Scientific Discovery

- The American Heart Association funds research related to heart health and heart disease in children, including congenital heart disease.
- The American Heart Association funds more pediatric cardiac research than any U.S. organization except the federal government.
- Last year, we funded nearly $13.5 million in new research awards broadly related to children’s heart disease. This was part of the $135.6 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.
- Many of these awards fund research projects aimed at determining how the heart develops before birth and how congenital heart defects develop.
- The association funds awards related to acquired children’s heart disease, and maintaining heart health in children.
- American Heart Association research awards mirror the proportion of applications received within each science topic.
- Across the country, 550 applications related to CV development and pediatrics were submitted in 2012–13. We funded 92, for a success rate of 16.7 percent in the pediatrics categories. This compares favorably with a success rate of 16 percent of all AHA applications.
- The AHA classifies research into more than 40 categories. Most pediatric-related science falls into the two categories for Cardiovascular Development:
  - 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
  - Cardiovascular Development — Clinical/Transitional
    - 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.

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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.

2010 - Donna M. Ferriero, MD, professor of neurology and pediatrics and director of child neurology at the University of California, San Francisco receives the American Stroke Association’s highest honor, The Thomas Willis Award, for groundbreaking work detailing the molecular and cellular mechanisms of hypoxic-ischemic injury in the developing brain. Her accomplishments in the laboratory are matched by an equally inspiring body of work translating those advances to the clinical realm, including playing key roles in the success of the first trial of hypothermia for neonatal brain injury, the first multicenter randomized clinical trial of a neuroprotective intervention in childhood ischemic brain injury, and making major contributions in neuroimaging and clinical pathophysiology of neonatal brain injury.

Scientific Statements and Guidelines

The American Heart Association and American Stroke Association publish medical scientific statements on various cardiovascular disease and stroke topics. AHA/ASA volunteer scientists and healthcare professionals write the statements. The statements are supported by scientific studies published in recognized journals and have a rigorous review and approval process. Scientific statements generally include a review of data available on a specific subject, an evaluation on its relationship to overall cardiovascular disease science, and often an AHA/ASA position on the basis of that evaluation.

In the past decade alone, AHA/ASA has published 31 statements related to pediatrics, most recently, Neurodevelopmental Outcomes in Children With Congenital Heart Disease: Evaluation and Management, which identifies, for the first time, conditions that increase the risk for developmental disorders among survivors.

Keeping Kids Healthy

Childhood obesity is one of our nation’s leading health threats and is a critical focus of the American Heart Association’s mission: building healthier lives, free of cardiovascular diseases and stroke.

We recommend prevention strategies that improve the social and physical environment for healthful eating and physical activity in children. These strategies include influencing policy and legislation, mobilizing communities and neighborhoods, changing organizational practices, fostering coalitions and networks, educating providers, promoting community education and strengthening individual knowledge and skills to practice positive health habits.

Healthy Way to Grow — With inaugural funding from by The William G. McGowan Charitable Fund, the American Heart Association and Nemours are launching this technical assistance program for child care centers across the country. Aimed at decreasing obesity among children ages birth to five years old, the program provides direct, hands-on assistance, customized training, resources and tools to support healthy lifestyles in childcare environments.

NFL PLAY 60 Challenge — The AHA has teamed up with the NFL’s PLAY 60 campaign to create the NFL PLAY 60 Challenge, inspiring middle school students to be more physically active and helping schools become places that encourage active lifestyles year-round.

Advocating for Children’s Health — The AHA supports numerous policy issues related to children’s health including efforts to improve quality physical education and school nutrition through state and federal legislation, such as the Newborn Screening Saves Lives Reauthorization Act that prompted many states to require hospitals to screen newborns for congenital heart defects. One in 100 newborns have a heart defect, and quick and painless tests like pulse oximetry are crucial in detecting these conditions.

Jump Rope For Heart — Since 1978, Jump Rope For Heart has been AHA’s educational fundraising program for millions of elementary school students across the nation. Participants learn jump rope skills, how their hearts work, and how to keep them beating healthy and strong.

Hoops For Heart — Middle school students who participate in Hoops For Heart learn basketball skills and the importance of heart health, while raising dollars to support lifesaving research and learning about community service.

Teaching Gardens — A fresh new approach to learning! We’re sowing the seed of knowledge to grow healthier kids who experience the value of vegetables. We’re growing a harvest of better health.

Understanding Childhood Obesity — An American Heart Association sourcebook on child nutrition and physical activity. It’s a great resource for media, policymakers, health professionals, school officials and other stakeholders to begin meaningful dialogue toward concrete solutions to the obesity epidemic. Download the full PDF or condensed version.

Congenital Heart Disease Resources

Written by Cardiovascular Disease in the Young experts for the AHA website: Adults With Congenital Heart Defects and If Your Child Has a Congenital Heart Defect.