**Supplementary files**

Figure S1. Pie plot of “dosage sensitive” genes categorized by protein functions. The top four are nucleic acid binding, cytoskeletal proteins, transferases, and transcription factors.

Figure S2. Locations of the 14 ovine expressed, X-linked genes in the ruminant pseudoautosomal region (PAR). The Human X chromosome (*HSAX*) is used to illustrate the organization of the human PARs (PAR1 and PAR2) and the evolutionary strata (S1-S5). Pseudoautosomal boundaries are shown by genes in pink texts. The human PAR1 is 2.7 Mb starting at the gene *PLCXD1* and ending at XG. The human PAR2 is 0.32 Mb. The ruminant PAR ranges from 5-9 Mb and starts at the gene *GTPB6P* and ends at *GPR143*. . In ruminants, the gene *PLCXD1* is X-linked but not located in PAR and its location is marked by a red line below the ruminant PAR. The 14 expressed X-linked genes that are located in the ruminant PAR are enclosed in red boxes. They are *P2RY8, DHRSX, ZBED1, CD99, XG, GYG2, ARSE, MXRA5, PRKX, NLGN4X, STS, PNPLA4, TBL1X, AND GPR143.* Modified from Raudsepp et al. 2015.

Table S1. Mapping rates of RNA-seq results of ovine fetuses and of datasets PRJNA254105 and PRJEB6169.

Table S2. The 625 X-linked genes expressed (TPM>1) by the heart, kidney and lung of fetal sheep at Day 135 of gestation.

Table S3. GO categories of expressed (TPM ≥ 1) genes on Chromosomes 14 (Table S3.1), 20 (Table S3.2) and 25 (Table S3.3). The RGEs of these chromosomes fell outside of the RGE quartiles of all other chromosomes.

Table S4. The top 20 GO categories of commonly expressed "dosage sensitive" genes.

Table S5. Differentially expressed X-linked genes by maternal nutrition in sheep fetal tissues (Table S5.1) and GO category of X-linked DEGs (Table S5.2).