



CMHD Pathology Report



CMHD Pathology Core

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ReportID: Report Date: April 30, 2013
Pathologist: H. Adissu

Mouse Genetics Project

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[Mouse Portal](#)
[Europhenome](#)

CMHD LabID: N13-240

Relevant History:

increased carbon dioxide production
corpus callosum absent
decreased heart weight
decreased lean body mass
decreased bone mineral content
vertebral transformation
abnormal rib morphology
truncated ribs
decreased CD8-positive
increased CD8-positive T cell number
decreased regulatory T cell number
decreased brain size
small hippocampus

AnimalID: M00494027

Histopathology Findings:

liver (MA:0000358)

Histopath Description:

The hepatocytes diffusely contain excessive glycogen accumulation in the cytoplasm.

Morphological Diagnosis:

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

Definitive Diagnosis:

diffuse hepatic lipidosis

Histopathology Comments:

Hepatic lipidosis and glycogenesis are due to high-fat diet.

thyroid gland (MA:0000129)

Histopath Description:

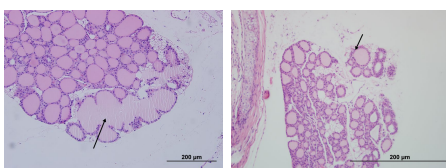
There is a large 400 um diameter follicle that appears to be composed of multiple coalesced follicles. The epithelium lining this follicle is low cuboidal to flat. The colloid is pale compared to that of surrounding follicles.

Morphological Diagnosis:

Distribution: focal; **Severity:** mild;

Definitive Diagnosis:

Thyroid follicular hypertrophy



Thyroid gland,
hyperplasia, 20x,

Thyroid, wildtype,
20x, HE

HE

knee (MA:0000046)**Histopath Description:**

The overall subgross anatomical organization of the femur, tibia, and the knee joint are within normal limits. Histologically, there is focal fissure and fraying (fibrillation) the tibial articular cartilage.

Morphological Diagnosis:

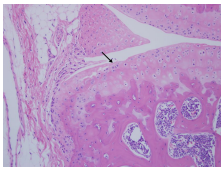
Duration: chronic; **Distribution:** focally extensive; **Severity:** mild; **MPATH Diagnosis:** degenerative change MPATH:14

Definitive Diagnosis:

Mild fibrillation of the superficial zone of femoral articular cartilage - consistent with low grade degenerative joint disease (DJD)

Histopathology Comments:

The histological changes within the superficial articular cartilage are indicative of early and very mild DJD. The lesions are likely age-associated. DJD occurs in all inbred strains of mice as part of the aging process.



Knee, fibrillation of the articular cartilage, 20x, HE.

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

The overall size of the brain is small compared to that of WT controls.

Morphological Diagnosis:

Distribution: generalized; **Severity:** mild;

Definitive Diagnosis:

Microcephaly, mild



Brain, microencephaly, 1.25x, HE



Brain, wildtype, normal, 1.25x, HE.

stomach (MA:0000353)**Histopath Description:**

moderate neutrophilic gastritis

Morphological Diagnosis:

Distribution: multifocal to coalescing; **Severity:** moderate;

Definitive Diagnosis:

Gastritis, neutrophilic

AnimalID: M00494026**Histopathology Findings:****thyroid gland (MA:0000129)****Histopath Description:**

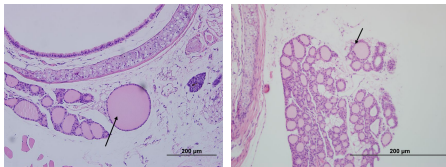
There are multiple large 100-150 um diameter follicles lined with a low cuboidal to flat epithelium.

Morphological Diagnosis:

Distribution: focal; **Severity:** mild;

Definitive Diagnosis:

Thyroid follicular hypertrophy



Thyroid gland,
hyperplasia, 20x,
HE

Thyroid, wildtype,
normal, 1.25x, HE

liver (MA:0000358)

Histopath Description:

The hepatocytes diffusely contain excessive glycogen accumulation in the cytoplasm.

Morphological Diagnosis:

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

Definitive Diagnosis:

diffuse hepatic lipidosis

Histopathology Comments:

Hepatic lipidosis and glycogenosis are due to high-fat diet.

thymus (MA:0000142)

Histopath Description:

There is a 150 um diameter epithelial cyst.

Morphological Diagnosis:

Distribution: focal; **MPATH Diagnosis:** cyst MPATH:62

Definitive Diagnosis:

Epithelial cyst

sternal manubrium (MA:0001332)

Histopath Description:

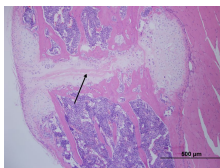
There is a complete sternal fracture. The chondroid tissue along the fracture is markedly degenerate. There is a nodular cartilagenous proliferation at the perichondrial margins (reactive reparative chondroid hyperplasia)

Morphological Diagnosis:

Duration: chronic; **Distribution:** focally extensive;

Definitive Diagnosis:

Sternal osteochondritis with fracture and reactive and reparative chondroid hyperplasia ('calus')



Sternum, fracture,
10x, HE

brain (MA:0000168)

Histopath Description:

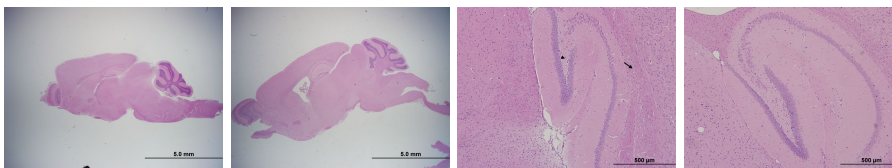
The overall size of the brain is small compared to that of WT controls.

Morphological Diagnosis:

Distribution: generalized; **Severity:** mild;

Definitive Diagnosis:

Microcephaly, mild



Brain,
microcephaly,
1.25x, HE

Brain, wildtype,
normal, 1.25x, HE

Brain-Hippocampus, wildtype,
note presence of
corpus calosum 10x

hippocampus, note
presence of corpus
calosum 10x

AnimalID: M00319281**Histopathology Findings:****liver (MA:0000358)****Histopath Description:**

The hepatocytes diffusely contain excessive glycogen accumulation in the cytoplasm.

Morphological Diagnosis:

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

Definitive Diagnosis:

diffuse hepatic lipidosis

Histopathology Comments:

Hepatic lipidosis and glycogenosis are due to high-fat diet.

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

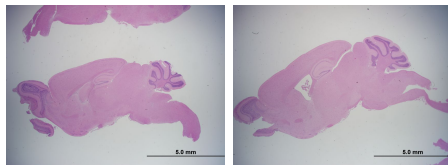
The overall size of the brain is small compared to that of WT controls.

Morphological Diagnosis:

Distribution: generalized; **Severity:** mild;

Definitive Diagnosis:

Microcephaly, mild



Brain,
microencephaly,
1.25x, HE

Brain, wildtype,
normal, 1.25x, HE

skin (MA:0000151)**Histopath Description:**

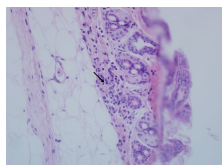
There are low numbers of mononuclear and rare polymorphonuclear inflammatory cells within the dermis. The epidermis is mildly thickened. The hair follicles are at catagen stage. The hair follicle epithelium is hyperplastic.

Morphological Diagnosis:

Distribution: multifocal; **Severity:** mild; **MPATH Diagnosis:** inflammation MPATH:212

Definitive Diagnosis:

Dermatitis with epidermal and follicular epithelial hyperplasia



Skin, dermatitis,
40x

AnimalID: M00319285**Histopathology Findings:****liver (MA:0000358)****Histopath Description:**

The hepatocytes diffusely contain excessive glycogen accumulation in the cytoplasm.

Morphological Diagnosis:

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

Definitive Diagnosis:

diffuse hepatic lipidosis

Histopathology Comments:

Hepatic lipidosis and glycogenosis are due to high-fat diet.

thyroid gland (MA:0000129)**Histopath Description:**

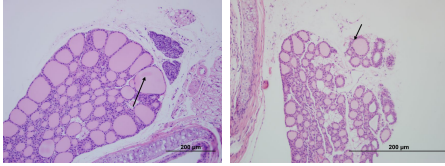
There are multiple large 100-150 um diameter follicles lined with a low cuboidal to flat epithelium.

Morphological Diagnosis:

Distribution: focal; **Severity:** mild;

Definitive Diagnosis:

Thyroid follicular hypertrophy



Thyroid gland,
hyperplasia, 20x,
HE

Thyroid, wildtype,
normal, 1.25x, HE

ovary (MA:0000384)**Histopath Description:**

Within the ovary are two large corpora lutea that compress and replace nearly half of the ovarian parenchyma.

Morphological Diagnosis:

Distribution: multifocal to coalescing; **Severity:** moderate; **MPATH Diagnosis:** hyperplasia
MPATH:134

Definitive Diagnosis:

Luteal hyperplasia and hypertrophy

knee (MA:0000046)**Histopath Description:**

The overall subgross anatomical organization of the femur, tibia, and the knee joint are within normal limits. Histologically, there is focal fissure and fraying (fibrillation) the tibial articular cartilage.

Morphological Diagnosis:

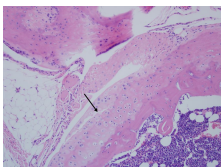
Duration: chronic; **Distribution:** focally extensive; **Severity:** mild; **MPATH Diagnosis:**
degenerative change MPATH:14

Definitive Diagnosis:

Mild fibrillation of the superficial zone of femoral articular cartilage - consistent with low grade degenerative joint disease (DJD)

Histopathology Comments:

The histological changes within the superficial articular cartilage are indicative of early and very mild DJD. The lesions are likely age-associated. DJD occurs in all inbred strains of mice as part of the aging process.



Knee, fibrillation of
the articular
cartilage, 20x, HE.

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

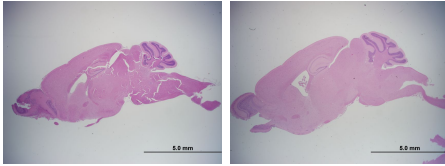
The overall size of the brain is small compared to that of WT controls.

Morphological Diagnosis:

Distribution: generalized; **Severity:** mild;

Definitive Diagnosis:

Microcephaly, mild



Brain,
microencephaly,
1.25x, HE

Brain, wildtype,
normal, 1.25x, HE

Report Summary and Recommendation:

Small brain (microencephaly) is observed in this line consistent with the clinical phenotype observation of microcephaly. The diagnosis of microencephaly is based on comparison with wildtype controls. This result should be interpreted with caution since variation in tissue preparation might influence tissue shrinkage. The hypoplasia is generalized with no evidence specific area affected. We did not see defect in the corpus callosum in contrast to the clinical phenotype observation (see example in M00494026 and a control wildtype)

Thyroid hyperplasia characterized by clusters of large follicles lined by flattened epithelium was observed in this line. This morphological feature is suggestive of inactive follicles. The lesion is minimal affecting a small proportion of the thyroid gland; hence its physiological significance is uncertain. Thyroid follicular inactivity may be secondary to reduced production of thyroid stimulating factor (TSH) production by the pituitary. The pituitary gland is not available for analysis. Morphometric analysis based on multiple sections of the thyroid gland is recommended to confirm this pathology phenotype. Further, measurement of serum thyroid and TSH is recommended.