

SOP50104: Overview of Pathogen Testing Performed on PDMR Models Prior to Distribution

Laboratory: Biological Testing Branch

Revision Date: 6/3/2021

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PD MR **NCI Patient-Derived Models Repository**
An NCI Precision Oncology InitiativeSM Resource

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VERSION INFORMATION

1. Change History

Revision	Description
9/17/2020	New Document for PDMR Public Website
6/3/2021	MKPV information added to Appendix

2. Related Documents

PDMR, FNLCR Animal Facility Health Reports
https://pdmr.cancer.gov/content/docs/AnimalFacilityHealthReport_PDMR_FNLCR.pdf

1.0 PATHOGEN TESTING OVERVIEW:

A piece of every PDX tumor contributing to a distribution lot of material is tested for a subset of human ([Table 1](#)) and rodent ([Table 2](#)) pathogens as described in this document. Testing for pathogens is performed at one of two facilities. Either the Animal Health Diagnostic Laboratory (AHDL; <https://ncifrederick.cancer.gov/Lasp/ahdl/Default.aspx>) in the Laboratory Animal Sciences Program (LASP) at the Frederick National Laboratory for Cancer (FNLCR) or at IDEXX BioAnalytics (<https://www.idexxbioanalytics.com/h-impact-human-pathogen-testing-profiles>). We have performed a blinded comparison of the two facilities and found they perform testing at an equivalent sensitivity.

It should be noted that in addition to the pathogens listed below, AHDL regularly screens patient tumor transport media for SARS-CoV-2. Finally, if a model tests positive for a pathogen, a sample is sent to the second facility for confirmation.

2.0 PATHOGEN REPORTING:

Human pathogen status is reported within the PDMR database on a model-by-model basis (<https://pdmdb.cancer.gov/web/apex/f?p=101:41>). Several human pathogens are excluded for distribution purposes including, but not limited to: Human immunodeficiency virus 1 or 2, Hepatitis virus B and Hepatitis virus C.

Animal facilities are routinely tested by AHDL with a full array of diagnostics testing conducted on sentinel rodents and environmental samples. The Biological Testing Branch (BTB, DTP, DCTD, NCI) generates and manages all models for the PDMR. Animal facility test results can be found at the following link and are updated annually:

https://pdmr.cancer.gov/content/docs/AnimalFacilityHealthReport_PDMR_FNLCR.pdf

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TABLE 1: COMPARISON OF HUMAN PATHOGENS ROUTINELY TESTED ON PDX MODELS

Human Pathogen List	IDEXX	AHDL, LASP, FNLCR
Epstein-Barr virus (EBV)	✓	✓
Hantaan virus	✓	
Hepatitis virus A	✓	✓
Hepatitis virus B	✓	✓
Hepatitis virus C	✓	✓
Herpes simplex 1 (HSV 1)	✓	✓
Herpes simplex 2 (HSV 2)	✓	✓
Human adenovirus (HAdV)	✓	
Human cytomegalovirus (HCMV)	✓	✓
Human herpes virus 6 (HHV 6)	✓	✓
Human herpes virus 8 (HHV 8)	✓	✓
Human immunodeficiency virus 1 (HIV1)	✓	✓
Human immunodeficiency virus 2 (HIV2)	✓	✓
Human papillomavirus 16 & 18 (HPV)	✓	✓
Human T-lymphotropic virus 1 (HTLV1)	✓	✓
Human T-lymphotropic virus 2 (HTLV2)	✓	✓
Lymphocytic choriomeningitis virus (LCMV)	✓	✓
Mycoplasma spp.	✓	✓
Seoul virus	✓	✓
Sin Nombre virus	✓	
Treponema pallidum (Syphilis)	✓	
Varicella virus (VZV)	✓	✓

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TABLE 2: COMPARISON OF RODENT PATHOGENS ROUTINELY TESTED ON PDX MODELS

Murine/Rodent Pathogen List	IDEXX	AHDL, LASP, FNLCR
Corynebacterium bovis	✓	✓
Corynebacterium HAC2	✓	
Ectromelia virus (ECT)	✓	✓
K virus	✓	
Lactic dehydrogenase-elevating virus (LDHV)	✓	✓
Lymphocytic choriomeningitis virus (LCMV)	✓	✓
Minute virus of mice (MVM)	✓	✓
Mouse adenovirus Type 1 FL strain (MAD1)	✓	✓
Mouse adenovirus Type 2 K87 strain (MAD2)	✓	✓
Mouse cytomegalovirus (MCMV)	✓	✓
Mouse hepatitis virus (MHV)	✓	✓
Mouse Kidney Parvovirus (MKPV)	✓	✓
Mouse norovirus (MNV)	✓	✓
Mouse parvovirus (MPV1-5)	✓	✓
Mouse rotavirus (EDIM)	✓	✓
Mouse thymic virus (MTV)	✓	
Mycoplasma pulmonis	✓	✓
Pneumonia virus of mice (PVM)	✓	✓
Polyoma virus (POLY)	✓	✓
Reovirus (Reo1, Reo2, Reo3)	✓	✓
Sendai virus (SEN)	✓	✓
Theiler's murine encephalomyelitis virus (GDVII or TMEV)	✓	✓

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APPENDIX: ADDITIONAL PATHOGEN TESTING INFORMATION

1. As of 5/16/2019, the PDMR incorporated testing of mouse kidney parvovirus (MKPV) into our standard murine pathogen screen. All distribution lot PDX, PDORG, PDC, and CAF material are screened and proven to be MKPV negative for distribution. For further information about this atypical strain of mouse parvovirus see the links below. If your center has an animal facility, we strongly recommend that you share the information about MKPV with your veterinarians as MKPV is not detected by the existing parvovirus screens.
 - a. [Link to 2018 publication by Roedinger et al.](#)
 - b. [Link to IDEXX Mouse Opti-XXPress test](#)