Researchers discover gene for branchio-oculo-facial syndrome

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Boston, MA--In a collaborative effort, researchers from Boston University School of Medicine (BUSM) have discovered that deletions or mutations within the TFAP2A gene (Activating Enhancer-Binding Protein) result in the distinctive clefting disorder Branchio-Oculo-Facial syndrome (BOFS).

This rare disorder is characterized by specific skin anomalies involving the neck and behind the ear, eye abnormalities, a typical facial appearance, and frequently cleft lip and palate. The study currently appears on-line in the April 17th issue of the *American Journal of Human Genetics*.

Using the latest in molecular microarray technologies, the researchers examined one affected mother and son and two sporadic BOFS cases and found a small deletion on chromosome 6 in the mother and son. Sequencing of genes in this candidate region revealed missense mutations clustered in the basic region of the DNA-binding domain of the TFAP2A gene in 4 sporadic BOFS patients.

According to lead author Jeff Milunsky, MD, director of clinical genetics, associate director of the Center for Human Genetics, and an associate professor of pediatrics, genetics and genomics at BUSM, this discovery will lead to more precise diagnostic testing, enable prenatal diagnosis, suggest directions for new research, and facilitate genetic counseling in these families.

“This gene is a well-known transcription factor involved in multiple developmental pathways as well as tumorigenesis. An intriguing finding is that one of the affected patients with a mutation also has brain cancer, highlighting again the connection between malformations and cancer,” he added.

Milunsky believes this discovery may have significant wide-ranging implications as this gene may also play a role in the more common isolated occurrence of cleft lip and palate.

Source: Boston University