PB-36

Evaluation of endocrine disruptors by DNA microarray

Hajime Watanabe[a], Atsuko Suzuki[a], Takeshi Mizutani[a], Hiroshi Handa[b], Taisen Iguchi[a]

[a]Center for Integrative Bioscience, Okazaki National Research Institutes CREST and JST, [b] Frontier Collaborative Research Center, Tokyo Institute of Technology

The capacity of numerous chemicals released into the environment to disrupt the development and function of the endocrine system of wildlife and humans is drawing the attention of public, but little is known about the disruption mechanisms.

In vitro studies using estrogen receptor expressing cell lines or yeast systems revealed some chemicals are estrogenic and they can activate transcription of the genes that have estrogenic activity. Based on these results, it has been widely assert that xenoestrogens affect via estrogen receptor and evoke estrogenic effects in wildlife and humans.

In order to examine the hypothesis, we have used DNA microarray to analyze global uterine gene expression patterns in mice. Mice were treated with various chemicals proposed to have endocrine disrupting qualities and gene expression changes by the chemicals were compared those by estrogen. As a result, we have found characteristic gene expression patterns for each chemical that are distinct from that of estrogen. Interestingly, gene expression pattern characteristic for each chemical was also observed in estrogen receptor alpha deficient mice. These findings suggested specific mechanisms of action for endocrine disrupting effects distinct from estrogen receptor mediated gene expression.