

Necropsy Histopathology Analysis

Predicting presence of histopathology findings from Whisper® lung score algorithm



GEISSLER CORPORATION

Histopathology Findings

25 Samples from 15 Animals*

Predictive Analytics
Univariate Logistic Regression**

95% Confidence Interval

	<u>Odds Ratios</u>	<u>lower</u>	<u>Upper</u>	<u>Lower CI > 1 = Significant</u>
Interstitial Pattern Wald Chi-Square = 5.5794, P = 0.0182	4.927	1.312	18.507	YES
PMN Infiltration Wald Chi-Square = 5.2285, P = 0.0222	4.640	1.245	17.293	YES
Monocyte Infiltration Wald Chi-Square = 5.1173, P = 0.0237	5.323	1.250	22.663	YES
Diffuse Distribution Wald Chi-Square = 4.8405, P = 0.0278	3.788	1.156	12.409	YES
Chronic Inflammation Wald Chi-Square = 4.4938, P = 0.0340	3.964	1.109	14.162	YES
Fibrin Infiltration Wald Chi-Square = 2.5271, P = 0.1119	2.049	0.846	4.961	NO
Bronchopneumonia Wald Chi-Square = 2.4983, P = 0.1140	2.271	0.821	6.282	NO
Lobular Distribution Wald Chi-Square = 1.1452, P = 0.2846	1.713	0.639	4.590	NO
Multifocal Distribution Wald Chi-Square = 0.3143, P = 0.5751	0.805	0.376	1.721	NO
Acute Inflammation Wald Chi-Square = 0.2770, P = 0.5987	1.221	0.581	2.567	NO

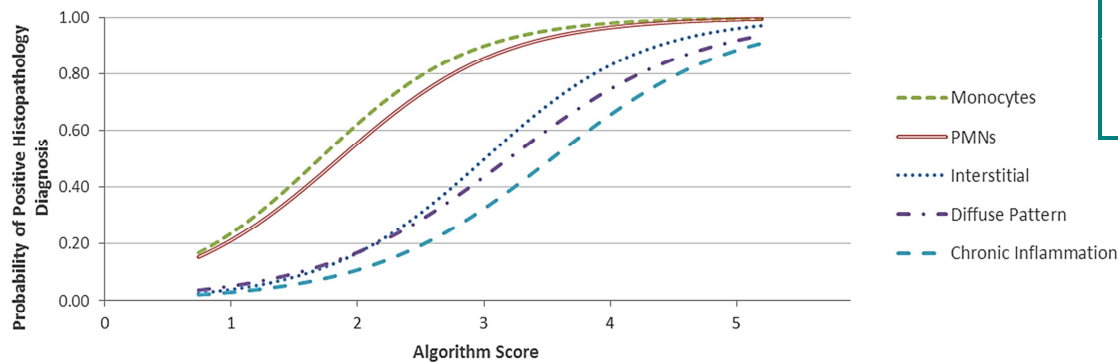
* **BOLD** = Significant with a univariate model for each histopathology category.

** Prediction is for the presence of a histopathology finding.

Histopathology Whisper® Validation Study

Histological Diagnosis	Likelihood Ratios of Positive Histological Diagnosis on Disease State Algorithm Scores (2,3,4,5) vs. Normal State Algorithm Scores (1)			
	<u>1 vs. 2</u>	<u>1 vs. 3</u>	<u>1 vs. 4</u>	<u>1 vs. 5</u>
Monocytes	2.63	3.80	4.14	4.21
PMNs	2.62	4.02	4.55	4.68
Interstitial Distribution	4.27	12.70	21.19	24.52
Diffuse Lung Pattern	3.32	8.53	14.60	17.97
Chronic Inflammation	3.64	10.95	22.17	29.89

Combined Probability Density Plots for Univariate Analysis on Histopathology Measures



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