

# CHARACTERIZATION OF UTERINE LEIOMYOMA IN THE NONHUMAN PRIMATE: THE BABOON

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## ABSTRACT

**Introduction:** The transformation of a single random myometrial cell into a group of benign cells that continue to divide form a leiomyoma in the uterus. These usually occur in the perimenopausal hormonal environment. Several animal models are being used to study the biology of uterine leiomyoma including the Eyker rat and the guinea pig. However, there are no models available that are similar to the human. Recently the presence of leiomyoma has been observed in the baboon (Papio).

**Objective:** To determine whether leiomyoma in the baboon are histologically and biochemically similar to the human leiomyoma.

**Methods:** Archived cases of uterine smooth muscle tumors were obtained from the Department of Pathology, Southwest Primate Research Center (San Antonio). Hematoxylin and Eosin sections were examined by four independent observers with criteria used in the literature to confirm histology of leiomyoma. Smooth muscle cells were characterized using Masson's trichrome special stain and immunohistologically using specific antibodies for smooth muscle actin, desmin, and vimentin. Immunohistochemistry for estrogen (ER) progesterone (PR) epidermal growth factor receptor (EGF-R) were performed using diaminobenzadine tetrachloride as the chromogen. Human leiomyoma samples were processed in parallel.

**Results:** All samples (23) that were previously designated to be leiomyoma were confirmed to be fibroids. The smooth muscle origin of the leiomyoma was confirmed in all the samples. EGF-R were localized in the cytoplasm of the muscle cells. ER and PR showed immunoexpression in the nucleus.

**Conclusion:** The leiomyoma from the baboon display similar characteristics to the human tumor.

## INTRODUCTION

The transformation of a single random myometrial cell into a group of benign cells that continue to divide form a leiomyoma in the uterus. These usually occur in the perimenopausal hormonal environment. Several animal models are being used to study the biology of uterine leiomyoma including the Eyker Rat and the Guinea Pig. However, there are no models available that are similar to the human in physiology and biochemistry. Recently the presence of leiomyoma have been observed in the baboon (Papio).

## OBJECTIVE

To determine whether leiomyoma in te baboon are histologically and biochemically similar to the human leiomyoma.

## MATERIAL AND METHODS

Archived cases of uterine smooth muscle tumors were obtained from the Department of Pathology, Southwest Primate Research Center (San Antonio). Hematoxylin and Eosin sections were examined by four independent observers using criteria for identification that are used for human specimens. Smooth muscle cells were characterized using Masson's Trichrome special stain and immunohistologically using specific antibodies for smooth muscle actin, desmin and vimentin. Immunohistochemistry for the estrogen, progesterone and epidermal growth factor receptor were performed using diaminobenzadine tetrachloride as the chromogen. Baboon myometrium, Human myometrium and leiomyoma samples were processed in parallel. Standard histological and immunohistological techniques were used.

## RESULTS



FIGURE 1 shows Leiomyomata in a baboon uterus and a human uterus.

FIGURE 2 shows human and baboon myometrium and leiomyomata stained with Hemotoxylin and Eosin and human and baboon leiomyoma stained with the special Masson's Trichrome stain.

FIGURE 3 shows immunological presence of desmin and vimentin in human and baboon myometrium and leiomyomata.

FIGURE 4 shows the presence of Progesterone and Estrogen receptors in human and baboon myometrium and leiomyomata.

FIGURE 5 shows the presence of Epidermal Growth Factor Receptors in human and baboon myometrium and leiomyomata.

All samples that were previously designated to be leiomyoma were confirmed to be fibroids. Smooth muscle origin of the leiomyomata was confirmed and the presence and location of Progesterone, Estrogen and Epidermal Growth Factor Receptor in the baboon tissue was similar to the human tissues.

Figure 3a, b, c, d: Desmin figures. 3e and f: Vimentin figures.

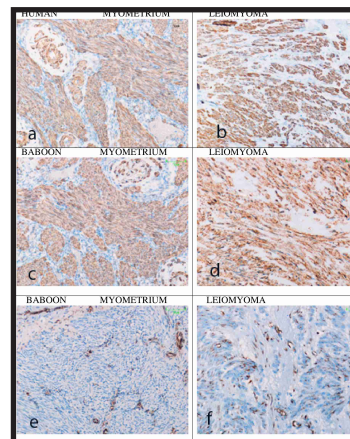
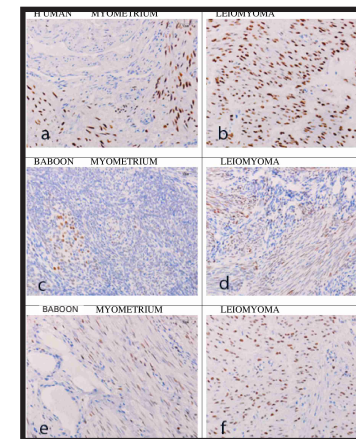


Figure 4a, b, c, d: Progesterone receptor. 4e and f: Estrogen receptor.



## CONCLUSIONS

The parameters examined in this study indicate that the Leiomyomata from the baboon are similar to the human tissue. Although information on the incidence of these tumors in this primate is not available and needs to be thoroughly investigated it may be possible to use this nonhuman primate in human relevant studies.

Figure 1.

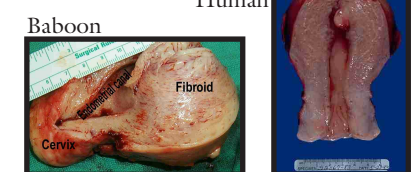


Figure 2a, b, c, d: Haematoxylin and eosin. 2e and f: Masson's trichrome.

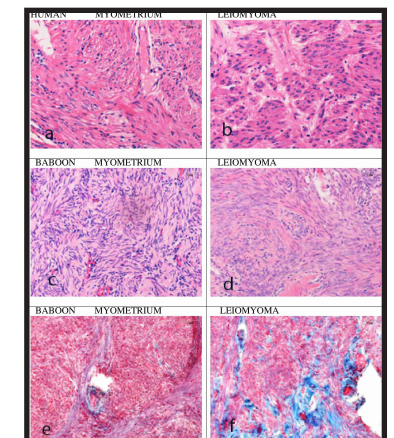


Figure 5: Epidermal g rowth factor receptor.

