I. Background and Purpose

Many newly developed animal models involve the transfer of cells, serum, or other tissue-derived products into live rodents. These biologics can serve as repositories for adventitious rodent pathogens that, when used in animal studies, can alter research outcomes and result in endemic outbreaks. Usually, contamination occurs by deriving cell lines or other biologics from infected rodents, by passaging cell lines through infected rodents, or by using infectious agent-contaminated materials (serum, co-culture cells) when maintaining rodent cells in vitro. Many rodent pathogens survive quite well in cell culture environments and can therefore be passed back into other rodents. Outbreaks of lymphocytic choriomeningitis virus (LCMV), mouse hepatitis virus (MHV), Ectromelia virus and other infectious disease outbreaks have occurred due to unknowing use of infected cell lines or biologicals in rodents. Unfortunately, the major suppliers of cell lines, tumors and rodent biological materials do not generally test for rodent pathogens.

To protect animals and the research data derived from work with them, all use of biologicals in animals or in laboratories using animals must be tested for rodent infectious agents. In addition, it can be advisable for research labs to test the cell lines that they are using in rodents to confirm the species of origin and even the particular cell line. Such testing can be performed by outside reference laboratories. The Animal Care Program Diagnostic Services Laboratory can help to coordinate this testing. The use of cell lines and other biologicals in animals at UCSD requires an approved animal protocol, in which that use is described.

II. Who Should Read This Guideline

All personnel using biologicals in rodents.

III. Definitions

<table>
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<tr>
<th>Term</th>
<th>Definition</th>
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<td>PCR-based infectious agent testing</td>
<td>Use of PCR to test a cell line or other biological for the presence of one or more infectious agents. These are available from several reference laboratories in the US, and have their own proprietary names.</td>
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IV. Guidelines

Any rodent cells or other species cells that have come into contact with rodents or rodent biological material must be tested for adventitial rodent pathogens and approved by ACP prior to use in rodents at UCSD. Current technology makes use of PCR-based panels the preferred choice for this testing.

Exemptions

Biologicals may not need to be tested if there is significant evidence to prove that they are free from rodent pathogens. Examples of such cases are as follows:

1) The cell line has been used chronically in animals for several years at UCSD with no positive sentinel results, and the biologicals have not been sent to another facility and then returned.

2) The supplier of the biologicals can document testing for rodent pathogens, and the biologicals have not been passaged through rodents since that time.

3) The biologicals have come directly from humans and have been tested for human pathogens.

4) The research lab can provide a complete history of colony health of all rodent colonies the biological has passed through, and the colony health reports are clean.

5) The work with untested cell lines and other biologicals in animals is conducted in ABSL-2 or higher facilities (see “Quarantine” below).

Each biological will need to be assessed on a case by case basis to determine if further testing is needed.

Quarantine

An alternative to testing biologicals or providing evidence that biologicals are free of pathogens is to conduct studies utilizing biologicals in a quarantine facility. The UCSD Animal Care Program has quarantine space available in the BSB Rodent Isolation Unit (RIU). Studies utilizing biologicals can be performed under quarantine conditions with the provision that personnel are trained in the policies and procedures for use of the RIU facility.

Please contact the UCSD Animal Care Program for testing incoming biologicals (ACP Diagnostic Services Laboratory - https://animalcare.ucsd.edu/pages/research-services/services-diagnostic-lab.html), scheduling use of the RIU (ACP Facility Access - https://animalcare.ucsd.edu/pages/facilities/facilities-access.html), or review of evidence that biologicals are pathogen free (ACP Veterinarians - https://animalcare.ucsd.edu/pages/animal-health/health-vet-consult.html).
V. Related Documents

VI. Additional information

Descriptions of Testing Methods and Services


Related Articles