



# CMHD Pathology Report



## CMHD Pathology Core

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## Mouse Genetics Project

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[Europhenome](#)

CMHD LabID: N13-574

## Relevant History:

Phenotype:  
MP:0004889 increased energy expenditure  
MP:0005289 increased oxygen consumption

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AnimalID: M00698954

## Histopathology Findings:

### brown fat (MA:0000057)

#### Histopath Description:

Representing less than 10% of the examined brown fat, there are areas focal to multifocal clusters of plump cells with basophilic cytoplasm and plump spindloid nucleus (interpreted as preadiposites) and small adipocytes with basophilic microvesiculated cytoplasm and central basophilic round nucleus (interpreted as young adipocytes). There are rare lymphocyte-like cells associated with these foci (it was not possible to determine with certainty if these represented degenerating adipocytes or inflammatory cells).

#### Morphological Diagnosis:

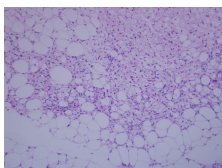
**Distribution:** multifocal; **Severity:** mild;

#### Definitive Diagnosis:

Multifocal adipogenesis and lipogenesis

#### Histopathology Comments:

These focal changes are occasionally seen in mice usually associated with mild inflammation (usually described as proliferative steatitis). The inflammatory component is very minimal in this case. We are not certain if the lesion represents a post inflammatory regeneration or a primary impairment of lipogenesis or blocked adipogenesis (differentiation of preadipocytes to adipocytes). Note that three mice in this line have various degrees of this lesion in either the brown or white fat (see summary)



Brown fat,  
hyperplasia, 20x,  
HE

## liver (MA:0000358)

#### Histopath Description:

diffuse lipidosis

#### Morphological Diagnosis:

**Distribution:** diffuse; **Severity:** extreme; **MPATH Diagnosis:** steatosis MPATH:622

#### Definitive Diagnosis:

hepatic steatosis

**eye (MA:0000261)****Histopath Description:**

Involving one eye, there are clusters of external nuclear structures within the internal plexiform layer.

**Morphological Diagnosis:**

**Distribution:** multifocal; **Severity:** mild;

**Definitive Diagnosis:**

Retinal dysplasia

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**AnimalID: M00848244****Histopathology Findings:****brown fat (MA:0000057)****Histopath Description:**

Representing less than 20% of the examined brown fat, there are areas focal to multifocal clusters of plump cells with basophilic cytoplasm and plump spindloid nucleus (interpreted as preadiposites) and small adipocytes with basophilic microvesiculated cytoplasm and central basophilic round nucleus (interpreted as young adipocytes). Moderate numbers of lymphocytes and macrophages are present within the interstitium. There is mild hemorrhage in the interstitium.

**Morphological Diagnosis:**

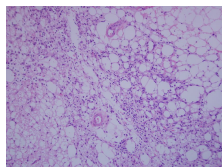
**Distribution:** multifocal; **Severity:** mild;

**Definitive Diagnosis:**

Steatitis with regenerative hyperplasia

**Histopathology Comments:**

These focal changes are occasionally seen in mice usually associated with mild inflammation (usually described as proliferative steatitis). The inflammatory component is very minimal in this case. We are not certain if the lesion represents a post inflammatory regeneration or a primary impairment of lipogenesis or blocked adipogenesis (differentiation of preadipocytes to adipocytes). Note that three mice in this line have various degrees of this lesion in either the brown or white fat (see summary)



Brown fat, Steatitis with regenerative hyperplasia, 20x, HE

**liver (MA:0000358)****Histopath Description:**

moderate lipidosis

**Morphological Diagnosis:**

**Distribution:** multifocal to coalescing; **Severity:** moderate; **MPATH Diagnosis:** steatosis  
MPATH:622

**Definitive Diagnosis:**

hepatic steatosis

**brain (MA:0000168)****Histopath Description:**

There is mild dilation of the lateral ventricles

**Morphological Diagnosis:**

**Distribution:** bilateral; **Severity:** mild;

**Definitive Diagnosis:**

Dilation of the brain ventricles

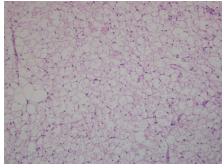
**Histopathology Comments:**

Mild dilation of the lateral ventricles is a background condition in mice of C57BL/6N background (Brayton et al., 2004).

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**AnimalID: M00668506****Histopathology Findings:****brown fat (MA:0000057)****Histopath Description:**

normal

Brown fat, normal,  
20x, HE**brain (MA:0000168)****Histopath Description:**

There is mild dilation of the the cerebral aqueduct

**Morphological Diagnosis:****Distribution:** bilateral; **Severity:** mild;**Definitive Diagnosis:**

Dilation of the brain ventricles

**Histopathology Comments:**

Mild dilation ventricles is a background condition in mice of C57BL/6N background (Brayton et al., 2004).

**eye (MA:0000261)****Histopath Description:**

Involving one eye, there are clusters of external nuclear structures within the internal plexiform layer.

**Morphological Diagnosis:****Distribution:** multifocal; **Severity:** mild;**Definitive Diagnosis:**

Retinal dysplasia

**thymus (MA:0000142)****Histopath Description:**

There is a 50 um diameter epithelial cyst within the medulla.

**Morphological Diagnosis:****Distribution:** multifocal; **MPATH Diagnosis:** cyst MPATH:62**Definitive Diagnosis:**

Epithelial cyst

**Histopathology Comments:**

This is a developmental abnormality commonly seen in mice.

**liver (MA:0000358)****Histopath Description:**

diffuse lipidosis

**Morphological Diagnosis:****Distribution:** diffuse; **Severity:** extreme; **MPATH Diagnosis:** steatosis MPATH:622**Definitive Diagnosis:**

hepatic steatosis

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**AnimalID: M00805352****Histopathology Findings:**

**brown fat (MA:000057)****Histopath Description:**

Representing less than 10% of the examined brown fat, there are areas focal to multifocal clusters of plump cells with basophilic cytoplasm and plump spindloid nucleus (interpreted as preadiposites) and small adipocytes with basophilic microvesiculated cytoplasm and central basophilic round nucleus (interpreted as young adipocytes). There are rare lymphocytes and macrophages in these foci (it was not possible to determine with certainty if these represented degenerating adipocytes or inflammatory cells).

**Morphological Diagnosis:**

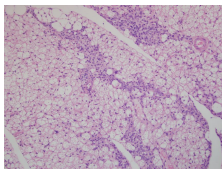
**Distribution:** multifocal; **Severity:** mild;

**Definitive Diagnosis:**

Multifocal adipogenesis and lipogenesis with mild inflammation

**Histopathology Comments:**

These focal changes are occasionally seen in mice usually associated with mild inflammation (usually described as proliferative steatitis). The inflammatory component is very minimal in this case. We are not certain if the lesion represents a post inflammatory regeneration or a primary impairment of lipogenesis or blocked adipogenesis (differentiation of preadipocytes to adipocytes). Note that three mice in this line have various degrees of this lesion in either the brown or white fat (see summary)



Brown fat,  
hyperplasia, 20x,  
HE

**liver (MA:0000358)****Histopath Description:**

diffuse lipidosis

**Morphological Diagnosis:**

**Distribution:** diffuse; **Severity:** extreme; **MPATH Diagnosis:** steatosis MPATH:622

**Definitive Diagnosis:**

hepatic steatosis

**brain (MA:0000168)****Histopath Description:**

There is mild dilation of the lateral ventricles

**Morphological Diagnosis:**

**Distribution:** bilateral; **Severity:** mild;

**Definitive Diagnosis:**

Dilation of the brain ventricles

**Histopathology Comments:**

Mild dilation of the lateral ventricles is a background condition in mice of C57BL/6N background (Brayton et al., 2004).

**lymph node (MA:0000139)****Histopath Description:**

early lymphoma

**Morphological Diagnosis:**

**MPATH Diagnosis:** lymphoid neoplasms MPATH:513

**Definitive Diagnosis:**

Early lymphoma

**Report Summary and Recommendation:**

Three mice in this line showed brown adipose tissue hyperplasia with adipogenesis and lipogenesis associated with mild inflammation. These lesions may represent regeneration following traumatic injury to the subcutaneous fat (likely from bite wounds). However, the lesions may have relevance in view of the metabolic phenotypes observed in this line. Other lesions are incidental or attributable to diet or strain

background.

Summary: Brown fat: Multifocal brown fat hyperplasia (adipogenesis and lipogenesis) with mild inflammation (3/4)