

Supplements

Table S1: Detected bacterial and fungal microorganisms in raccoon dogs presented with sarcoptic mange

Animal	Microorganism Organ	No growth	<i>Acinetobacter</i> spp.	aerobic bacilli	α -streptococci	<i>C. perfringens</i> ¹	<i>Coryne. auriscanis</i> ²	<i>Enterobacter</i> spp.	<i>Enteroc. faecalis</i> ³	<i>Escherichia coli</i>	<i>Fungi</i> ⁴	<i>Lactococcus</i> spp.	<i>Macrococcus</i> spp.	other <i>Enterobacteriales</i> ⁵	<i>Pseudomonas</i> spp.	<i>Psychrobacter</i> spp.	<i>S. pseudintermedius</i> ⁶	Coag.-neg. staph. ⁷	<i>Strep. canis</i> ⁸	<i>Strep. dysgalactiae</i>	<i>Vagococcus</i> spp.
Raccoon dog 1 (Np1)	Liver			(+)	+			+				+		+			+	+			
	Spleen											(+)					+	+			
	Kidney				+									(+)			++	+			
	Lung		+		+				+			+		+			+++	+	+		
	Small Intestine			+	++	+++						+		(+)			++				
	Large Intestine			++	++	+++						+					+				
	Brain				(+)							(+)		(+)			+	+			
	Reproductive Organs	+																			
	Skin													+		+	+++				
Raccoon dog 2 (Np2)	Liver												+				(+)				
	Spleen																				
	Kidney				+		+						+	(+)			+	++		+	
	Lung				+		+						+				+	+			
	Small Intestine				+		+						+				(+)	+			
	Large Intestine				+		+			+			+				(+)	+			
	Mesenteric lymph node						+						+				(+)	+			
	Brain				+		++						++				+	++		+	
	Reproductive Organs				+		+						+				+	++			
	Skin						+++						+				+++	+++			

(continued)

Animal	Microorganism Organ																				
		No growth	<i>Acinetobacter</i> spp.	aerobic bacilli	α -streptococci	<i>C. perfringens</i> ¹	<i>Coryne. auriscanis</i> ²	<i>Enterobacter</i> spp.	<i>Enteroc. faecalis</i> ³	<i>Escherichia coli</i>	<i>Fungi</i> ⁴	<i>Lactococcus</i> spp.	<i>Macrococcus</i> spp.	other <i>Enterobacteriales</i> ⁵	<i>Pseudomonas</i> spp.	<i>Psychrobacter</i> spp.	<i>S. pseudintermedius</i> ⁶	Coag.-neg. staph. ⁷	<i>Strep. canis</i> ⁸	<i>Strep. dysgalactiae</i>	<i>Vagococcus</i> spp.
Raccoon dog 3 (Np3)	Liver													(+)		+			+		
	Spleen				+											+	(+)	(+)			
	Kidney													(+)	+	+	+	+	++		
	Lung			+	+									+	+	++	+	++	++		
	Small Intestine			+	+	+											+	+	+		
	Large Intestine			+	+	+++									+		+	+	+		
	Mesenteric lymph node				+												+	+	+++		
	Brain				+++									+	+		++	++	+		
	Reproductive Organs				+									+	+			+	+		
	Skin			+	++		+++											++	++		
Raccoon dg 4 (Np4)	Liver																+				
	Spleen																+				
	Kidney																+				
	Lung																				
	Small Intestine			+				++									+				
	Large Intestine			++				++									++				
	Mesenteric lymph node																(+)				
	Skin													(+)			+++				

(continued)

Animal	Microorganism Organ																					
		No growth	<i>Acinetobacter</i> spp.	aerobic bacilli	α -streptococci	<i>C. perfringens</i> ¹	<i>Coryne. auriscanis</i> ²	<i>Enterobacter</i> spp.	<i>Enteroc. faecalis</i> ³	<i>Escherichia coli</i>	<i>Fungi</i> ⁴	<i>Lactococcus garviae</i>	<i>Lactococcus lactis</i>	<i>Macrococcus</i> spp.	other <i>Enterobacteriales</i> ⁵	<i>Pseudomonas</i> spp.	<i>Psychrobacter</i> spp.	<i>S. pseudintermedius</i> ⁶	Coag.-neg. staph. ⁷	<i>Strep. canis</i> ⁸	<i>Strep. dysgalactiae</i>	<i>Vagococcus</i> spp.
Raccoon dog 5 (Np5)	Liver	+																				
	Spleen												(+)					(+)				
	Kidney						+						(+)					+	(+)	(+)		
	Lung						+						+	(+)	(+)			+	(+)			
	Small Intestine					+				+			+					+	(+)	(+)		
	Large Intestine			+		+++				(+)	+		+					+	+	(+)		
	Mesenteric lymph node						(+)											(+)				
	Inguinal lymph node																	++	(+)	(+)		
	Brain						+											(+)	(+)			
	Reproductive Organs																	(+)				
	Skin						++							++				+++	+			

¹*C. perfringens*, *Clostridium perfringens*; ²*Coryne. auriscanis*, *Corynebacterium auriscanis*; ³*Enteroc. faecalis*, *Enterococcus faecalis*; ⁴Fungi, not further identified; ⁵include *Buttiauxella* spp., *Leclercia* spp., *Pantoea* spp., *Rahnella* spp., *Raoultella* spp., *Serratia* spp.; ⁶*S. pseudintermedius*, *Staphylococcus pseudintermedius*; ⁷Coag.-neg. staph., coagulase negative staphylococci;

⁸*Strep. canis*, *Streptococcus canis*

Table S2: Biological data and pathological findings of the five investigated raccoon dogs presented with sarcoptic mange

Biological data				Pathological findings	
Animal	Sex	Age	Nutritional status	Gross	Histopathology
Raccoon dog 1 (Np1)	M	juvenile	Not assessable	Skin: Alopecia with severe lichenification, crust formation and hyperpigmentation of the skin; Ectoparasitosis, mild (ticks and louse flies)	Skin: Epidermal hyperplasia and hyperkeratosis, diffuse, severe, with mild eosinophilic dermatitis and numerous intracorneal mites; Tonsils: Follicular hyperplasia, mild; Retropharyngeal lymph node: Follicular hyperplasia, severe; Lung: Bronchopneumonia, necrosuppurative, multifocal,, acute, mild; Pulmonary lymph node: Follicular hyperplasia, severe; Liver: Hepatolipidosis, diffuse, mild; Spleen: Follicular hyperplasia, mild; Intestine: Enteritis, lymphocytic, multisegmental, chronic, mild; Mesenteric lymph node: Follicular hyperplasia, severe; Peyer's patches : Follicular hyperplasia; Inguinal lymph node: follicular hyperplasia, severe
Raccoon dog 2 (Np2)	F	adult	Good	Skin: Alopecia with severe lichenification, crust formation and hyperpigmentation of the skin; Ectoparasitosis, mild (ticks) Intestine: Endoparasitosis, mild (nematodes); Catarrhal enteritis, segmental, acute, mild.	Skin: Epidermal hyperplasia and hyperkeratosis, diffuse, mild, with mild eosinophilic dermatitis and single intracorneal mites; Nasal mucosa: Rhinitis, suppurative and necrotizing, focal, subacute, mild, with intralesional foreign material; Retropharyngeal lymph node: Follicular hyperplasia, mild; Lung: Pneumonia, bronchointerstitial, lymphohistiocytic, diffuse, chronic, mild, with multifocal involvement of eosinophil granulocytes; airway smooth muscle hypertrophy, diffuse, moderate; Mesenteric lymph node: Follicular hyperplasia, severe; Peyer's patches: Follicular hyperplasia, severe
Raccoon dog 3 (Np3)	M	juvenile	Poor	Skin: Alopecia with severe lichenification, crust formation and hyperpigmentation of the skin; Ectoparasitosis, severe (ticks); Intestine: Endoparasitosis, moderate (nematodes); Catarrhal enteritis, segmental, mild	Skin: Epidermal hyperplasia and hyperkeratosis, diffuse, severe, with mild eosinophilic dermatitis and numerous intracorneal mites; Lung: Bronchopneumonia, suppurative, multifocal, subacute, mild; Airway smooth muscle hypertrophy, diffuse, moderate; Intestine: few intraluminal nematodes, Peyer's patches plates: Follicular hyperplasia, mild

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Biological data				Pathological findings	
Animal	Sex	Age	Nutritional status	Gross	Histopathology
Raccoon dog 4 (Np4)	M	juvenile	Not assessable	Skin: Alopecia with severe lichenification, crust formation and hyperpigmentation of the skin; Ectoparasitosis, severe (ticks, louse flies; skin scraping during necropsy showed numerous mites (morphologically consistent with <i>Sarcoptes</i> spp.); Intestine: Endoparasitosis, mild (nematode); Catarrhal enteritis, segmental, mild	Skin: Epidermal hyperplasia and hyperkeratosis, diffuse, severe, with mild eosinophilic dermatitis and numerous intracorneal mites; Retropharyngeal lymph node: Follicular hyperplasia, severe; Lung: Bronchopneumonia, suppurative, multifocal, subacute, moderate; Liver: Hepatitis, necrotizing, (sub)acute, mild; Spleen: hyperplasia of the red and white pulp, moderate; Peyer's patches: Follicular hyperplasia, severe; Bone marrow: Trilinear hyperplasia
Raccoon dog 5 (Np5)	M	adult	Poor	Skin: multifocal thinning of the haircoat; Ectoparasitosis, mild (ticks); Intestine: Endoparasitosis, mild (cestodes)	Skin: Epidermal hyperplasia and hyperkeratosis, diffuse, severe, with mild eosinophilic dermatitis and numerous intracorneal mites; Tonsils: Follicular hyperplasia, moderate; Retropharyngeal lymph node: Follicular hyperplasia, mild; Trachea: Calcification of the cartilage, mild; Lung: Pneumonia, bronchointerstitial, lymphoplasmacytic and eosinophilic, diffuse, chronic, mild, ; Liver: Hepatitis, necrotizing, multifocal, acute, moderate; Stomach: Follicular gastritis, multifocal, chronic, moderate; Spleen: hyperplasia of the red and white pulp, mild; Intestine: Enteritis, mostly eosinophilic, segmental, acute, mild; Kidney: Fibrosis, interstitial, focal, chronic, severe; Aortic lymph node: Follicular hyperplasia, severe; Inguinal lymph node: Follicular hyperplasia, severe; Bone marrow: Trilinear hyperplasia