

Estrogen Regulates the SPRR2 Family Genes in Mouse Uterus During the Estrous Cycle and Early Pregnancy Period

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Previously, we have reported that SPRR2 family genes were regulated by estrogen (E2) using cDNA microarray in mouse uterus. For further characterization of SPRR2 family genes expressed in the mouse uterus, the effects of estrogen dose, progesterone and ICI 182,780 (pure anti-estrogen; ER blocking reagent) on the regulation of SPRR family genes were investigated semi-quantitative RT-PCR and OVX mice model. In addition, immunoreactivity of SPRR2a protein was observed by immunohistochemical analysis in OVX mice uterus and during the estrous cycle and early pregnancy period. Immunohistochemical localization of SPRR2a protein showed that intense immunoreactivity was detected in uterine sections of OVX mice collected after 6 h and 12 h following E2 treatment, mice collected from pregnancy day 1 and mice collected from proestrus to estrus stage. Moreover, E2-induced immunoreactivity of SPRR2a protein was strongly blocked by pure anti-estrogen ICI 182,780 pretreatment. These localizations of SPRR2a were predominantly restricted to luminal epithelial cells and glandular epithelial cells but no immunoreactivity was present in stromal cells. These findings related with SPRR2 family gene demonstrate that E2 is a key regulator of SPRR2a family genes expression in the mouse uterus during the estrous cycle and early pregnancy period. Furthermore, investigations of the regulatory mechanism of the SPRR2 family gene expression on the regulation in the uterus through dose- and

ER-dependency experiments also suggest that these are in fact estrogen-activated genes. In summary, our results may enable better understanding of SPRR2 gene functions underlying the morphological and biochemical alterations of uterus during the estrous cycle and early pregnancy period.