Methods: Histopathology, transmission electron microscopy (TEM), and next generation sequencing were completed from skin lesion samples.

Results: Lesions were confined to the caudolateral body and peduncle and were pink to red, raised, and mixed gelatinous and granular. Histopathology revealed proliferation of epithelial elements within dermal denticles producing malformed tooth-like structures resembling odontogenic neoplasms in other vertebrates. Nuclear inclusion bodies and viral particles were not observed with histopathology or TEM, respectively. BLAST analysis of Illumina MiSeq sequence data revealed viral sequences with greatest similarity (71.79% identity) to that of the giant guitarfish adomavirus (GAdoV). Lesions in the index animal have since partially regressed but persisted for one year, and four additional sand tiger sharks in the same enclosure have developed similar skin proliferations

Conclusions: This is the second report of an adomavirus characterized from proliferative skin lesions in an elasmobranch and the first virus described from a sand tiger shark. Additional sampling of other affected animals, genome assembly, and RNAscope *in situ* hybridization are underway.

IDENTIFICATION OF UNEXPECTED MYCOBATERIA IN FELINE AND CANINE CUTANEOUS LESIONS BY PCR ON FORMALIN-FIXED PARAFFIN-EMBEDDED TISSUES

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We report cutaneous mycobacterial infections in a cat and a dog with unexpected mycobacteria identified by PCR on formalin-fixed paraffin-embedded (FFPE) skin biopsy tissues. A 2-year-old indoor domestic cat from Pennsylvania, USA had subcutaneous nodules in the axillae, hindlimbs, and along the ventrum. Biopsy showed nodular histiocytic infiltrates with abundant intracellular acid-fast bacilli and mycobacterial immunolabeling, compatible with feline lepromatous leprosy. Culture was not performed, and PCR detected Mycobacterium avium complex (MAC) species. An 8-year-old domestic dog from Colonia, Uruguay had cutaneous nodules on both ear pinnae and left thigh. Ear biopsy showed pyogranulomatous inflammation with rare acid-fast bacilli and mycobacterial immunoreactivity, compatible with canine leproid granuloma. Mycobacterial culture was negative, and PCR detected a member of the Mycobacterium tuberculosis complex (MTBC). Neither animal had known immunosuppression or evidence of extracutaneous involvement. Canine leproid granuloma is typically caused by a nontuberculous *Mycobacterium* sp. of the *M. simiae* clade, and not reported in association with MTBC. Feline leprosy is caused by *M.*

lepraemurium and occasionally other atypical mycobacteria, and lesions are difficult to distinguish clinically from the rare entity of MAC associated opportunistic infection, as in this cat. Species-specific identification of mycobacterial infections is critical for optimal therapy but is difficult due to fastidious growth requirements and variable culturability. PCR is invaluable in the identification of human mycobacterial infections from FFPE tissue, especially when no fresh tissues are available for culture. These cases demonstrate similar value of PCR for accurate mycobacterial identification in FFPE tissues from domestic animals.

DIAGNOSTIC METHODS FOR THE ASSESSMENT OF METABOLIC BONE DISEASE IN RESPONSE TO DIETARY PHOSPHORUS, AND VITAMIN D3 IN NURSERY PIGS

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Background: Metabolic bone disease is an important cause of swine lameness, most often caused by inappropriate levels of dietary phosphorus (P) or vitamin D3. Diagnosis is challenging due to limitations in available diagnostic assays and questions involving the effectiveness and interpretation of assay results.

Objective: Determine the most sensitive method for diagnosing metabolic bone disease in swine and correlate histopathology, bone ash, and density.

Methods: Forty-four-day-old pigs (5 pigs per pen) were randomized to 6 dietary treatments, consisting of; 1) P deficiency, 2) meeting the P NRC requirement, 3) diet 2, including phytase, 4) industry-level P with phytase, and no vitamin D3, 5) diet 4 with 1,653 IU/kg of vitamin D, and 6) diet 5 with an additional 2,000 IU/kg vitamin D3. The 2nd rib, 10th rib, and fibula were quantified histologically in relation to failure of endochondral ossification (FEO) and the presence of infractions.

Results: Higher scores for FEO with increased infractions and thinner medullary bone trabeculae were observed in the pigs fed a P deficient diet. Histologic changes were more significant in the 10th rib compared to the 2nd rib and fibula. Differences in bone ash and density in response to vitamin D3 and P were most apparent with the fibulas and 2nd ribs.

Conclusion: These findings suggest that the 10th rib could be more sensitive in detecting histological changes related to metabolic bone disease than the 2nd rib. The 2nd rib and fibula were considered the most responsive to detecting differences in bone ash and density.