

PPW 2026, Case #1

Authors:

Lauren Himmel, Senior Principal Pathologist, Preclinical Safety, AbbVie, Inc.
Kyle Wilcox, Principal Research Scientist, Discovery Neuroscience, AbbVie, Inc.
Nadine Ruderisch, Principal Research Scientist, Discovery Neuroscience, AbbVie, Inc.
Lexie Smith, Senior Clinical Veterinarian, Comparative Medicine, AbbVie, Inc.
Sjoerd Finnema, Research Fellow, Discovery Neuroscience, AbbVie, Inc.
Wayne Buck, Senior Research Fellow, Preclinical Safety, AbbVie, Inc.

Signalment: male intact 20-year-old F0 Mauritian origin cynomolgus macaque.

History: This animal arrived to the AbbVie imaging colony in July 2022 and was co-housed with ovariectomized females in accordance with USDA and AAALAC standards. This animal underwent many dental extractions due to endodontic and periodontic disease with intermittent periods of decreased appetite. A small, firm integumentary mass was observed on the abdomen starting in 2024, that was slow-growing and considered consistent with a lipoma, but otherwise this animal was deemed to be in good health standing. Prior to arrival at AbbVie, the NHP was a breeder animal and otherwise study-naïve. In December 2025, as part of an IACUC-approved protocol, a PET scan was performed during which this animal was dosed IV with a radiolabeled biologic. The monkey was euthanized for CNS tissue collection 24 hours later.

Gross and Histopathology Findings:

Bilaterally symmetrical entorhinal dark discoloration was macroscopically evident from the cerebrocortical surface and on cut section. Pigmented material could be noted in negative control slides from immunohistochemistry runs, as well as in H&E-stained slides prepared from the same blocks. This substance was granular to clumped, variably dark to golden brown, and present predominantly around blood vessels, within microglia, and occasionally within the neuropil. Lesser amounts of similar material were scattered throughout the thalamus and leptomeninges. Qualitatively, the pigmented material appeared consistent with hemosiderin, melanin, or neuromelanin. Additionally, intracytoplasmic yellow-golden pigment was present within neurons multifocally.

Special histochemical staining (Perl's Prussian blue [PB], Schmorl's [SC]) revealed a mixture of iron-containing and aging pigments, respectively. The entorhinal cortical pigment of interest was PB-negative and Sc-positive. Iron-containing pigment (PB-positive) was mainly limited to the thalamus, both of the clumped brown pigment material and less strongly within spheroid-like structures of neuronal cell processes. Reducing pigment (Sc-positive) was also present within thalamic neurons and spheroid-like structures, interpreted as ceroid lipofuscin.



PPW 2026, Case #2

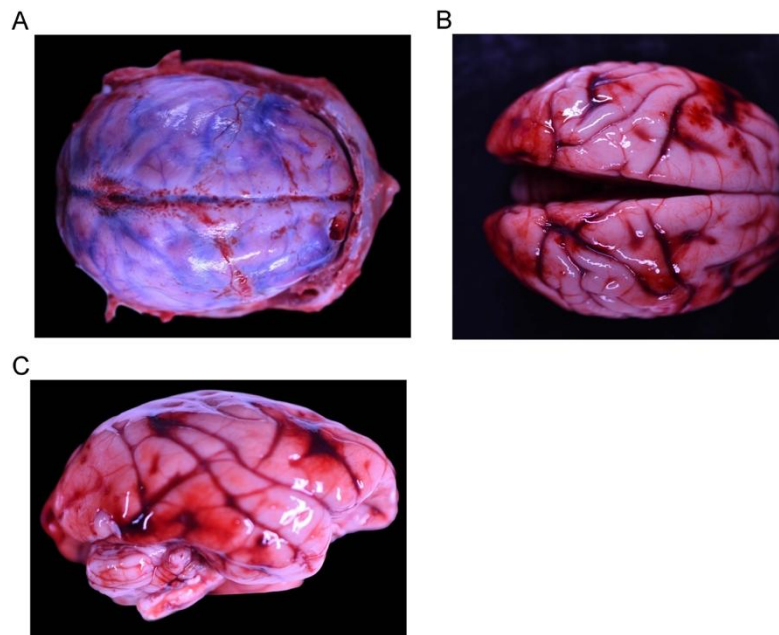
Authors: Monica Jimenez, VMD, PhD¹ and Katherine Olstad, DVM, DACVP (AP)¹

¹*National Biomedical Research Institute, University of California, Davis, Davis, CA*

Signalment: 22-month-old, male, outdoor-housed Rhesus macaque (*Macaca mullata*)

History: Patient presented with a two-week history of marked weight loss (19.7% of total body weight). On examination, a left-sided head tilt and circling was appreciated. Patient was thereafter euthanized due to poor prognosis.

Gross Findings: *Brain:* Extending throughout the dura from midline at the falx cerebri and bilaterally along the lateral middle meningeal arteries are multifocal to coalescing pinpoint paintbrush hemorrhages. The brain parenchyma is diffusely edematous and there are multifocal hemorrhages that pool within and radiate from multiple sulci, with the area surrounding the middle frontal gyrus most severely affected. The cerebellum is subjectively relatively small, and the vessels are slightly congested.



1060 William Moore Drive
Raleigh, North Carolina 27607



College of
Veterinary Medicine

PPW 2026, Case #3

Authors: Augusto Jimenez-Romero^{1,2}, Abigail Armwood¹

1. College of Veterinary Medicine, North Carolina State University (3rd year anatomic pathology resident)

2. Department of Pathology and Laboratory Medicine, University of North Carolina, Chapel Hill

Signalment: 2-year-old, female spayed, capuchin monkey (*Cebus* sp.)

History: The animal presented after two weeks of progressive neurologic signs, characterized primarily by behavioral changes, mydriasis, horizontal nystagmus, and a left-sided head tilt. A CT scan revealed a mass effect in the thalamic region. MRI showed a large intracranial mass, causing obstruction of normal cerebrospinal fluid flow resulting in marked hydrocephalus.

Gross findings: At necropsy, the lateral ventricles are markedly expanded, and partially obstructing the lateral ventricular lumen is an irregularly oval, friable, soft, pale pink to gray mass. The mass lies on the base of and extends into the lateral ventricles. On the cut surface, the mass is homogeneously friable and has red pinpoint foci.

UC Davis Weill

School of Veterinary Medicine

PPW 2026, Case #4

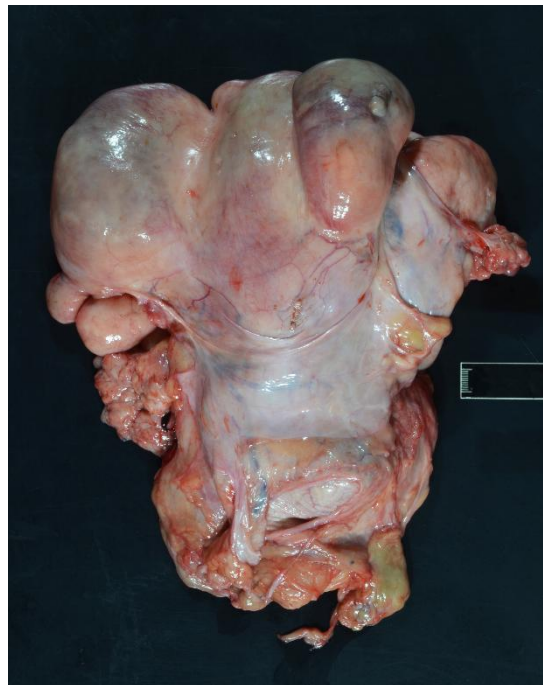
Authors: Jennifer Price¹; Natalia Vapniarsky DVM DACVP PhD¹; Devinn Sinnott DVM DACVP PhD¹

1. UC Davis; School of Veterinary Medicine; Davis, CA 95616

Signalment: 46yr FI Western Lowland Gorilla

History: Koko was a well-known 46-year-old captive gorilla. She had sporadic lethargy, inappetence, and constipation for the past 6 to 9 months, in addition to chronic pain, hypothyroidism, and a prior case of pneumonia 2 years ago. 24 hours before her death, she was anorexic and extremely weak. The Gorilla Foundation found her dead in her room on 6/19/2018.

Gross Lesions: Koko had more than 200 firm, white, multifocal-to-coalescing nodules lining the abdominal cavity and organs (liver, mesentery, spleen, right kidney, pancreas, and small intestines). The nodules ranged from 0.5-5 cm in diameter and were firm, tan, and homogeneous on section. The masses were more abundant in the caudal abdomen. The uterus had mucosal and intramural expansile, firm, poorly demarcated, pale tan masses measuring 12 x 7 x 6 cm, 9 x 9 x 6 cm, and 7 x 5 x 3 cm (Figure 1). The heart had regions of white mineralization on the left AV valve, right coronary cusp, and throughout the right and left myocardium.



PPW 2026, Case #6

Authors: Martha Hensel*, Sarah M. Kezar, William Hopkins

Signalment and History: A 34-year-old male *Aotus nancymae* had a chronic head-tilt to the right and severe spinal kyphosis. The animal was found to be acutely ataxic and falling to the right, so the decision was made to humanely euthanize.

Gross Findings: At necropsy, the animal was thin with diffuse muscle atrophy, and the thoracolumbar spinal column had a pronounced curvature and deviation from midline consistent with spinal kyphosis. The ventral aspect of the thoracic and lumbar vertebrae were bridged by bony proliferation (spondylosis). The intervertebral discs appeared friable in regions of spondylosis interpreted as chronic degenerative disc disease. The heart was enlarged with multifocal areas of myocardial fibrosis in the left ventricular free wall. The internal iliac artery had multifocal white to yellow hard slightly raised plaque material. The brain was grossly normal.

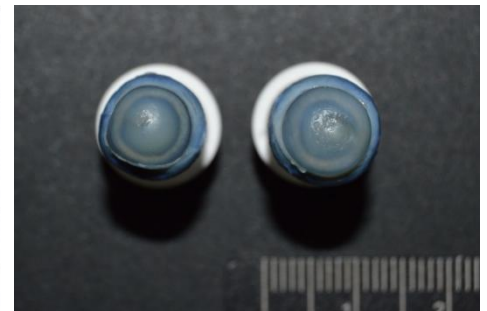
PPW 2026, Cas #7**Authors:** Emma Ferraro¹, Martha A. Delaney², Jordan Davis-Powell³, Dominique Keller³

1. Zoological Pathology Program, University of Illinois Urbana-Champaign, Brookfield Zoo Chicago, 3rd year resident
2. Zoological Pathology Program, University of Illinois Urbana-Champaign, Brookfield Zoo Chicago
3. Los Angeles Zoo and Botanical Gardens

Signalment: 77 g, neonatal (6-day-old), male blue-eyed black lemur (*Eulemur flavifrons*)**History:** This endangered lemur was born without apparent complications at an AZA-accredited zoological institution. Previously, the dam gave birth to twins, resulting in dystocia and loss of both fetuses. On postmortem examination, neither twin had evidence of congenital abnormalities. The dam had no other significant clinical history.

After a successful birth, this neonate was unable to grip or latch onto the mother for nursing, though was bottle feeding well. Bilateral corneal edema was noted grossly at birth, which progressed to corneal ulceration of the right eye. The neonate was acutely found on the floor of the enclosure after a suspected fall. Clinical findings at this time included hypothermia and hypoglycemia. This individual was euthanized due to failure to improve with supportive care and grave prognosis.

Gross Findings: On gross examination of the fixed skull, haired skin covers the entire head. The eyes were removed prior to submission and are submitted separately. The calvarium is absent, including the parietal bones and dorsal portions of the frontal, temporal, and occipital bones, forming a large foramen over the dorsal cerebrum (acalvaria). On cut sections, the cerebellum is not apparent and instead, the caudoventral cranium has a large defect containing scant colorless, translucent, watery fluid. The cerebrum has markedly shallow to absent gyri and sulci and indistinct junction of gray and white matter. Throughout the cerebrum are multiple large, haphazard, roughly linear clefts filled with dark red, opaque material (blood). Bilaterally, the corneas have 4 mm (right) and 1 mm (left) diameter, irregularly marginated, dull, superficial defects (ulcer).





**UNIVERSITY OF
GEORGIA**
College of Veterinary Medicine
Department of Pathology

PPW 2026, Case #8

Authors: Megan Crawford¹, Stewart Colby², Brittany McHale³, Bryce Miller³, and Caitlin Burrell³

1. Department of Pathology, University of Georgia, 3rd year Anatomic Pathology Resident
2. Windward Animal Hospital, Johns Creek GA, Clinician
3. Zoo and Exotic Animal Pathology Service, University of Georgia, Anatomic Pathologist

Signalment: A 2.5-month-old, intact male, black-and-white ruffed lemur (*Varecia variegata*)

History: At 3-weeks-old, this lemur was reported to be uncoordinated and wobbly and later developed difficulty with prehension. The female sibling was reported to be healthy with normal development. Over a five-year period, three other lemurs of similar ages with similar clinical histories from the same parents were submitted for necropsy to the University of Georgia's Zoo and Exotic Animal Pathology Service.

Gross Findings: The cerebellum was grossly normal.

PPW 2026, Case #9

Authors:

Jessica Santos Streauslin, University of Minnesota, anatomic pathology resident; Ariel de Aguiar, University of Minnesota, anatomic pathology resident; Brent Clark, University of Minnesota Medical School, Professor Emeritus of Laboratory Medicine and Pathology; James M. Rasmussen, Director of Veterinary Services/veterinarian in Como Park Zoo & Conservatory; Linda J. Lowenstine, University of California - Davis, Professor (Emerita) of Veterinary Pathology; Arno Wuenschmann, University of Minnesota, Professor of Veterinary Pathology; Carlos Lopez Figueroa, University of Minnesota, Assistant Professor.

Signalment: 7-year-old Intact Female, Western Lowland Gorilla (*Gorilla gorilla gorilla*)

History: This gorilla was born at Como Park Zoo and Conservatory and developed progressive neurologic abnormalities beginning at approximately 2 years of age. The clinical course was characterized by a predominantly motor syndrome, with initial signs including weakness, reduced ability to grasp objects with the digits, and slowed voluntary movement. Based on the clinical presentation, neural larval migrans due to *Baylisascaris procyonis* was initially suspected, and medical treatment and physical therapy were instituted. Despite long-term management over approximately 5 years, the animal's quality of life progressively declined, and humane euthanasia was elected.

Gross Findings: At postmortem examination, the animal was underweight, with scant internal adipose stores. A small number of fibrous adhesions were present between the large intestine and the right abdominal wall. No gross lesions were identified in the brain or eyes. Along the spinal cord, a few segments of the leptomeninges were mildly light brown discolored.

PPW 2026, Case #10

Authors: Anne D. Lewis, DVM, PhD, DACVP, Professor, Veterinary Pathologist , Oregon National Primate Research Center, Beaverton OR

Signalment: 245-day old infant female rhesus macaque (*Macaca mulatta*)

History: Infant removed from social housing with dam for lethargy. Developed seizures which resolved with midazolam; muscle fasciculations of right hand persisted. Unable to right herself from lateral recumbency. Euthanized due to poor prognosis.

Clinical Pathology: WBC 56,930/ul, 86% neutrophils, 3% bands, 11% lymphocytes, HCT 34.26%, platelets 455,000/ul

Gross Findings: The cerebrum is enlarged and swollen with multifocal areas of pallor, particularly affecting the temporal lobes bilaterally. Coronal section at midbrain reveals marked swelling, pallor and loss of tissue integrity of gray matter of left parietal, and temporal lobes with diffuse enlargement of left cerebral hemisphere and midline shift to the right. There are multiple pinpoint hemorrhages in the gray matter of the left parietal and temporal lobes.

