GeneDex

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TissueScan Disease Panels–now you can rapidly profile hundreds of diseased & normal tissues via real time PCR!

Biomarkers for cancer continue to be an important focus of research as physicians and researchers continue their quest to understand and treat these devastating diseases. Identifying valid biomarkers is important for assessment of disease risk, early detection of disease, accurate diagnosis and prognosis, and therapeutic regimen design. One crucial yet very difficult step for reseachers is to obtain a large number of high quality cancer samples with detailed documentation for use in their research projects. This can be an impossible task for non-clinical researchers who have no ready access to human surgical tissues or biopsy samples. OriGene's TissueScan Disease panels were invented to remove this sometimes insummountable hurdle so that researchers can focus their energies on the the validation process. And now OriGene has released new panels covering additional critically important diseases: breast cancer, prostate cancer, kidney cancer, Crohn's and colitis, and lymphoma.

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WHAT IS TISSUESCAN?

TissueScan is a PCR-ready cDNA panel. Each plate contains normalized cDNAs from defined tissue sources that can be interrogated via real-time PCR to determine gene expression patterns. TissueScan Oncology panels contain 48 archived biopsy tissues representing one cancer type. The 48 tissues include several normal samples and many samples from diseased tissue, representing all cancer progression stages. Researchers can simply aliquot a real-time PCR master mix (including a gene-specific primer pair) into the plate, load onto a PCR machine and walk away. Two hours later, the survey of gene expression levels across 48 documented samples is complete. The whole process is quick, sensitive, accurate and painless. OriGene has been selling panels with colon, ovarian, lung, and thyroid cancer samples since 2006, and has just released panels containing breast cancer, prostate cancer, kidney cancer, Crohn's and colitis, and lymphoma specimens.

QUALITY IS THE KEY FOR TISSUESCAN

The quality of the source tissue ultimately determines the value of a product such as this. OriGene is proud to declare that all tissues are provided by Cytomyx (www.cytomyx.com), a reputable biorepository with one of the largest collections of highly characterized human tissue samples in the world. Each sample was obtained with informed consent and is accompanied by a detailed pathology report (Fig. 1). Histology images (Fig 2) corresponding to the tissue from which the cDNA was derived are available in two levels of detail. An electrophe-rogram measuring the RNA integrity is included as well; the sharp 18S and 28S peaks (Fig 3A) represent high quality RNA. Finally, quality control data indicating a lack of genomic DNA contamination are also provided (Fig 3B), assuring our customers that only the highest quality RNA preparations were used to produce the cDNA in every TissueScan Disease Panel.

OriGene's TissueScan Oncology and Disease Panels were invented to remove the hurdle of high-quality tissue procurement so that researchers can focus their energies on the the validation process.

TissueScan Oncology panels contain 48 archived biopsy tissues representing one cancer type. The 48 tissues include several normal samples and many samples from diseased tissue, representing all cancer progression stages.

Figure 1. A sample pathology report for one sample from a TissueScan Oncology panel. Reports are available on OriGene's website for every cDNA included on the panel.

CONSENT ABSTRACTION REPORT FOR : CU0000000555

Pathology Report Case Level Details :

Ardais ID : AU0000000555   (Gender: Male, Age at Surgery: 86)
Consent ID : CU0000000555
Procedure : Colectomy, right

Pathology Report Summary :

Section	Diagnosis	Tissue of Origin of Dx	Site of Finding
Primary	Adenocarcinoma of colon	Colon: right	Colon: right

Case Pathology Notes:

Pathology Report Section Details (Primary)

Diagnosis from DI Pathology Report : Adenocarcinoma of colon

Tissue of Origin of Diagnosis : Colon: right

Site of Finding : Colon: right

Diseased Tissue Size (cm x cm x cm) : 5 x 5 x 3   Diseased Tissue Weight (gm) : Not Specified

Histologic Type : Adenocarcinoma

Histologic Nuclear Grade : AJCC G2: Moderately differentiated

Perineural Invasion Indicator : No   Lymphatic Vascular Invasion : Absent

Margins Involved by Tumor : Not Reported

Margins Uninvolved (Including Distance) : Proximal, Distal.

Type of Inflammatory Cell Infiltrate :   Cell Infiltrate Amount :

Tumor Stage Classification : AJCC Fifth Edition

Tumor Stage : T4 (Derived)

Venous Vessel Invasion :   Tumor Configuration :

Extranodal Spread : Not Specified   Size of Largest Nodal Metastasis : Not Reported

Lymph Node Notes : Not Specified

Total Number of Nodes Examined : 7   Total Number of Positive Nodes : 1

Lymph Node Stage : N1 (Derived)

Distant Metastasis : MX (Derived)

Minimum Stage Grouping : III

Pathology Section Notes : Depth of invasion: pericolonic adipose tissue. Serosal surface is positive. Prominent Crohn's like lymphoid response -absent.

Additional Pathology Detail :

Additional Pathology Finding : No pathologic disease

Tissue : Colon

Notes :

Additional Pathology Finding : Tumor of appendix, carcinoid

Tissue : Appendix

Notes :

Figure 2. Sample images of hematoxylin and eosin stained sections of tissue samples used to make TissueScan Disease panels. The tissues used to prepare the cDNA for inclusion in the TissueScan Disease panels are sectioned and stained for pathological analysis.. The images (4X magnification, left, and 20X magnification, right) are available to view for both normal and Disease samples.
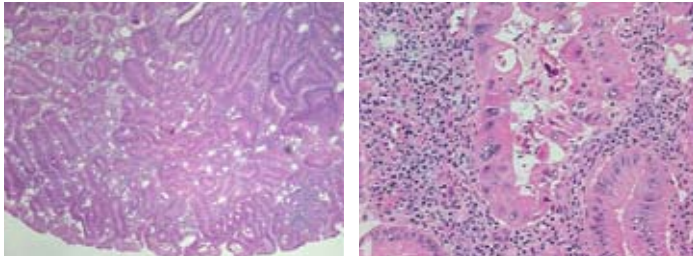

Figure 3. Quality control of RNA used in OriGene's TissueScan Disease panels. A, Electropherogram of RNA showing sharp peaks representing the 18S and 28S ribosomal RNA bands indicates little to no degradation of the RNA. B, Agarose gel showing results of RT-PCR reactions performed with and without RT enzyme indicates a lack of genomic DNA contamination in the RNA sample.
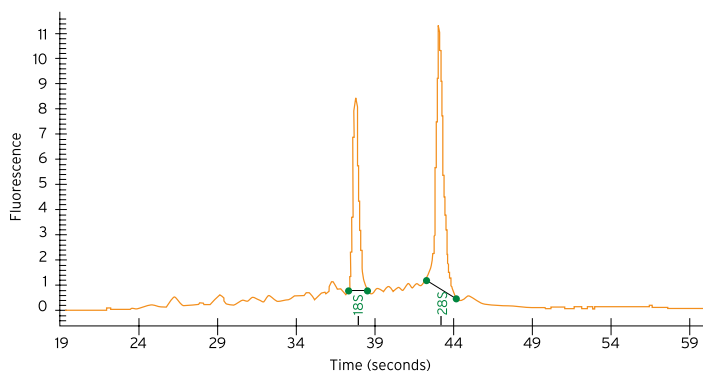
Figure 3A

Figure 3B

The validity of the panel is demonstrated in the following experiment. A breast cancer panel (BCRT101) was used to evaluate Her-2 (ErbB2, NCBI accession number NM_00100005862) expression levels in 48 breast tissues. Her-2 is known to be overexpressed in 25-30% of breast cancer patients. Due to its value in predicting prognosis and responsiveness to the drug Herceptin, Her-2 expression levels are routinely checked in breast cancer patients.

Out of the 48 tissues in BCRT101 panel, 39 have accompanying Her-2 immunohistochemistry (IHC) data. Taking advantage of this valuable clinical information, we compared our real-time PCR results with the provided IHC data. Not only did the analysis indicate upregulation of Her-2 in cancer tissues as compared to normal, we were able to draw further correlations using information in the pathology report. It was exciting to find that all TissueScan samples indicated to be upregulated for Her-2 by our real- time PCR were also identified as positive for Her-2 by IHC (Fig 4).

Figure 4. TissueScan Oncology results for Her-2 are validated by IHC data provided in pathology reports. TissueScan breast cancer panel (BCRT101) was screened by real-time PCR using primers for Her-2. Stars indicate samples identified as Her-2 positive (by immunohistochemical staining) in accompanying pathology reports. No IHC data was available for tissue samples #17 and #37.
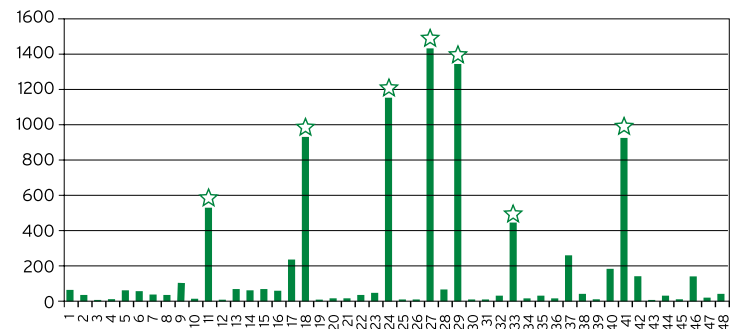
All TissueScan panels have been validated using a biomarker published in peer-reviewed journal. See the article in this issue, "Frequently Asked Questions... about TissueScan Disease Panels" for details.

WHO NEEDS TISSUESCAN?

Scientists in any of the following research areas would benefit from TissueScan:

1. Scientists who have obtained the leads for potential biomarkers in studies with a relatively small sample size. To validate such candidate genes, it is crucial to investigate a larger sample pool to gain statistical relevance.

2. Scientists with biomarker candidates derived from a cell line study or from animal studies. It is pivotal to profile the genes in human tissues to understand their significance in clinical diagnosis and therapy.

3. Scientists validating cancer staging markers. One key feature of TissueScan is that each panel contains one cancer type across all stages, providing a comprehensive landscape for a gene expression survey.

4. Scientists studying SNPs/chromosomal aberrations and disease risk. As the samples on each TissueScan Disease panel are derived from 48 individuals, they can be used to study the frequency of a particular SNP or chromosomal rearrangement. Comparing the diseased with the normal tissues may reveal a potential association of a genotype with disease.

5. Scientists who wish to determine the relevance of a cancer biomarker to other cancer types. Many genes that have aberrant expression in one cancer type are also mutated or disregulated in other types of cancer. One well-known example is BRCA1, the breast cancer susceptibility gene. In addition to an association with breast cancer, mutations in the BRCA1 gene also show an association with an increased risk of ovarian, Fallopian tube, prostate and colon cancers. Recently, an international study showed that a newly discovered gene that potentially elevates breast cancer risk also potentially elevates prostate cancer risk[1]. OriGene's growing TissueScan repertoire currently includes multiple cancer types, facilitating the work of those who wish to expand the validation process into other cancer types.

WHICH TISSUESCAN PANELS ARE AVAILABLE?
BCRT101, BCRT501
Breast Cancer Disease Panels covering four disease stages and normal tissues

HCRT101, HCRT501
Colon Cancer Panels covering four disease stages and normal tissues

HLRT101, HLRT501
Lung Cancer Panels covering four disease stages and normal tissues

HORT101, HORT501
Ovarian Cancer Panels covering four disease stages and normal tissues

HPRT101, HPRT501
Prostate Cancer Panels covering four disease stages, BPH and normal tissues

HTRT101, HTRT501
Thyroid Cancer Panels covering four disease stages and normal tissues

LYRT101, LYRT501
Lymphoma Disease Panels covering four disease stages and normal tissues

HKRT101, HKRT501
Kidney Cancer Panels covering diseased and normal tissues

CCRT101, CCRT501
Crohns and Colitis Disease Panels covering four disease stages and normal tissues

Coming soon!
Melanoma Disease Panel
Watch http://www.origene.com/geneexpression/disease-panels/products.mspx for details of upcoming availability.

MORE QUESTIONS?
More information for each panel can be found on our website at http://www.origene.com/geneexpression/disease-panels/products.mspx. Feel free to contact OriGene's technical support team for any questions or suggestions. Your input for future panels will be most appreciated.

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REFERENCE:
1. A recurrent mutation in PALB2 in Finnish cancer families. Erkko et al. *Nature*. 2007 Mar 15;446(7133):316-9.

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