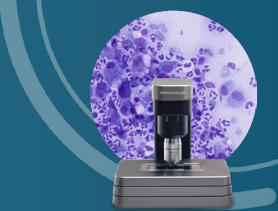


Vetscan Imagyst AI Dermatology

Infectious Agent Semi-Quantitative Category Overview



The Vetscan Imagyst AI Dermatology application delivers AI-driven dermatologic cytology analysis, providing critical data to inform, diagnose, and treat. It analyzes skin impression smears, ear swabs, and skin swabs to provide consistent results comparable to expert clinical pathologists, regardless of personnel, training, and microscopic performance.¹ The AI technology identifies the presence of bacteria, yeast (*Malassezia sp.*), and inflammatory cells to aid in diagnosing infection, so veterinary staff can spend more time with patients.

On the Vetscan Imagyst AI Dermatology report, inflammatory cells are qualitatively reported as either present or absent. Infectious agents — including cocci, rods, and yeast (*Malassezia sp.*) — are reported on a semi-quantitative scale of none to rare (NTR), 1+, 2+, or 3+. These semi-quantitative categories were established by comparing quantitative algorithm outputs against the consensus readings of three blinded, board-certified Veterinary Clinical Pathologists (CPs), ensuring the scale reflects expert clinical evaluation.

For results displayed on the user interface:

- Inflammatory WBCs — If an inflammatory WBC object is detected, the total number of objects identified by the AI is displayed alongside the qualitative present/absent designation.
- Infectious Agents — If a value of 1+ or greater is reported, the interface will also display an approximate number of infectious objects per 40X HPF (high-power field).

This reporting methodology represents an advancement over earlier versions of the algorithm. Previous releases counted singular organisms and reported an absolute number of objects within the scan area. The v3.0 algorithm takes a more sophisticated, multi-factorial approach by accounting for:

- Density of infectious agents within scan regions
- Valid scan areas across the slide

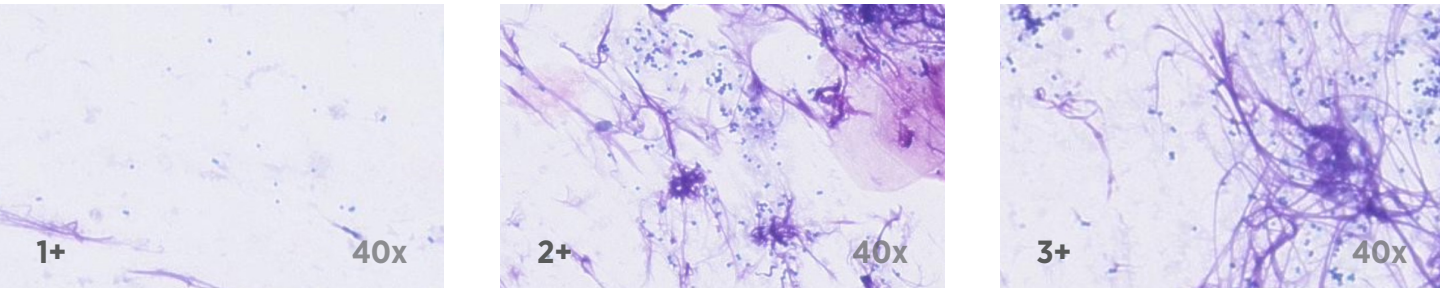
This allows the algorithm to generate clinically meaningful per-HPF estimates that better reflect the overall nature of the sample — rather than a simple absolute object count.

By mapping the algorithm's per-HPF object counts against the clinical pathologists' semi-quantitative grades, the team identified the **count ranges that best corresponded to each grade level**. The cut points between each grade were optimized to achieve the highest alignment with expert clinical pathologist assessments.

Important Note on Sample Type: Thresholds for infectious agents differ between **skin prep smears** and **ear cytology**. This is because the AI algorithm evaluates every area of the slide, and validation against expert clinical pathologists revealed that skin impression smears typically have different distribution of infectious agent elements resulting in distinct thresholds for each site.

The ranges are as follows for each infectious agent object:

Cocci Shaped Bacteria

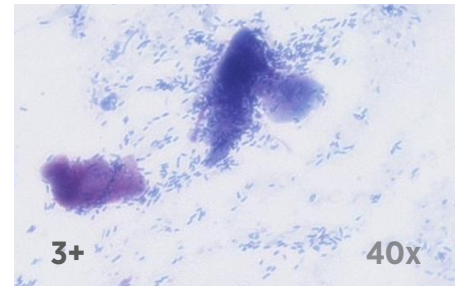
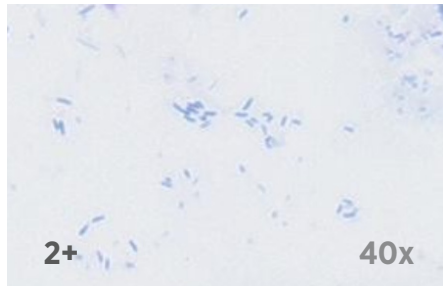


Semi-Quantitative Grade	Skin Prep Algorithm Counts	Ear Swab Algorithm Counts
NTR	< 0.120 / 40X HPF	< 0.925 / 40X HPF
1+	~ 0.120 - ~ 3.708 / 40X HPF	~ 0.925 - ~ 12.852 / 40X HPF
2+	~ 3.709 - ~ 32.093 / 40X HPF	~ 12.853 - ~ 24.445 / 40X HPF
3+	≥ 32.094 / 40X HPF	≥ 24.446 / 40X HPF

Vetscan Imagyst AI Dermatology

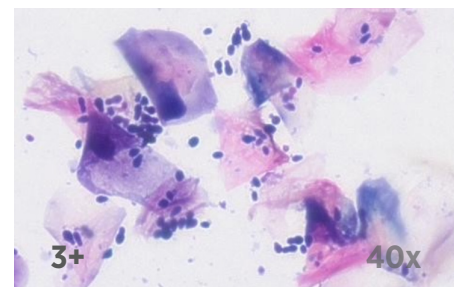
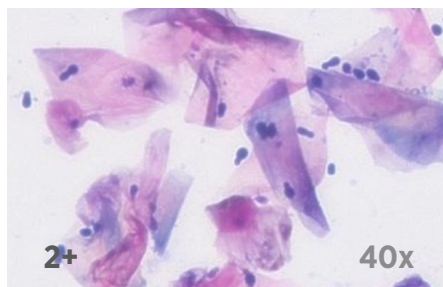
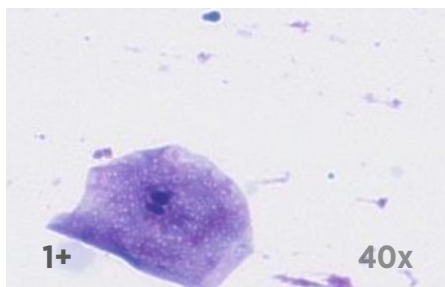
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Rod Shaped Bacteria



Semi-Quantitative Grade	Skin Prep Algorithm Counts	Ear Swab Algorithm Counts
NTR	< 0.011 / 40X HPF	< 0.294 / 40X HPF
1+	~ 0.011 - ~ 0.827 / 40X HPF	~ 0.294 - ~ 0.750 / 40X HPF
2+	~ 0.828 - ~ 1.490 / 40X HPF	~ 0.751 - ~ 6.869 / 40X HPF
3+	≥ 1.491 / 40X HPF	≥ 6.870 / 40X HPF

Yeast (*Malassezia spp.*)



Semi-Quantitative Grade	Skin Prep Algorithm Counts	Ear Swab Algorithm Counts
NTR	< 0.001 / 40X HPF	< 0.021 / 40X HPF
1+	~ 0.001 - ~ 0.532 / 40X HPF	~ 0.021 - ~ 0.721 / 40X HPF
2+	~ 0.533 - ~ 15.097 / 40X HPF	~ 0.722 - ~ 3.198 / 40X HPF
3+	≥ 15.098 / 40X HPF	≥ 3.199 / 40X HPF

Vetscan Imagyst AI Dermatology

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Conclusion

The semi-quantitative values provided by the Vetscan Imagyst for the infectious agents represent a consistent, thorough, and accurate¹ evaluation of the scan area, with results comparable to expert clinical pathologists. The microscopic findings from a cytological evaluation should always be interpreted considering the clinical findings from the patient.² Efficient analysis with the Vetscan Imagyst provides the ability to streamline workflow in veterinary hospitals and get accurate¹ detailed reports to simplify conversations with pet owners.

Key Points to Remember

1. An NTR result does not mean zero organisms were found.

Result means either no infectious agents were detected above the AI's confidence threshold, or too few were present to meet the minimum count for a 1+ classification.

2. Decimal values are normal and expected.

The AI estimates organism counts by averaging detections across multiple regions of the slide. As a simple example, if 2 organisms are found in one field and 3 in another, the reported value is 2.5. This is intentional — not an error.

3. AI per-HPF values cannot be directly compared to published literature compared to human evaluation.

Traditional manual cytology focuses on the busiest areas of a slide, which is how published ranges were established. The Vetscan Imagyst AI Derm algorithm takes a different path — evaluating all valid scan areas across the entire slide. This whole-slide approach means results may appear higher or lower than manually-derived values, simply reflecting a difference in methodology. This is why the alignment of AI-generated values with clinical pathologist semiquantitative assessments (1+, 2+, etc.) is so important — it provides veterinarians with a familiar, clinically anchored reference point that helps bridge the gap between traditional manual evaluation and this more thorough, whole-slide approach.

References

1. Zoetis Data on File. Study Report No. DHX6Z-US-26-326

2. Fisher D. 2020. Cutaneous and Subcutaneous Lesions. In: *Cowell and Tyler's Diagnostic Cytology and Hematology of the Dog and Cat*. 5th edition. p. 74. Images: Vetscan Imagyst