

The effect of splice variant of the LH-R on the expression of gonadotropin receptor

Takashi Minegishi^{1,2}, Kazuto Nakamura^{1,2}, Soichi Yamashita¹, and Yuki Omori¹

¹Department of Obstetrics and Gynecology, Graduate School of Medicine, Gunma University, Maebashi, Gunma, Japan

²Core Research for Evolutional Science and Technology (CREST), Japan Science and Technology, Tokyo, Japan

We previously reported a splice variant form of human LH receptor [hLHR(exon 9)] that lacks exon 9, coding the N-terminal extracellular region close to the first transmembrane domain. Several recent studies suggest that G protein-coupled receptors are able to form dimerization or oligomerization of the receptor, suggesting an intermolecular interaction between hLHR(exon 9) and the wild-type LH receptor (hLHR). The aim of this study, using coimmunoprecipitation, is to examine whether hLHR forms an association with hLHR(exon 9). An interaction between hLHR(exon 9) with the immature band (68 kDa) of hLHR and not with the mature band (85 kDa) was seen. When hLHR and hLHR(exon 9) were coexpressed, the density of hLHR expression was significantly reduced, compared with hLHR expressed alone. The human chorionic gonadotropin-stimulated cAMP accumulation in the cells expressing hLHR(exon 9) was also impaired, compared with the cells expressing hLHR. In this study, we demonstrated that hLHR is capable of forming receptor complexes. Our findings may expand the possibility of a splice variant of hLHR specifically modulating the functional property of the wild-type hLHR.