

Table S1. Results of statistical analysis regarding the prognostic value (**tumor-related mortality / tumor-specific survival time**) of the 2011 two-tier histologic grading system.

Statistical Analysis	Result
Sensitivity	84.6%
Specificity	91.6%
Positive predictive value	61.1%
Hazard ratio (95% CI)	46.5 (9.6 – 223.3)

95%CI, 95% confidence interval

Only one canine cutaneous mast cell tumor had a mitotic count (MC) of 6, thus was predicted to have an aggressive biological behavior according to Romansik et al. and as low grade based on a MC threshold for the two-tier histological grading system (other grading parameters were low). This mast cell tumor was lost to follow-up at 18 months (i.e. correct prognostication based on the grading threshold). The three dogs with high grade mast cell tumors based on grading parameters other than the MC (i.e. karyomegaly and multinucleation) died due to the tumor after 2 months or died due to other cause 7 and 20 months after surgery. Thus, the sensitivity of the two-tier grading system (sensitivity: 84.6%) was higher as compared to the MC (sensitivity: 76.9%), whereas specificity was slightly lower (91.6% vs. 92.7%), due to the combination with other morphological criteria.

Supplemental Table S2. Results of statistical analysis regarding the prognostic value (**all-cause mortality at 12 months after surgery/ overall survival time**) of the 2011 two-tier histologic grading system.

Statistical Analysis	Result
Sensitivity	62.5%
Specificity	90.0%
Positive predictive value	55.6%
Hazard ratio (95% CI)	11.1 (4.7 – 26.2)

95%CI, 95% confidence interval