

Patient Name:		Health Status:		Account #:	
Owner's Name:		Ordered by:		Sample ID:	
Breed:	Bottlenose Dolphin	Email:		Sample Type:	Thoracic cavity
Age:	23	Hospital:		Received Date:	
Species:	Tursiops Truncatus	Location:		Report Date:	

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

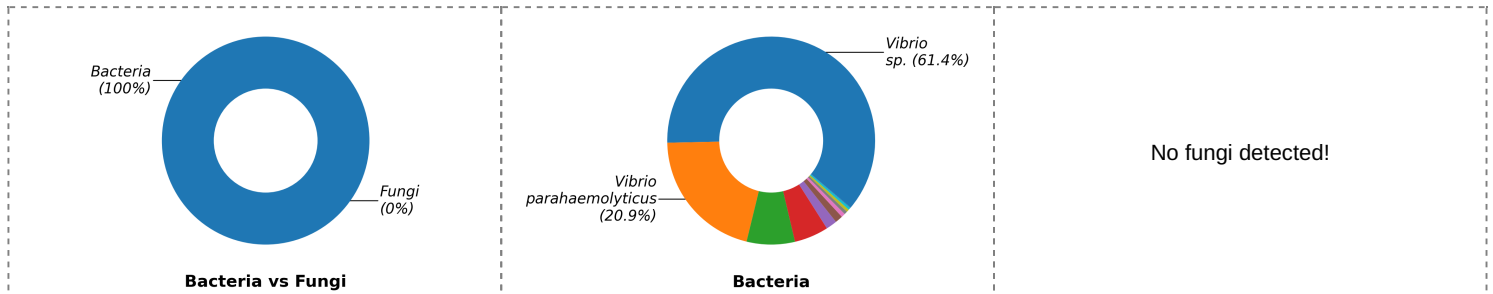
Species Detected	Percentage (%)	Cells per Sample
Vibrio sp. [1][2][3]	61.44	130,000
Vibrio parahaemolyticus [1][2][3]	20.86	44,000
Vibrio alginolyticus [1][2][3]	7.50	16,000
Vibrio alginolyticus-diaboli-parahaemolyticus [1][2][3]	5.32	11,000
Enterococcus faecalis [4]	0.37	770

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.

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.

Antibiotic Resistance for Detected Clinically Relevant Microbes

The sample was screened for the presence of antibiotic resistance genes and intrinsic resistances of clinically relevant microorganisms. For this analysis more than 90 antibiotic resistance genes were screened. The cautious use of any antibiotic drug is highly recommended. Please follow the guidelines for antimicrobial stewardship in veterinary practice.

This table lists antibiotic sensitivities/resistances for the indicated bacteria based on detection of specific antibiotic resistance genes and naturally occurring, or intrinsic, resistance to specific antibiotics previously identified for that organism.

Drug Tiers*	Antibiotics	<i>Vibrio sp.</i> (61.4 %)	<i>Vibrio parahaemolyticus</i> (20.9 %)	<i>Vibrio alginolyticus</i> (7.5 %)	<i>Vibrio alginolyticus-diabolicus-parahaemolyticus</i> (5.3 %)	<i>Enterococcus faecalis</i> (0.4 %)
1st	Cefazolin	NRD	NRD	NRD	NRD	NR
	Cephalothin	NRD	NRD	NRD	NRD	NR
	Cephalexin	NRD	NRD	NRD	NRD	NR
	Cefadroxil	NRD	NRD	NRD	NRD	NR
	Cefoxitin	NRD	NRD	NRD	NRD	NR
	Penicillin	NRD	NRD	NRD	NRD	NR
	Penicillin G	NRD	NRD	NRD	NRD	NR
	Oxacillin	NRD	NRD	NRD	NRD	NR
	Ampicillin	NRD	NRD	NRD	NRD	NR
	Amoxicillin	NRD	NRD	NRD	NRD	NR
	Clavamox	NRD	NRD	NRD	NRD	G
	Gentamicin	NRD	NRD	NRD	NRD	NR
	Tobramycin	NRD	NRD	NRD	NRD	NR
	Neomycin	NRD	NRD	NRD	NRD	NR
	Clindamycin	NRD	NRD	NRD	NRD	NR
	Lincomycin	NRD	NRD	NRD	NRD	NR
	Doxycycline	NRD	NRD	NRD	NRD	NR
	Minocycline	NRD	NRD	NRD	NRD	NR
Tetracycline	NRD	NRD	NRD	NRD	NR	
Sulfonamide	NRD	NR	NR	NR	NRD	
Trimethoprim-sulfamethoxazole	NRD	NRD	NRD	NRD	NR	
Metronidazole	NRD	NRD	NRD	NRD	NR	
2nd	Cefovecin	NRD	NRD	NRD	NRD	NR
	Cefpodoxime	NRD	NRD	NRD	NRD	NR
	Ceftiofur	NRD	NRD	NRD	NRD	NR
	Timentin	NRD	NRD	NRD	NRD	NR
	Azithromycin	NRD	NRD	NRD	NRD	NR
	Orbifloxacin	NRD	NRD	NRD	NRD	NR
3rd	Chloramphenicol	NRD	NRD	NRD	NRD	G
	Florfenicol	NRD	NRD	NRD	NRD	F
	Amikacin	NRD	NRD	NRD	NRD	NR
	Rifampin	NRD	NRD	NRD	NRD	P
	Imipenem	NRD	NRD	NRD	NRD	F
	Levofloxacin	NRD	NRD	NRD	NRD	NR
	Marbofloxacin	NRD	NRD	NRD	NRD	NR
	Pradofloxacin [§]	NRD	NRD	NRD	NRD	NR
	Enrofloxacin	NRD	NRD	NRD	NRD	NR
	Ciprofloxacin [¶]	NRD	NRD	NRD	NRD	NR
	Ceftazidime	NRD	NRD	NRD	NRD	NR
	Mupirocin	NRD	NRD	NRD	NRD	NR
Nitrofurantoin	NRD	NRD	NRD	NRD	G	
Colistin	NRD	NRD	NRD	NRD	NR	
Ticarcillin	NRD	NRD	NRD	NRD	NR	
Piperacillin-Tazobactam	NRD	NRD	NRD	NRD	G	

Abbreviation Keys:

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 Antibiotic Target Panel

Symbols:

*	Reference: Antimicrobial Resistance and Stewardship Initiative University of Minnesota, Antibiotic Drug Tiers and Selection List for Companion Animals.
§	Variable bioavailability in canine patients.
¶	Contraindicated in canine patients.



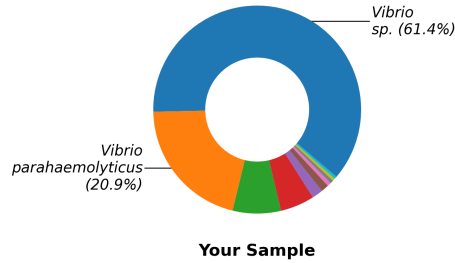
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Supplemental Data

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	Percentage (%)	Cells per Sample
<i>Vibrio sp.</i> [1][2][3]	61.44	130,000
<i>Vibrio parahaemolyticus</i> [1][2][3]	20.86	44,000
<i>Vibrio alginolyticus</i> [1][2][3]	7.50	16,000
<i>Vibrio alginolyticus-diabolicus-parahaemolyticus</i> [1][2][3]	5.32	11,000
(c) <i>Flavobacteriia sp.</i>	1.71	3,600
<i>Salinivibrio costicola</i>	1.19	2,500
<i>Pseudoalteromonas ruthenica</i>	0.61	1,300
(c) <i>Gammaproteobacteria sp.</i>	0.49	1,000

Total Fungal Composition

No Fungi Detected!



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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>ANT(6)-Ia</i>	aminoglycoside	aminoglycoside nucleotidyltransferase
<i>lnuA</i>	lincosamide	lincosamide nucleotidyltransferase
<i>blaZ</i>	penam	class A beta-lactamase
<i>ermC</i>	streptogramin, macrolide, lincosamide	23S rRNA methyltransferase
<i>msrA</i>	streptogramin, tetracycline, phenicol, macrolide, lincosamide	ABC-F ribosomal protection protein
<i>sul2</i>	sulfonamide	dihydropteroate synthase
<i>tetL</i>	tetracycline	tetracycline efflux pump
<i>tetW</i>	tetracycline	ribosomal protection protein
<i>tetC</i>	tetracycline	tetracycline efflux pump



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References

1. Carpenter, James W., and Chris Marion. Exotic Animal Formulary-E-Book. Elsevier Health Sciences, 2017.
2. Wallach, Joel D., and William J. Boever. Diseases of exotic animals. Medical and surgical management. WB Saunders Co., 1983.
3. Ballard, Bonnie, and Ryan Cheek, eds. Exotic animal medicine for the veterinary technician. John Wiley & Sons, 2016.
4. Greene, Craig E. Infectious Diseases of the Dog and Cat-E-Book. Elsevier Health Sciences, 2013.

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 canine patient. As with any diagnosis or treatment regime, you should use clinical discretion with each canine patient based on a complete evaluation of the canine 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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