



CMHD Pathology Report



CMHD Pathology Core

Toronto Centre for
Phenogenomics
25 Orde St. 3rd fl.
Toronto, Ont. M5T 3H7
Tel.(416) 586-8375
Fax (416) 586-5993

contact: Dr. Susan
Newbigging
email:
newbigging@lunenfeld.ca

Principle Investigator: Dr. Colin McKerlie ICSIG

Institute: Sick Kids
Address:

ReportID: Report Date: November 23,
2011
Pathologist: H. Adissu

Mouse Genetics Project

Wellcome Trust Sanger
Institute
Wellcome Trust Genome
Campus
Hinxton, Cambridge
CB10 1SA
UK

email:
MGPenquiries@sanger.ac.uk
[Mouse Portal](#)
[Europhenome](#)

CMHD LabID: N11-192

Relevant History:

(X-ray Imaging) Abnormal number of lumbar and pelvic vertebrae, plus transitional vertebrae issue as well

AnimalID: M00165676 Efna1 hom

Tissue Preservation and Staining:

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

Histopathology Findings:

brown fat (MA:0000057)

Histopath Description:

Within the cervical brown fat is present a moderately cellular, poorly demarcated and polygonal cells supported by a fine fibrous stroma. Neoplastic cells have distinct borders with abundant, foamy, microvacuolated and eosinophilic cytoplasm, centrally located nuclei with finely stippled chromatin, and one or two prominent basophilic nucleoli. The mitotic rate is 1 per HPF. Scattered lymphocytes and macrophages are present within the neoplasm.

Morphological Diagnosis:

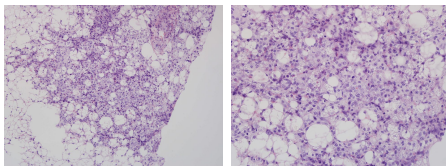
Distribution: Multifocal; **MPATH Diagnosis:** lipoma MPATH:417

Definitive Diagnosis:

Hibernoma

Histopathology Comments:

Hibernoma is a rare, benign, locally invasive neoplasm of brown fat adipose tissue.



Brown fat, hibernoma, 20x, HE. Brown fat, hibernoma, 40x, HE.

testis (MA:0000411)

Histopath Description:

Within the seminiferous tubule are present occasional large (100 um diameter) multinucleated cells. Nuclei are mostly located in the center surrounded by granular eosinophilic cytoplasm.

Morphological Diagnosis:

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

Definitive Diagnosis:

Multinucleated cells within the seminiferous tubule

Histopathology Comments:

See comments in earlier submission regarding multinucleated cells within the seminiferous tubule.

spinal cord (MA:0000216)

Histopath Description:

occasional 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 similar to those observed in Mcph1 line (artefactual).

Morphological Diagnosis:

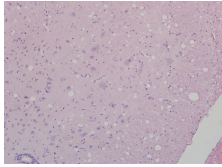
Distribution: Multifocal; **Severity:** mild;

Definitive Diagnosis:

Buscaino bodies or mucocytes.

Histopathology Comments:

This is considered a tissue processing artefact (see comment in summary)



Spinal cord,
vacuolation, 20x,
HE.

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

The overall hepatic lobular architecture is normal. Diffusely, hepatocytes contain intracytoplasmic clear vacuoles (lipid). The lipid vacuoles within the midzonal and periacinar regions are small (2-3 um in diameter) and surround a central nucleus (interpreted as microvesicular lipid). The lipid vacuoles within the portal areas are large (8-12 um in diameter) and displace the nucleus to the margin (macrovesicular lipid). There are rare perivascular mononuclear inflammatory cells.

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.

Organ/Tissue Analyzed:

NSF will be appended

AnimalID: M00165680 Efna1 hom**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. Nearly 30% of hepatocytes notably within the midzonal region contain large (8-12 um in diameter) intracytoplasmic clear vacuoles (macrovesicular lipid). Rare small clusters of lymphocytes are present.

Morphological Diagnosis:

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

Definitive Diagnosis:

Hepatic lipidosis; multifocal inflammatory foci

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.

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

There is a 200 um diameter dermoid cyst within the orbital area of the frontal cerebral cortex. The cyst is keratin-filled and is lined by a well-differentiated simple squamous epithelium. The surrounding brain tissue is mildly compressed.

Morphological Diagnosis:

Distribution: Focal; **Severity:** mild; **MPATH Diagnosis:** dermoid cyst MPATH:311

Definitive Diagnosis:

Cerebral dermoid cyst (dermoid sinus)

Histopathology Comments:

Dermoid cyst is caused by defective epidermal closure along embryonic fissures isolating an island of ectoderm in the dermis or subcutis. The cyst was small with minimal compression of the surrounding brain tissue; its significance is uncertain.

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

There is a mild enlargement of the lateral ventricle.

Morphological Diagnosis:

Severity: mild; **MPATH Diagnosis:** hydrocephalus MPATH:639

Definitive Diagnosis:

hydrocephalus, lateral ventricle

Histopathology Comments:

Variable degree of hydrocephalus is observed in a proportion of wild type C57 Black 6 mice.

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

occasional 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 similar to those observed in Mcph1 line (artefactual).

Morphological Diagnosis:

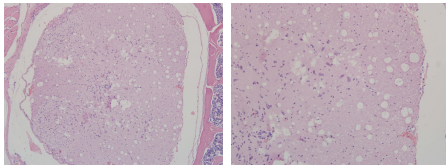
Distribution: Multifocal; **Severity:** mild;

Definitive Diagnosis:

Buscaino bodies or mucocytes.

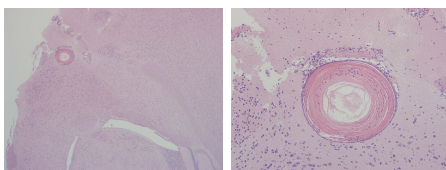
Histopathology Comments:

This is considered a tissue processing artefact (see comment in summary)



Spinal cord,
vacuolation, 10x,
HE.

Spinal cord,
vacuolation, 20x,
HE.



Brain, dermoid cyst,
4x, HE.

Brain, dermoid cyst,
20x, HE.

Organ/Tissue Analyzed:

NSF will be appended

AnimalID: M00165712 Efna1 hom**Tissue Preservation and Staining:**

There is a separation of the dermis and hypodermis. Tissues not present in submission: Calvarium, ears, tongue, Harderian gland, zymbal gland, nasal sinuses, teeth, gall bladder.

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

There is a focal perivascular mononuclear inflammatory cell aggregate within the lung.

Morphological Diagnosis:

Duration: Chronic; **Distribution:** Focal; **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.

lymph node (MA:0000139)

Histopath Description:

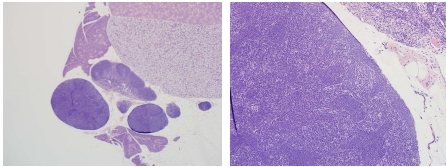
The architecture of two superficial cervical lymph nodes is altered by the presence of large numbers of monomorphic lymphocytes filling and distending all the sinuses and elevating the capsule. The neoplastic cells have generally a scant amount of eosinophilic cytoplasm, medium sized round central nucleus with granular chromatin and single variably distinct amphophilic nucleoli. Mitotic figures are less than 1/HPF.

Morphological Diagnosis:

Distribution: Diffuse; **MPATH Diagnosis:** lymphoma [obsolete use MPATH:516 or 535] MPATH:343

Definitive Diagnosis:

Lymphoma



Superficial cervical lymph node, lymphoma, 4x, HE.

Superficial cervical lymph node, 20x, HE

brown fat (MA:0000057)

Histopath Description:

There is a focally extensive aggregate of distinct cells within the brown fat. These cells have a prominent open central nucleus and abundant microvesiculated cytoplasm (as described for the hibernoma in mouse M00165676 in this line). However, mitotic figures are not seen and pleomorphism is minimal.

Morphological Diagnosis:

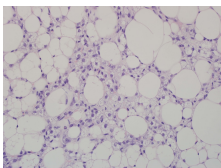
Distribution: Focal; **Severity:** mild; **MPATH Diagnosis:** lipoma MPATH:417

Definitive Diagnosis:

Focal atypical hyperplasia of brown fat (suspicious for early hibernoma).

Histopathology Comments:

This lesion is suspicious for early hibernoma.



Brown fat, atypical hyperplastic focus, 40x, HE

kidney (MA:0000368)

Histopath Description:

There is a focal perivascular aggregate of macrophages, lymphocytes and rare plasma cells at the corticomedullary junction of one of the kidneys.

Morphological Diagnosis:

Duration: Chronic-active; **Distribution:** Focal; **Severity:** mild; **MPATH Diagnosis:** inflammation MPATH:212

Definitive Diagnosis:

Focal perivascular inflammatory aggregate.

Organ/Tissue Analyzed:

NSF will be appended

AnimalID: M00165719 Efna1 hom

Tissue Preservation and Staining:

There is artifactula tissue fragmentation and loss in the spinal cord. Tissues not present in submission:

Calvarium, ears, tongue, Harderian gland, zymbal gland, nasal sinuses, teeth, gall bladder.

Histopathology Findings:

Lymph node (MA:0000139)

Histopath Description:

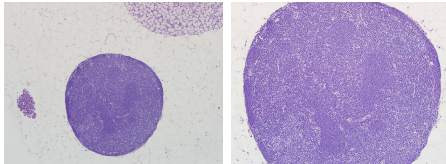
The lymph node architecture is altered by the presence of large numbers of monomorphic lymphocytes filling and distending all the sinuses and elevating the capsule. The neoplastic cells have generally a scant amount of eosinophilic cytoplasm, medium sized round central nucleus with granular chromatin and single variably distinct amphophilic nucleoli. Mitotic figures are less than 1/HPF.

Morphological Diagnosis:

Distribution: Multifocal; **MPATH Diagnosis:** lymphoma [obsolete use MPATH:516 or 535] MPATH:343

Definitive Diagnosis:

Lymphoma



Superficial cervical lymph node, lymphoma, 10x, HE. HE. Superficial cervical lymph node, 20x, HE.

spinal cord (MA:0000216)

Histopath Description:

occasional 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 similar to those observed in Mcph1 line (artefactual).

Morphological Diagnosis:

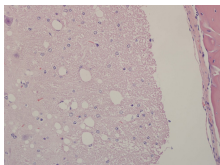
Distribution: Multifocal; **Severity:** mild;

Definitive Diagnosis:

Buscaino bodies or mucocytes.

Histopathology Comments:

This is considered a tissue processing artefact (see comment in summary)



Spinal cord, vacuolation, 40x, HE.

liver (MA:0000358)

Histopath Description:

The overall hepatic lobular architecture is normal. Nearly 30% of hepatocytes notably within the midzonal region contain large (8-12 um in diameter) intracytoplasmic clear vacuoles (macrovesicular lipid). Rare small clusters of lymphocytes are present.

Morphological Diagnosis:

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

Definitive Diagnosis:

Hepatic lipidosis; multifocal inflammatory foci

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.

lung (MA:0000415)

Histopath Description:

There is a focal perivascular mononuclear inflammatory cell aggregate within the lung.

Morphological Diagnosis:

Duration: Chronic; **Distribution:** Focal; **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.

Organ/Tissue Analyzed:

NSF will be appended

Summary:

Lymphoma of the superficial lymph nodes is observed in M0165712 and M0165719.

Proliferative lesion within the brown fat is present in M00165712 and M00165676 (the lesion in the latter case is neoplastic).

Available sections are not permissive to evaluate vertebral phenotype.

Artefactual vacuolar changes are present within the spinal cord of three mice. These artefacts, referred to as Buscaino bodies or mucocytes, are common processing artifact associated with extended immersion in ethanol during paraffin infiltration (typically by over-the-weekend holding on an automated processor) and manifest as pale, blue-gray, amorphous bodies in H&E-stained sections.

Report Summary and Recommendation:

Lymphoma of the superficial lymph nodes is observed in M0165712 and M0165719.

Proliferative lesion within the brown fat is present in M00165712 and M00165676 (the lesion in the latter case is neoplastic).

Available sections are not permissive to evaluate vertebral phenotype.

Artefactual vacuolar changes are present within the spinal cord of three mice. These artefacts, referred to as Buscaino bodies or mucocytes, are common processing artifact associated with extended immersion in ethanol during paraffin infiltration (typically by over-the-weekend holding on an automated processor) and manifest as pale, blue-gray, amorphous bodies in H&E-stained sections.

Lymph node: precursor b cell neoplasms MPATH:517

Brown adipose tissue: lipoma MPATH:417