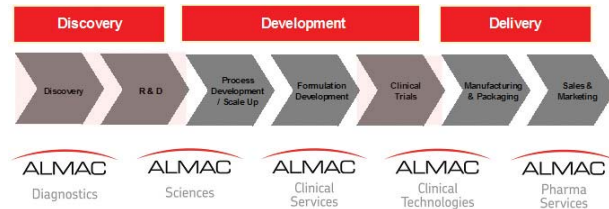


Almac Diagnostics – Division of Almac Group



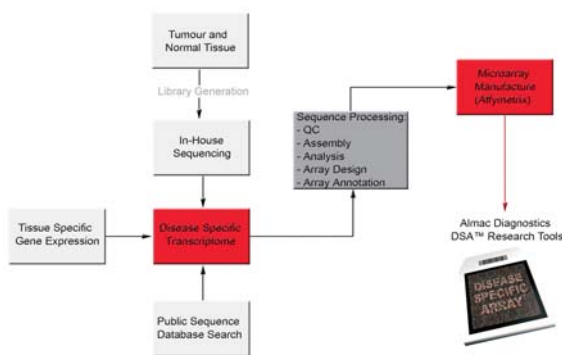
- Extensive laboratory and bioinformatics expertise in biomarker discovery and validation.
- Bringing the advantage of the proprietary DSA™ technology (patent pending).
- Delivering a range of genomic solutions to Pharma, Biotech and Academic customers.

An integrated group providing the full range of services required to take a new drug or compound from concept right through to final patient delivery.

DSA™ Technology

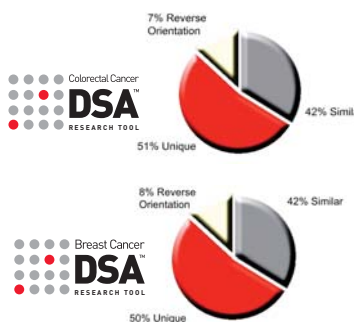
Almac Diagnostics Research Tools are the first high-density microarrays developed to represent transcriptomes of individual disease settings.

• DSA™ Research Tool Development

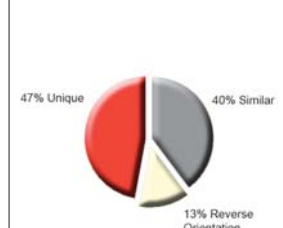


- Sequence information derived from in-house sequencing of representative tissue samples, public database searches for the disease of interest and focussed tissue gene expression profiling.
- Sequence information collated is extensively analysed, annotated and prepared for probe design.
- Probe design and array manufacturing performed by Affymetrix according to Almac Diagnostics specific requirements (extreme 3' bias).
- The final array enables the interrogation of ~60,000 transcripts.

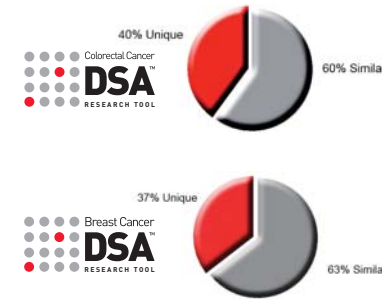
• Content Comparison of DSA™ Research Tools with RefSeq



• Content Comparison between Colorectal and Breast Cancer DSA™ Research Tools



• Content Comparison of DSA™ Research Tools with HG-U133 Plus2



• Technical Assessment of DSA™ Research Tools

RNA later	FFPE	RNA later	FFPE
Tumour (n=5)	Tumour (n=5)	Tumour (n=5)	Tumour (n=5)
Normal (n=5)	Normal (n=5)	Normal (n=5)	Normal (n=5)
Breast Cancer DSA™ Research Tool		Affymetrix HG-U133 Plus 2	

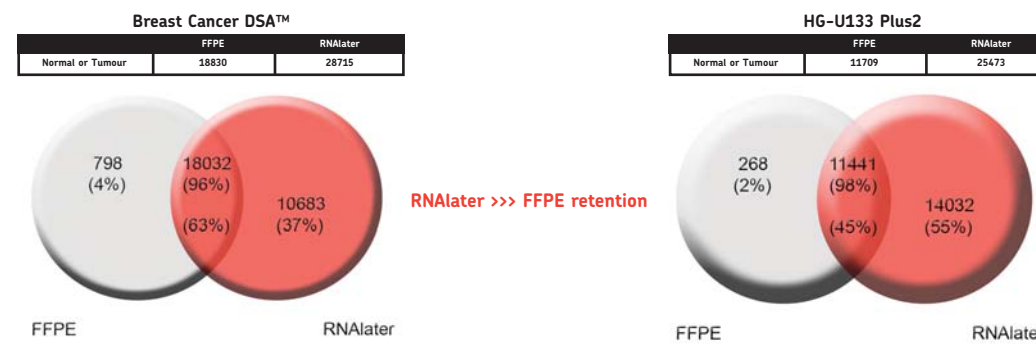
RNA extracted from a “quad” set of matched tissues obtained from a single patient:

- RNA later® preserved Tumour tissue
- RNA later® preserved Normal tissue
- FFPE Tumour tissue
- FFPE Normal tissue

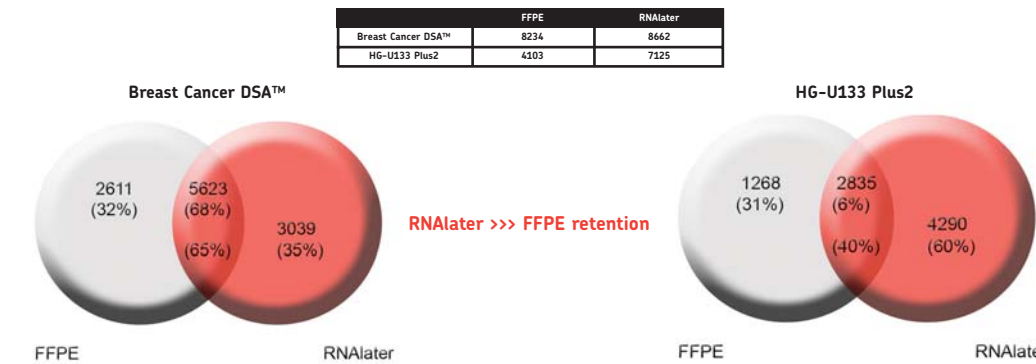
For each subset 5 replicates are measured.

• Performance Comparison of DSA™ Research Tools with HG-U133Plus2

• Detection of Expression



• Detection of Differential Expression



• Uses for the range of DSA™ Research Tools in the field of biomarkers



Bioinformatics Expertise

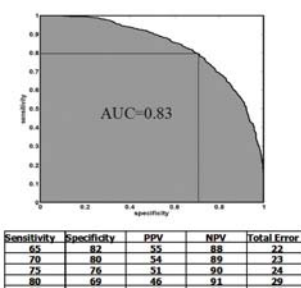
Almac Diagnostics boasts a wealth of bioinformatics expertise ranging from study design and state of the art methods of pattern recognition and classification to systems biology approaches including elucidation of biological processes, pathways and networks.

• Examples of biomarker discovery projects

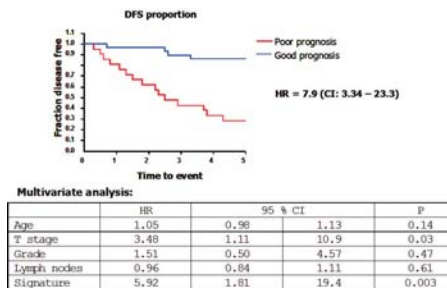
• Multi-index gene signature

- Accurately predicts the recurrence of stage II colorectal cancer.
- Developed using Colorectal cancer DSA™ Research Tool from FFPE samples of up to 16 years old
- Validated on an independent test set.

Performance on a training set – cross-validation



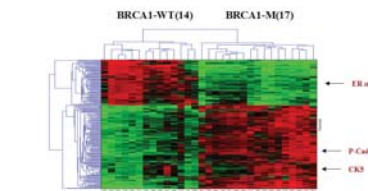
Performance on an independent test set



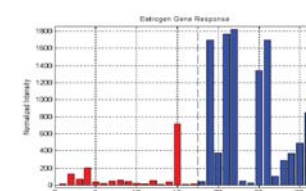
• Individual target biomarkers

- Discovery of markers indicative of BRCA1 mutation (BRCA1 transcriptional targets).
- Analysis of FFPE breast tumour samples displaying wild-type and mutant BRCA1 gene expression using Breast Cancer DSA™ Research Tool.

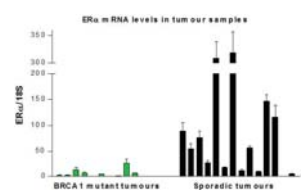
FFPE-base profiling comparing BRCA1 mutant vs wild type tumours



ERα expression across all samples

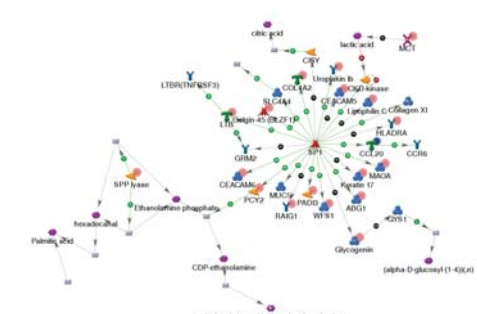
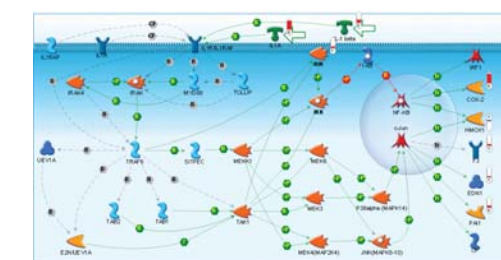


Q-PCR validation



Ideal biomarkers display high inter-group variability, whilst retaining very low intra-group variability, i.e. low or loss of expression in one group and high expression in the other.

• Biological analysis of biomarkers identified

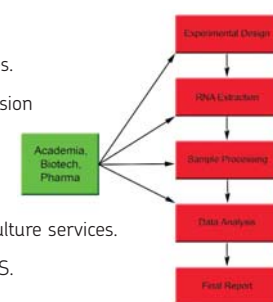


- Biological analysis is an important stage of the Bioinformatics workflow when identifying biomarkers.
- We have dedicated software packages for pathway identification and gene ontology analysis.
- Gene ontology analysis allows bioinformaticians to break gene groups down based on functionality, process inclusion or cellular geography.
- Following biological analysis literature searches are also performed to identify any associated literature which may strengthen the link of certain biomarker targets with a disease state for example

The Integrated Platform as a Service

The integrated platform for biomarker discovery and validation can be utilised by customers in part or in its entirety. Our fee for service package covers the entire process from nucleic acid extraction right through to the analysis of the data.

- Experimental design consultations available to customers upon request.
- Customers can enter the sample processing flow at any point based on their own in-house capabilities.
- Customers who have already generated gene expression data can avail of the data analysis service alone.
- All customers receive a customised report of their experiment and its outcomes.
- We also provide SNP genotyping, Q-PCR and Cell Culture services.
- We are currently preparing for GLP in the UK and US.



Key Differentiators

- Have twin facilities in the UK and the US.
- First Service Provider in the world to attain ISO17025 accreditation for gene expression services.
- Unique DSA™ Technology.
- Benefit from 25 years experience in the pharmaceutical services sector.



Photographs of the Almac Diagnostics US facility, Durham, NC (far-left) and UK facility, Craigavon, Northern Ireland (right)