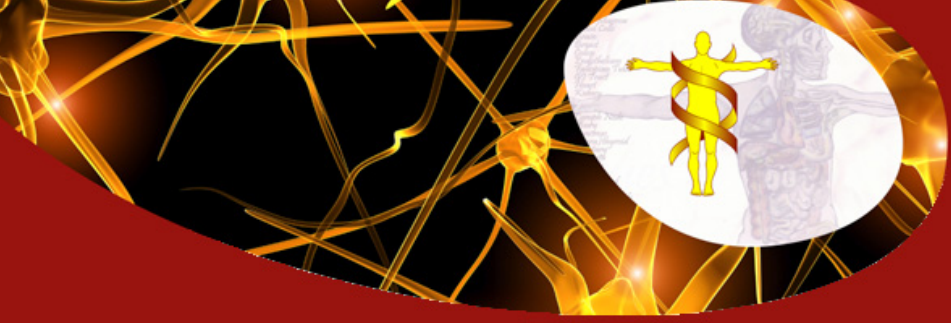
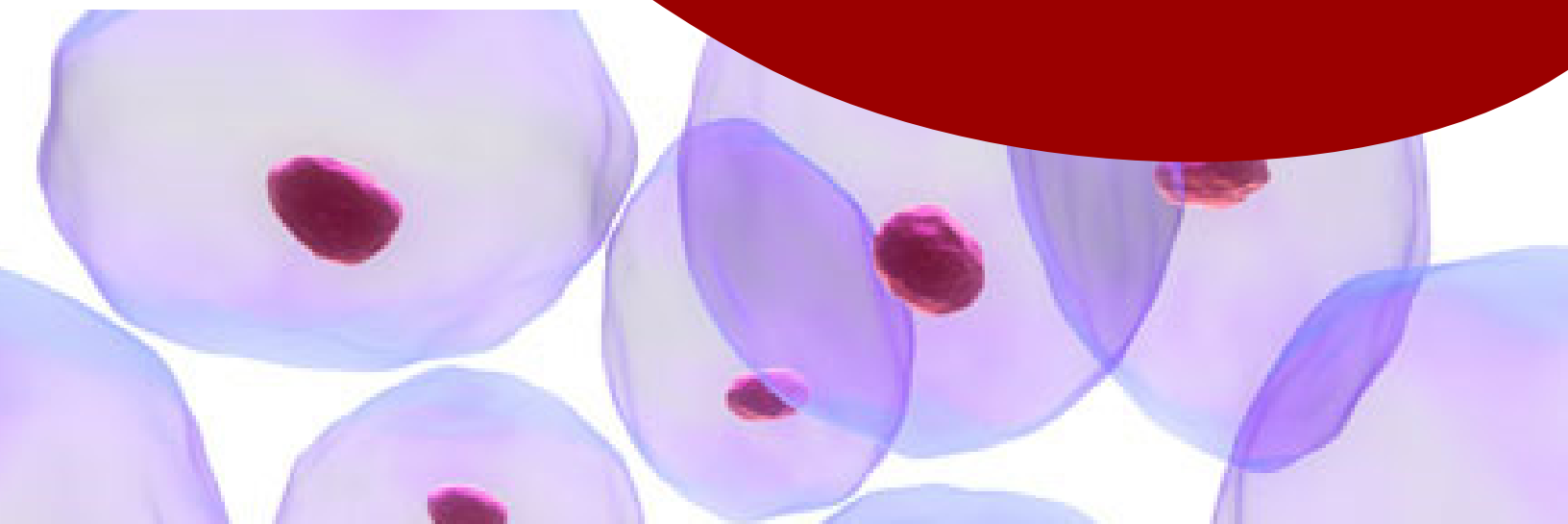




**Tissue
Solutions™**

Working with you, for you...



**Tissues for Preclinical Drug &
Biomarker and Safety Testing**

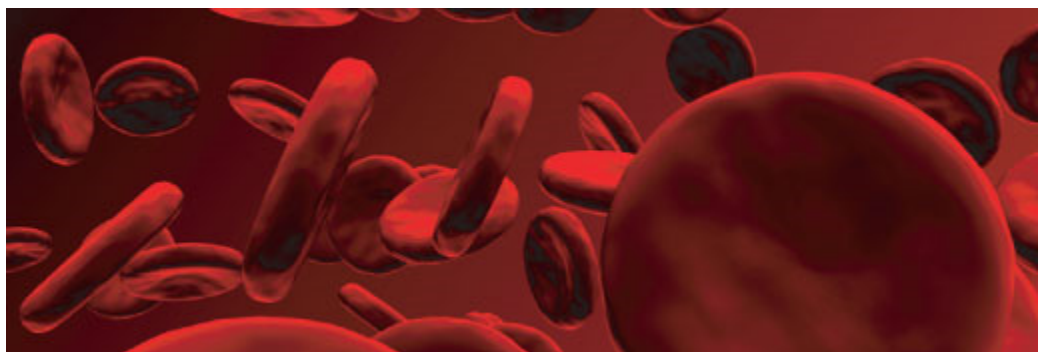
"At Tissue Solutions, our ethos is to have a client-focused, flexible approach, being as open, friendly and efficient as possible. We like to work with you, for you."

Tissue Solutions offers you a single point to access the entire range of human biological materials for all your research and development needs. This includes diseased and normal tissues in fresh, frozen and FFPE formats. Using our large network of ethical sources we find the tissues you require, to your specifications and will deliver them to your door.

Our goal is to provide high quality and well characterized samples to biotech companies, the pharmaceutical community and contract research organizations worldwide. We also organize customized and prospective tissue acquisition projects and give specialized advice relating to all aspects of the acquisition process, including intellectual input on project design.

We appreciate that you would rather spend your time finding new biomarkers and developing, testing and validating novel drugs to cure human disease than spend your time sourcing material to help you do your work, so let our dedicated Tissue Acquisitionists lessen your workload and become a virtual part of your team.

Our aim is to maintain a high ethical reputation as a reliable and efficient source of biological material to the industry worldwide.



Working with you, for you...

Pathology verified frozen and FFPE tissues are available from a wide range of disease states. We can supply matched tumour and NAT (normal adjacent tissue) from the same donor and meet your % tumour requirements. Surgical samples are typically frozen within 15 -30 minutes of resection and are usually supplied as blocks, although slides and TMA formats are also available.

We can supply surgical excess and post mortem tissues from donors with different conditions including:-

Cancer - Breast, Pancreas, Prostate, Uterine, Glioblastoma, Melanoma, Head & neck, Bladder, Liver, Kidney, Lung, Ovarian etc

Autoimmune disorders - MS, Rheumatoid Arthritis (RA), IBD etc

CNS/Neurodegeneration - Alzheimer's, Parkinson's, Schizophrenia, Depression, Brain tumours etc

Inflammation - Osteoarthritis (OA), Asthma, COPD, Psoriasis etc.

Cardiovascular - PAOD, heart muscle, valves, blood vessels and arteries etc

Metabolic Disorders – Diabetes (types I and II), Obesity

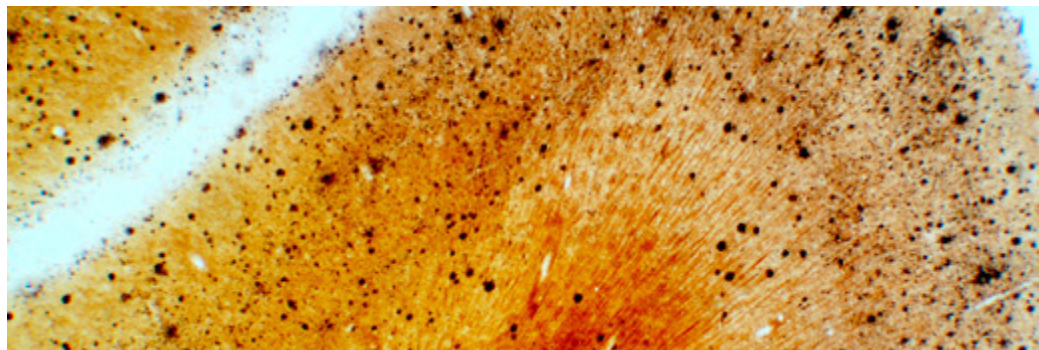
Infectious Disease - fungal nails, bloods from various infectious diseases (eg. HIV, HCV etc)

Blood Disorders - Acute Lymphocytic Leukemia (ALL), Chronic Lymphocytic Leukemia (CLL), Acute Myeloid Leukemia (AML), Chronic Myeloid Leukemia (CML)

Control Samples (non-diseased) - normal adjacent tissues from surgical resection and post mortem tissues; the full FDA and/or EMEA panel

Body Fluids – Bloods, Plasma, Serum, Bone marrow, Urine, Saliva, Sputum, Synovial fluid, Cerebrospinal fluid (CSF) and Ascites etc

This list is not comprehensive. As we are not restricted by our own inventory, we will find what you are looking for either already banked by one of our sources or find a new source. Alternatively, for very difficult to acquire tissues we can perform a feasibility study and/or project manage a prospective collection for you at one of our collaborating hospitals. So, if you are struggling to find something, just speak to us!



Fresh Normal and Cancer Tissues

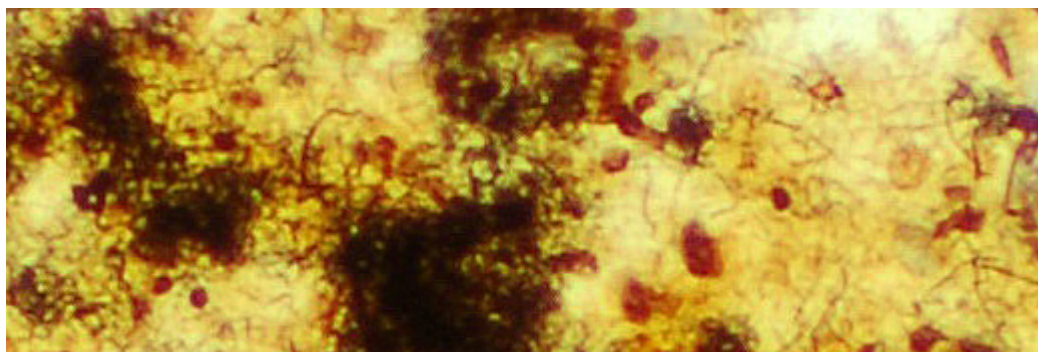
We provide a range of fresh human tissue samples to our clients in the UK, Europe and USA on a prospective basis. The viability of this will obviously vary depending on the locations of both the source and the client.

We can deliver a range of both normal and cancer samples from surgical resection for use in for example *ex vivo* and cell based assays.

Fresh Tissue	Normal	Cancer
Bloods		
Urine		
Skin		
Breast		
Colon		
Kidney		
Lung		
Bladder		
Pancreas		
Ovarian		
Head & Neck		
Prostate		

In addition, post mortem samples can be provided from organ donors that are not suitable for transplantation.

Fresh bloods and urine samples can also be obtained from healthy and diseased volunteers on a prospective collection basis.



Fresh Human Skin

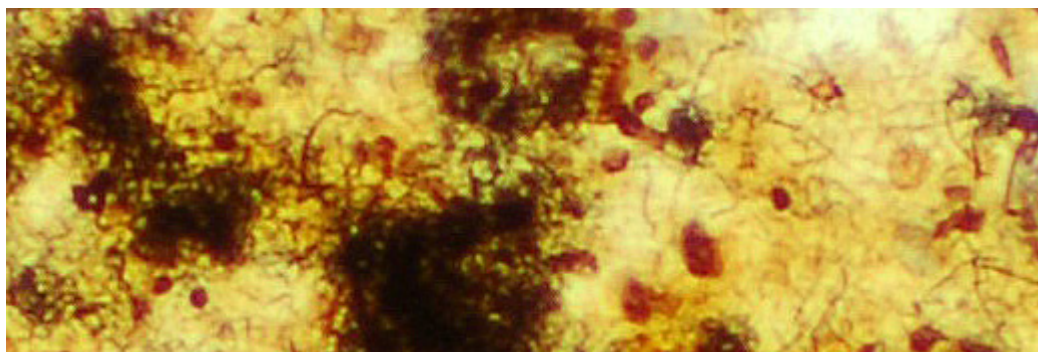
Fresh human skin is available for use in your drug discovery and development applications such as drug permeation studies, skin irritation and toxicology models and for the isolation of primary and stem cells.

We provide surgical excess tissue following cosmetic procedures and can supply sheets of fresh skin from abdomen (full thickness and dermatomed), breast, scalp, and occasionally from arm, upper and lower eye lid and back.

Post mortem skin can also be obtained from most areas of the body (depending on donor consent) and the typical post mortem intervals (PMIs) are 6-8 hours. The donor age range does vary but donors over the age of 65 will be more common.

All fresh skin samples can be shipped in your medium of choice and are supplied with details of the donors HCV, HBV and HIV status.

"We provide a range of fresh human tissue samples to our clients in the UK, Europe and USA on a prospective basis."



If the specific samples you are looking for are not available banked, then we can carry out a prospective collection for you either in the UK, Russia or USA. By working with our collaborating hospitals and post mortem sources that already have IRB/ethics approval in place, we can provide those "tough" tissues e.g. fresh samples and those with specific inclusion and exclusion criteria.

Surgical Excess and Post Mortem Tissue Collections

Working with our current sources we can often supply the samples you are looking for. From living donors this includes blood, serum, plasma, urine and fresh surgical excess tissues from both normal and diseased donors. A range of tissues are available from our post mortem sources on a prospective basis including fresh brain, DRGS and eyes. Please speak to us about your needs.

Feasibility Studies

We carry out feasibility studies to identify collaborating clinicians and clinical groups willing to collect on your behalf. This allows us to determine realistic protocols and associated timescales and provide realistic alternative approaches using different tissues types or experiments when needed. We can also identify currently banked specialized collections relevant to your research. All contact details of those proposed to be involved and a brief description of their role would be provided.

Establishing Clinical Collaborations

We can then initiate and/or establish agreements directly between you and the tissue source, depending on your company's requirements. For prospective collections we can prepare the project plan, recruit collaborating clinicians and secure an agreement with the source, all on your behalf.

Obtaining UK Ethical Approval

For our clients in the UK, we also offer advice on the ethics application process. This includes working to:

- Obtain UK ethical approval on your behalf.
- Prepare realistic protocols.
- Design patient information & consent sheets that conform to the National Research Ethics Service (NRES) guidelines.

Logistics

And finally, depending on your needs we can also set up the framework for tissue delivery direct from the source to your labs and deal with all the logistics associated with sample shipment.

Working with you, for you...

We can supply high quality normal tissues required for both the FDA and EMEA panels for antibody cross reactivity studies. All samples are ethically obtained with full donor or donor family consent from post mortem and surgical sources (if required).

We tailor each panel to suit your requirements in terms of:-

- Age range and sex of the donors
- Racial backgrounds (Caucasian, Asian, African American etc)
- Preservation methods (flash frozen in liquid nitrogen, slow freezing, dry ice freezing, OCT embedding, FFPE)
- Number of blocks required per tissue
- Full and partial panels in terms of donor and tissue numbers

The standard clinical information will include demographic data (age, gender, ethnicity), cause of death, date of procurement and PMI and an H&E slide is provided of every tissue. Additional donor information can be provided on request.

FDA Panel Tissues

Adrenal Gland	Aorta	Breast	Cervix
Cerebellum	Cortex	Endometrium	Esophagus
Eye	Fallopian Tube	Colon	Duodenum
Ileum	DRG	Heart	Ganglion
Stomach	Kidney	Liver	Lung
Lymph Node	Ovary	Pancreas	Parathyroid
Peripheral Nerve	Pituitary	Placenta	Prostate
Skin	Spinal Cord	Spleen	Striated Muscle
Testis	Thymus	Thyroid	Tonsil
Ureter	Urinary Bladder		
Additional Tissues Required by EMEA			
Blood Smears	Bone Marrow	Parotid Gland	

Procurement of other normal tissues, such as gallbladder, vas deferens, epididymis, etc. is available upon request.



Working with you, for you...

We are continually adding to our range of cells isolated from fresh tissue samples and primary cell lines. These can be shipped as live cultures or cryopreserved.

Human Hepotocytes: Hepotocytes are available either fresh or frozen, for growing in suspension or in monolayers, as short (5 to 6 days) or long term cultures (up to 3 weeks). Fresh cells can be shipped in flasks or multiwell plates. All cells are supplied with donor information including age, sex, liver pathology, medical history. We can also supply subcelluar fractions: microsomes, S9 fractions (non-induced or induced and cytosols).

Human Keratinocytes: Normal adult keratinocytes are prepared from breast or abdominal skin.

Human Fibroblasts: Our fibroblasts are isolated from abdominal skin, breast skin or scalp samples.

Human Melanocytes: Epidermal melanocytes have been isolated from the skin of healthy donors.

Human Adipocytes & Pre-adipocytes: Subcutaneous adipocytes and pre-adipocytes are available and have been purified from surgical excess normal material. Protocols for culture and differentiation are provided.

Human Pancreatic Islets: High quality characterized human pancreatic islets are available for research use. This includes normal human islets and pancreatic islets from type 1 and type 2 diabetic donors.

All our human cells have been isolated from donors that are negative for HIV1/2, HCV and HBV infection and certified free of mycoplasmal, bacterial, yeast and fungl contamination. Please contact us for details of available cells in our current stock.



Working with you, for you...

We offer a range of tissue processing and analysis services through our collaborating partners. This includes the more routine services such as DNA and RNA extraction from both frozen and FFPE blocks plus the more specialist work as outlined below:-

Immunohistochemistry (IHC) & Histology

We work with a specialist GLP accredited provider of IHC and contract histology to provide expert antibody screening services covering all phases of clinical trials. We support your therapeutic antibody development work through cross-reactivity testing in human tissue and other species (GLP or non-GLP). Regulatory work is carried out using the FDA, EMEA and MAFF panels of normal tissues. Our expertise means we can also support immunotoxicity lymphocyte sub-group analyses, cell proliferation studies and diagnostic research services as well as target validation and clinical biomarker assays.

Primary Cell Line Establishment

Working with experienced cell biologists we can establish and culture new primary cell lines derived from fresh human tissue. This opens up a whole range of possibilities in terms of the types of cell lines we can provide to you using clinically relevant material including cells.

Primary cell lines can be established from both normal and diseased tissues e.g. cancers, COPD, RA etc from single or multiple donors for your target identification and validation assays. By using ethically acquired fresh tissue from donors we can provide detailed clinical information relevant to that cell line. This extensive knowledge of primary cell culture has led to the development and validation of specialized media formulations for culturing primary cells, improving both the establishment process and the performance of the cells significantly. We are also happy to tackle the isolation of so-called “difficult” cells.

Pancreatic Islet Studies

If you commonly outsource studies involving human pancreatic islets for the study of diabetes or evaluating new drugs then we can help on a contract service basis.

Development of Non-Invasive Biomarkers

We can provide a highly sensitive gene expression profiling service (qRT-PCR) to help develop robust non-invasive biomarkers that measure drug-induced changes in gene expression at the mRNA level from individual hairs plucked from cancer patients undergoing treatment. This biomarker technology has the potential to provide valuable insights for decision-making in drug development, providing an early indication of toxicity and allowing you to measure the effect of drug exposure on targeted signalling pathways and evaluate the dose and schedule. Importantly, this proprietary cDNA amplification and labeling technology preserves initial mRNA relative abundance.





**Tissue
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