

From mice to molecules

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Good science relies on maximizing the amount of data acquired during an experiment, a principle that is even more important during these days of fiscal responsibility. This poster will describe the histopathological techniques used in the phenotypical characterization of genetically engineered mice for cancer research. The aim is to provide the maximum information from each study, reducing the number of animals used for experimentation. Commencing with meticulous protocol design, the process continues through detailed documentation of the necropsy findings and tissue preparation, down to the isolation of proteins and nucleic acids. The techniques described include the processing of tissues initially with wholemount staining, followed by paraffin embedding and sectioning, tissue staining with haematoxylin and eosin, as well as immunohistochemistry. The laboratory makes use of tissue punching for large tumors and laser capture microdissection (LCM) for smaller tumors and selected cell populations. Critical to the process is the preparation of high quality images to document the gross pathology down to the individual cellular detail, using a variety of laboratory microscopes and slide scanners. Image analysis is employed where appropriate, to assess and quantify specific cell populations in tissue sections and tissue microarrays (TMA's). Resulting images are uploaded onto a secure server so that they may be reviewed by expert pathologists from around the globe, without the slides leaving the laboratory.