

Development of tumor biomarkers for diagnosis of uterine sarcoma from leiomyoma

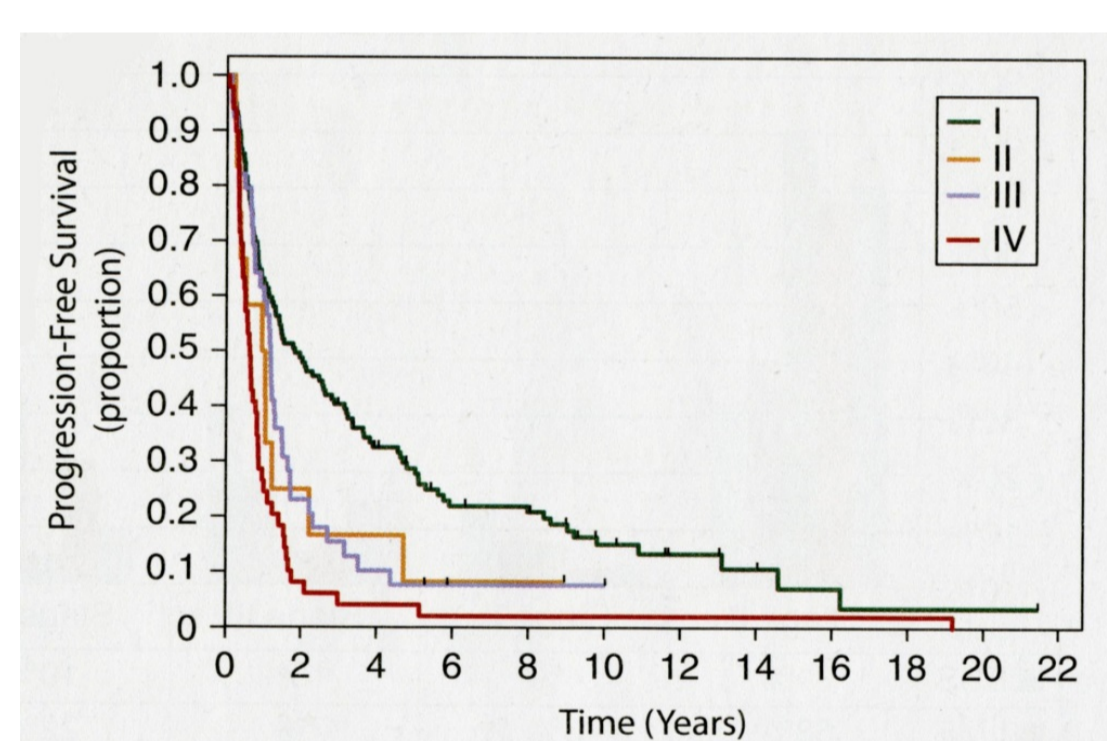
University of Fukui
 Faculty of Medical Sciences Department of Biochemistry
 Kaoru Miyamoto

Abstract

Uterine Sarcomas are rare malignant tumor with a poor prognosis because of recurrence and metastasis. It is difficult to distinguish uterine sarcomas and certain types of uterine leiomyomas which occur about one-third of mature females. Therefore it is an urgent task to develop diagnostic tumor markers for uterine sarcomas which can discriminate sarcomas from leiomyomas. In this study we identified novel serum biomarkers of uterine sarcomas. Based on these findings we are trying to develop a diagnostic kit using serum biomarkers we identified.

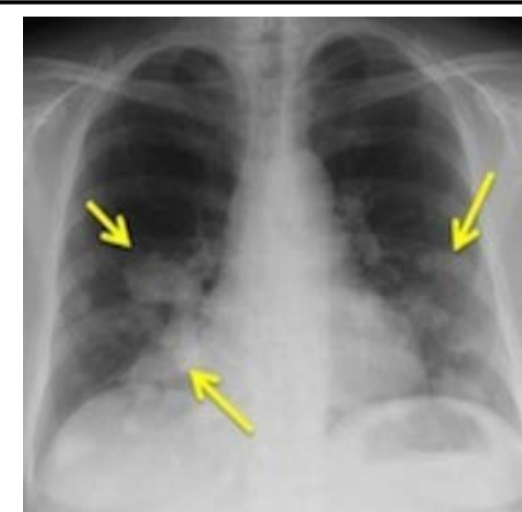
Background 1

Uterine sarcomas are rare tumors but with very poor prognosis because of metastasis



Patterns of first recurrence in patients with uterine sarcoma

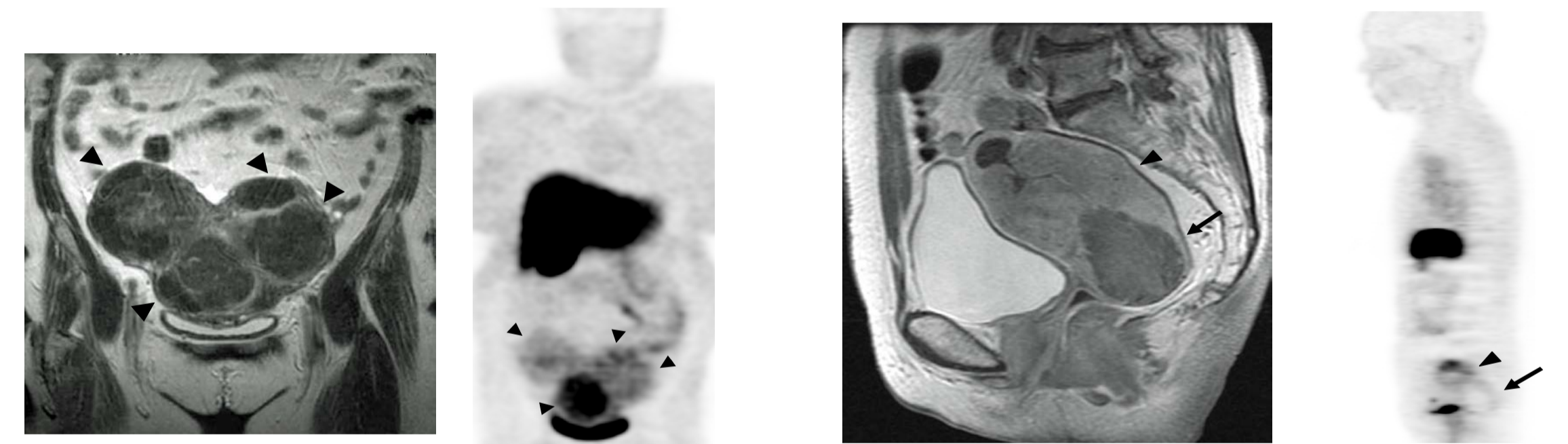
Median PFS (months)	12 - 19
Pelvic only first recurrence	41%
Extrapelvic first recurrence	59%
Most common extrapelvic site	Lung



Abeler et al. Uterine sarcoma in Norway. A histopathological and prognostic survey of a total population from 1970 to 2000 including 419 patients. 2009 Histopathology

Background 2

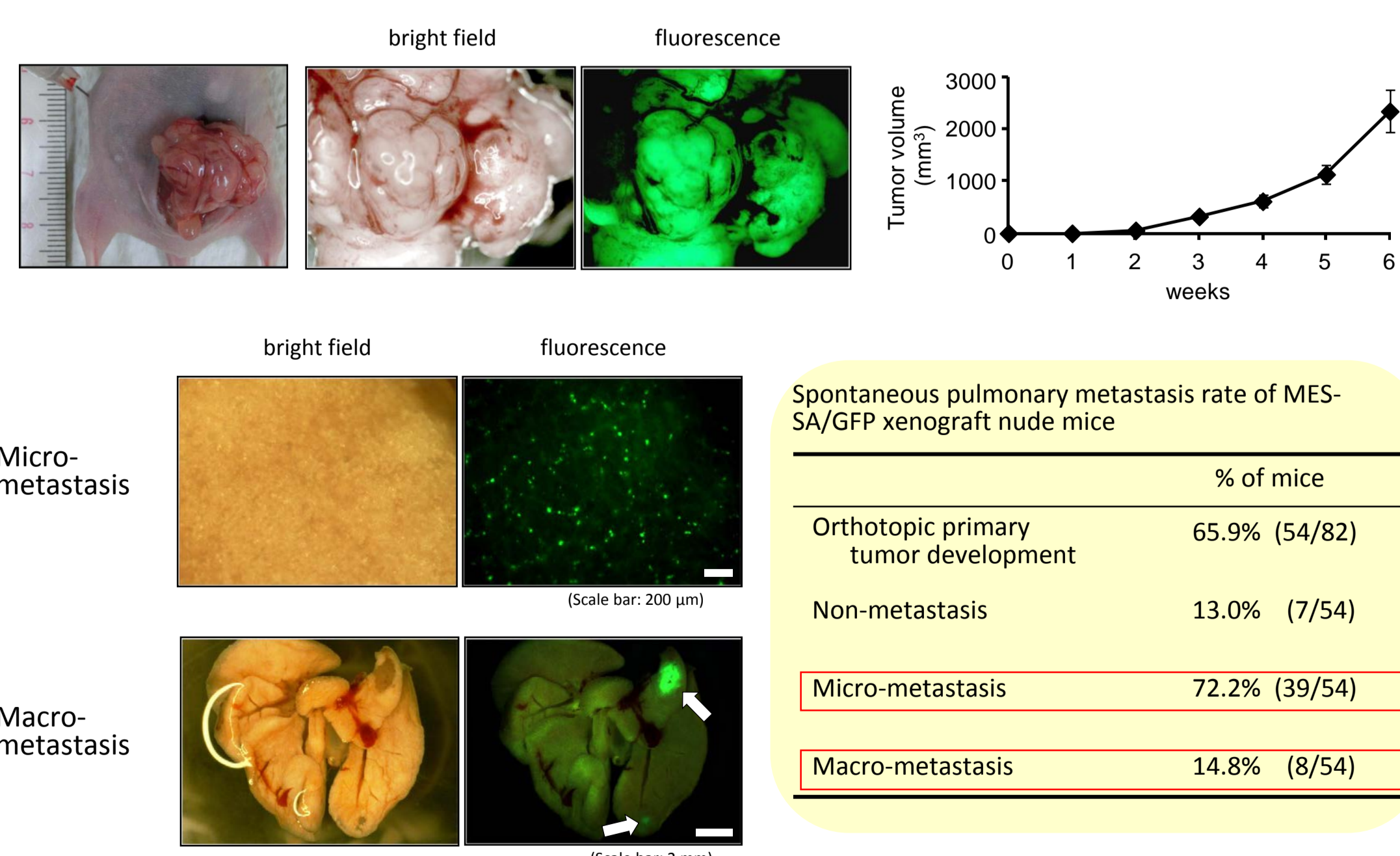
It is difficult to distinguish certain types of uterine leiomyomas from uterine sarcomas. At present FES PET analysis and surgical biopsy are only methods to distinguish them. However, FES PET can be done in very limited facilities, and surgical biopsy has a risk against promoting metastasis. Therefore, it is an urgent task to develop a non-invasive diagnostic method to distinguish between uterine sarcomas and leiomyomas.



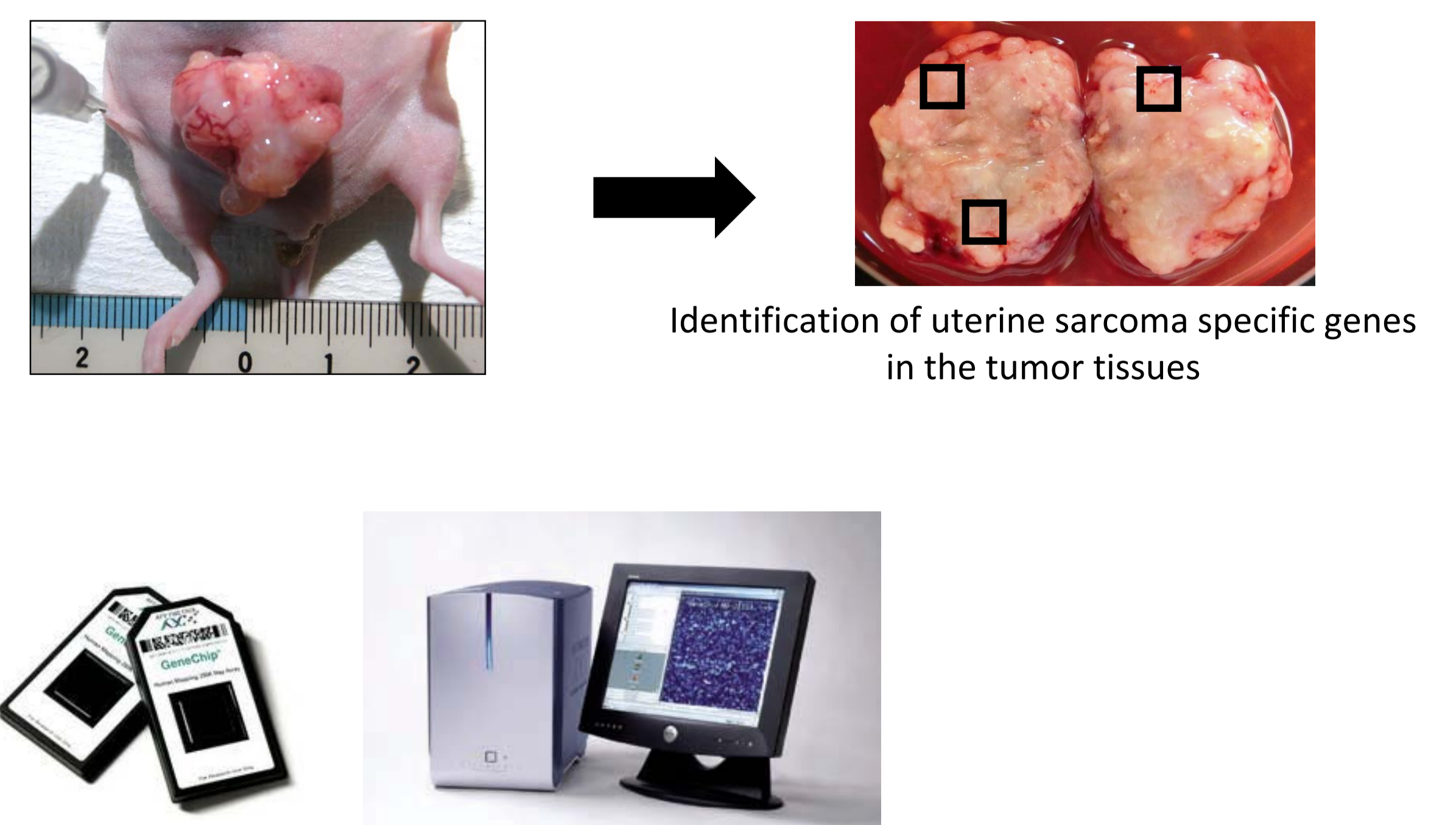
FES PET of an uterine leiomyoma

FES PET of an uterine sarcoma

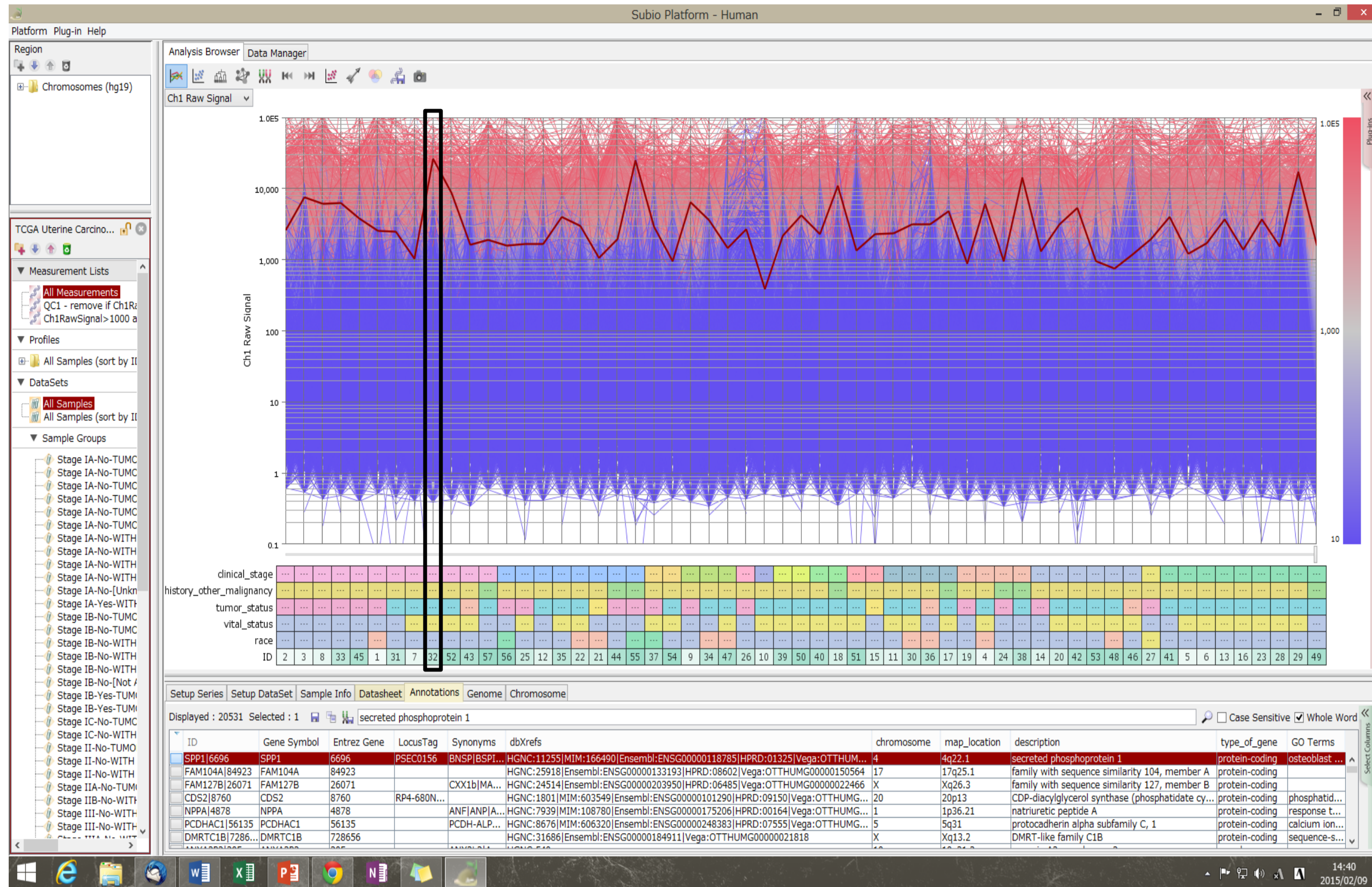
Establishment of a spontaneous metastasis model of uterine sarcoma



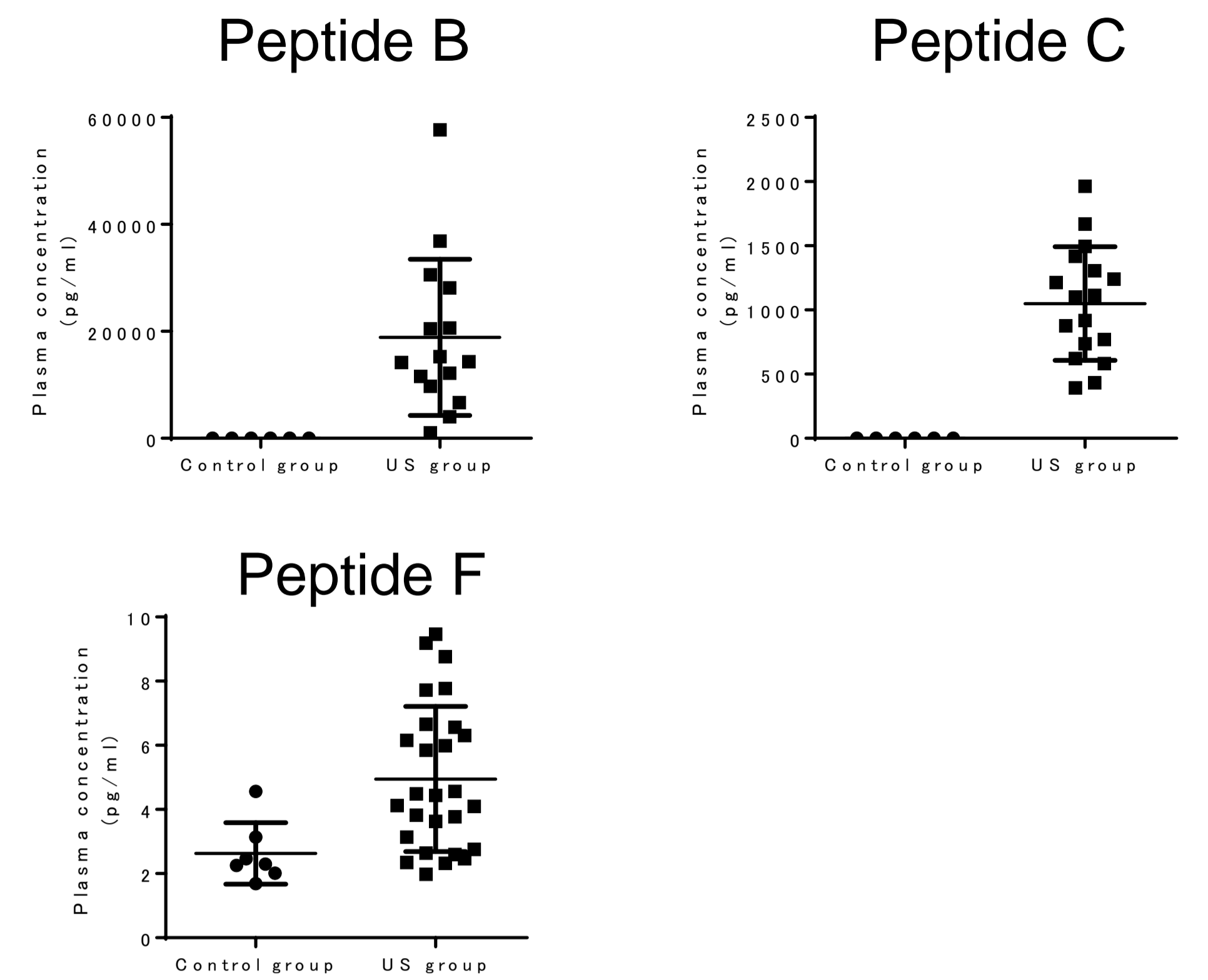
DNA microarray analysis of human uterine sarcoma tissues in the mouse model



Public database search for uterine sarcoma specific genes

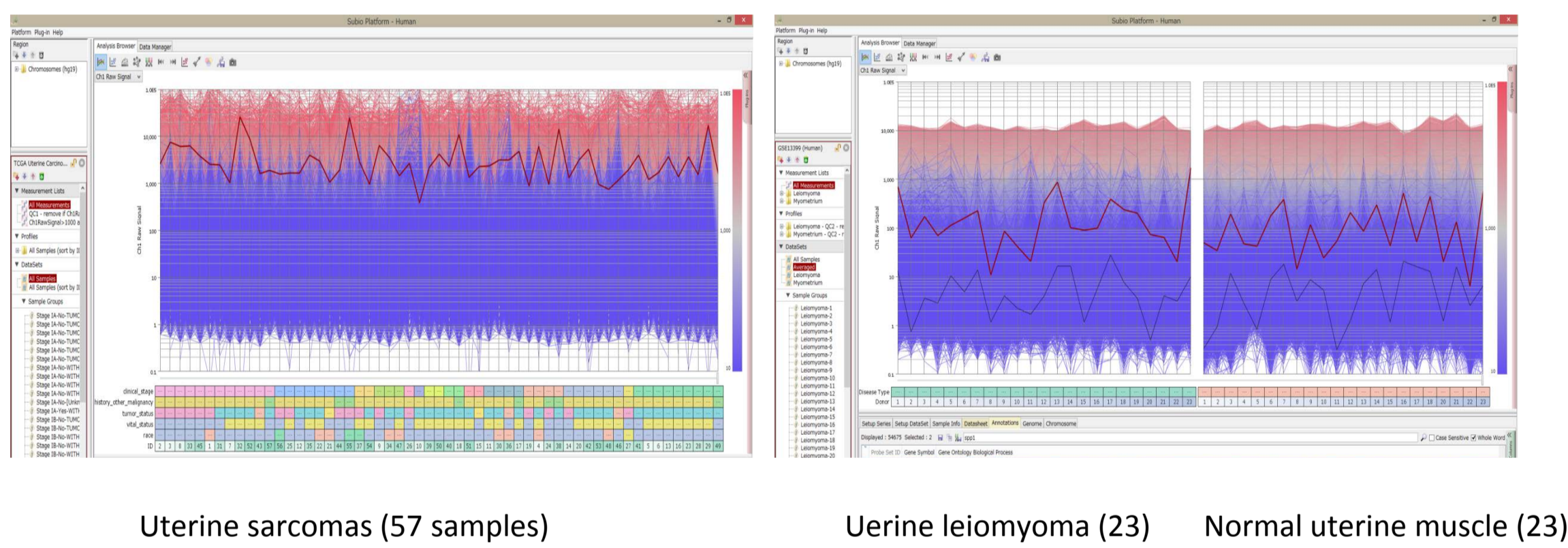


Serum concentrations of candidate biomarker peptides in the mouse model

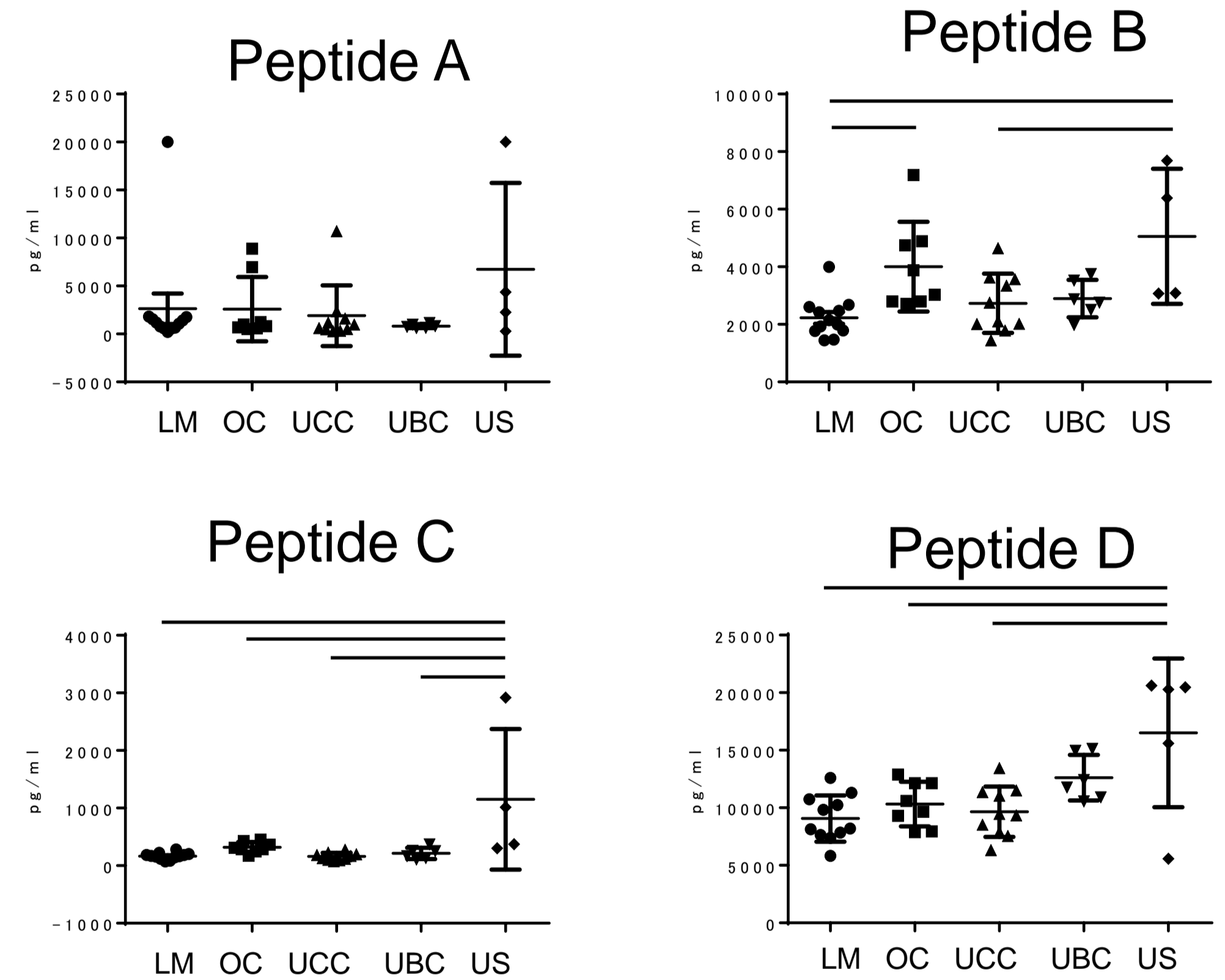


Gene expression levels of peptide B in Uterine sarcomas, leiomyomas, and normal uterine muscles (From a public database)

ペプチドB



Serum concentrations of biomarker peptides in patients



LM: Leiomyoma OC: Ovarian cancer UCC: Uterine cervical cancer
UBC: Uterine body cancer US: Uterine sarcoma

Strategy for searching serum biomarkers of uterine sarcomas

- ① Identification of uterine sarcoma specific genes
 - a) DNA microarray of human uterine sarcoma tissues developed in mice uteri.
 - b) Public database search for uterine sarcoma specific genes
- ② Pick-up biomarker candidate genes, which encode secreting proteins or peptides
- ③ Measurement of serum levels of these candidate proteins or peptides by ELISA
- ④ Comparing these serum concentrations between uterine sarcomas and leiomyomas.

Conclusion;

We identified serum biomarker polypeptides for diagnosis of uterine sarcomas.

Measurement of these polypeptides in the serum of patients, and development of a diagnostic system is now underway.

【知的財産権】

• 特願2015-152893

「子宮肉腫と子宮筋腫を鑑別する腫瘍マーカー」

【連絡先】

福井大学 産学官連携本部

知的財産・技術移転部 中山淑恵

TEL : 0776-27-9725 FAX : 0776-27-9727

E-mail: titekiall@ml.u-fukui.ac.jp