**INTRODUCTION**

Cytosolic glutathione S-transferases (GSTs) comprise a large family of proteins (18 gene products divided into eight major Classes designated as A, alpha), M (mu), P (pi), T (theta), K (kappra), Z (zeta), O (omega) and S (sigma). The GSTs play prominent roles in biotransformations of many endogenous components and in the detoxification of xenobiotics. Studies to date indicate that GSTs exhibit distinct yet overlapping, tissue expression patterns. For example, in humans, GST A1-1 is the predominant GST in liver, but other GST Class A isoforms have been detected in nearly every tissue examined.

It is well documented that GSTs are released by cells upon damage due to toxin exposure. Hence, given relatively recent discovery of many additional isoforms, GSTs have enormous untapped potential to serve as organ-specific toxicity biomarkers. Therefore, we have developed and characterized a comprehensive panel of GST isoform-specific antibodies and herein report their use to map the expression of GST isoforms in a broad range of human tissues.

**MATERIALS AND METHODS**

Expression and purification of recombinant human GST isoforms

**IMMUNOLOCALIZATION OF HUMAN GST ISOFORMS IN NORMAL AND DISEASED TISSUES**

<table>
<thead>
<tr>
<th>Anti-GST Antibodies</th>
<th>Liver</th>
<th>Lung</th>
<th>Spinal Cord</th>
<th>Stomach</th>
<th>Small Intestine</th>
<th>Pancreas</th>
<th>Breast</th>
<th>Brain Tissue</th>
<th>Kidney</th>
<th>Adenocarcinoma of the prostate</th>
</tr>
</thead>
</table>

**EXPRESSION OF GST-M3 IN HUMAN PROSTATE**

Upon visual assessment and using the Definiens software to score every core and every stain, the antibody specific for GST P1 shows the best uptake and distribution. From the statistical analysis, anti GST A4 as well as the polyclonal specific to GST M1 show a unique specificity profile for Prostate. Visually, normal and diseased prostate tissues showed areas of differential staining (as can be seen below).

**KEY**

- Blank = not readable (e.g. TMA section did not adhere to slide)
- + = No staining detected, or very weak staining by visual and/or Definiens
- L = Low level of staining by Definiens, +/- to 2+ staining by visual
- H = High level of staining by Definiens, 3+ to 5+ staining by visual
- V = Variability between Definiens and visual analysis OR between different specimens
- N = Nuclear staining
- C = Cytoplasmic staining
- n/C= Staining of nucleus observed but weaker than that observed for cytoplasm
- V = Weak staining observed

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