

|                      |                             |                                 |
|----------------------|-----------------------------|---------------------------------|
| <b>Patient Name:</b> | <b>Health Status:</b> Other | <b>Account #:</b>               |
| <b>Owner's Name:</b> | <b>Ordered by:</b>          | <b>Internal ID:</b>             |
| <b>Breed:</b>        | <b>Email:</b>               | <b>Sample Type:</b>             |
| <b>Age:</b>          | <b>Hospital:</b>            | <b>Received Date:</b> 2/26/2026 |
| <b>Species:</b> Dog  | <b>Location:</b>            | <b>Report Date:</b> 03/02/26    |

## Potential Clinically Relevant Microbes Detected:

Top 5 potential Bacterial and Eukaryotic pathogens are listed. The comprehensive list of all microbes are shown in page 3. "Inferred" column indicates the difference of the species' abundance from "Normal Range", i.e. its abundance in clinical healthy animals. Less than 1000 cells of Bacteria or less than 10 cells of Fungi are often not clinically significant.

### 1. Bacteria

| Species Detected                             | AID*                   | Percentage | Cells per Sample | Normal Range | Inferred Status |
|--|------------------------|------------|------------------|--------------|-----------------|
| <a href="#">Anaerobiospirillum sp.</a> [1]   | --                     | 2.8 %      | 280,000,000      | NA           | NA              |
| <a href="#">Clostridium perfringens</a> [2]  | --                     | 1.1 %      | 110,000,000      | NA           | NA              |
| <a href="#">Helicobacter rappini</a> [5]     | <a href="#">[Link]</a> | 0.1 %      | 10,000,000       | NA           | NA              |
| <a href="#">Campylobacter helveticus</a> [6] | <a href="#">[Link]</a> | 0.1 %      | 5,000,000        | 0-4.6 %      | ● Normal        |

### 2. Fungi

No Known Eukaryotic Pathogen Detected!

### 3. Parasites

| Species Detected                          | AID* | Percentage | Cells per Sample | Normal Range | Inferred Status |
|---|------|------------|------------------|--------------|-----------------|
| <a href="#">Tritrichomonas foetus</a> [7] | --   | 96.0 %     | 2,100            | NA           | NA              |
| <a href="#">Giardia duodenalis</a> [8]    | --   | 3.5 %      | 78               | NA           | NA              |

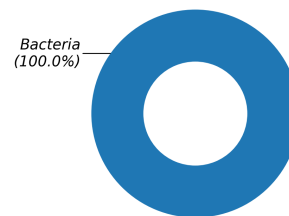
#### Abbreviation Key:

- **Normal Range.** Species detected within the reference range of clinically healthy animals.
- **Abnormal Range.** Species detected outside the reference range of clinically healthy animals.
- **Disease Range.** Species detected significantly higher than the reference range of clinically healthy animals.

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

## Microbial Composition Overview:

| Taxa            | Percentage |
|-----------------|------------|
| Bacteria        | 99.99%     |
| Fungi           | 0%         |
| Other_Eukaryota | 0%         |



Grand Composition

# Antimicrobial Resistance for Detected Clinically Relevant Microbes

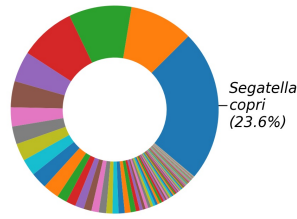
The sample was screened for antibiotic resistance genes and intrinsic resistances. Please follow antimicrobial stewardship guidelines for cautious antibiotic use.

| Drug Tiers*                   | Antibiotics     | <i>Anaerobiospirillum</i> sp. (2.8 %) | <i>Enterococcus lactis</i> (1.1 %) | <i>Helicobacter rappini</i> (0.1 %) | <i>Campylobacter helveticus</i> (0.1 %) | Suggested Dose†          | Drug Delivery  |
|-------------------------------|-----------------|---------------------------------------|------------------------------------|-------------------------------------|---|--------------------------|----------------|
| 1st                           | Cefazolin       | -                                     | R                                  | -                                   | -                                       | 15 mg/kg, q 12 hrs       | IV, SC         |
|                               | Cephalothin     | -                                     | R                                  | R                                   | R                                       | 4-20 mg/kg, q 8 hrs      | PO             |
|                               | Cephalexin      | -                                     | R                                  | -                                   | -                                       | 22 mg/kg, q 12 hrs       | PO             |
|                               | Cefadroxil      | -                                     | R                                  | -                                   | G                                       | 22 mg/kg, q 12 hrs       | PO             |
|                               | Cefoxitin       | -                                     | R                                  | -                                   | -                                       | 15 mg/kg, q 12 hrs       | IV, SC         |
|                               | Penicillin      | -                                     | R                                  | -                                   | -                                       | 8-10 mg/kg, q 8 hrs      | PO             |
|                               | Penicillin G    | -                                     | G                                  | -                                   | R                                       | -                        | -              |
|                               | Oxacillin       | -                                     | G                                  | -                                   | -                                       | 22 mg/kg, q 8 hrs        | IV             |
|                               | Ampicillin      | -                                     | G                                  | -                                   | -                                       | 22 mg/kg, q 8 hrs        | IV, SC         |
|                               | Amoxicillin     | -                                     | G                                  | G                                   | -                                       | 22 mg/kg, q 8 hrs        | PO             |
|                               | Clavamox        | -                                     | G                                  | -                                   | -                                       | 13.75 mg/kg, q 12 hrs    | PO             |
|                               | Gentamicin      | -                                     | R                                  | -                                   | -                                       | 6 mg/kg, q 24 hrs        | IV, SC         |
|                               | Tobramycin      | -                                     | R                                  | -                                   | -                                       | -                        | IV/Topical Use |
|                               | Neomycin        | -                                     | R                                  | -                                   | -                                       | -                        | Topical Use    |
|                               | Clindamycin     | -                                     | R                                  | R                                   | R                                       | 5.5 mg/kg, q 12 hrs      | PO             |
|                               | Lincomycin      | -                                     | R                                  | R                                   | R                                       | 15-25 mg/kg, q 24hrs     | PO             |
|                               | Doxycycline     | -                                     | -                                  | -                                   | -                                       | 5 mg/kg, q 12 hrs        | PO             |
|                               | Minocycline     | -                                     | -                                  | -                                   | -                                       | 10 mg/kg, q 12 hrs       | PO             |
| Tetracycline                  | -               | -                                     | -                                  | -                                   | 20 mg/kg, q 12 hrs                      | PO                       |                |
| Sulfonamide                   | -               | -                                     | -                                  | -                                   | 30 mg/kg, q 12 hrs                      | PO                       |                |
| Trimethoprim-sulfamethoxazole | -               | R                                     | -                                  | -                                   | 15-30 mg/kg, q 24 hrs                   | PO                       |                |
| Metronidazole                 | -               | -                                     | -                                  | -                                   | 10 mg/kg, q 8 hrs                       | IV                       |                |
| Cefovecin                     | -               | -                                     | -                                  | -                                   | 8 mg/kg, once                           | SC                       |                |
| 2nd                           | Cefpodoxime     | -                                     | -                                  | -                                   | -                                       | 5 mg/kg, q 24 hrs        | PO             |
|                               | Ceftiofur       | -                                     | -                                  | -                                   | -                                       | 2.2 mg/kg, q 24 hrs      | SC             |
|                               | Timentin        | -                                     | -                                  | -                                   | -                                       | -                        | Topical Use    |
|                               | Azithromycin    | -                                     | IR                                 | -                                   | -                                       | 5 mg/kg q 12 hrs         | PO             |
|                               | Orbifloxacin    | -                                     | -                                  | -                                   | -                                       | 2.5-7.5 mg/kg, q 24 hrs  | PO             |
| 3rd                           | Chloramphenicol | -                                     | G                                  | -                                   | -                                       | 35 mg/kg q 8 hrs         | PO             |
|                               | Florfenicol     | -                                     | -                                  | -                                   | -                                       | 20 mg/kg, q 12 hrs       | PO             |
|                               | Amikacin        | -                                     | R                                  | -                                   | -                                       | 15 mg/kg, q 24 hrs       | IV, SC         |
|                               | Rifampin        | -                                     | -                                  | -                                   | -                                       | 5-10 mg/kg, q 12 hrs     | PO             |
|                               | Imipenem        | -                                     | G                                  | -                                   | -                                       | 10 or 20 mg/kg, q 8 hrs  | -              |
|                               | Levofloxacin    | -                                     | -                                  | -                                   | -                                       | 10-30 mg/kg, q 24 hrs    | IV/PO          |
|                               | Marbofloxacin   | -                                     | -                                  | -                                   | -                                       | 2.75-5.5 mg/kg, q 24 hrs | PO             |
|                               | Pradofloxacin§  | -                                     | -                                  | -                                   | -                                       | 3.0 mg/kg, q 24 hrs      | PO             |
|                               | Enrofloxacin    | -                                     | -                                  | -                                   | -                                       | 5 mg/kg, q 24 hrs        | PO             |
|                               | Ciprofloxacin§¶ | -                                     | -                                  | -                                   | -                                       | -                        | Topical Use    |
|                               | Ceftazidime     | -                                     | R                                  | -                                   | -                                       | 3-30 mg/kg, q 6-8 hrs    | IV             |
|                               | Mupirocin       | -                                     | R                                  | R                                   | R                                       | -                        | Topical Use    |
|                               | Nitrofurantoin  | -                                     | G                                  | -                                   | -                                       | 4.4-5mg/kg, q 24 hrs     | PO             |
|                               | Colistin        | -                                     | -                                  | -                                   | -                                       | 8-9g/kg, q 24 hrs        | PO             |
|                               | Ticarcillin     | -                                     | -                                  | -                                   | -                                       | 3.1 g, q 4-6 hrs         | IV             |
| Piperacillin-Tazobactam       | -               | -                                     | -                                  | -                                   | 90 mg/kg, 30min q 8 hrs                 | IV                       |                |
| Fusidic acid‡                 | -               | R                                     | R                                  | R                                   | -                                       | Topical Use              |                |
| Tulathromycin                 | -               | IR                                    | -                                  | -                                   | 2.5mg/kg                                | SC                       |                |
| Tylosin                       | -               | IR                                    | -                                  | -                                   | 10-25mg/kg                              | PO                       |                |

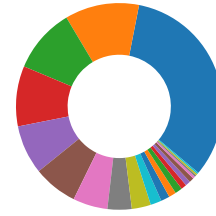
|    |   |    |                        |   |  |
|----|---|----|------------------------|---|--|
| R  | Not Recommended (resistance genes detected, intrinsic resistance, or <10% effectiveness in antibiogram studies) | PO | Oral, by mouth         | * | Antibiotic Drug Tiers for Companion Animals, ARSI, University of Minnesota |
| IR | Intermediate Resistance Predicted   | IV | Intravenous injection  | § | Contraindicated in some animals  |
| -  | No resistance detected/no info  | SC | Subcutaneous injection | ¶ | Variable bioavailability in animals  |
| P  | No resistance detected and <b>Poor</b> Efficacy (< 50% effectiveness in antibiogram studies)                    | TU | Topical use            | ‡ | Used in combination with other antibiotics (except quinolones)             |
| F  | No resistance detected and <b>Fair</b> Efficacy (< 75% effectiveness in antibiogram studies)                    |    |                        | † | Doses may vary with patient species and infections.                        |
| G  | No resistance detected and <b>Good</b> Efficacy (> 75% effectiveness in antibiogram studies)                    |    |                        |   |  |

## Supplemental Data

### Bacteria & Archaea Composition



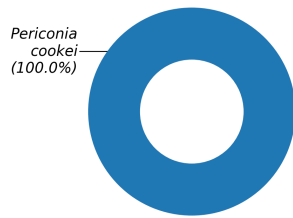
Your Sample



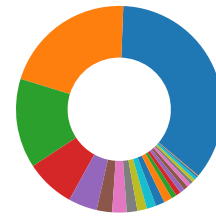
Clinically Healthy Reference

| Species Detected                  | AID* | Percentage | Cells per Sample | Normal Range | Inferred Status |
|-----------------------------------|------|------------|------------------|--------------|-----------------|
| <i>Segatella copri</i>            | --   | 23.6 %     | 2,400,000,000    | 0-28.0 %     | ● Normal        |
| <i>Blautia sp.</i>                | --   | 9.9 %      | 1,000,000,000    | NA           | NA              |
| <i>Catenibacterium sp.</i>        | --   | 9.8 %      | 980,000,000      | NA           | NA              |
| <i>Alloprevotella sp.</i>         | --   | 8.7 %      | 870,000,000      | NA           | NA              |
| <i>Prevotella sp.</i>             | --   | 4.8 %      | 480,000,000      | NA           | NA              |
| <i>Peptacetobacter sp.</i>        | --   | 4.1 %      | 410,000,000      | 0-13.0 %     | ● Normal        |
| <i>Holdemanella biformis</i>      | --   | 3.0 %      | 300,000,000      | 0-2.9 %      | ● Abnormal      |
| <i>Anaerobiospirillum sp.</i> [1] | --   | 2.8 %      | 280,000,000      | NA           | NA              |

### Fungi Composition



Your Sample



Clinically Healthy Reference

| Species Detected        | AID* | Percentage | Cells per Sample | Normal Range | Inferred Status |
|-------------------------|------|------------|------------------|--------------|-----------------|
| <i>Periconia cookei</i> | --   | 100.0 %    | 1                | 0-0.2 %      | ● Abnormal      |

Donut plots above depict the relative abundance of all detected Bacterial or fungal species. Each color represents a different species. The larger the colored segment is, the more abundant that species is in the specimen.

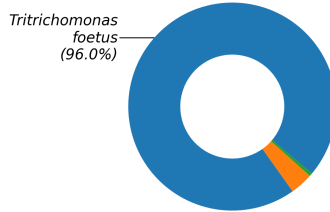
The tables above lists top 8 bacterial/fungal species detected within the limit of detection. The absolute and relative abundances of each species is shown. Potential clinically relevant microbes are highlighted in red.

#### Abbreviation Key:

- **Normal Range.** Species detected within the reference range of clinically healthy animals.
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## Eukaryota (Excluding Fungi) Composition



Your Sample

| Species Detected             | AID* | Percentage | Cells per Sample | Normal Range | Inferred Status |
|------------------------------|------|------------|------------------|--------------|-----------------|
| <i>Trichostrongylus axei</i> | --   | 96.0 %     | 2,100            | NA           | NA              |
| <i>Giardia duodenalis</i>    | --   | 3.5 %      | 78               | NA           | NA              |
| (c) <i>Cestoda sp.</i>       | --   | 0.5 %      | 11               | NA           | NA              |

Donut plots above depict the relative abundance of all detected eukaryote or virus species. Each color represents a different species. The larger the colored segment is, the more abundant that species is in the specimen.

The tables above lists top 8 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.

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## Toxin/Biofilm Genes Detected

| Predicted Host Species                 | Gene Symbol | Virulence Class | Read Counts | Description   |
|--|-------------|-----------------|-------------|---|
| <i>Clostridium perfringens</i> (1.03%) | nagH        | Toxin           | 86          | hyaluronidase   |
|  | nagI        | Toxin           | 50          | hyaluronidase   |
|  | colA        | Toxin           | 50          | collagenase   |
|  | nagJ        | Toxin           | 40          | hyaluronidase   |
|  | nagL        | Toxin           | 34          | hyaluronidase   |
|  | nagK        | Toxin           | 31          | hyaluronidase   |
|  | pfoA        | Toxin           | 21          | perfringolysin O  |
|  | plc         | Toxin           | 20          | phospholipase C   |
|  | pfo         | Toxin           | 4           | Perfringolysin O  |
| <i>Escherichia coli</i> (0.03%)        | hlyB        | Toxin           | 10          | Hemolysin B   |
|  | cnf1        | Toxin           | 4           | cytotoxic necrotizing factor 1                                  |
|  | hlyC        | Toxin           | 4           | Hemolysin C   |
|  | hlyA        | Toxin           | 2           | Hemolysin A   |
|  | senB        | Toxin           | 1           | enterotoxin   |
| <i>Helicobacter rappini</i> (0.1%)     | cdtB        | Toxin           | 3           | CdtB  |
|  | sopE        | Toxin           | 2           | Toxin SopE  |
|  | mrkC        | Biofilm         | 19          | fimbrial biogenesis outer membrane usher protein mrkC precursor |
|  | mrkJ        | Biofilm         | 5           | phosphodiesterase   |
|  | mrkH        | Biofilm         | 4           | transcriptional activator                                       |
|  | mrkI        | Biofilm         | 2           | LuxR family regulatory protein                                  |

## References

1. Greene, Craig E. *Infectious Diseases of the Dog and Cat-E-Book*. Elsevier Health Sciences, 2013.
2. Ehrlich G. D., Hu F. Z., Sotereanos N., Sewicke J., Parvizi J., Nara P.L., Arciola, C. R. What role do periodontal pathogens play in osteoarthritis and periprosthetic joint infections of the knee. (2014) *J Appl Biomater Funct Mater* 12(1): 13-20
3. Carpenter, James W., and Chris Marion. *Exotic Animal Formulary-E-Book*. Elsevier Health Sciences, 2017.
4. Wallach, Joel D., and William J. Boever. *Diseases of exotic animals. Medical and surgical management*. WB Saunders Co., 1983.
5. Kubota-Aizawa, Sanae, et al. Epidemiological study of gastric *Helicobacter* spp. in dogs with gastrointestinal disease in Japan and diversity of *Helicobacter heilmannii sensu stricto*. *The Veterinary Journal* 225 (2017): 56-62.
6. Cito F., Rijks J., Rantsios A. T., Cunningham A. A., Baneth G., Guardabassi L., Kuiken T., Giovannini A. Prioritization of Companion Animal Transmissible Diseases for Policy Intervention in Europe. (2016) *Journal of Comparative Pathology*, 155(1):S18-S26
7. Suzuki, J., Kobayashi, S., Osuka, H., Kawahata, D., Oishi, T., Sekiguchi, K., ... & Iwata, S. (2016). Characterization of a human isolate of *Tritrichomonas foetus* (cattle/swine genotype) infected by a zoonotic opportunistic infection. *Journal of Veterinary Medical Science*, 78(4), 633-640.
8. Ryan, U., & Cacci<sup>2</sup>, S. M. (2013). Zoonotic potential of *Giardia*. *International journal for parasitology*, 43(12-13), 943-956.

## Methods

The MiDOG<sup>®</sup> 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 microbes present in the specimen.

## When no Microbial Species are Detected:

When no Microbial 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 microbial 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<sup>®</sup> 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<sup>®</sup> report has not been evaluated by the FDA.

## Customer Support

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