

University of Washington  
National Primate Research Center

Accession # 20-145  
Submission Date 23 Jul 20

## DIAGNOSTIC LABORATORY NECROPSY REPORT



Requester DF Investigator DF Animal ID # A20074  
Species Mf Requester's Phone \_\_\_\_\_

Date of Death 23 Jul 20 Date of Necropsy 23 Jul 20 Time 1515 Pathologist RM

Nutritional Condition:  Adequate  Marginal  Poor  Obese

Other Tests Required:  Sero  Micro  Parasit  Other \_\_\_\_\_

Other Diagnostic Samples aerobic microbiology of lung

Type of report:  Final 24 Aug 20  Preliminary 23 Jul 20  Amended \_\_\_\_\_

### Clinical History:

This animal was assigned to the project "R44 UFLU". The macaque originated from Maritius, completed CDC quarantine, and then arrived here in April 2020. The animal was treated for Giardia and Campylobacter while in domestic isolation, and cleared quarantine in June 2020. At the end of June 2020, the animal developed bloody mucoid diarrhea, but no pathogens were identified on fecal testing, and he was treated with supportive care. Stool improved over the next 2 weeks. A temperature microchip was placed IP on 7/2/2020, and on 7/14/2020 baseline sampling, including BAL and TAL, were performed and the animal recovered uneventfully. On 7/21/2020, repeat baseline sampling, including BAL/TAL, were performed and the animal was inoculated with the H1N1 strain of influenza virus (IT, oral, IN, and IO inoculations). Research support staff noted that sample recovering was low from BAL/TAL. Additionally, during the initial recovering period, the animal's SPO2 decreased to 60-70% and the animal had difficulty breathing. The animal was given flow-by oxygen and gentle coupage was performed, and the animal's remaining recovering was unremarkable. PM temperature check via the microchip indicated that his temperature was elevated (103.8F). On cageside recheck on 7/22, the animal was quiet and intermittently laying down in the cage, but did sit up on the perch when stimulated. Respiration appeared mildly increased cage side. Because of the low sampling return from BAL/TAL, furosemide was started to help clear fluid from the lungs. On 7/23, the animal was sedated for veterinary exam and diagnostic workup, and on initial presentation, respiratory rate was 144 brpm with significantly increased effort and audible noises. Lung sound were very harsh and fluid in the upper airways could be heard on auscultation. Thoracic radiographs indicated a widespread mixed alveolar and non-structured interstitial pattern consistent with pneumonia. CBC and chemistry on 7/23 indicated a new lymphopenia, otherwise bloodwork was unremarkable. Due to grave prognosis, humane euthanasia was elected.

### Gross Description:

A 2 year old, 2.8 kg, intact male with inactive reproductive tract (juvenile) *Macaca fascicularis* is presented euthanized for necropsy in good postmortem and nutritional (adequate musculing and adipose stores) condition. There are no significant external lesions and the integumentary system is grossly unremarkable.

The hilar to mid portions of all lung lobes are mottled deep red, purple and pink, with some regions barely floating in formalin. The respiratory system is otherwise grossly unremarkable.

The nervous, cardiovascular, digestive, urogenital, endocrine, hemic-lymphatic and musculoskeletal systems are grossly unremarkable.

#### Gross Diagnosis(es):

1. Severe, multifocal-hilar, acute to subacute pneumonia

#### Gross Comments:

The gross lesions are most suggestive of a severe viral/influenza pneumonia rather than a bacterial pneumonia, however gross findings can be misleading. Further interpretations are pending histology and microbiology. Portions of all lung lobes and trachea preserved in formalin for histology. Samples acquired as per research protocol (copy in case folder).

#### Histological Findings:

Blocks/sections are as follows:

- 1 is left caudal lung lobe
- 2 is left cranial lung lobe
- 3 is left mid lung lobe
- 4 is right accessory lung lobe and trachea
- 5 is right caudal lung lobe
- 6 is right cranial lung lobe
- 7 is right mid lung lobe

All lung lobes have similar, diffuse inflammation that varies in degree as follows:

Left caudal lung lobe has moderate to extensive lesions.

Left cranial and mid lung lobes have mild to moderate lesions.

Right accessory lung lobe has moderate to extensive lesions.

Right caudal lung lobe has extensive lesions including moderate sized areas multifocally of alveolar necrosis.

Right cranial and mid lung lobes have mild to moderately extensive lesions.

Lesions are characterized by alveolar edema, fibrin deposition, suppurative to pyogranulomatous (neutrophils, lymphocytes and macrophages) inflammation, and alveolar ducts and bronchioles (respiratory bronchioles and terminal bronchioles) have multifocal, moderate loss of mucosa and with mild to occasionally extensive luminal extension of inflammatory changes described above. Occasional bronchi have small regions of mucosal attenuation as well, and minor submucosal mixed inflammation.

Lobes with areas of extensive lesions also have regions of extensive fibrin deposition with fibrinous alveolar pseudomembrane formation multifocally, multifocal areas of moderate alveolar septal thickening by edema and inflammatory cells as described above, and multifocal small to moderate sized regions of alveolar necrosis/effacement.

Lungs also have (pre-existing) mild perivascular, peribronchiole and peribronchiolar lymphohistiocytic aggregates and minimal pneumoconiosis.

The section of trachea has a moderate sized focus of squamous metaplasia with loss of cilia and this focus has mild to moderate, submucosal, granulomatous to pyogranulomatous and eosinophilic inflammation with edema and neovascularization (notably this focal lesion could be secondary to previous intubation or due to the influenza infection).

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Final Principal Diagnosis(es):

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1. Mild to extensive, diffuse, fibrinosuppurative to pyogranulomatous alveolitis and bronchiolitis with edema and multifocal alveolar necrosis and alveolar fibrinous pseudomembrane formation
  2. Moderate, focal, pyogranulomatous tracheitis with squamous metaplasia and submucosal neovascularization
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Histology Comments:

Lung lesions are due to the influenza infection, and the pulmonary lesions are subacute to early chronicity, all of which correlates well with history, clinical presentation, and negative microbiology of the lung swab (final results of lung microbiology was negative growth at 3 days).

As indicated in the histology description, the tracheal lesion could be from past intubation, which is favored, particularly as the tracheal lesion was chronic.

Preliminary histology results were distributed by AB 29 Jul 2020.

Please contact me with any questions, comments or concerns.

Pathologist \_\_\_\_\_ RM \_\_\_\_\_