

## Examensarbete i Molekylärbiologi 2009

### Estrogen receptor function in breast cancer

Breast cancer is the most common cancer among Swedish women. Estrogens play a well-known role in the progression of breast cancer. The majority of breast cancers expresses estrogen receptors and is initially dependent on estrogen to grow. Therefore, these cancers can be effectively treated with adjuvant anti-estrogenic therapy such as tamoxifen or aromatase inhibitors. However, breast cancer cells which are not completely eradicated by the initial therapy will gain resistance to endocrine therapy. Though, patients with recurrent, endocrine resistant breast cancer are no longer able to cure.

We are studying the function of estrogen receptors (ER) in breast cancer, focusing on endocrine resistance. Our aim is to develop new “estrogen-like drugs” with less side-effects and greater specificity based on molecular biology. The project you will be working with goes from studies of gene-expression in clinical breast cancer samples to in vitro experiments on cancer cells. You will be introduced to a wide array of laboratory techniques such as advanced cell-culturing, immunohistochemistry, proliferation assays, western blotting, molecular cloning and real-time quantitative PCR. After completing the project, there is a good chance to proceed as a PhD-student within the research group.

#### Selected publications:

Estrogen receptor beta in breast cancer—Diagnostic and therapeutic implications

Johan Hartman, Anders Ström, Jan-Åke Gustafsson, *Steroids, In Press, Available online 4 March 2009.*

Estrogen receptor beta inhibits angiogenesis and growth of T47D breast cancer xenografts. Hartman J, Lindberg K, Morani A, Inzunza J, Ström A, Gustafsson JA. *Cancer Res.* 2006 Dec 1;66(23):11207-13.

Estrogen receptor beta inhibits 17beta-estradiol-stimulated proliferation of the breast cancer cell line T47D. Ström A, Hartman J, Foster JS, Kietz S, Wimalasena J, Gustafsson JA. *Proc Natl Acad Sci U S A.* 2004 Feb 10;101(6):1566-71.

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