POSTER 24

NOVEL METHODS IN MAMMARY GLAND EVALUATION

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In response to the growing knowledge base on effects of environmental contaminants on mammary tissue, the National Toxicology Program (NTP) renovated their bioassay guidelines to adapt developmental chemical exposure and reproductive studies by including evaluation of mammary gland development.

The normal development of mammary tissue in the Harlan Sprague Dawley (HSD) rat is not documented. Our goal is to create an encyclopedia of mammary gland development in both male and female HSD rat offspring, starting with gestational day 15 through postnatal day 70. In addition, prenatal exposure to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin was used to demonstrate delayed mammary gland effects, and diethylstilbesterol was used to demonstrate precocious mammary gland effects in offspring.

Our findings yielded a thorough database of normal, precocious, and delayed mammary gland development in HSD male and female rats using both standard H&E staining and the mammary whole mount procedure. Methods to successfully remove mammary tissue from pups and dams were developed, and the process for histological analysis of the fetal tissues was modified, as no one has ever reported mammary gland data from HSD fetuses. The lack of information on early mammary gland development necessitated the creation of our original methods and the final result was an extensive mammary gland development guide.

This comprehensive atlas of mammary gland development will be a key component in helping the NTP and other researchers understand the extent of developmental changes following early life exposures, especially as they pertain to late life disease status.

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