

Surgical Biopsies  
Patrick Roady, DVM, MS, DACVP

Learning Objective:

1. Learn the steps of biopsy specimen processing at the VDL.
2. Appreciate how a final diagnosis is obtained and its clinical relevance.
3. Know how to maximize the diagnostic potential of submitted tissues.

The steps involved with processing biopsies are numerous and take days. This is the tradeoff versus cytology, in which results can be obtained in minutes. However, it is still considered the “golden standard” for many disease processes.

To maximize the diagnostic value of the submitted tissues, the referring veterinarian can:

1. Provide an accurate history
  - Signalment
  - Clinical history including signs and previous diagnostics
  - Location of the biopsy
2. Use proper containers
3. Proper fixation (1:10 tissue to formalin ratio)
4. Identify surgical margins (if applicable)

Many neoplasms have established grading schemes that should be included in the final histology report. Common grading systems include:

1. Cutaneous mast cell tumors in dogs (Patnaik 1-3 scale, Kiupel two-tiered scale [high/low])
2. Subcutaneous mast cell tumors in dogs (Thompson favorable vs poor prognosis)
3. Cutaneous mast cell tumors in cats (Sabattini two-tiered scale [high/low])
4. Mammary gland tumors in dogs (Goldschmidt 1-3 scale)
5. Mammary gland tumors in cats (Mills 1-3 scale)
6. Soft tissue sarcomas in dogs (Dennis 1-3 scale)
7. Melanocytic tumors in dogs (Smedley favorable vs poor prognosis)
8. Lymphoma in dogs (low-, mid-, high-grade)
9. Lung tumors in dogs (McNiel 1-3 scale)

References:

1. Patnaik, “Canine cutaneous mast cell tumor: morphologic grading and survival time in 83 dogs” *Vet Pathol*, 1984
2. Kiupel, “Proposal of a 2-tier histologic grading system for canine cutaneous mast cell tumors to more accurately predict biological behavior” *Vet Pathol*. 2011
3. Thompson, “Canine subcutaneous mast cell tumor: characterization and prognostic indices” *Vet Pathol*, 2011
4. Sabattini, “Grading Cutaneous Mast Cell Tumors in Cats” *Vet Pathol*, 2018
5. Goldschmidt, “Classification and grading of canine mammary tumors” *Vet Pathol*, 2011
6. Mills, “Prognostic Value of Histologic Grading for Feline Mammary Carcinoma: A Retrospective Survival Analysis” *Vet Pathol*, 2014

7. Dennis, "Prognostic factors for cutaneous and subcutaneous soft tissue sarcomas in dogs" *Vet Pathol*, 2011
8. Smedley, "Prognostic markers for canine melanocytic neoplasms: a comparative review of the literature and goals for future investigation" *Vet Pathol*, 2011
9. McNiel, "Evaluation of prognostic factors for dogs with primary lung tumors: 67 cases (1985-1992)" *J Am Vet Med Assoc*, 1997