

Tumor Profile - Cutaneous Mast Cell-Canine

The Veterinary Diagnostic Laboratories at Colorado State University offers a panel of tests designed to aid in prognosis and treatment of cutaneous canine mast cell tumors. Research indicates that specific determinants of tumor cell proliferation as well as c-KIT (CD117) expression, localization, and mutation status provide important prognostic information in cases of canine cutaneous mast cell tumors and may be useful in determination of optimal medical therapy.

Each panel will be performed under the direct supervision of a boarded veterinary pathologist, and will include the following tests:

Mitotic index – a direct evaluation of cellular proliferation by the pathologist.⁴

Ki-67 IHC – a robust and specific immunohistochemical based determination of cellular proliferation.⁶

c-KIT IHC – a reliable and validated immunohistochemical evaluation of KIT protein expression pattern and intensity. Redistribution of cKIT protein (a tyrosine kinase receptor) has been correlated with gene mutation.^{5,6}

c-KIT mutation status– PCR based detection of internal tandem duplications in exon 11 and exon 8 of the *c-kit* gene.

Oriented toward veterinarians and veterinary oncologists with a discerning client base, the panel will also include a comprehensive report prepared by the pathologist.

The complete panel is available for \$210.00. When requesting the panel, the optimal sample submission is 2 impression smears (or aspirates) from the unfixed mass and four formalin fixed paraffin embedded (FFPE) sections of tumor tissue on positively charged slides. If impression smears or aspirates were not obtained, submissions of 6 slides from the FFPE mass can be accommodated as can submission of the tissue block with additional charges for slide cutting and mounting. The panels will be run once per week with results reported on Friday. Rush orders can be facilitated for an additional charge.

Suggested references:

1. Hahn, K.A., G. Ogilvie, T. Rusk, et al., *Masitinib is safe and effective for the treatment of canine mast cell tumors*. J Vet Intern Med, **22**(6): p. 1301-9, 2008.
2. Letard, S., Y. Yang, K. Hanssens, et al., *Gain-of-function mutations in the extracellular domain of KIT are common in canine mast cell tumors*. Mol Cancer Res, **6**(7): p. 1137-45, 2008.
3. London, C.A., P.B. Malpas, S.L. Wood-Follis, et al., *Multi-center, placebo-controlled, double-blind, randomized study of oral toceranib phosphate (SU11654), a receptor tyrosine kinase inhibitor, for the treatment of dogs with recurrent (either local or distant) mast cell tumor following surgical excision*. Clin Cancer Res, **15**(11): p. 3856- 65, 2009.
4. Romansik, E.M., C.M. Reilly, P.H. Kass, et al., *Mitotic index is predictive for survival for canine cutaneous mast cell tumors*. Vet Pathol, **44**(3): p. 335-41, 2007.
5. Webster, J.D., V. Yuzbasiyan-Gurkan, J.B. Kaneene, et al., *The role of c-KIT in tumorigenesis: evaluation in canine cutaneous mast cell tumors*. Neoplasia, **8**(2): p. 104-11, 2006.
6. Webster, J.D., V. Yuzbasiyan-Gurkan, R.A. Miller, et al., *Cellular proliferation in canine cutaneous mast cell tumors: associations with c-KIT and its role in prognostication*. Vet Pathol, **44**(3): p. 298-308, 2007.
7. Webster, J.D., V. Yuzbasiyan-Gurkan, D.H. Thamm, et al., *Evaluation of prognostic markers for canine mast cell tumors treated with vinblastine and prednisone*. BMC Vet Res, **4**: p. 32, 2008.

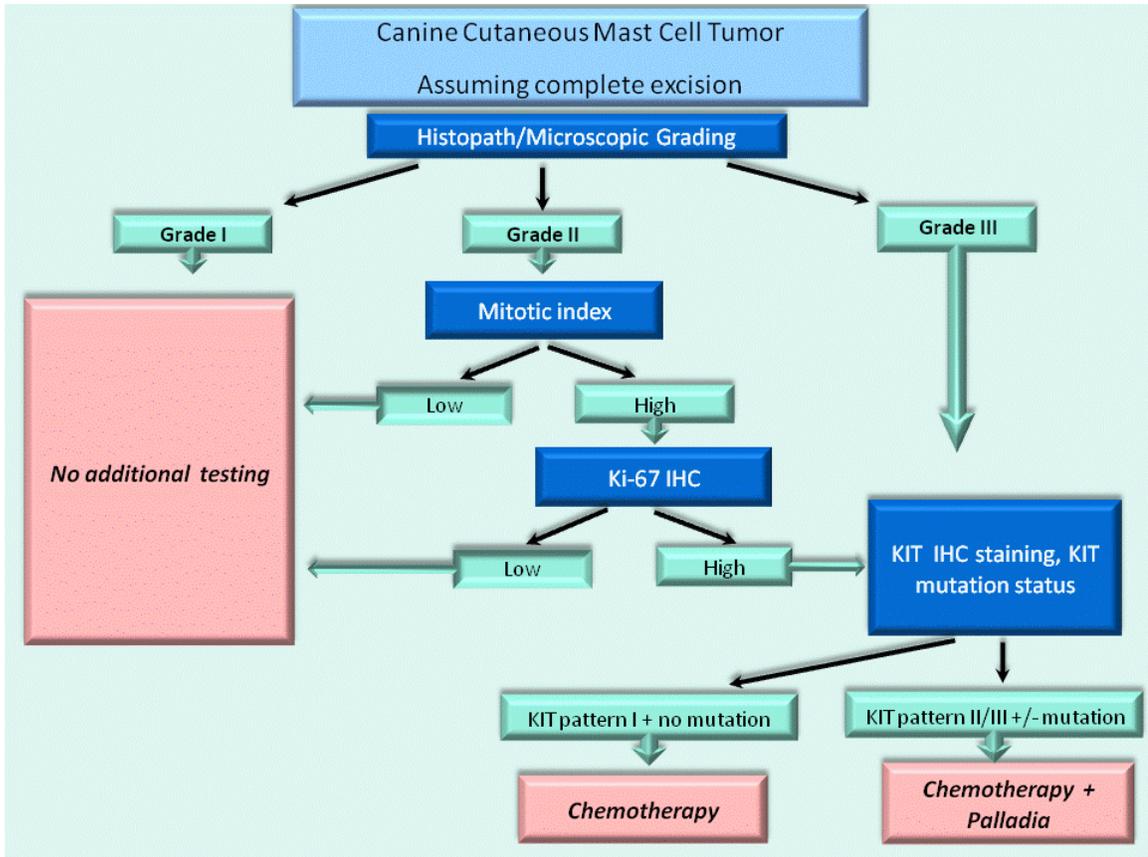


Figure 1: Canine Cutaneous Mast Cell Tumor Treatment Algorithm