TEXAS A&M HEALTH SCIENCE CENTER

News Release

EMBARGOED UNTIL 2 P.M. CDT, MONDAY, APRIL 29, 2013

Date: April 29, 2013
Contact: Scott Maier 979-436-0614
Texas A&M Health Science Center Marketing and Communications

Institute of Biosciences and Technology researchers make connection between genetic defect and congenital hydrocephalus

(COLLEGE STATION, Texas) — Researchers at the Texas A&M Health Science Center (TAMHSC) Institute of Biosciences and Technology in Houston have made a connection between a genetic defect and congenital hydrocephalus, a finding that may eventually lead to treatments for the neurological disease.

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

"This paper marks a new beginning in understanding and transferring the potential prevention and treatment of congenital hydrocephalus from the laboratory to the patient's bedside," said Jiang Chang, M.D., Ph.D., associate professor in the Center for Translational Cancer Research and study senior author. "The results are preliminary but very promising for imminent therapy of this disease."

The cerebrospinal fluid (CSF) flow tract supplies the brain with essential nutrients and growth factors throughout development and into adulthood. Malformation of the ependymal epithelium, which constructs the CSF tract and propels flow, can result in a brain fluid buildup called hydrocephalus.

Hydrocephalus is a severe neurological disorder that affects about one out of every 500 newborns, according to the National Institute of Neurological Disorders and Stroke. Precise causes are unknown, but genetic factors are believed to play a significant role.

In their study, Dr. Chang and his colleagues found *Rnd3*, a protein involved in regulating certain molecular mechanisms, plays a part in hydrocephalus. Its deletion in mice led to disease development due to the increased production of ependymal cells.

-more-

Further, *Rnd3* has a role with the *Notch* receptor, a protein involved in many biological processes, particularly cell-to-cell signaling communications. The researchers discovered inhibiting *Notch* activity curtailed formation of hydrocephalus, which could serve as a potential target for therapeutics.

The next step is to develop drugs with Food and Drug Administration approval for clinical trials in animals, Dr. Jiang said.

Contributing to the *PNAS* study from the TAMHSC-Institute of Biosciences and Technology were Xi Lin, Xiangsheng Yang and Xiaojing Yue, along with Baohui Liu from Wuhan University in China and Lixia Diao and Jing Wang from The University of Texas M.D. Anderson Cancer Center in Houston. Research was supported by the National Institutes of Health.

- 30 -