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Nomenclatural novelties : L. Ma, O.H. Cissé & J.A. Kovacs

Pneumocystis canis C. Weissenbacher-Lang ex L. Ma, O.H. Cissé & J.A. Kovacs, sp. nov.

IF557826

Holotype: Fig. 2c (Weissenbacher-Lang et al., J. Vet. Diagn. Invest. 29(5): 757-762 (2017))

Diagnosis: With an insertion of 33 nucleotides in the mitogenome (MT726212) at positions 2917-2949 (CTTTTTTTAATGAAAAATCTTCTAATTGAAAA) compared to the mitogenome of *P. carinii* (JX499145), *P. murina* (JX499144) and *P. jirovecii* (JX499143). With insertions of 12 nucleotides in the rRNA operon (MT780538) at positions 2021-2032 (AATCAAGTAATT), and an insertion of 13 nucleotides at positions 2539-2551 (TTTTAAAAGGGTA), and an insertion of 13 nucleotides at positions 6413-6425 (TTTTGATGTTAGA) compared to that of *P. carinii* (MT780539), *P. murina* (MT780542) and *P. jirovecii* (MT780540).

Notes: This species was identified from the lungs of a Whippet mixed-breed dog from Austria, as originally reported by Weissenbacher-Lang et al. (J. Vet. Diagn. Invest. 29(5):757-762. 2017). Briefly, this dog was 3 years old, male, and presented with respiratory distress. Radiographic examination showed diffuse interstitial infiltration and pneumomediastinum. Hematologic tests indicated marked leukocytosis and neutrophilia. The dog underwent thoracoscopy and resection of the left cranial lung lobe and the mediastinal and sternal lymph nodes. Histologic examination of resected lung and thoracic lymph node tissues demonstrated abundant foamy exudates in the alveolar spaces of the lungs and the medullary sinuses of the lymph node, with moderate lymphocyte infiltration in the interstitium. Presence of *Pneumocystis* in these tissues was confirmed by silver staining, in situ RNA hybridization and PCR in combination with DNA sequencing. The size of *Pneumocystis* cysts was measured on silver-stained paraffin-embedded lung tissue sections, with an average diameter of 3.6-4.6 μm . The morphology of this *Pneumocystis* organism was indistinguishable from *Pneumocystis* reported from humans and other animals.

Recently, we performed next-generation sequencing using genomic DNA samples extracted from the lung tissues of this dog, and assembled the complete mitochondrial genome and a large proportion of the nuclear genome of *Pneumocystis*. The mitogenome showed 21.4-29.8% nucleotide divergence from the mitogenome of *P. murina*, *P. carinii* and *P. jirovecii*, which are only species with complete mitogenome sequences currently available. The nuclear genome of this species showed 21.2-22.5% nucleotide divergence from that of *P. murina*, *P. carinii* and *P. jirovecii*. Both the mitogenome and nuclear genome sequences of this species have been deposited into NCBI database with accession numbers MT726212 (in GenBank) and PRJNA636786 (in BioProject), respectively.