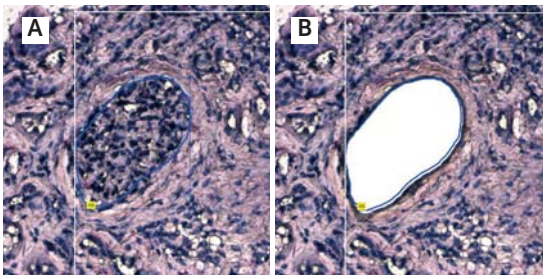
epistem

Laser Capture Microdissection

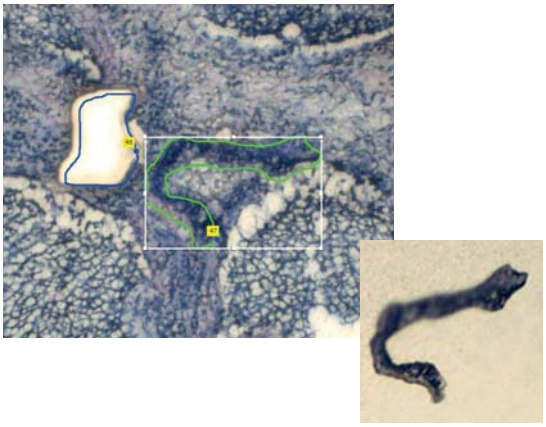
Gene Expression Analysis of Isolated Cell Populations

summary

Epistem offers Laser Capture Microdissection (LCM) services and subsequent gene expression and DNA genotype analysis. This technique is an ideal method for obtaining molecular analysis of specific cell populations. Following the isolation of cells of interest Epistem is able to perform global (microarray) and focussed (qPCR) analysis from pg levels of RNA or DNA. We use our proprietary amplification techniques and can interrogate down to single cell populations.



Renal tissue section A) before and B) after undergoing LCM to remove cells of a single glomerulus



A section of human lung epithelium isolated and removed using LCM

Laser Capture Microdissection

Laser capture microdissection (LCM) allows for the isolation of specific cell populations from tissue samples or blood smears. Once isolated, Epistem is able to perform gene expression analysis by microarray or quantitative PCR. This enables the comparison of gene expression profiles from defined cell types within the same tissue sample. The use of LCM and subsequent gene expression analysis allows comparison between diseased and non-diseased tissue as well as tissue assessment pre- and post- drug treatment, which permits:

- Identification of biomarkers associated with disease
- Identification of new targets for therapeutic intervention
- Assessment of mechanism of action of compounds
- Assessment of the safety profile of compounds

Epistem has extensive expertise and experience in obtaining biomarker information using this multi-stage process. We can carry out the entire work-flow or alternatively can undertake a single stage of the process according to client requirements.

Sample Preparation

LCM requires specialist treatment of tissue sections for them to be compatible with downstream processing for gene expression analysis in order to obtain optimal results. Epistem are experts in establishing processing and cell staining techniques that are compatible with LCM and subsequent gene expression analysis. We work with sponsors to establish protocols best suited to their project requirements.

Epistem Limited, 48 Grafton Street, Manchester, M13 9XX, UK
Tel: +44 (0)161 989 0245 Fax: +44 (0)161 989 0262

biomarkers@epistem.co.uk
www.genebiomarkers.com or www.epistem.co.uk

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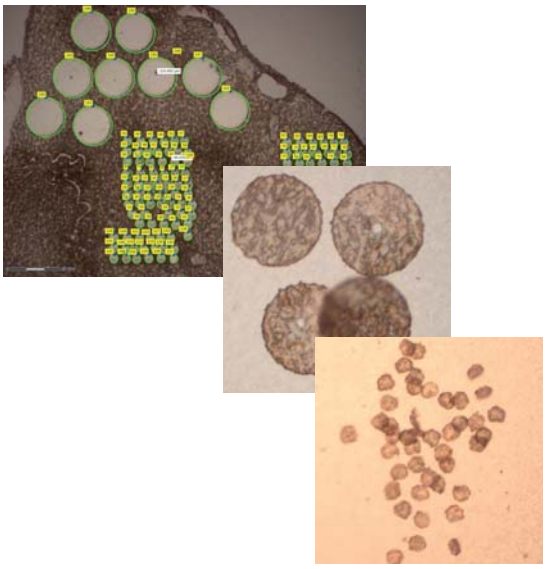
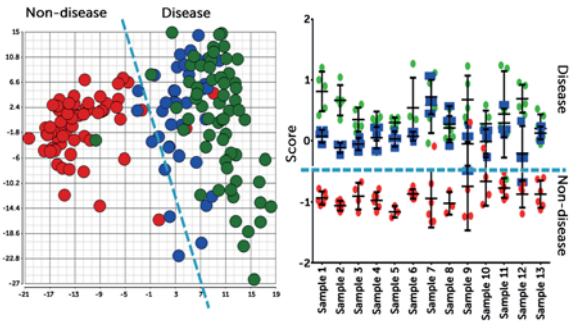
Laser Capture Microdissection



High throughput LCM analysis of murine renal glomeruli



Epistem data analysis following LCM and gene expression analysis: PCA plot and gene signature scores separate healthy from diseased cell populations

Applications

Discovery of disease biomarkers

Discovery of therapeutic agents

Assessment of compound mechanism of action

Assessment of compound safety profile

LCM

Epistem's LCM platform is high throughput and non-contact based allowing for the efficient identification and isolation of specific cell populations without the risk of contamination. We routinely assess capture areas of approximately 50 cells and have experience of capturing cells from a large variety of tissue types, both healthy and diseased.

Gene Expression Analysis

Epistem can provide global and focussed gene expression analysis in a GCLP accredited environment using microarray or quantitative PCR. We are able to examine the entire genome in order to identify changes in gene expression or alternatively can focus in on genes of specific interest to the client. Using our proprietary amplification system, GenetRx™, Epistem can derive information from as little as 10pg RNA, which is the input from a single cell.

Data Interpretation

In addition to the acquisition of gene expression information from LCM samples, Epistem offers biological interpretation of the data as well as comprehensive data analysis that a sponsor may require. Enrichment analysis and expression network modelling approaches can also be undertaken by Epistem.

Why Choose Epistem?

Our Expertise: Epistem Pharmacogenomics provides high quality biomarker and personalised medicine information to pharmaceutical and biotechnology companies from very limited quantities of RNA. We specialise in advancing drug development programs for oncology, inflammatory and fibrotic disease indications through our innovative plucked hair analysis and laser capture microdissection techniques as well as offering GCLP accredited laboratory gene expression and DNA genotyping services. In addition to our expertise in assessing limited quantities of RNA, we also have extensive experience in developing patient stratification companion diagnostic assays using our point of care Genedrive® platform.

Outstanding Service: Epistem's high level of expertise and customer focus has led to an enviable track record and impressive repeat business ratio. Epistem has worked with over 200 pharmaceutical and biotechnology companies and has developed long term collaborative relationships with several market leaders.

Quality Management: Epistem's pharmacogenomics laboratories are GCLP accredited. Our ISO 13485 certification is for the design, development, manufacture and distribution of molecular diagnostic instruments and molecular IVD assays.