Testis Phthalate Target Cell Identification

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Understanding the risk of phthalates to human reproductive health requires knowledge of the critical molecular and cellular events following exposure. The long-term goal of this proposal was to produce a molecular and cellular pathway of the phthalate testis injury mechanism. While some late (dysgenetic testicular architecture) and early (altered testicular gene expression) manifestations of phthalate exposure are clear, the testicular cell initially targeted by phthalates is unknown. Based upon current data, we hypothesized that the Sertoli cell is the initial target cell following both fetal and pubertal phthalate exposure. To test the hypothesis, this proposal had three specific aims with the goal of determining the phthalate target cell: (1) identify early and sensitive *in vivo* genetic markers of phthalate exposure using microarray and qPCR; (2) map these genetic markers to testicular cell types using *in situ* hybridization; and (3) correlate microarray results from phthalate-exposed primary Sertoli and Leydig cells to microarray data previously obtained *in vivo.*

**Implications:** Phthalates are male reproductive toxicants with uncertain molecular mechanisms of action. To define the phthalate toxic mechanism, our short-term goal was to identify quantitative differences in susceptibility to phthalate-induced male reproductive injury among strains of genetically homogenous (inbred) mice. Once such mouse strains are identified, our longer-term goal was to use this information to discover regions of the mouse genome and specific genetic polymorphisms that are responsible for susceptibility differences. These data are important to understand the molecular mechanism of phthalate toxicity and as an aid in assessing risks of human phthalate exposure in a diverse human population.

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**Presentations:**


This abstract was prepared by the principal investigator for the project. Please see [www.americanchemistry.com/lri](http://www.americanchemistry.com/lri) for more information about the LRI.
Peer-reviewed publications:


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