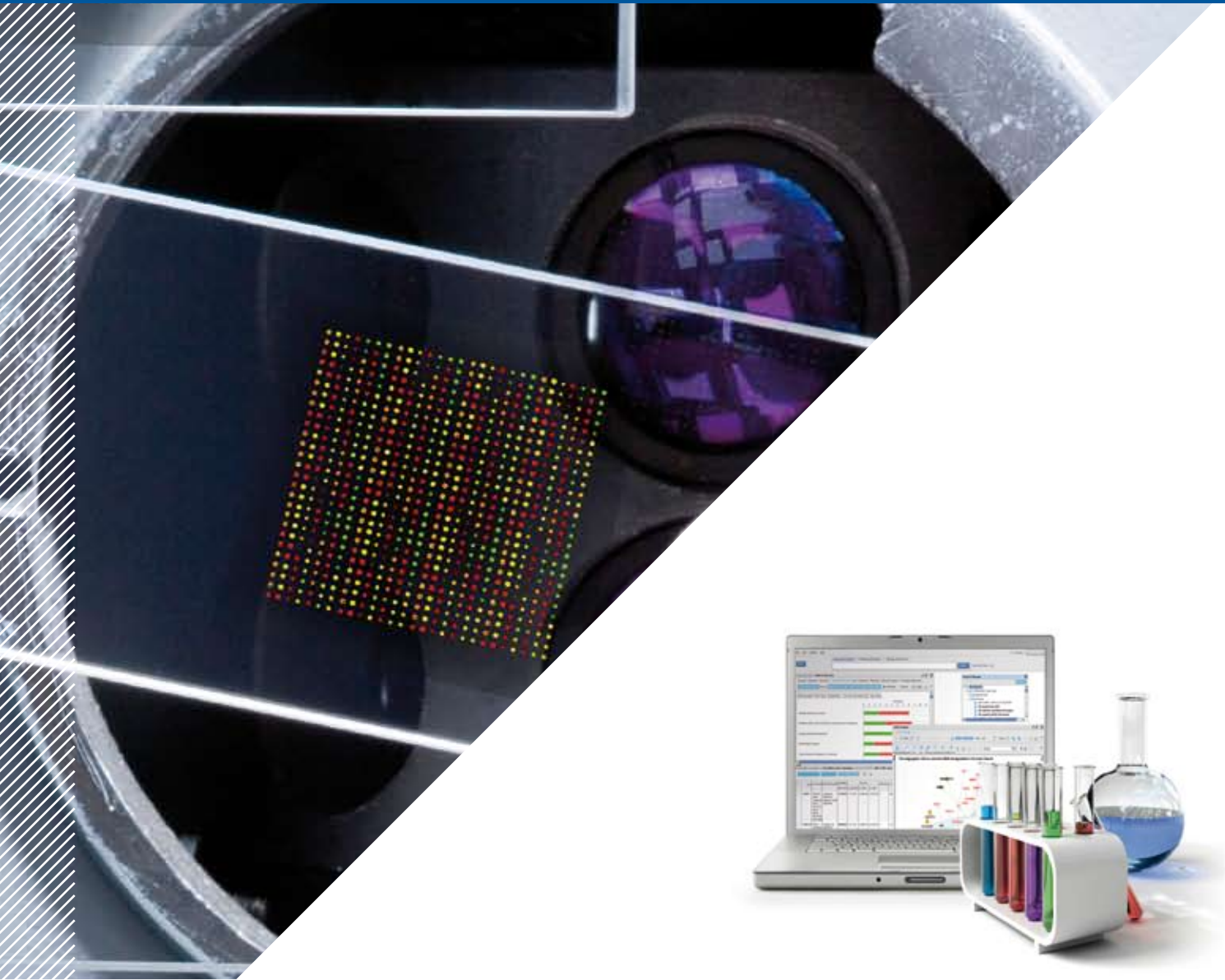


Microarray Services

Expertise in design, analysis and interpretation



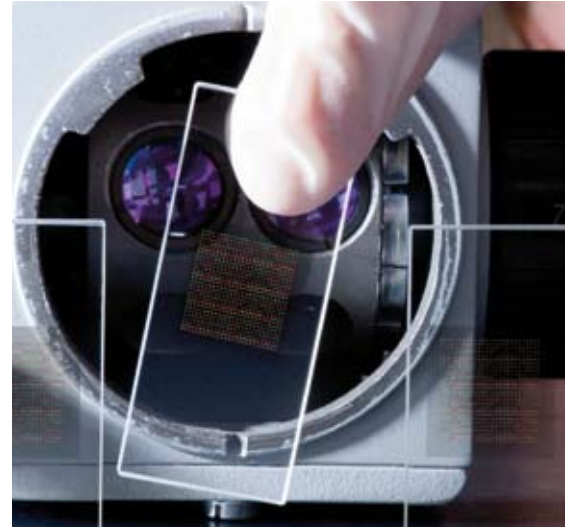
Microarray Services: expertise in design, analysis and interpretation

Outsourcing your microarray studies?

Whether you require hybridisation and delivery of raw data, or full experimental design and downstream pathways analysis, CXR provides the expertise you need.

Partnering with CXR on your array projects gives you access to:

- ▶ Years of experience in experimental design and interpretation. As the longest-standing Agilent-accredited microarray service provider in the UK, we have the know-how you need.
- ▶ An in-depth understanding of the underlying biology. Our focus is always on interpreting the biological significance of raw array data. We have particular expertise in determining mechanisms of toxicity.



A flexible, cost-effective platform for data generation and interpretation

Our combination of the Agilent array platform and Ingenuity Pathways Analysis informatics allows us to offer as much (or as little) support as you need – from labelling, hybridisation and raw data supply; through to signature list generation,

development of mechanism-based hypotheses and biological pathways analysis. Should you require it, CXR can provide an end-to-end service by generating the biological samples in house using appropriate *in vitro* or *in vivo* models.

Capabilities in both gene expression and genomic analysis

- ▶ Agilent and CXR support both traditional gene expression analysis (at the mRNA or microRNA level), plus genomic techniques (e.g. comparative genomic hybridisation - cGH).

Engineered for sensitivity and flexibility

- ▶ Agilent's 60-mer probes provide industry-leading sensitivity. Both one-colour (quantitative) and two-colour (comparative) labelling approaches are supported.

Rapid access to customised arrays

- ▶ Agilent's inkjet technology and web-based portal for custom array design allows rapid and cost-effective access to user-designed chipsets.

Expert biological interpretation of results

- ▶ We understand that statistical analysis of bioinformatic data can be overwhelming without context, which is why we combine the Agilent platform with the Ingenuity bioinformatics platform.

Experience and support you can trust

- ▶ An Agilent-accredited service provider since 2005, CXR has played a pivotal role in the establishment of a number of cutting-edge analyses on the Agilent platform, including laser microdissection targeted expression analysis of human biopsy samples.

CXR Biosciences provides expert bi

Case Study 1

The customer was concerned about the competitive profile of one of their development compounds and wished to compare it with the market leader. We analysed kidney and liver samples from treated rats. Differences were found in key pathways involved in apoptosis, DNA damage, oxidative stress and cell cycle control. The results demonstrated that the market leader had the potential to cause carcinogenicity over long term use, highlighting a potential commercial advantage for our customer. Armed with this knowledge, the decision was taken to continue the development of the compound.



Biological interpretation of results

Investigative and Mechanistic Toxicology

Using our microarray capabilities alongside other applied preclinical and toxicological approaches allows us to unravel complex mechanisms of toxicity across species and to establish relevance to man.

CXR will work with you to design state of the art investigative safety studies to understand the mechanisms of adverse preclinical observations, interpret the results, and if required make recommendations as to the future of the project.

CXR is a key advisor in the development of Ingenuity's toxicity-focused pathways analysis software, IPA-Tox™. Overlaying results from Ingenuity Pathways Analysis with statistical clustering of microarray data provides new insights into the mechanisms of toxicological responses such as oxidative stress, interactions of drugs with individual enzymes such as P450s and xenobiotic metabolism. This approach is extremely powerful when searching for biomarkers, assessing

their relevance to man and evaluating the utility of toxicological models for risk assessment.

Analysing the most challenging samples

Emerging microarray applications place a premium on the detection of sequences present at very low levels. This capability is especially valuable when analysing complex tissue types, such as heterogeneous cell populations in tumour samples.

CXR has considerable expertise in:

Isolating individual tissues or even individual cells (for instance using laser-capture microdissection) and extracting informative RNA/DNA samples

Selecting and carrying out the most appropriate labelling strategy (one vs. two cycle) using low sample input amounts (down to 50ng total RNA/DNA)

Biological interpretation of data from such samples, for instance establishing mechanisms of toxicity at a cellular level

Case Study 2

CXR studied region-specific changes in gene expression and signalling pathways caused by a widely-used industrial chemical in the rat, in order to determine whether these toxicities were relevant to man. Transcription profiling was carried out using RNA isolated from laser capture microdissected interstitial cell and tubular cell regions from testes of exposed rats. Microarray analysis identified a number of pathways that were commonly altered in each cellular region, but also some that were specific to individual cell types, demonstrating that the interstitial cells appeared to be the primary target of chemical-induced dysfunction.

► Reference: Plummer et al., Toxicological Sciences 97(2), 520-532 (2007)

Founded in 2001, CXR Biosciences has used its collaborative approach, proprietary models and cutting edge expertise to help customers of all sizes solve issues relating to the selection of drug candidates or safety of compounds. CXR offers tailored preclinical services in the areas of drug development and investigative toxicology, as well as developing preclinical technology platforms that are more predictive of drug response in man. CXR's customers include pharmaceutical, chemical & biotechnology companies, leading universities and research institutions. CXR Biosciences Ltd. is located in Dundee, Scotland.

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