



Experimental Pathology

www.london-research-institute.org.uk/experimentalpathology

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Experimental Pathology offers expert help in a range of techniques for the analysis of cells and tissues from experimental animals and human bioresources. Advice, training and expertise in microscopy, dissection and imaging are provided to scientists at the LRI, with the ultimate aim of relating pathology of mouse models of disease to that of human diseases.

In the last year our image capture/analysis software platform was upgraded to NIS Elements; the user-friendly interface and sophistication allows novice users to be instructed in taking publication standard microscopic (including fluorescence multi-channel) images.

Multichannel image

NIS Elements also offers a flexible range of measurement parameters, such as taxonomic labelling, cell counts, lengths and areas. Measurements can be made by drawing directly onto the image, with output results being exported to any spreadsheet editor. The automatic function allows measurement of 90 different object/field features and image pixels can be

segmented according to user defined classes based on intensity, RGB and HIS values. Object counting is possible using thresholding and restrictions and



Figure 1. Images using defined filters can be captured and merged automatically using NIS Elements.

the rich spectrum of mathematical morphology filters for object classification can be used to segment binary and greyscale images for measurement.

Continued improvement of our adult mouse tissue dissection and handling protocol, coupled with improvements in fixation technique, including perfusion fixation will provide optimal preservation and analysis of subtle tissue changes attributable to aberrant gene expression.

Summary of other technical services

- Embryonic Analysis – Expertise in normal and pathological development
- Histological sectioning/staining of frozen/fixed tissue – Experience of diverse samples (Drosophila embryos, cell lines, embryos E7.5-E19, adult mice organs).
- Dissecting (photo) microscopy, Macro-photography and High resolution microscopy
- Mouse specific IHC – Panel >170 antibodies, standard set of control and tumour tissue for optimising antibodies. I6000 automated stainer for high throughput.
- Microscopic Histopathological analysis – Identification of strain versus mutation specific changes, specialist interpretation of tissue structure with human comparative pathology.
- Whole-mount organ staining/analysis – Mammary gland (Carmine), β -galactosidase and skeletal staining, X-raying.
- Whole-mount in situ hybridisation (ISH)
- 3D reconstruction – of serially stained sections for a 3-D view of cellular relationships/tissue architecture
- Laser Capture Microdissection – for DNA/RNA extraction (from frozen /FFPE tissues)

We encourage close interaction with users and scientists are encouraged to visit the department for advice and to discuss current and future projects. Teaching is also an essential activity of the lab; we provide individual training in imaging, tissue handling, IHC, and other laboratory techniques as well as microscopy reviews and discussion. Further information is available on the EPL internet pages.

Publications listed on page 134