Press release about the following paper that was published in PNAS:

Gabbi C, Kong X, Suzuki H, Kim, HJ, Gao M, Jia X, Ohnishi H, Ueta Y, Warner M, Guan Y, Gustafsson JÅ. *Central diabetes insipidus associated with impaired renal aquaporin-1 expression in mice lacking the Liver X Receptor β.* PNAS, 2012; Feb 21;109(8):3030-4. ISSN: 0027-8424

Center for Nuclear Receptors and Cell Signaling

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News Contact:
Kathy Major
ksmajor@uh.edu
College of Natural Sciences and Mathematics
713.743.4023

Media Contact:
Lisa Merkl
lkmerkl@uh.edu
Office of University Communication
713.743.8192
713.213.5279 (cell)

April 19, 2012

A team of researchers at the UH Center for Nuclear Receptors and Cell Signaling (CNRCS) have published results indicating that nuclear receptor liver X receptor β (LXRβ) plays a role in the cause of diabetes insipidus (DI). The team's findings were reported in Proceedings of the National Academy of Sciences of the United States of America, the official journal of the National Academy.

"Our research reveals a novel and unexpected role for LXRβ in controlling water balance with targets in both the brain and kidney," says CNRCS director Dr. Jan-Åke Gustafsson. "We believe that LXRβ could be a therapeutic target in disorders of water balance, such as DI."

In the study, mice without the LXRβ receptor exhibited abnormal daily excretion of highly diluted urine and increased water intake. The team determined that mice without LXRβ had a conserved but reduced ability to concentrate urine. Researchers then treated the mice with the antidiuretic hormone, arginine vasopressin (AVP), which resulted in an increase of urine concentration. The results indicated that DI may have been caused by a defect in the central production of AVP. Immunohistochemical studies revealed that in the absence of LXRβ there is very little AVP in the brain.

DI is a condition which prevents the kidneys from conserving water while filtering blood and is characterized by increased amounts of urine and intense thirst. The condition results from a defect in the secretion of AVP in the brain, or resistance to its action in the kidneys. While the condition is uncommon, in some cases DI in small children can be fatal.

"Anywhere from 30 to 50% of the cases of central diabetes insipidus have an unknown origin," says Dr. Chiara Gabbi, first author of the study and research assistant professor at the Center. "We believe that genetic mutations of LXRβ may be responsible for cases of DI with unknown origin."

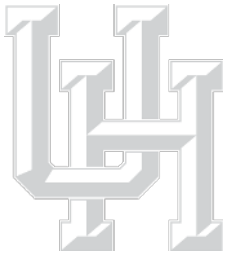
The study was supported by grants from the Robert A. Welch Foundation, the Swedish Cancer Fund and the Texas Emerging Technology Fund.

Established in 1914, PNAS is among most-cited multidisciplinary scientific research journals and reports on the progressive research of the Academy. The circulation reaches over 3,000 institutions in more than 60 countries, including more than 2,200 Academy members and more than 400 foreign associates.

Established in 2009, CNRCS is the focal point of the UH health initiative. Led by Gustafsson, a world-renowned expert in the field of nuclear receptors, CNRCS researchers are involved in many aspects of nuclear receptor research, all focused on understanding the roles of these receptors in health and disease. CNRCS researchers are working toward the goal of finding new treatments for an array of significant diseases including cancer, diabetes and metabolic syndrome and degenerative neurologic diseases. Working from the Center's world-class labs, CNRCS researchers combine interdisciplinary research and dynamic collaboration with the Texas Medical Center and industry partners.

To view the abstract or full text, visit http://www.pnas.org/content/early/2012/02/07/1200588109.

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