

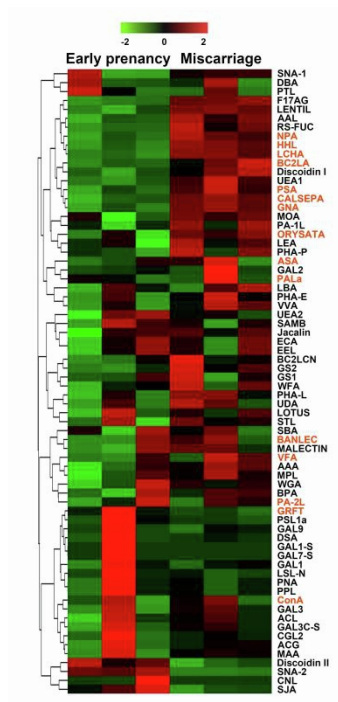
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## **Supplemental information**

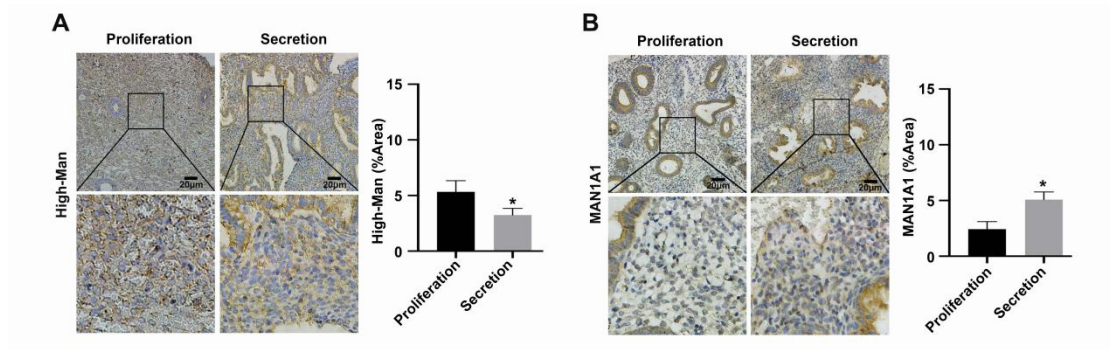
### **Elevated high-mannose N-glycans hamper endometrial decidualization**

**Siyi Chen, Aihui Zhang, Na Li, Hongpan Wu, Yaqi Li, Shuai Liu, and Qiu Yan**

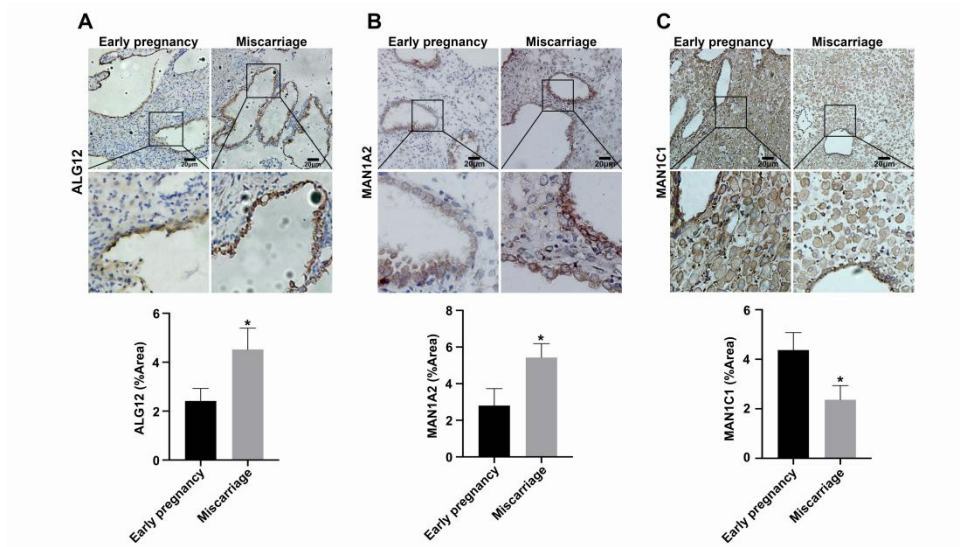
## Supplemental information



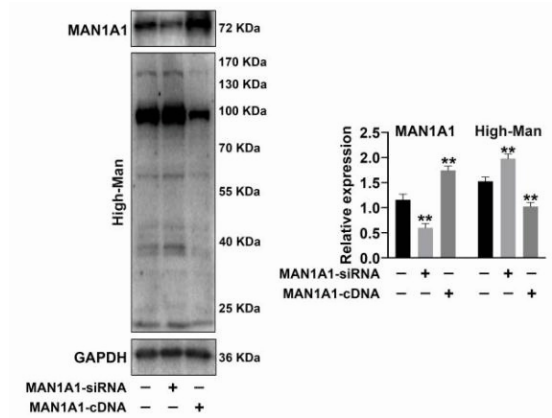
**Figure S1. Glycosylation traits of human decidualization, related to Figure 1.** Two-dimensional hierarchical clustering analysis of glycomic profile in the decidual tissues of early pregnant women (n=3) and miscarriage patients (n=3) by Lectin microarray. Red color: high signal; Green color: low signal; Black color: medium signal.



**Figure S2. Decreased high-mannose glycans and increased MAN1A1 in endometrial tissues of secretory phase compared with proliferative phase of non-pregnant women, related to Figure 1. (A, B) Immunohistochemical staining of high-mannose and MAN1A1 in endometrium of proliferative and secretory phases. Scale bars=20  $\mu\text{m}$ . \* $p < 0.05$ .**

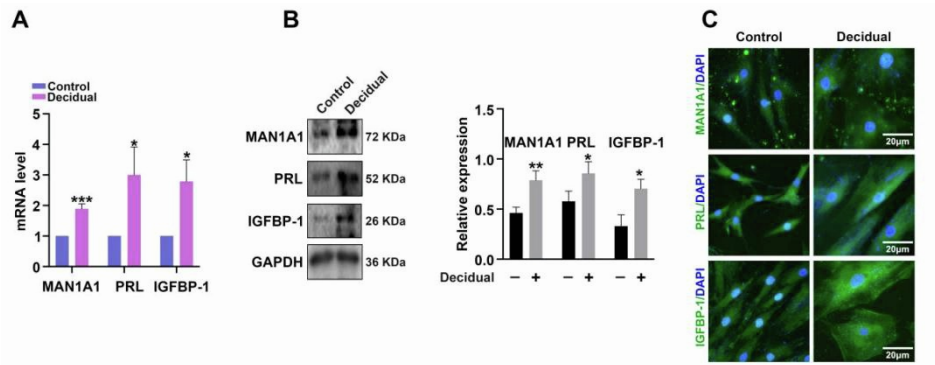


**Figure S3. Increased ALG12 and MAN1A2, and decreased MAN1A1 in decidua of miscarriage patients, related to Figure 1. (A-C) Immunohistochemical staining of ALG12, MAN1A2 and MAN1C1 in endometrium of early pregnancy and miscarriage. Scale bars=20 μm. \* $p < 0.05$ .**

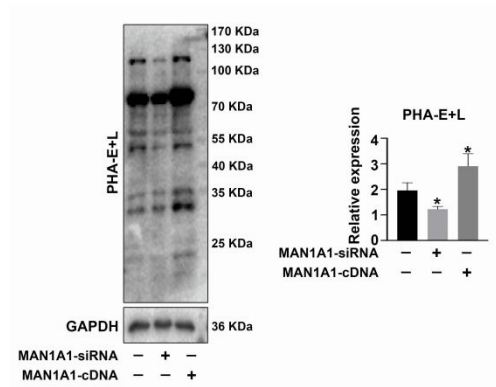


**Figure S4. MAN1A1 regulates biosynthesis of high-mannose, related to Figure 2.**

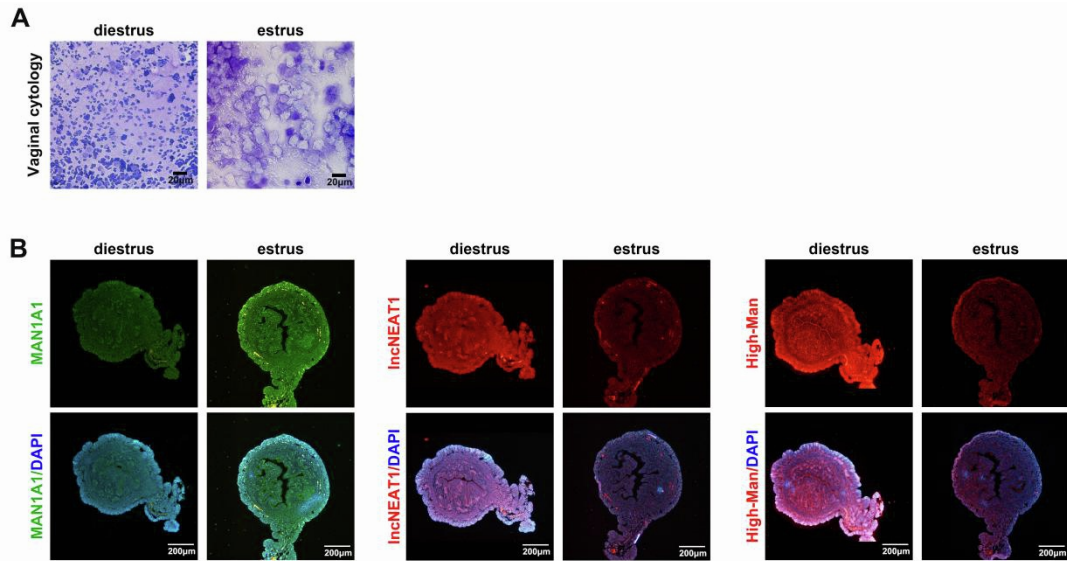
Western blot analysis of high-mannose and MAN1A1 expression in HESCs after transfection with MAN1A1-siRNA or MAN1A1-cDNA. **\*\* $p < 0.01$ .**



**Figure S5. MAN1A1 is increased in HESCs after artificially decidua induced, related to Figure 2. (A, B) qPCR and western blot analysis of MAN1A1, PRL and IGFBP-1 expression in HESCs after decidua induced with MPA and dbcAMP (ID) or uninduced control. (C) Immunofluorescent staining analysis of MAN1A1 (green), PRL (green) and IGFBP-1 (green) expression in HESCs after ID or uninduced control. Nuclei were stained with DAPI (blue). Scale bars=20  $\mu$ m. \* $p < 0.05$ , \*\* $p < 0.01$ .**



**Figure S6. MAN1A1 regulates biosynthesis of N-glycans by PHA-(E+L), related to Figure 2.** Lectin blot analysis of N-glycans level by PHA-(E+L) in HESCs after transfection with MAN1A1-siRNA or MAN1A1-cDNA. \* $p < 0.05$ .



**Figure S7 Increased MAN1A1, and decreased IncNEAT1 and high-mannose glycans in estrous cycle of estrus phase compared with diestrus phase, related to Figure 5. (A)** Vaginal smear was performed to confirm the estrous cycle of diestrus and estrus. **(B)** Immunofluorescent staining and FISH analysis of MAN1A1 (green), IncNEAT1 (red) and high-mannose (red) in the uteruses of diestrus and estrus phases. Nuclei were stained with DAPI (blue). Scale bars=200 μm.