Institute of Biosciences and Technology researchers discover gene’s unique role in atrial fibrillation

Posted on: 2010-05-10 15:10:43

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(HOUSTON) — Researchers at the Texas A&M Health Science Center (HSC) Institute of Biosciences and Technology at Houston have discovered a gene’s unique role in atrial fibrillation, a finding that could eventually help in developing treatments for a disease affecting millions of Americans.

The study is currently available online in Proceedings of the National Academy of Sciences and will be in an upcoming issue of the journal.

“The study was directed at understanding the genes that are important for controlling the normal heart beat rhythm,” said James Martin, M.D., Ph.D., professor in the Center for Cancer and Stem Cell Biology in the HSC-Institute of Biosciences and Technology and study senior author. “We believe this knowledge will be useful for making medications that can be used to treat atrial fibrillation.”

According to the American Heart Association, atrial fibrillation (AF) is a disorder found in about 2.2 million Americans. Instead of beating effectively, the heart’s two small upper chambers (called the atria) quiver. Blood isn’t pumped completely out of the atria, so it may pool and clot, even resulting in a stroke. The likelihood of developing atrial fibrillation increases with age.

In their study, Dr. Martin and his colleagues examined a gene called Pitx2. This gene is part of the homeobox gene family that is important in embryonic development, including the heart.

They found Pitx2 inhibits the synthesis of other genes, predisposing people to AF. The goal now is to learn why this inhibition occurs.

“Pitx2 is a gene that controls left-right symmetry, the difference between the left and right side of the body,” Dr. Martin said. “It is known to be important for instructing the heart to develop in the left side of the chest cavity. Our findings make a direct connection between left-right symmetry and the most common human heart rhythm defect.”

Contributing to the PNAS study from the HSC-Institute of Biosciences and Technology were graduate assistant Jun Wang and research assistant Elzbieta Klysik. Also contributing were Subeena Sood and Xander H.T. Wehrens of Baylor College of Medicine and Randy Johnson of The University of Texas M.D. Anderson Cancer Center.

Research was supported by the National Institutes of Health and the American Heart Association South Central affiliate.