

Gene Expression

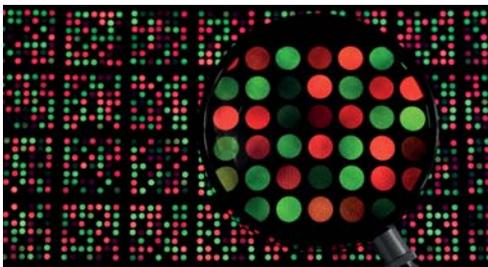
Global and Focused mRNA and miRNA Profiling Services

summary

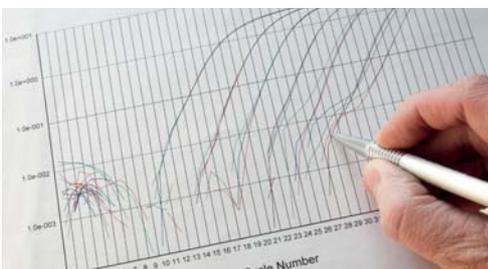


Epistem provides global (microarray, NGS) and focused (qPCR) GCLP accredited mRNA and miRNA gene expression profiling services. Expression profiles can be generated from pg- μ g levels of RNA permitting analysis of small starting materials including:

- Plucked hair (multiple species)
- Laser capture microdissected (LCM) tissue
- Single cell analysis
- Whole blood and fractionated PBMC populations
- Preclinical and clinical biopsies
- Tissue and cell lines



Affymetrix and Agilent microarray platform analysis for global mRNA and miRNA profiling



Sensitive qPCR analysis of specified genes



Next Generation Sequencing Analysis via Illumina platforms

Global and Focused Gene Expression Analysis

Epistem provides global and focused mRNA and miRNA profiling services in a GCLP accredited facility. We offer both conventional profiling services from medium to high amounts of total RNA (ng- μ g quantities) and also specialise in providing robust and reliable gene expression information from very small amounts of starting materials (including from a single cell input or 10pg of RNA). RNA can be supplied to Epistem by the Sponsor or can be isolated by Epistem from tissue matrices either supplied by the Sponsor or generated by Epistem.

Next Generation Sequencing

Epistem offers NextGen genome (DNA) and transcriptome (RNA) sequencing services using a range of different Illumina platforms.

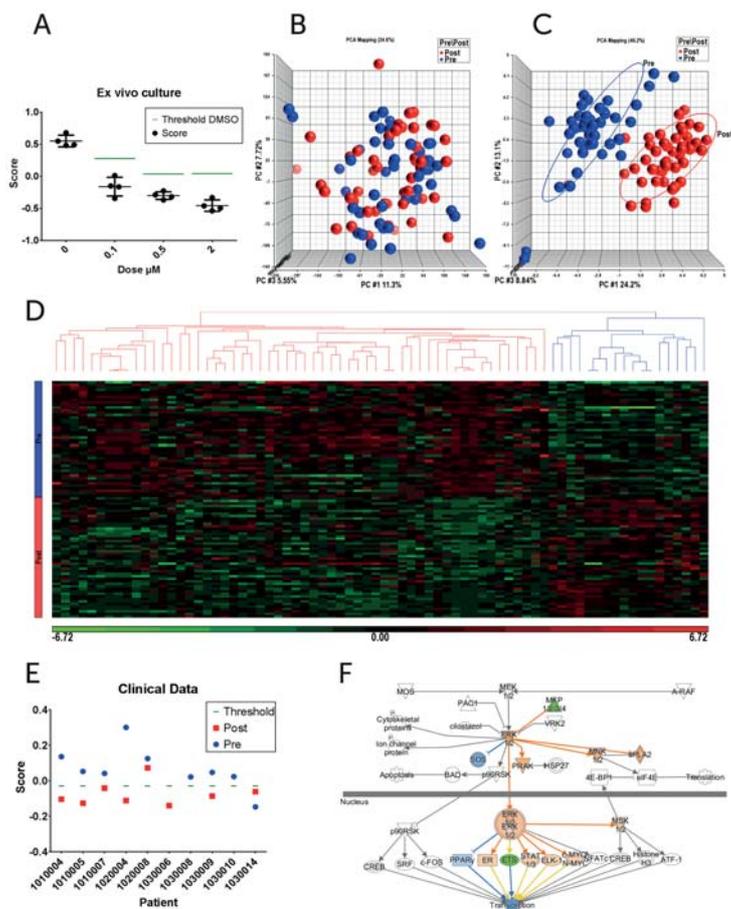
Microarray Analysis

Epistem offers microarray analysis on Affymetrix and Agilent platforms enabling accurate gene expression analysis of the whole transcriptome. Sponsors can choose from pre-designed or custom designed arrays. Whole genome array services are available for human, non-human primate, dog, rat and mouse species. Epistem also provides comprehensive data analysis tailored specifically to sponsor requirements. Our bespoke data analysis service includes statistical and hypothesis testing, p value and fold-change information with data mining focusing on hierarchical clustering and principal component analysis (PCA). Detailed pathway enrichment analysis and expression network modelling approaches can also be undertaken.

qPCR Analysis

Epistem's amplification technology also allows the interrogation of the transcriptome by focused quantitative Real-Time PCR (RT-qPCR), with assays being designed and validated for industry standard performance based on a comparative Ct method.

Gene Expression Analysis



Discovery and clinical translation of pharmacodynamic transcriptional signatures

The figure above illustrates Epistem’s expertise in identifying biologically meaningful and translatable compound mediated transcriptional signatures for use in clinical phase 1 settings. In an *ex vivo* model system (in this case human plucked anagen hair), compound mediated dose responsive transcripts are identified and used to generate a multivariate “score” (A). In a large cohort of plucked hairs from phase 1 oncology patients, whilst no group separation is evident by Principal Component Analysis when initially viewing all array probes (B), when restricting to the multivariate signature, group separation between pre- and post-compound dose is evident (C). This is further represented by 2D-Hierarchical clustering (D). Intra-patient analysis further refines the patient level response (E). In-depth biological interpretation underpins assurance of biological relevance of identified transcriptional information (F).

Gene Expression Profiling

Epistem also performs conventional gene expression (mRNA and miRNA) profiling on human and animal tissue as well as cells derived from clinical trials, *in vivo* and *in vitro* studies.

Epistem is a partner of choice for many pharmaceutical and biotechnology companies providing gene expression biomarker information from preclinical and clinical samples to support drug development programs. Our services are conducted to GCLP standards. We have experience in assessing a wide variety of biological samples including whole blood, PBMC populations, tumour and tissue biopsies, skin, single plucked scalp hair, sputum, lavage, CSF and specific cell populations isolated by laser capture microdissection (LCM).

Highly Sensitive Gene Expression Profiling

Epistem’s gene expression service is a powerful tool providing highly sensitive analysis of samples too small for conventional methods. To increase sensitivity and allow processing of small samples, cDNA is synchronously amplified from small amounts of purified RNA using Epistem’s proprietary technology, RNA-Amp™. Each cDNA sample is subjected to quality control criteria based on reference or housekeeping genes. This provides an accurate representative copy of the starting mRNA from which qualitative analysis can be undertaken by RT-qPCR, microarray or NGS analysis.

The amplified cDNA is indefinitely renewable through additional rounds of PCR, thereby providing a permanent cDNA archive.

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.