

# Laboratory of Environmental Toxicology and Pharmacology

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Our research examines the effects of environmental endocrine disruptors, including phytoestrogens and heavy metals, on the function of central nervous systems in mammals. Environmental endocrine disruptors have the potential to interfere with reproductive, endocrine, and immune systems. For example, exposure to nonylphenol, one of the most common environmental endocrine disruptors, during either the perinatal period or adulthood has been found to decrease ovary weight and sperm count, and has altered kidney and liver structures in rats; however, the amount of studies that have investigated the effects of endocrine disruptors on the central nervous system is insufficient. Previous studies have shown that estrogen has neuroprotective effects, and can aid learning and memory. Many endocrine disruptors have weak estrogenic activities; therefore, our current research focuses on how endocrine disruptors affect learning and memory performance in rats.

Our research is conducted using a battery of behavioral tests including an appetitive-motivated maze test (MAZE test), a step-through passive avoidance test, an open-field test, and an elevated plus-maze test.

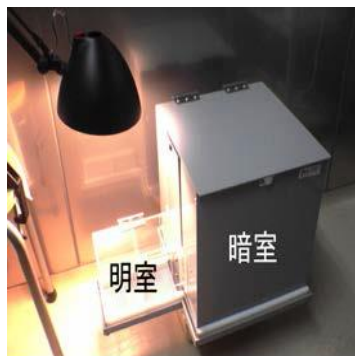
Examples of our current research can be seen in the publications listed below.

1. Yumi Kohara, et al.: Perinatal exposure to genistein, a soy phytoestrogen, improves spatial learning and memory but impairs passive avoidance learning and memory in offspring. *Physiology & Behavior* 130: 40-46, 2014
2. Rika Kuwahara, et al.: Bisphenol A does not affect memory performance in adult male rats. *Cell Mol Neurobiol* 34: 333-342, 2014



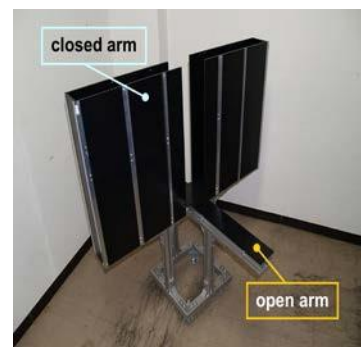
MAZE test

For examination of special learning and memory



Step-through passive avoidance test

For examination of fear-motivated learning and memory



Elevated plus-maze test

For examination of anxiety