

**Supplemental Table 1.** Signalment information included with previously reported clinical information and staining results.

| Case | Breed   | Sex | Age (y) | Location              | Treatment                                | Metastasis  | Recurrence          | DFS | Status  | Score |        |         | Percent staining |        |         | Intensity |        |         | MT score | Consistent with smooth muscle origin |
|------|---|-----|---------|-----------------------|--|---|---------------------|-----|---|-------|--------|---------|------------------|--------|---------|-----------|--------|---------|----------|--------------------------------------|
|      |   |     |         |                       |  |   |                     |     |   | SMA   | Desmin | Laminin | SMA              | Desmin | Laminin | SMA       | Desmin | Laminin |          |                                      |
| 1    | Lhasa Apso  | SF  | 11      | Dermis, carpus        | Excisional biopsy                        | No staging  | Unknown             | 0   | Unknown   | 3     | 3      | 3       | 100              | 100    | 100     | 3         | 1      | 1       | 0        | Leiomyoma (piloileiomyoma)           |
| 2    | Labrador Retriever mix                                | SF  | 8       | Pharynx               | Incomplete excision                      | Concern for liver/spleen masses on AUS at time of recurrence, not sampled | Yes                 | 292 | Euthanized  | 3     | 1      | 3       | 100              | 100    | 100     | 3         | 2      | 1       | 1        | Leiomyosarcoma                       |
| 3    | German Shepherd Dog                                   | M   | 9       | Dermis, footpad       | Marginal excision                        | No staging  | Historic recurrence | 17  | Unknown   | 3     | 0      | 3       | 100              | 100    | 100     | 3         | 1      | 2       | Variable | Leiomyosarcoma (angioleiomyosarcoma) |
| 4    | Labrador Retriever                                    | SF  | 10      | Bulbar third eyelid   | Incomplete excision (3rd eyelid removal) | Unremarkable TXR/AUS at diagnosis   | No                  | 21  | Unknown   | 3     | 0      | 3       | 100              | 100    | 80      | 3         | 0      | 2       | 0        | Leiomyosarcoma                       |
| 5    | Golden Retriever                                      | CM  | 7       | Subcutis, pelvic limb | Complete excision                        | Unremarkable TXR at diagnosis, cardiac/pulmonary masses at autopsy        | No                  | 52  | Died from cardiopulmonary SMA-sarcoma                               | 3     | 0      | 3       | 70               | 70     | 80      | 3         | 0      | 2       | 2        | No                                   |
| 6    | Miniature Poodle mix                                  | CM  | 11      | Subcutis, carpus      | Complete excision (amputation)           | Unremarkable TXR at diagnosis   | Unknown             | 0   | Unknown   | 3     | 0      | 2       | 80               | 80     | 30      | 3         | 0      | 2       | 0        | No                                   |
| 7    | Labrador Retriever/ American Saffordshire Terrier mix | F   | 2       | Subcutis, calvaria    | None                                     | None on autopsy   | Unknown             | 0   | Died as a result of cerebellar compression and hemorrhage from mass | 3     | 1      | 2       | 70               | 70     | 50      | 3         | 1      | 2       | 1        | No                                   |
| 8    | Labrador Retriever                                    | F   | 6       | Subcutis, popliteal   | None                                     | None on autopsy   | Unknown             | 0   | Euthanized  | 3     | 0      | 1       | 80               | 80     | 50      | 3         | 0      | 2       | 2        | No                                   |
| 9    | Australian Cattle Dog mix                             | SF  | 3       | Intradural C3         | None                                     | None on autopsy   | Unknown             | 0   | Euthanized as a result of mass                                      | 3     | 1      | 1       | 100              | 100    | 30      | 3         | 2      | 1       | 3        | No                                   |

# Non-visceral leiomyosarcoma in dogs

|    |  |    |    |                                  |  |  |                        |       |   |   |   |   |                     |                     |                     |   |   |    |    |    |
|----|--|----|----|----------------------------------|--|--|------------------------|-------|---|---|---|---|---------------------|---------------------|---------------------|---|---|----|----|----|
| 10 | Cocker<br>Spaniel mix                          | CM | 12 | Subcutis,<br>base of<br>penis    | Two doses<br>doxorubicin   | Unremarkable<br>TXR/AUS at<br>diagnosis  | Historic<br>recurrence | 55    | Unknown   | 3 | 0 | 0 | 100                 | 100                 | 0                   | 3 | 0 | 0  | 1  | No |
| 11 | Cardigan<br>Welsh<br>Corgi mix                 | SF | 9  | Subcutis,<br>neck                | Complete<br>excision, 4<br>doses<br>doxorubicin                          | Unremarkable<br>TXR/AUS<br>(multiple<br>times)   | No                     | 1,457 | Unknown   | 3 | 0 | 0 | 100                 | 100                 | 0                   | 3 | 0 | 0  | 3  | No |
| 12 | Rottweiler                                     | M  | 7  | Eyelid                           | Exenteration,<br>6 doses<br>carboplatin<br>for rib<br>osteosarcoma       | Unremarkable<br>TXR/AUS<br>(multiple<br>times)   | No                     | 316   | Unknown   | 2 | 0 | 3 | 30                  | 30                  | 100                 | 3 | 0 | 2  | ND | No |
| 13 | Shepherd<br>Mix                                | SF | 8  | Subcutis,<br>periorbital         | None   | No staging   | No                     | 9     | Unknown   | 2 | 0 | 2 | 50                  | 50                  | 50                  | 2 | 0 | 2  | ND | No |
| 14 | Labrador<br>Retriever/<br>Border<br>Collie mix | SF | 10 | Subcutis,<br>body wall           | 1 dose<br>doxorubicin  | Pulmonary<br>metastasis on<br>CT at<br>diagnosis   | No                     | 78    | Euthanized<br>as a result<br>of cancer<br>progression | 2 | 0 | 2 | 30                  | 30                  | 70                  | 3 | 0 | 1  | ND | No |
| 15 | Doberman<br>Pinscher                           | SF | 6  | Dermis, neck                     | Marginal<br>excision   | Unremarkable<br>TXR at<br>diagnosis  | No                     | 49    | Unknown   | 2 | 0 | 2 | 30                  | 30                  | 60                  | 3 | 0 | 2  | ND | No |
| 16 | Rhodesian<br>Ridgeback<br>mix                  | CM | 13 | Subcutis,<br>pelvic limb         | None   | Pulmonary<br>metastasis on<br>autopsy  | Unknown                | 0     | Euthanized<br>as a result<br>of epistaxis             | 1 | 2 | 1 | 0                   | 0                   | 0                   | 0 | 2 | 0  | ND | No |
| 17 | Greyhound                                      | SF | 5  | Subcutis, left<br>hip            | Complete<br>excision   | Unremarkable<br>TXR/AUS at<br>diagnosis  | No                     | 2     | Unknown   | 1 | 1 | 1 | Rare,<br>individual | Rare,<br>individual | 0                   | 1 | 1 | 1  | ND | No |
| 18 | Labrador<br>Retriever<br>mix                   | M  | 12 | Subcutis,<br>distal femur        | None   | Pulmonary<br>metastasis on<br>autopsy  | Unknown                | 0     | Euthanized<br>as a result<br>of mass                  | 0 | 2 | 2 | 0                   | 0                   | 50                  | 0 | 2 | 1- | ND | No |
| 19 | Great Dane                                     | F  | 1  | Subcutis,<br>metatarsus          | Complete<br>excision +<br>RT after<br>multiple<br>regrowths<br>over 2 mo | Unremarkable<br>TXR<br>(multiple<br>times)   | No                     | 1,548 | Unknown   | 0 | 0 | 0 | 100                 | 100                 | 30                  | 3 | 0 | 1  | ND | No |
| 20 | Belgian<br>Malinois                            | SF | 14 | Subcutis,<br>body wall           | None   | Unremarkable<br>TXR/AUS at<br>diagnosis  | No                     | 210   | Died  | 0 | 0 | 0 | 0                   | 0                   | 0                   | 0 | 0 | 0  | ND | No |
| 21 | Australian<br>Shepherd<br>mix                  | SF | 15 | Dermis, base<br>of tail          | 1 dose<br>carboplatin  | Unremarkable<br>thoracic CT /<br>AUS at<br>diagnosis;<br>metastases in<br>sublumbar<br>LNs on<br>autopsy | Unknown                | 0     | Euthanized  | 0 | 0 | 0 | 0                   | 0                   | 0                   | 0 | 0 | 0  | ND | No |
| 22 | Golden<br>Retriever                            | M  | 4  | Retrobulbar                      | Incomplete<br>excision   | Unremarkable<br>TXR at<br>diagnosis  | No                     | 33    | Died prior to<br>induction<br>for first RT            | 0 | 0 | 0 | 0                   | 0                   | 0                   | 0 | 0 | 0  | ND | No |
| 23 | American<br>Eskimo<br>Dog                      | SF | 6  | Subcutis,<br>ventral to<br>orbit | Incomplete<br>excision   | No staging   | No                     | 1     | Unknown   | 0 | 0 | 0 | 0                   | 0                   | Rare,<br>individual | 0 | 0 | 1  | ND | No |

# Non-visceral leiomyosarcoma in dogs

|    |                  |   |    |                  |                              |   |    |     |  |   |   |   |   |   |   |   |   |   |   |    |    |
|----|------------------|---|----|------------------|------------------------------|---|----|-----|--|---|---|---|---|---|---|---|---|---|---|----|----|
| 24 | Golden Retriever | M | 12 | Subcutis, carpus | Two incomplete excisions, RT | Unremarkable TXR at diagnosis, pulmonary and costal pleural metastases on autopsy | No | 270 | Euthanized as a result of metastatic disease | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ND | No |
|----|------------------|---|----|------------------|------------------------------|---|----|-----|--|---|---|---|---|---|---|---|---|---|---|----|----|

Historical recurrence: indicates the biopsy sample available for review was a regrowth of a previous mass. Status: if the cause of death could reasonably be attributed to the tumor, this is noted. Immunolabeling score by immunohistochemical (IHC) stain (smooth muscle actin [SMA], desmin, laminin): 0 = none, 1 = up to 1/3 of neoplastic cells, 2 = up to 2/3 of neoplastic cells, 3 = more than 2/3 of neoplastic cells. Intensity: 0 = none, 1 = weak, 2 = moderate, 3 = strong. MT score: 0 = minimal, 1 = mild, 2 = moderate, 3 = abundant material between neoplastic cells. AUS = abdominal ultrasound; CM = castrated male, CT = computed tomography; DFS = disease-free survival, as defined from the date of diagnosis to either recurrence, death, or last known follow-up; F = female, LNs = lymph nodes; M = male, MT = Masson trichrome; ND = not done; RT = radiation therapy; SF = spayed female, TXR = thoracic radiographs.