Results: Comparing our microarray data with previous analyses of the human transcriptome, we found that the gene expression patterns of KRT7-positive cells were similar to those identified in placental tissue. We identified 259 upregulated genes commonly expressed in all four KRT7-positive groups, including well-known TB markers. Among these, we identified seven genes whose placental expression and functions have not been previously characterized. To identify whether these genes could be candidate novel TB-related genes, we confirmed their expression in primary placental tissue by immunohistochemical staining. As a result, we found that only XAGE2 and KCNQ2 were expressed in TB layers.

Conclusions: BMP4-treated KRT7-positive cells have similar characteristics to those of human placental tissue. Our approach allowed for the identification of novel genes possibly involved in placentation.

17.
CHARACTERISTICS OF PHYSIOLOGICAL DEVELOPMENT OF PLACENTAL VILLOUS VASCULATURE USING SUPERB MICRO-VASCULAR IMAGING

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Objective: Superb Micro-vascular Imaging (SMI) is a new technology for observing low blood flow profiles and providing high-resolution Doppler images. We aimed to analyze the characteristics of the physiological development of placental chorionic villous vessels (VVs) using SMI.

Material and Methods: The subjects were 5 cases of normal singleton pregnancy. The observations were made longitudinally, at 19-21, 29-31 and 36-38 weeks. The VVs were defined as primary (P), secondary (S) and tertiary (T), according to branching structures. In each observation, branching characteristics of VVs were analyzed qualitatively. The distance between P-VVs on the chorionic plate were measured. Among the VVs, one branching vessel clearly delineated from P to T VVs was sampled, and the length of each VV was measured. The gestational age-related characteristics of VVs were analyzed qualitatively using the Kruskal-Wallis one-way ANOVA on ranks test and followed up with the Dunn's test. The significance was set at $P<0.05$.

Results

1) The distances between the P-VVs at 19-21 weeks (median: 14.8mm) became elongated at 29-31 weeks (23.2mm), but no change thereafter at 36-38 weeks (23.1mm).
2) The lengths of the P/S-VVs at 19-21 weeks (8.15mm /5.55mm) extended at 29-31 (12.6mm/ 9.6mm), but showed no change thereafter at 36-38 weeks (11.35mm/ 8.0mm).

Conclusions: The distance between the P-VVs and the length of the P/S-VVs extended to 29-31 weeks and no further changes thereafter. This suggested that the basic structure of villus vasculature was completed at around 30 weeks' gestation.

18.
UMBILICAL CORD EDEMA WITH UMBILICAL CORD HEMANGIOMA IN PREGNANCY, A CASE REPORT

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In addition to the circulating disorders and inflammations, edema of the umbilical cord has an association with congenital anomalies and perinatal death. Here we report a case having umbilical cord edema with umbilical cord hemangioma who gave birth to a healthy infant vaginally.

A 26-year-old, 3 gravida 1 para female conceived naturally and received periodical check-up at a local obstetrical clinic. She was pointed out

umbilical cord cysts at 30 weeks of gestation and referred to our institution.Ultrasonography revealed edematous umbilical cord with cystic structures.The fetal growth was appropriate, no morphological abnormalities. Her pregnancy course was uneventful and she gave birth to a 2,965g of female infant vaginally at 39 weeks and 2 days of gestation. The fetal status was reassuring throughout the parturition. The total length of the umbilical cord was 70 cm and the cord was edematous over 53 cm from the umbilical ring. Histopathological examination revealed no urachal sinus in umbilical cord.Instead, there was a lobulated and circumferential hemangioma-like hyperplasia around the umbilical artery, leading to a diagnosis of umbilical cord hemangioma.

Hemangioma is benign endothelial cell neoplasms that affect the skin and the other organs.It may form part of a syndrome or occur in association with other malformations. Unlike the placental hemangioma, umbilical cord hemangioma is very rare and may not be detected prenatally. It is recommended to rule out associated malformations and hemangiomas in other locations for the fetus with umbilical cord edema.

19.
PROGESTERONE SUPPRESSES THE ENHANCEMENT OF INFLAMMATION ON THE FETAL MEMBRANE

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Objective: Progesterone (P4) has been known to be important in maintaining pregnancy by anti-inflammatory effect in the myometrium, however, this effect is less understood in the fetal membrane. We previously reported that mice with dental *Porphyromonas gingivalis* (*P.g*) infection could be useful as a model of preterm birth. In this model, inflammation in the fetal membrane via toll-like receptor 2 (TLR2) is thought to result in preterm birth. The aim of this study was to investigate the effect of P4 on the fetal membrane.

Methods: *P.g* mice were injected subcutaneously with (*P.g* +P4 mice) or without (*P.g* mice) 1mg P4 daily at day 15.5-17.5 of gestation. We performed Western blot analysis for detection of MAPK and NF-κB on the fetal membrane at day 18 of gestation. We also evaluated inflammatory cytokines (IL-1β, IL-8, TNF-α) and TLR2 at the same tissues using RT-PCR.

Results: The enhancement of MAPK and NF-κB expression levels was decreased in *P.g* +P4 mice, compared with in *P.g* mice. The treatment with P4 significantly reduced the enhancement of the expression of IL-1β, IL-8, TNF-α and TLR2.

Conclusion: P4 prevented preterm birth by suppressing the activation of inflammatory signaling pathways via TLR2 in the fetal membrane of preterm birth mouse model.

20.
THE CONTRIBUTION OF PLACENTAL PATHOLOGY TO THE PREDICTION OF, AND PROTECTION AGAINST, CEREBRAL PALSY(CP)

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Object: As we know, cerebral palsy (CP) can be caused by intrauterine hypoxia, hypoxia in delivery, and premature birth. In this study I investigate how to predict CP through examination of the placenta for signs of hypoxia.

We looked at what kind of hypoxic states can be found through an examination of the placenta, looking at Villous edema, thrombosis of the villous vessels, decidual degeneration, Diffuse Chorioamnionic Hemosiderosis (DCH), Chorioamnioniris (CAM) and abruptio placentae.

Method: I examined 37 placentas from CP cases by microscope.

The cases were chosen from clinical records and diagnosis by pediatricians.

Results: From 37 cases I found.

Edematous villi - 19 cases

Villous vessels occlusion - 15 cases

Dysmature villi -5 cases