

# Center for Craniofacial Research

IDENTIFY / UNDERSTAND / PREVENT / TREAT



## Background and Distinctions

Established in 2013, the Center for Craniofacial Research (CCR) is a collaborative endeavor between UTHealth's School of Dentistry and Medical School, where we're working to discover new ways to prevent and treat abnormalities of the head and face in children. Craniofacial anomalies are among the world's most common birth defects, with more than 135,000 children worldwide born annually with clefts of the lip and palate.

These abnormalities have been shown to run in families, but environmental factors also play a role. Smoking, seizure medications and untreated fever in the mother's first trimester of pregnancy are all associated with a higher risk of clefting deformities.

The emotional and financial impact on children and their families can be significant and far-reaching. While corrective surgery is available, the procedures are often painful, requiring years to complete.

The CCR's mission is to lead cutting-edge research to identify, understand, prevent and treat craniofacial disorders. The CCR is under the direction of nationally recognized geneticist Jacqueline T. Hecht, PhD, MS, professor and associate dean for research at the UTHealth School of Dentistry, and director of the Pediatric Research Center at the UTHealth Medical School.



### DISTINCTIONS

- CCR has an extensive database of genetic samples, collected from clefting families over 30 years, including samples from multiple generations of the same families.
- CCR's colony of zebrafish is a resource for researchers throughout the Texas Medical Center and southeast Texas. Zebrafish are ideal for genetic research because of their short reproductive cycle, with results in 24-48 hours.
- CCR has 12 full-time basic science faculty members conducting nearly two dozen research studies, including several with funding from the National Institutes of Health.
- CCR has a full-time genetic counselor to help with clinical and genetic assessment of patients with craniofacial anomalies. Genetic counselors help families understand why craniofacial anomalies occur and whether they will recur in future pregnancies.
- CCR researchers have access to world-class laboratories in the UTHealth Behavioral and Biomedical Sciences Building.



## HOW YOU CAN HELP

Gifts to the UTHealth Center for Craniofacial Research can support research in a variety of ways:

- **Naming of the Center for Craniofacial Research:** The naming opportunity is available for this center and would greatly support research efforts.
- **Naming and Establishing Faculty Endowments:** Faculty endowments ensure a basis of financial support so that innovative researchers can focus on science.
- **Bridge Funds:** To keep research initiatives funded between grants.
- **Visiting Professorships:** To support programs featuring expert speakers discussing current topics, innovations and concerns of interest to UTHealth audiences.
- **Current Use Funds:** To meet a variety of CCR needs, such as sending students to national conferences.

For more information about any of these projects or how you can support the drive to prevent, detect and treat cleft lip, palate and other craniofacial disorders, please contact:

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## RESEARCH, CLINICAL AND EDUCATIONAL FOCUS AREAS

- CCR researchers published findings, later confirmed by others, that a variation of the CRISPLD2 gene is associated with cleft lip and palate in both humans and zebrafish. CCR researchers are now investigating so-called “downstream genes” that form the genetic pathway to cleft lip and palate.
- CCR researchers are working to identify the genetic variations underlying orofacial clefting, cranial and jaw abnormalities, and tooth agenesis (missing teeth). A suspected link between tooth agenesis and colon cancer is being explored.
- By manipulating genes on a molecular level, CCR researchers are working to identify interacting genes and the roles they play in craniofacial development.
- Correcting craniofacial anomalies by means of tissue regeneration — possibly from the patient’s own stem cells — is a promising area of research at the CCR.
- CCR is pursuing an expanded genetics curriculum for dental students, in keeping with the rise of genomic medicine.

## UTHEALTH SCHOOL OF DENTISTRY COLLABORATORS:

- UTHealth Medical School Craniofacial Clinic
- Shriners Hospitals for Children - Houston
- Texas Children’s Hospital, Department of Plastic Surgery

*“Craniofacial abnormalities are common, costly and crushing for families. Finding the causes of these birth defects is of critical importance and achievable in the near future. This will lead to prevention programs and better treatments.”*

*– Jacqueline T. Hecht, PhD, Director, Center for Craniofacial Research  
Associate Dean for Research, UTHealth School of Dentistry*

### Mission

To advance human health by providing high-quality education, patient care, and research in oral health for Texas, the nation and the world.



The University of Texas  
Health Science Center at Houston  
School of Dentistry