

UBC ANIMAL CARE COMMITTEE

Guidelines on Testing of Cell Lines and other biological material

PURPOSE

Contaminated biological materials, especially mouse tumors and human tumors passaged in rodents, have a significant risk of carrying viral and other adventitious pathogens which can cause avoidable outbreaks of infectious disease in rodent colonies. The results of these disease outbreaks can interfere with research results, cause morbidity and mortality, and require costly depopulation of entire colonies. Contaminated murine tumor cell lines have also been reported to carry zoonotic diseases such as Lymphocytic Choriomeningitis virus and hantaviruses.

The UBC Animal Care Committee recommends that all biological materials (i.e. cell lines, transplantable tumors, sera, monoclonal antibodies, mouse hybridomas, etc.) **derived from or having been passaged in rodents**, be tested for rodent viral contamination prior to implantation or inoculation in rodents at UBC research animal facilities.

Reports on the testing of biological materials should be available for review by the university veterinarians, animal user committee, and the manager/management of the rodent facility prior to the use of the material within the animal facility.

The UBC Animal Care Committee strongly recommends individual facilities adopt these guidelines as policy.

TESTING

We recommend investigators use the PCR based IMPACT tests developed for this purpose by the University of Missouri RADIL (Research Animal Diagnostic Laboratory). RADIL developed and validated a PCR-based alternative to MAP testing. Contamination of biological specimens, such as cell lines, hybridomas and tumor cells, with rodent pathogens can result in devastating outbreaks of disease in laboratory animals implanted with these materials and confounding and deleterious effects on tissue culture-based experiments. As well as hindering research progress, such outbreaks also have animal welfare implications, as they would likely result in the use of more animals than would have been necessary in the absence of an outbreak and thereby violate the principles of the 3 Rs. The traditional method for testing biological specimens for murine pathogens has been the Mouse Antibody Production (MAP) test which is still available. The major disadvantage of MAP testing is the 6 to 8 weeks required to get results. To

address this issue, RADIL developed the **Infectious Microbe PCR Amplification Test** or **IMPACT**, which is a panel of PCR assays that detects murine pathogens. Comparison of IMPACT results with MAP testing results for representative DNA and RNA viruses indicated that the sensitivity of the IMPACT was equal or greater than that of MAP testing. Turnaround time for IMPACT results in 5 business days. The cost of testing by the IMPACT is markedly lower than commercial MAP testing.

Contact information for RADIL is

<http://www.radil.missouri.edu/info/DiagTesting/services/molecularbiology.asp#prof>

Animal Origin Tissues (such as transplantable tumors, ES cells, cell lines, serum and growth media of animal origin). We recommend subjecting all lots of murine origin or animal derived biologicals and media to the RADIL IMPACT # 1 22 agent pathogen test to minimize the risks of virus and pathogen transfer to animals. Turn around time for this testing is 5 business days. We also advise storing aliquots of media and biological materials used in animal studies for retrospective testing, if changing sources or batches.

Human Origin Tissues

Contamination of biological specimens of human origin, such as human cell lines and tumours, with human pathogens, can pose a health risk to personnel handling the specimens. In the case of human origin materials destined for implantation in animals, contact UBC Health, Safety & Environment for recommendations on safe handling and disposal procedures.

Commercial Testing Facilities

There are three commercial testing facilities that provide MAP and PCR based testing:

Charles River Laboratories Lab Animal Diagnostic Services Wilmington, MA
Molecular Diagnostic Services, Inc. San Diego, CA
University of Missouri Research Diagnostic Lab Columbia, MO