

<b>Patient Name:</b>		<b>Health Status:</b>		<b>Account #:</b>	
<b>Owner's Name:</b>		<b>Ordered by:</b>		<b>Sample ID:</b>	
<b>Breed:</b>	Domestic Short Hair	<b>Email:</b>		<b>Sample Type:</b>	Nasal
<b>Age:</b>	13	<b>Hospital:</b>		<b>Received Date:</b>	
<b>Species:</b>	Feline	<b>Location:</b>		<b>Report Date:</b>	

## Potential Clinically Relevant Microbes Detected:

Listed are those bacteria and fungi detected in the specimen that are of potential clinical relevance. Results from this report should be considered together with additional clinical data gathered by the veterinarian (physical examination, medical history, cytology, etc.) as the microbes detected may or may not be the cause of the clinical condition. For a comprehensive list of all microorganisms detected in this specimen see page 3 of this report. Please consider that even commensals can become pathogenic in certain patients under certain circumstances. Further, novel or extremely rare pathogens may be found on page 3 for your consideration and clinical diagnosis.

### 1. Bacteria

Species Detected	AID*	Percentage (%)	Cells per Sample
<a href="#">Mycoplasma cynos</a> [1]	<a href="#">[Link]</a>	46.56	2,100,000
<a href="#">Fusobacterium russii</a> [2]	--	38.67	1,700,000
<a href="#">Porphyromonas cangingivalis</a> [3]	<a href="#">[Link]</a>	0.49	22,000
<a href="#">Ureaplasma felinum</a> [4][5][6]	<a href="#">[Link]</a>	0.11	4,800

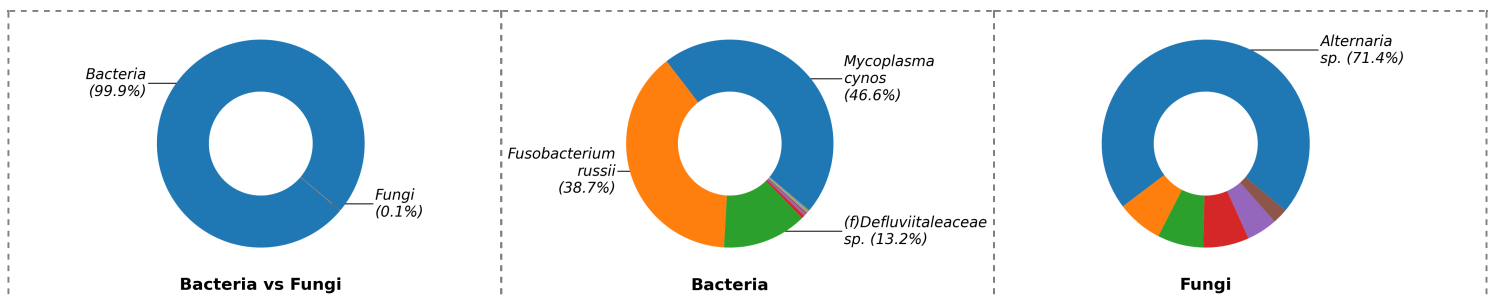
### 2. Fungi

#### No Known Fungal Pathogen Detected!

The number of cells per sample is subject to variations based on sampling technique applied to collect the sample. Following the sampling protocol closely is highly recommended. Less than 1000 cells of Bacteria or less than 10 cells of Fungi are often not clinically relevant unless poor sampling technique was applied, or lower sample volume was submitted.

\* AID stands for Animal Infection Database. It is a resource center to provide more information for microbes in animal microbiome settings.

## Microbial Overview:



**Bacteria vs Fungi:** the relative abundance between Bacteria and Fungi. **Bacteria:** the percentage profile of bacterial species alone. **Fungi:** the percentage profile of fungi species alone. Each color represents a species. The larger the colored segment is, the more abundant the species is.

**Antimicrobial Resistance for Detected Clinically Relevant Microbes**

The sample was screened for antibiotic resistance genes and intrinsic resistances. Please follow antimicrobial stewardship guidelines for cautious antibiotic use.

Drug Tiers*	Antibiotics	<i>Mycoplasma cynos</i> (46.6 %)	<i>Fusobacterium russii</i> (38.7 %)	<i>Porphyromonas cangingivalis</i> (0.5 %)	<i>Ureaplasma felinum</i> (0.1 %)	Suggested Dose†	Drug Delivery
1st	Cefazolin	NR	NRD	NRD	NRD	15 mg/kg, q 12 hrs	IV, SC
	Cephalothin	NR	NRD	NRD	NRD	4-20 mg/kg, q 8 hrs	PO
	Cephalexin	NR	NRD	NRD	NRD	22 mg/kg, q 12 hrs	PO
	Cefadroxil	NR	NRD	NRD	NRD	22 mg/kg, q 12 hrs	PO
	Cefoxitin	NR	G	G	NRD	15 mg/kg, q 12 hrs	IV, SC
	Penicillin	NR	G	G	NRD	8-10 mg/kg, q 8 hrs	PO
	Penicillin G	NR	G	G	NRD	--	--
	Oxacillin	NR	NRD	NRD	NRD	22 mg/kg, q 8 hrs	IV
	Ampicillin	NR	G	G	NRD	22 mg/kg, q 8 hrs	IV, SC
	Amoxicillin	NR	G	NRD	NRD	22 mg/kg, q 8 hrs	PO
	Clavamox	NR	G	G	NRD	13.75 mg/kg, q 12 hrs	PO
	Gentamicin	F	NRD	NRD	NRD	6 mg/kg, q 24 hrs	IV, SC
	Tobramycin	F	NRD	NRD	NRD	--	IV/Topical Use
	Neomycin	F	NRD	NRD	NRD	--	Topical Use
	Clindamycin	F	G	G	NRD	5.5 mg/kg, q 12 hrs	PO
	Lincomycin	F	NRD	NRD	NRD	15-25 mg/kg, q 24hrs	PO
	Doxycycline	F	NRD	NRD	NRD	5 mg/kg, q 12 hrs	PO
	Minocycline	F	NRD	NRD	NRD	10 mg/kg, q 12 hrs	PO
	Tetracycline	F	G	NRD	NRD	20 mg/kg, q 12 hrs	PO
	2nd	Sulfonamide	NR	NRD	NRD	NRD	30 mg/kg, q 12 hrs
Trimethoprim-sulfamethoxazole		NR	NRD	NRD	NRD	15-30 mg/kg, q 24 hrs	PO
Metronidazole		NR	NRD	NRD	NRD	10 mg/kg, q 8 hrs	IV
Cefovecin		NR	NRD	NRD	NRD	8 mg/kg, once	SC
Cefpodoxime		NR	NRD	NRD	NRD	5 mg/kg, q 24 hrs	PO
Ceftiofur		NR	NRD	NRD	NRD	2.2 mg/kg, q 24 hrs	SC
Timentin		NR	NRD	NRD	NRD	--	Topical Use
Azithromycin		F	NRD	NRD	NRD	5 mg/kg q 12 hrs	PO
Orbifloxacin		NR	NRD	NRD	NRD	2.5-7.5 mg/kg, q 24 hrs	PO
Chloramphenicol		F	NRD	NRD	NRD	35 mg/kg q 8 hrs	PO
3rd	Florfenicol	F	NRD	NRD	NRD	20 mg/kg, q 12 hrs	PO
	Amikacin	F	NRD	NRD	NRD	15 mg/kg, q 24 hrs	IV, SC
	Rifampin	NR	NRD	NRD	NRD	5-10 mg/kg, q 12 hrs	PO
	Imipenem	NR	G	G	NRD	10 or 20 mg/kg, q 8 hrs	--
	Levofloxacin	NR	NRD	NRD	NRD	10-30 mg/kg, q 24 hrs	IV/PO
	Marbofloxacin	NR	NRD	NRD	NRD	2.75-5.5 mg/kg, q 24 hrs	PO
	Pradofloxacin§	NR	NRD	NRD	NRD	3.0 mg/kg, q 24 hrs	PO
	Enrofloxacin	NR	NRD	NRD	NRD	5 mg/kg, q 24 hrs	PO
	Ciprofloxacin¶	NR	NRD	NRD	NRD	--	Topical Use
	Ceftazidime	NR	NRD	NRD	NRD	3-30 mg/kg, q 6-8 hrs	IV
	Mupirocin	NRD	NRD	NRD	NRD	--	Topical Use
	Nitrofurantoin	NRD	NRD	NRD	NRD	4.4-5mg/kg, q 24 hrs	PO
	Colistin	NR	NRD	NRD	NRD	8-9g/kg, q 24 hrs	PO
Ticarcillin	NR	NRD	NRD	NRD	3.1 g, q 4-6 hrs	IV	
Piperacillin-Tazobactam	NR	NRD	NRD	NRD	90 mg/kg, 30min q 8 hrs	IV	

**Abbreviation Keys and Symbols:**

NR	Not Recommended (Due to either Resistance Genes Detected, Intrinsic Resistance, or < 10% Effectiveness in Antibiogram Studies)
P	Poor Performance (< 50% Effectiveness in Antibiogram Studies)
F	Fair Performance (< 75% Effectiveness in Antibiogram Studies)
G	Good Performance (> 75% Effectiveness in Antibiogram Studies)
NRD	No Antibiotic Resistance Detected Based on the MiDOG Analysis

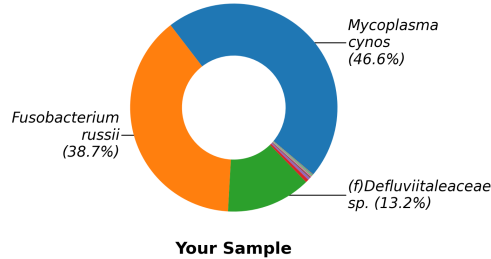
PO	Oral, by mouth
IV	Intravenous Injection
SC	Subcutaneous Injection
TU	Topical Use
--	No Info

*	Antibiotic Drug Tiers for Companion Animals, Antimicrobial Resistance and Stewardship Initiative, University of Minnesota
†	Dosis may vary based on patient species and/or type of infection. Reference at: <a href="http://www.midogtest.com/antibiotics">www.midogtest.com/antibiotics</a>
§	Contraindicated in animal patients
¶	Variable bioavailability in animal patients

## Supplemental Data

### Total Bacteria Composition

Charts below depict the relative abundance of all detected bacterial species. Each color represents a different bacterial species. The larger the colored segment is, the more abundant that species is in the specimen.

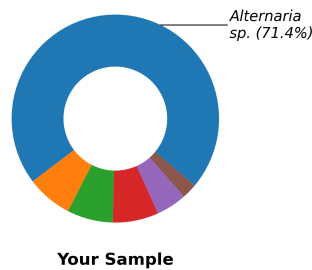


The table below lists top 8 bacterial species detected within the limit of detection. The absolute and relative abundances of each species is shown. Potential clinically relevant microbes are highlighted in red.

Species Detected	AID*	Percentage (%)	Cells per Sample
<i>Mycoplasma cynos</i> [1]	<a href="#">[Link]</a>	46.56	2,100,000
<i>Fusobacterium russii</i> [2]	--	38.67	1,700,000
(f)Defluviitaleaceae sp.	--	13.18	590,000
<i>Porphyromonas cangingivalis</i> [3]	<a href="#">[Link]</a>	0.49	22,000
(o)Neisseriales sp.	--	0.37	16,000
<i>Cutibacterium acnes</i>	--	0.22	9,800
<i>Ureaplasma felinum</i> [4][5][6]	<a href="#">[Link]</a>	0.11	4,800
(f)Campylobacteraceae sp.	--	0.10	4,500

### Total Fungal Composition

Charts below depict the relative abundance of all detected fungal species. Each color represents a different fungal species. The larger the colored segment is, the more abundant that species is in the specimen.



The table below lists top 8 fungal species detected within the limit of detection. The absolute and relative abundances of each species is shown. Potential clinically relevant microbes are highlighted in red.

Species Detected	AID*	Percentage (%)	Cells per Sample
<i>Alternaria sp.</i>	--	71.43	30
<i>Cladosporium sp.</i>	--	7.14	3
<i>Malassezia restricta</i>	--	7.14	3
(p)Ascomycota sp.	--	7.14	3
<i>Microdochium sp.</i>	--	4.76	2
(o)Hypocreales sp.	--	2.38	1

\* AID stands for Animal Infection Database. It is a resource center to provide more information for microbes in animal microbiome settings.

## Antimicrobial Resistance Genes Detected

The table below lists antimicrobial resistance genes that are detected in this sample. For antibiotics usage guidance, please first refer to the "Antibiotic Resistance" table shown in Page 2. Use this table only as an additional resource when needed. Inferring antimicrobial resistance from the resistance genes detected should be cautious, especially in a mixed microbial population.

AMR_Gene_Detected	Resistance_Against	Function
<i>APH(3'')-Ib</i>	aminoglycoside	aminoglycoside phosphotransferase
<i>APH(3')-IIIa</i>	aminoglycoside	aminoglycoside phosphotransferase
<i>ANT(6)-Ia</i>	aminoglycoside	aminoglycoside nucleotidyltransferase
<i>AAC(3)-Ia</i>	aminoglycoside	aminoglycoside acetyltransferase
<i>ANT(4')-Ib</i>	aminoglycoside	Kanamycin nucleotidyltransferase
<i>APH(6)-Id</i>	aminoglycoside	aminoglycoside phosphotransferase
<i>APH(3')-Ia</i>	aminoglycoside	aminoglycoside phosphotransferase
<i>SHV</i>	carbapenem, cephalosporin, penam	class A beta-lactamase
<i>parC (Mycoplasma cynos)</i>	fluoroquinolone	DNA topoisomerase IV, subunit A (mutated)
<i>linA</i>	lincosamide	lincosamide nucleotidyltransferase
<i>mphD</i>	macrolide	macrolide phosphotransferase
<i>mphC</i>	macrolide	macrolide phosphotransferase
<i>mecA</i>	monobactam, carbapenem, cephalosporin, cephamycin, penam, penem	penicillin-binding protein 2a
<i>mupA</i>	mupirocin	alternative isoleucyl-tRNA synthetase
<i>blaZ</i>	penam	class A beta-lactamase
<i>ermC</i>	streptogramin, macrolide, lincosamide	23S rRNA methyltransferase
<i>ermB</i>	streptogramin, macrolide, lincosamide	ribosomal methylase
<i>ermX</i>	streptogramin, macrolide, lincosamide	ribosomal RNA methyltransferase
<i>msrA</i>	streptogramin, tetracycline, phenicol, macrolide, lincosamide	ABC-F ribosomal protection protein
<i>msrD</i>	streptogramin, tetracycline, phenicol, macrolide, lincosamide	ABC-F ribosomal protection protein
<i>sul2</i>	sulfonamide	dihydropteroate synthase
<i>sul1</i>	sulfonamide	dihydropteroate synthase
<i>tetK</i>	tetracycline	tetracycline efflux pump
<i>tetW</i>	tetracycline	ribosomal protection protein

## References

1. Sykes, J. E. (2013). Canine and feline infectious diseases. Elsevier Health Sciences
2. LOVE, D. N., Jones, R. F., & BAILEY, M. (1980). Characterization of Fusobacterium species isolated from soft tissue infections in cats. Journal of Applied Bacteriology, 48(2), 325-331.
3. J. Glenn, Songer; Karen W., Post (2004). Veterinary Microbiology Bacterial and Fungal Agents of Animal Disease. London: Elsevier Health Sciences. ISBN 1-416-06501-6.
4. Bennett, John E., Raphael Dolin, and Martin J. Blaser. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases E-Book. Elsevier health sciences, 2019.
5. Sykes, Jane E., and Craig E. Greene. Infectious Diseases of the Dog and Cat-E-Book. Elsevier Health Sciences, 2013.
6. Williams, Elizabeth S., and Ian K. Barker, eds. Infectious diseases of wild mammals. John Wiley & Sons, 2008.

## Methods

The MiDOG® All-in-One Microbial Test is a targeted, Next-generation DNA sequencing testing service able to identify molecular signatures unique to the identity and character of a specific microorganism. This test relies on safeguarded preservation and transport of collected samples, thorough extraction of DNA from all microbes present in the specimen, select amplification of microbial DNA followed by Next-generation DNA sequencing using the latest technologies from Illumina (Illumina, Inc., San Diego, CA). Data handling is done via curated microbial databases to accurately align DNA sequences to ensure precise and accurate (species-level) identification of all bacteria and fungi present in the specimen.

## When no Bacterial or Fungal Species are Detected:

When no bacterial or fungal species are detected in this test, this result may be due to a very low microbial load and/or low concentration of microbial DNA in the sample provided. In this case, we recommend re-sampling the area of interest and re-submitting specimen for analysis.

## Phylogenetic Rank Abbreviations

If the detected bacterial or fungal taxon could not be identified down to the genus level, the closest phylogenetic rank identified is provided. An abbreviation indicating the level of the rank is displayed aside. The meaning of the abbreviations is shown as:(p) Phylum level, (c) Class level, (o) Order level, and (f) Family level.

## Disclaimer

The information contained in this MiDOG® report is intended only to be factor for use in a diagnosis and treatment regime for the animal patient. As with any diagnosis or treatment regime, you should use clinical discretion with each animal patient based on a complete evaluation of the animal patient, including history, physical presentation and complete laboratory data, including confirmatory tests. All test results should be evaluated in the context of the patients individual clinical presentation. The information in the MiDOG® report has not been evaluated by the FDA.

## Customer Support

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