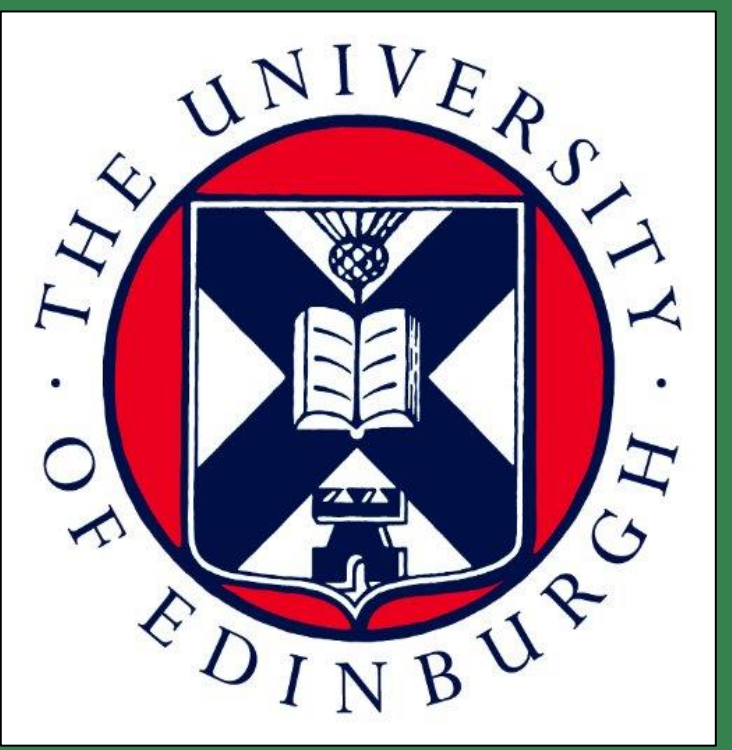




# SPONTANEOUS NEOPLASIA IN LIONS (*PANTHERA LEO*): COMBINED RETROSPECTIVE CASE SERIES AND LITERATURE REVIEW.

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## Introduction

Lions (*Panthera leo*) are a key charismatic zoo species, but the scientific literature concerning neoplastic disease is scattered with limited reviews.

## General neoplasia statistics

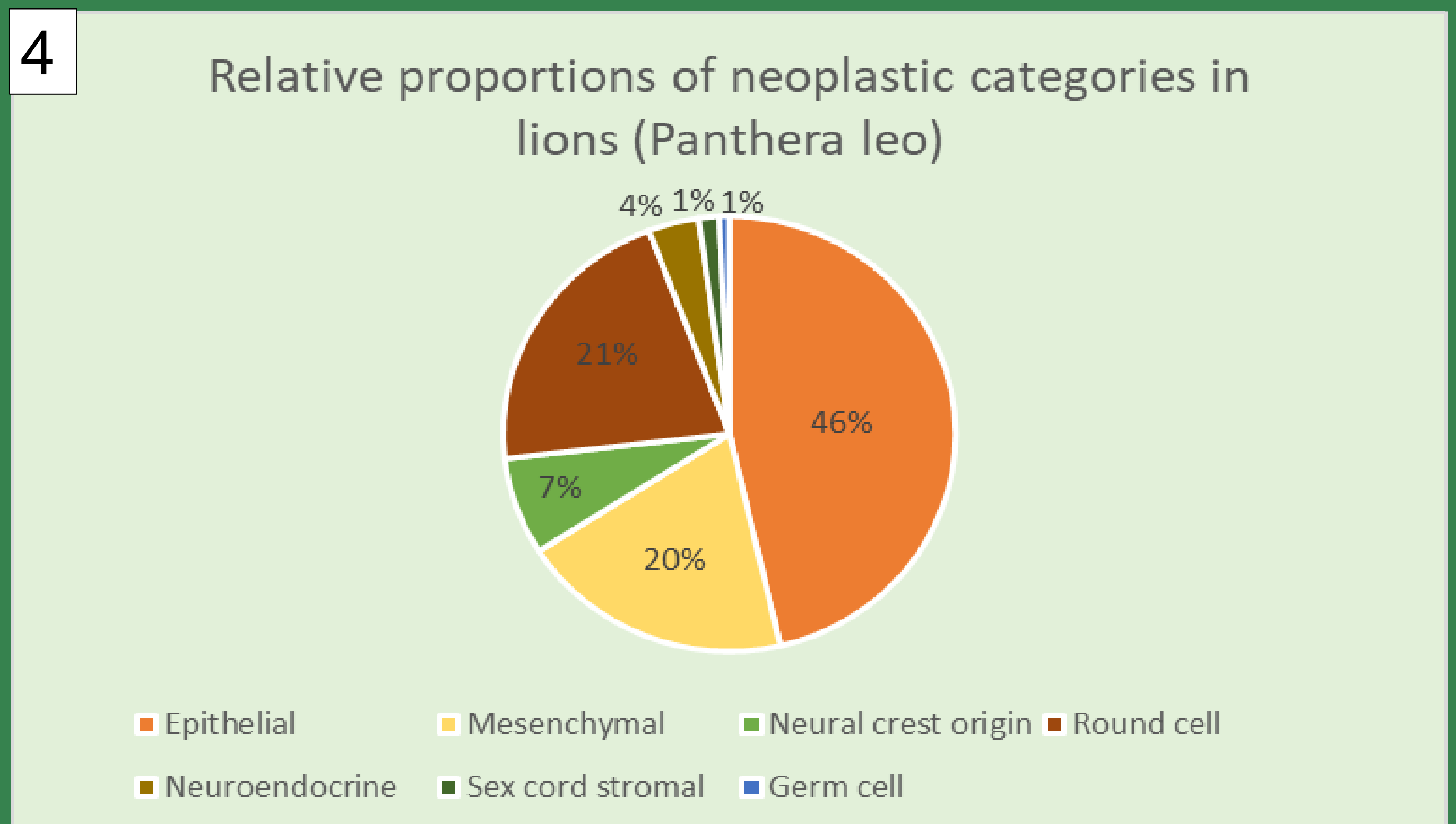
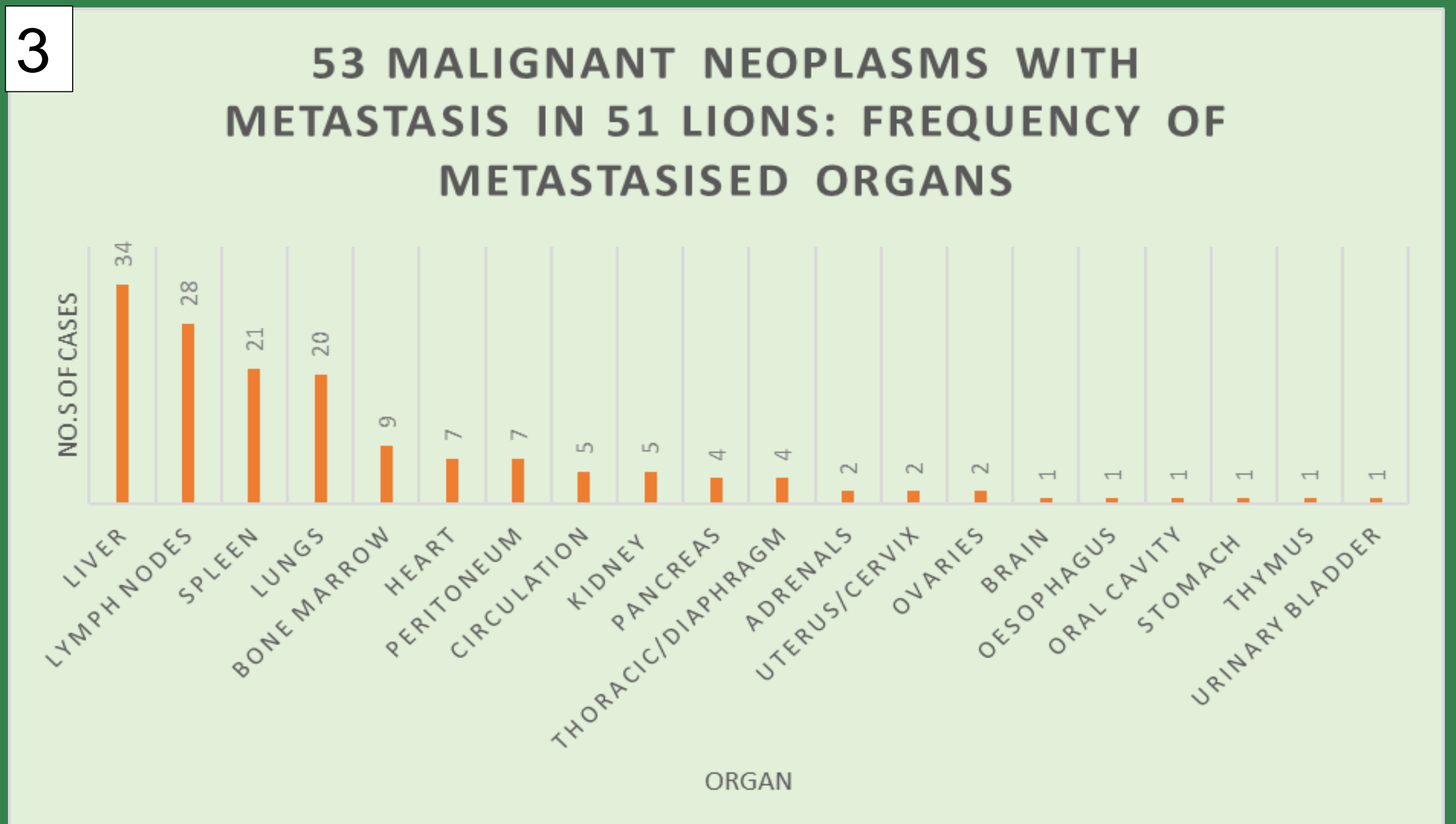
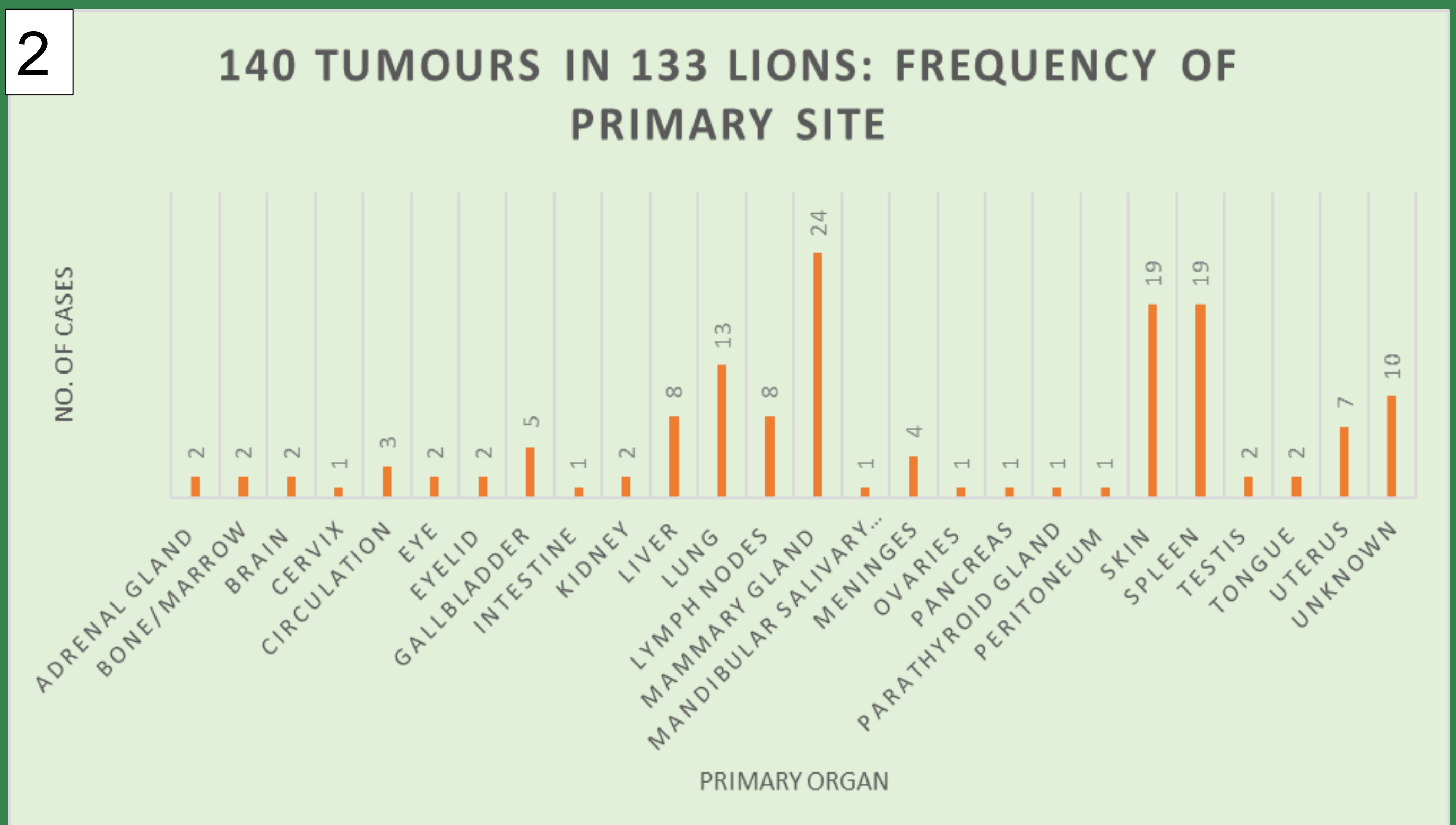
- **Frequency of malignant vs benign tumours:** 76.4 vs 23.6% respectively.
- **Neoplasia associated-death or risk to life (without treatment):** 61.7%
- **Overall rate of metastasis:** 39.8% of all tumours.
- **Most common tumours:**
  - Mammary gland adenocarcinoma [MGA] (15.7%)
  - Lymphoma (15.0%).



Image sourced from: <https://www.istockphoto.com/photos/lion-running/> (06/08/2022)

## Materials and Methods

One-hundred-and-forty neoplasms from 133 lions (0.5 to 26 years old) were reviewed from IZVG Pathology, Easter Bush Pathology, and current scientific literature (31 peer-reviewed publications, using Google Scholar/Pubmed keywords: “*Panthera leo*”, “tumor”, and “neoplasia”).



## Conclusion

Metastasising malignant neoplasms of mammary gland and lymphoid origin are dominant in lions (>12 years).

**Image reference:** Vercammen, F et al. “Haemangiosarcoma in a captive Asiatic lion (*Panthera leo persica*).” Open veterinary journal vol. 5,1 (2015): 52-5.

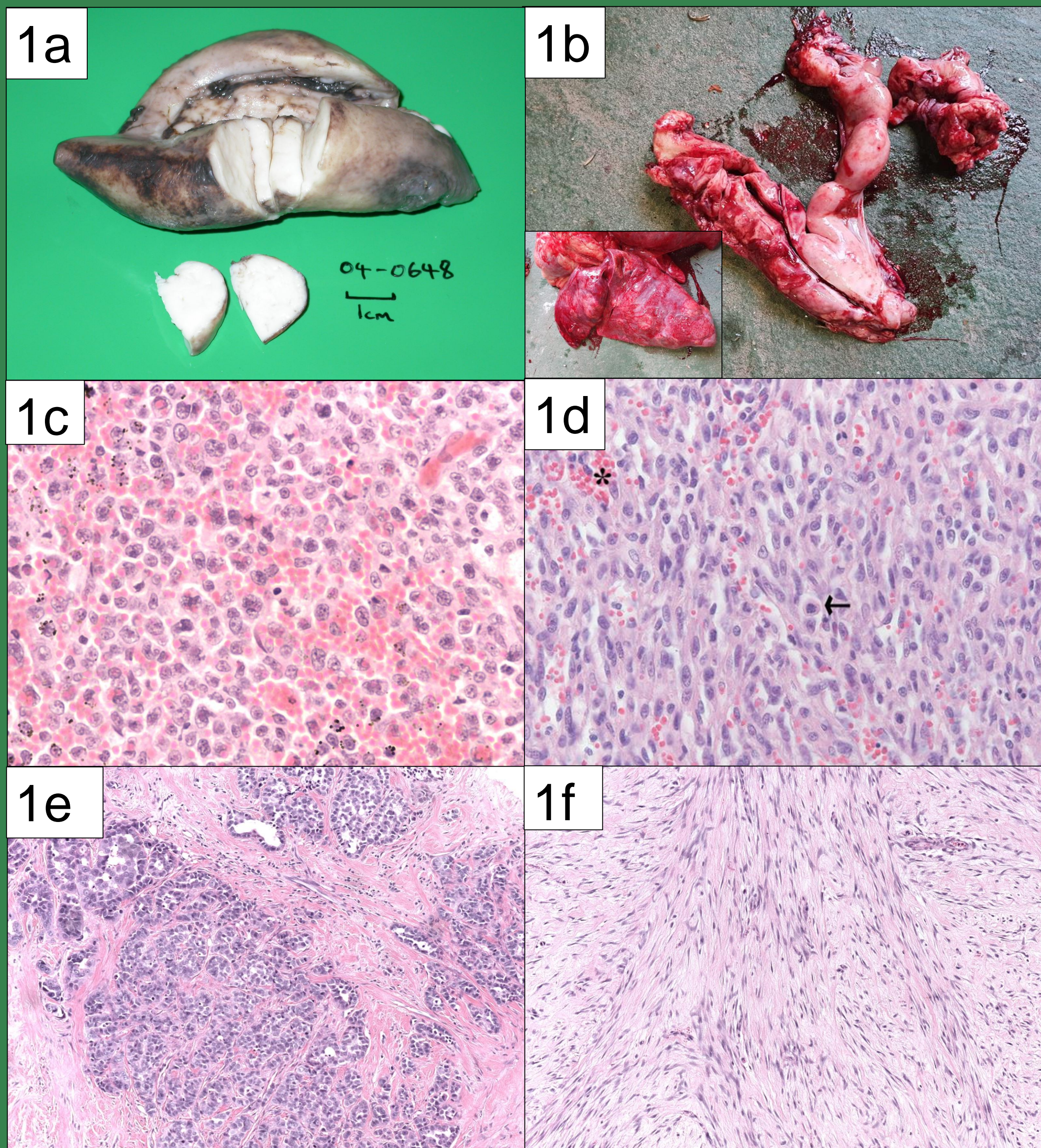


Fig 1) Neoplasia in lions. 1a) Cervical leiomyoma in a White African lion, gross image. 1b) Uterine adenocarcinoma with pulmonary metastasis (insert: lung) in a Barbary lion, gross image. 1c) Splenic erythrophagocytic T-cell lymphoma in a Barbary lion (HE, 400x). 1d) Hepatic haemangiosarcoma in an Asiatic lion (HE, 400x; Vercammen, F et al. 2015). 1e) Mammary gland adenocarcinoma in an African lion (HE, 100x). 1f), Subcutaneous fibrosarcoma in a White African lion (HE, 100x).

## Subspecies differences

- **Mean ages:**
  - African (n=50) – 16 years old
  - White African (n=6) – 12 years old
  - Asian lions (n=19) – 12.6 years old
  - Barbary lions (n=3) – all >16 years old.
- **Sex ratios:** Females dominated sex ratios in African (62%), and White African populations (100%).
- **Commonest tumours by subspecies:**
  - African: mammary gland adenocarcinoma (27.3%) [see Fig. 1e].
  - White African: cutaneous mesenchymal tumours (57.1%) [see Fig. 1f].
  - Asians: haemangiosarcoma (42.1%) [see Fig. 1d].
  - Barbary lions (n=3):
    - Mammary gland adenocarcinoma (pulmonary/hepatic/splenic/renal metastasis).
    - Uterine adenocarcinoma (pulmonary metastasis) [see Fig 1b].
    - Splenic erythrophagocytic T-cell lymphoma (nodal metastasis) [see Fig 1c].