



Mouse Expressed Sequence Tags Related to Liver, Skin, Kidney, Thymus, Lung and Palate Toxicology

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Inventors: Christopher Bradfield, Russel Thomas

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing tools for identifying patterns of gene expression associated with exposure to various tissue-specific toxicants in a mouse model.

Overview

Accurate monitoring of gene expression is critical to determining those patterns of expression correlating with exposure to certain drugs or toxins. By elucidating these patterns, researchers may be able to predict a toxin's mechanism of action.

The Invention

UW-Madison researchers have developed tools for monitoring changes in gene expression associated with exposure to various tissue-specific toxicants in the mouse model. Their approach involves determining the frequency of expressed sequence tags (ESTs), which are 200 to 500 base pair sequences of genomic DNA generated from cDNA.

The researchers first constructed cDNA libraries from mRNA extracted from various tissues of control mice and the livers of mice exposed to certain toxicants; sequenced the ends of the cDNA clones to create ESTs; and then organized the clones and counted them. Comparing EST libraries of control and toxin-exposed livers allows researchers to determine how toxicant exposure affects gene expression.

The EST frequency approach also generates a reagent for use in cDNA microarrays, allowing more rapid comparison of expression patterns between samples. Thus, this technology includes three reagents: EST clone sets from various mouse tissues, an organized version of this information and arrays of cDNAs in either liquid culture or as spots in microarrays.

Applications

- Provides tools for identifying patterns of gene expression associated with exposure to various tissue-specific toxicants in a mouse model

Key Benefits

- Clone sets are organized and optimized for toxicology studies.
- Could allow the discovery of novel genes
- Researchers have exposed mice to several toxicants, including dioxins, peroxisome proliferators, cytotoxins and inflammatory agents

- Suitable for manufacturing cDNA microarrays, allowing more rapid comparison of expression patterns between samples

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Additional Information

For More Information About the Inventors

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WARF
Wisconsin Alumni Research Foundation

| info@warf.org | 608.960.9850

- [Christopher Bradfield](#)

Tech Fields

- [Drug Discovery & Development : Preclinical testing](#)
- [Research Tools : Animal & disease models](#)

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