



# CMHD Pathology Report



## CMHD Pathology Core

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Pathologist: H. Adissu

## Mouse Genetics Project

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Hinxton, Cambridge  
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UK

CMHD LabID: N11-180

## Relevant History:

Phenotype documented: Modified SHIRPA; Auditory Brainstem Response; Eye Morphology; Micronuclei; Eye Histopathology) Absent pinna reflex, corneal vascularization, chromosomal instability, abnormal ABR, abnormal fertility, decreased BMC, decreased bone trabeculae, increased trabecular bone volume

**AnimalID: M00166290 Mcph1 homo**

## Tissue Preservation and Staining:

Tissues not present in submission: Calvarium, ears, tongue, Harderian gland, zymbal gland, nasal sinuses, teeth, gall bladder. Adrenal glands not available in section.

## Histopathology Findings:

### liver (MA:0000358)

#### Histopath Description:

The overall hepatic lobular architecture is normal. Nearly 10% of hepatocytes within the portal areas contain large (8-12 um in diameter) intracytoplasmic clear vacuoles (macrovesicular lipid).

#### Morphological Diagnosis:

**Distribution:** Multifocal; **Severity:** mild; **MPATH Diagnosis:** lipid deposition MPATH:42

#### Definitive Diagnosis:

Hepatic lipidosis

#### Histopathology Comments:

Hepatocellular vacuolar change of variable degree suggestive of lipidosis is present in all mice from WTSI, consistent with high lipid diet. The changes in this mouse are less severe.

### stomach (MA:0000353)

#### Histopath Description:

There are low numbers of neutrophils within the deep lamina propria

#### Morphological Diagnosis:

**Duration:** Sub-acute; **Distribution:** Multifocal; **Severity:** mild; **MPATH Diagnosis:** inflammation MPATH:212

#### Definitive Diagnosis:

Gastritis, suppurative

#### Histopathology Comments:

This lesion is most commonly associated with Helicobacter infection. Further investigation is suggested using histochemistry (Silver stain) or colony fecal PCR.

### spinal cord (MA:0000216)

#### Histopath Description:

Multiple vacuoles (10-40 um in diameter) are present within the spinal cord, notably within the white matter and at the white matter and grey matter junction. The vacuoles are mostly empty, but some contain basophilic membranous elements of uncertain identity (suspected to be myelin sheaths). Occasionally, marginalized, compressed, and crescent-shaped nuclear material is present in association with the vacuoles. Axonal structures were not discerned within these vacuoles.

#### Morphological Diagnosis:



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

The plane of section is slightly off center catching part of the optic nerve, a nearly full diameter lens, the iris, but no pupil. The iris in close apposition with the cornea. All structures are within normal limit. There is a focal 100 um long lifting of a segment of the corneal epithelium from the stroma; no edema or inflammation is seen (artefactual separation).

**Morphological Diagnosis:**

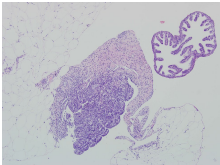
**Severity:** no lesions;

**Definitive Diagnosis:**

No abnormality in the section examined

**Histopathology Comments:**

The pupils are not observed although a good part of the optic nerve is in view. Deeper section may be required to ruleout true absence of the pupils



Ovary and ovidus,  
hypoplasia, 10x,  
HE.

**Organ/Tissue Analyzed:**

There were no significant findings in the following tissues: Brain, eyes, salivary glands, trachea, heart, thymus, thyroid gland, parathyroid gland, spleen, exocrine and endocrine pancreas, esophagus, intestines, urinary organs and tract, lymph nodes, bones, bone marrow, skeletal muscles, brown fat, and skin.

**AnimalID: M00166320 Mcph1 homo****Tissue Preservation and Staining:**

Tissues not present in submission: Calvarium, ears, tongue, Harderian gland, zymbal gland, nasal sinuses, teeth, gall bladder. Thyroid gland not available in section. Eyes section obliquely.

**Histopathology Findings:****lung (MA:0000415)****Histopath Description:**

There are multifocal perivascular mononuclear inflammatory cell aggregate within the lung

**Morphological Diagnosis:**

**Duration:** Chronic; **Distribution:** Multifocal; **Severity:** mild; **MPATH Diagnosis:** inflammation MPATH:212

**Definitive Diagnosis:**

Perivascular inflammatory aggregates

**Histopathology Comments:**

This lesion is suggestive of antigenic stimulation of hematogenous origin. It is a common and insignificant incidental finding.

**adrenal gland (MA:0000116)****Histopath Description:**

There is a 100 um, oval, bilobulated, encapsulated, subcapsular adrenocortical structure within the adrenal gland.

**Morphological Diagnosis:**

**Distribution:** Unilateral; **Severity:** mild; **MPATH Diagnosis:** choristoma MPATH:477

**Definitive Diagnosis:**

Accessory adrenocortical tissue.

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

The overall hepatic lobular architecture is normal. Approximately 5-10% of hepatocytes within the portal areas contain large (8-12 um in diameter) intracytoplasmic clear vacuoles (macrovesicular lipid).

**Morphological Diagnosis:**

**Distribution:** Multifocal; **Severity:** mild; **MPATH Diagnosis:** lipid deposition MPATH:42

**Definitive Diagnosis:**



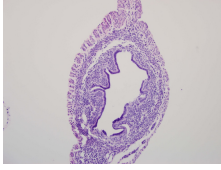
**Distribution:** Diffuse; **Severity:** severe; **MPATH Diagnosis:** hypoplasia MPATH:133

**Definitive Diagnosis:**

Hypoplasia and immaturity of tubular reproductive organs.

**Histopathology Comments:**

The histological features of the uterus and oviduct are consistent infantile or prepubescent stage.



Uterus, hypoplasia, note infantile (prepubescent) feature of the uterus, 20x, HE.

**eye (MA:0000261)**

**Histopath Description:**

Unilaterally, the whole globe appears small (2/3 of normal), but this is difficult to confirm as the plane of section is oblique or peripheral. As a result both cornea and retina appear abnormally thickened and ciliary body is robust and is in contact with cornea in full view.

**Morphological Diagnosis:**

**Severity:** moderate; **MPATH Diagnosis:** hypoplasia MPATH:133

**Definitive Diagnosis:**

Microphthalmia, suspect

**Histopathology Comments:**

The small globe is suggestive of microphthalmia. However, this is difficult to confirm because of less optimal sectioning.

**bone (MA:0001459)**

**Histopath Description:**

There are rare trabecular bones within the proximal tibial metaphysis. At this focus, the cortical bone is thin (nearly half as thick compared to controls) and the marrow is hypocellular with increased lipidosis.

**Morphological Diagnosis:**

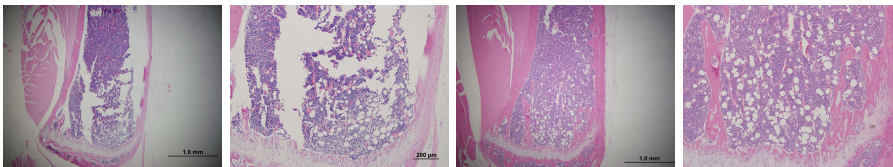
**MPATH Diagnosis:** osteopenia MPATH:53

**Definitive Diagnosis:**

Osteopenia

**Histopathology Comments:**

The lesion is consistent with decreased bone trabeculae observed in in-life phenotype

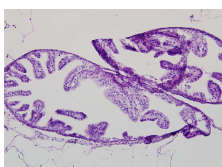


Tibia, osteopenia, note absence of trabecular bone and thin cortical bone, 4x, HE

Tibia, osteopenia, note absence of trabecular bone and thin cortical bone, 10x, HE

Tibia, normal, control mouse, 4x, HE

Tibia, normal, control mouse, 10x, HE



Oviduct, hypoplasia, 20x, HE.

**Organ/Tissue Analyzed:**

There were no significant findings in the following tissues: Brain, salivary glands, trachea, heart, thymus, thyroid gland, parathyroid gland, spleen, exocrine and endocrine pancreas, esophagus, intestines, urinary organs and tract, lymph nodes, skeletal muscles, brown fat, and skin.

**AnimalID: M00166309 Mcph1 homo****Tissue Preservation and Staining:**

Tissues not present in submission: Calvarium, ears, tongue, Harderian gland, zymbal gland, nasal sinuses, teeth, gall bladder.

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

lipid accumulation similar to M0018944 Adam 17 Het

**Morphological Diagnosis:**

**Distribution:** Diffuse; **Severity:** moderate; **MPATH Diagnosis:** lipid deposition MPATH:42

**Definitive Diagnosis:**

Hepatic lipidosis

**Histopathology Comments:**

Hepatocellular vacuolar change of variable degree suggestive of lipidosis is present in all mice from WTSI, consistent with high lipid diet.

**testis (MA:0000411)****Histopath Description:**

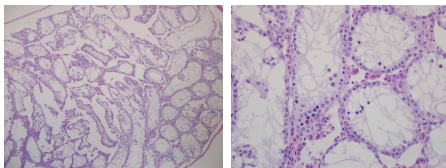
Seminiferous tubules are diffusely vacuolated and hypocellular. They are lined by spermatogonia and numerous sertoli cells with accentuated vacuolated cytoplasmic processes filling the lumina. Rare apoptotic bodies are present. Primary spermatocytes are very rare. Myoepithelial cells are unremarkable. Interstitial cells are accentuated.

**Morphological Diagnosis:**

**Distribution:** Diffuse; **MPATH Diagnosis:** hypoplasia MPATH:133

**Definitive Diagnosis:**

Testicular atrophy and lack of spermatogenesis.



Testis, diffuse hypoplasia, 10x, HE.

Testis, hypoplasia, note sertoli cells with expansile vacuolated cytoplasm and few spermatogonia at the base, 40x, HE.

**epididymal duct (MA:0001735)****Histopath Description:**

Scattered cell debris are present within the tail of epididymis; spermatocytes are not present.

**Morphological Diagnosis:**

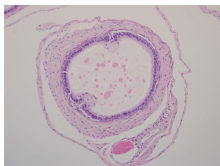
**Distribution:** Diffuse; **MPATH Diagnosis:** hypoplasia MPATH:133

**Definitive Diagnosis:**

Epididymal aspermia

**Histopathology Comments:**

The absence of spermatocytes is consistent with the observed seminiferous atrophy.



Epididymal duct, aspermia; note absence of spermatocytes, 40x, HE.

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

There are large numbers of neutrophils within the deep lamina propria of the glandular stomach adjacent to the limiting ridge.

**Morphological Diagnosis:**

**Duration:** Chronic-active; **Distribution:** Multifocal; **Severity:** moderate; **MPATH Diagnosis:** inflammation MPATH:212

**Definitive Diagnosis:**

Gastritis, suppurative

**Histopathology Comments:**

This lesion is most commonly associated with Helicobacter infection. Further investigation is suggested using histochemistry (Silver stain) or colony fecal PCR.

**spinal cord (MA:0000216)**

**Histopath Description:**

Similar changes as M00166290 Mcph1 homo

**Morphological Diagnosis:**

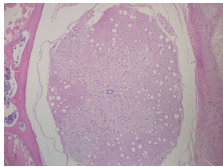
**Distribution:** Multifocal; **Severity:** no lesions;

**Definitive Diagnosis:**

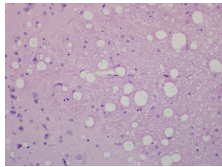
Buscaino bodies or mucocytes.

**Histopathology Comments:**

See comment in summary



Spinal cord, myelin vacuolation (mucocytes/Buscaino bodies), 10x, HE.



Spinal cord, myelin vacuolation (mucocytes/Buscaino bodies), 40x, HE.

**eye (MA:0000261)**

**Histopath Description:**

In one of the eyes, there is a 100 uM stalk of pigmented fibrous connective tissue containing a small artery in the center extends from the area of the optic disc towards the posterior vitreous. A small fragment of fibrous tissue is freely present within the vitreous anterior to this stalk (assumed to be extension of the stalk).

**Morphological Diagnosis:**

**Distribution:** Bilateral; **MPATH Diagnosis:** developmental and structural abnormality MPATH:55

**Definitive Diagnosis:**

Persistent hyaloid artery

**Histopathology Comments:**

hyaloid artery remnant is a rare condition in which there remain some parts of the hyaloid artery. The posterior hyaloid vascular system of mice usually undergoes involution in the first month of life (Richard et al., 2000).

**Organ/Tissue Analyzed:**

There were no significant findings in the following tissues: Brain, eyes, salivary glands, trachea, lungs, heart, thymus, thyroid gland, parathyroid gland, spleen, exocrine and endocrine pancreas, esophagus, intestines, urinary organs and tract, adrenal gland, lymph nodes, bones, bone marrow, skeletal muscles, brown fat, and skin.

**AnimalID: M00166310 Mcph1 homo**

**Tissue Preservation and Staining:**

Tissues not present in submission: Calvarium, ears, tongue, Harderian gland, zymbal gland, nasal sinuses, teeth, gall bladder.

**Histopathology Findings:**

**liver (MA:0000358)**

**Histopath Description:**

The overall hepatic lobular architecture is normal. Approximately 5-10% of hepatocytes within the portal areas contain large (8-12 um in diameter) intracytoplasmic clear vacuoles (macrovesicular lipid).

**Morphological Diagnosis:**

**Distribution:** Multifocal; **Severity:** mild; **MPATH Diagnosis:** lipid deposition MPATH:42

**Definitive Diagnosis:**

Hepatic lipidosis

**Histopathology Comments:**

Hepatocellular vacuolar change of variable degree suggestive of lipidosis is present in all mice from WTSI, consistent with high lipid diet. The changes in this mouse are less severe.

**testis (MA:0000411)****Histopath Description:**

Seminiferous tubules are diffusely vacuolated and hypocellular. They are lined by spermatogonia and numerous sertoli cells with accentuated vacuolated cytoplasmic processes filling the lumina. Rare apoptotic bodies are present. Primary spermatocytes are very rare. Myoepithelial cells are unremarkable. Interstitial cells are accentuated.

**Morphological Diagnosis:**

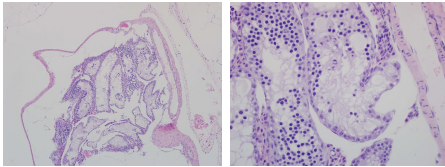
**Distribution:** Diffuse; **MPATH Diagnosis:** atrophy MPATH:127

**Definitive Diagnosis:**

Testicular atrophy and lack of spermatogenesis.

**Histopathology Comments:**

The lesions are similar to the other mutant male mouse in this line.



Testis, hypoplasia, 10x, HE.

Testis, hypoplasia, note sertoli cells with expansile vacuolated cytoplasm and few spermatogonia at the base, 40x, HE.

**epididymal duct (MA:0001735)****Histopath Description:**

Scattered cell debris are present within the tail of epididymis; spermatocytes are not present.

**Morphological Diagnosis:**

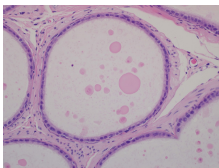
**Distribution:** Diffuse; **MPATH Diagnosis:** hypoplasia MPATH:133

**Definitive Diagnosis:**

Epididymal aspermia

**Histopathology Comments:**

The absence of spermatocytes is consistent with the observed seminiferous atrophy.



Epididymal duct, aspermia; note absence of spermatocytes, 40x, HE.

**spinal cord (MA:0000216)****Histopath Description:**

Similar changes as M00166290 Mcph1 homo

**Morphological Diagnosis:**

**Distribution:** Multifocal; **Severity:** no lesions;

**Definitive Diagnosis:**

Buscaino bodies or mucocytes.

**Histopathology Comments:**

See comment in summary

