Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Ankle2 -/+ heterozygous pups were significantly smaller than WT regardless of maternal genotype ($p<0.004$, Tukey’s). H&E stain and preliminary examination of a subset of whole cross sections of pups revealed abnormalities observed in the cortex of ZIKV Ankle2 -/+ mouse pups but not in mock infected animals (Fig C).

CONCLUSION: Taken together, this novel model enabled us to identify at least one putative target (ANKLE2) of congenital ZIKV-associated brain abnormalities which may lead to clinical microcephaly. Expansion of a Drosophila-based screen of viral proteins may identify other viral targets resulting in congenital malformations and provide opportunities for future pharmacologic interventions to prevent these malformations.

STUDY DESIGN: Unlabored, term cesarean placentas were collected from uncomplicated pregnancies ($n=10$). Gene expression and western blot analyses for ACE2 and TMPRSS2 were conducted using intevirilous biopsies. Placenta proteins were compared to commercially available human lung samples, a human cytrophoblasts (BeWo cells) and recombinant proteins. Previously banked maternal plasma samples from uncomplicated pregnancies across gestation were analyzed by ELISA ($n=12$ donors).

RESULTS: Placental ACE2 expression was significantly greater than TMPRSS2 (Figure 1A). Both were present at predicted sizes corresponding to recombinant proteins and in greater amount than lung samples. Qualitatively, the abundance of ACE2 in placenta samples corresponds with 1ng of recombinant protein vs. 0.1ng for TMPRSS2 (Figure 1B). BeWo cells appear to have a greater amount of TMPRSS2 vs. ACE2. In maternal plasma, ACE2 was highly variable and undetectable most samples (Figure 2).

CONCLUSION: Despite the few reports of vertical transmission, our results indicate human placentas have endogenous ACE2 and TMPRSS2 and possibly at greater levels than the lung. ELISA results suggest that maternal blood is not a major contributor of placental ACE2 in most pregnancies. Since the proteins necessary for SARS-CoV-2 infection are present, other element(s) may influence or are required for vertical transmission. Future studies planned to address placental innate immune responses against this variant of coronavirus.

**Objectives:**

- **Previous coronavirus outbreaks (SARS and MERS) were linked to severe pregnancy outcomes including miscarriage and stillbirth. With exception of anecdotal reports, vertical transmission of SARS-CoV2 remains unproven.**
- **Emerging evidence has implicated the angiotensin converting enzyme 2 (ACE2) in SARS-CoV-2 viral entry and its pro-inflammatory effects with respiratory syndromes. The serine protease TMPRSS2 is required for spike protein priming and subsequent viral replication. Little is understood regarding the expression of ACE2 and TMPRSS2 in human placentas. We examined these proteins in term human placentas and maternal blood.**

**Methods:**

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CONCLUSION: COVID positive pregnant women had similar placental outcomes compared to asymptomatic women. Future studies are needed to determine if the placental changes seen in our cohort are specific to COVID-19 or due to other factors.

OBJECTIVE: To study the impact of prenatal maternal stress during the COVID-19 pandemic on in-vivo fetal brain biochemical profiles using magnetic resonance spectroscopy (MRS).

STUDY DESIGN: We prospectively enrolled low-risk healthy pregnant women without any complications during the COVID-19 pandemic. We compared brain biochemical profiles measured in fetuses before the COVID-19 pandemic with fetuses studied during the COVID-19 pandemic using noninvasive MRS. All study participants completed standardized questionnaires Perceived Stress Scale (PSS) and Spielberger State Anxiety Inventory (STAI-S) were scanned on a 1.5T GE MR scanner. Spectroscopy voxel was placed in the center of the fetal brain and spectra were acquire using PRESS sequence: TE/TR: 144/128, NSA: 128 and quantified using LCModel.

RESULTS: We studied 131 fetuses (107 health fetuses pre-COVID 19 and 24 and fetuses from healthy pregnant women during the pandemic) at a mean gestational age of 29.2 ± 4.7 and 29.0 ± 5.6 weeks, respectively (range: 18-37 weeks). Our data show significantly higher levels of lactate (p = 0.02) and scyllo-inositol (sI) (p = 0.02) in fetuses from the pandemic cohort. Notably, higher levels of lactate were associated with higher STAI-S (p = 0.006) and PSS scores (p = 0.019).

CONCLUSION: We observed higher levels of lactate, a byproduct of anaerobic metabolism, in the fetal brain of healthy pregnant women during the pandemic. Increased lactate in the fetal brain was associated with higher maternal stress and anxiety. We also observed higher levels of sI. Inositols are simple sugar alcohols and elevated levels of cerebral sI are correlated with altered glial and neuronal metabolism. While our data suggest altered fetal brain development during the COVID-19 pandemic, the mechanisms mediating these changes remain unclear. Long-term follow-up of this cohort is currently underway.