

Nuclear receptors reveal possible interventions for cancer, obesity

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Research with significant implications in the treatment and intervention of cancer and obesity has been published recently in two prestigious journals by University of Houston (UH) biochemist Dr. Jan-Ake Gustafsson.

In an invited review in the [Journal of Biological Chemistry](#), the most-cited biomedical research journal in the world, Gustafsson and his team summarize the most recent results pertaining to the function of a nuclear receptor called estrogen receptor beta, or ERbeta, the biological and medical importance of which Gustafsson and his associates discovered in 1995. In the article, titled "Estrogen Signaling via Estrogen Receptor Beta," the group found that this regulatory molecule prevents what is called epithelial-to-mesenchymal transition, or EMT, in the prostate gland. EMT is believed to have an essential role in prostate [tumor development](#). ERbeta also has a growth-suppressive effect in [colon cancer](#) cells.

All of this, added to new insights gained by the researchers regarding ERbeta's interaction with certain genetic materials, suggests that this molecule is potentially an interesting pharmaceutical target in many diseases, including cancer.

A second article by Gustafsson and his group appeared in a recent issue of the journal [Proceedings of the National Academy of Sciences](#), one of the world's most-cited multidisciplinary scientific serials. Titled "Both liver-X receptor (LXR) isoforms control [energy expenditure](#) by

regulating Brown Adipose Tissue activity," the research shows that two specific nuclear receptors – LXRalpha and LXRbeta – act in such a way as to indicate they have a crucial role in regulating energy homeostasis, which is important to maintain the stability of normal biological states during adjustments to environmental changes. Gustafsson suggests, then, that these molecules should be considered as targets in pharmaceutical intervention against obesity.

Both studies were performed in collaboration with Gustafsson's colleagues from the Karolinska Institute in Sweden, where he continues his duties as a member of the Center for Biotechnology at Huddinge University Hospital at the Karolinska Institute. He also holds an appointment as an adjunct professor at Baylor College of Medicine in Houston. Since 2009, his primary duties are as the Robert A. Welch Professor in UH's biology and biochemistry department and director of the Center for [Nuclear Receptors](#) and Cell Signaling, a collaborative effort between UH and The Methodist Hospital Research Institute.

In addition to holding both a Ph.D. and M.D., Gustafsson was recently invited by the University of Turku in Finland to accept an honorary doctorate from its faculty of medicine during the institution's graduation ceremony to be held in May.

Provided by University of Houston

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