cardiovascular Transcription Factors-Growth Factors and Cardiovascular Protein
- Cardiovascular Morphogenesis-Cardiac Teratology
- Gene Regulation — e.g., Cardiovascular microRNA-Promoter Analysis and Epigenetics
- Genomics and Genetics of Cardiovascular Development
- Human Cardiovascular Development and Diseases
- Pediatric Cardiovascular Disease
- Proteomics — e.g., Protein Biochemistry and Structural Biology
- Pulmonary Development
- Stem Cells-iPS Cells — Regenerative Medicine
- Tissue Engineering

- Additional applications related to pediatric heart disease could be assigned to other study sections. For example, proposals related to surgical treatment of a congenital heart defect could be reviewed by the Surgery Review Committee
- In addition to funding research awards, we fund scientific conferences and symposia to update the understanding of the anatomy, diagnosis and medical and surgical management of congenital heart disease.
- The AHA's 16 scientific councils are made up of science and research professionals who actively support our mission through research, education and advocacy. The councils help develop AHA statements and guidelines, and organize scientific conferences. The Council on Cardiovascular Disease in the Young is focused on pediatric scientific issues.

## Science Application

### Pediatric Research Milestones

**1944** – Dr. Helen B. Taussig founded the field of pediatric cardiology. She developed the concept for a procedure that would extend the lives of children born with Tetralogy of Fallot (blue baby syndrome). This concept led to the Blalock-Taussig shunt, a procedure developed by Dr. Alfred Blalock and Vivien Thomas, who were Taussig's colleagues at the Johns Hopkins Hospital. AHA supported Taussig with a 1973 Grant-in-Aid, "Follow-Up Patients With Tetralogy Of Fallot."

**1966** – Along with Dr. William Miller, pediatric cardiologist Dr. William Rashkind at the Children's Hospital of Philadelphia developed balloon atrial septostomy, a lifesaving technique and device for neonates with transposition of the great arteries. A father of interventional catheterization, Rashkind also created devices to close atrial septal defects and persistent patent ductus arteriosus. A longtime AHA volunteer, he received a 1983 Grant-in-Aid titled "Transcatheter Treatment Of Congenital Heart Disease."

**1986** – Dr. Craig Lillehei received a Midwest Affiliate Fellowship, "Ventricular Function During Cardiac Allograft Rejection." As an

attending surgeon, he later worked with technology pioneer Redmond Burke to perform the first three pediatric heart-lung transplantations in New England, with the help of colleagues from Brigham and Women's Hospital including Malcolm Decamp and Sari Aranki.

### Advocating For Healthier Kids

The Robert Wood Johnson Foundation and the American Heart Association have embarked upon an ambitious collaboration to reverse the nation's childhood obesity epidemic by 2015. Building upon AHA's extensive advocacy capacity and experience, RWJF will provide the association with \$8 million in initial funding to create and manage an advocacy initiative focused on changing local, state and federal policies to help children and adolescents eat healthier foods and be more active.

Under the new initiative, RWJF and AHA will focus on policy interventions to advance six priorities that research shows are likely to have the greatest impact on childhood obesity. AHA will develop the overarching strategy that knits together efforts across all six priorities and fund efforts for three of them:

- improving the nutritional quality of snack foods and beverages in schools;
- reducing consumption of sugary beverages; and
- protecting children from unhealthy food and beverage marketing.

RWJF will fund efforts to address the following priorities in underserved communities:

- increasing access to affordable healthy foods;
- increasing access to parks, playgrounds, walking paths, bike lanes and other opportunities to be physically active; and
- helping schools and youth-serving programs increase children's physical activity levels.

Both RWJF and AHA will focus on reaching communities hardest hit by the epidemic, including communities of color and lower-income communities.

**The American Heart Association provides public education and information about pediatric heart disease. Visit [heart.org](http://heart.org) and enter the keywords "Healthier Kids."**