Perinatal oxytocin-CD38-vitamin A, axis involves both hypothalamic and placental regulation
Gamliel M, Ebstein R, Yirmiya N, Anderson K, Mankuta D
Hadassah Hebrew University Hospital, Jerusalem, Israel

Objective
To examine the underlying mechanisms by which oxytocin affects the normal fetal brain, we evaluated the levels of oxytocin, CD38 and a vitamin A derivative, the all-trans retinoic acid (ATRA), in healthy pregnant women in the third trimester of pregnancy and in cord blood of the newborn. Recent controversial studies have suggested an increased risk for autism when oxytocin is used during induction and augmentation of labour. CD38 is known to take part in oxytocin secretion, while vitamin A is essential for this process.

Methods
A prospective descriptive study of 31 pregnant women and their subsequent newborn. Levels of oxytocin, CD38 and ATRA were measured in both maternal peripheral blood and in newborn's cord blood, and the tripartite relationship between these parameters (the "oxytocin-CD38-vitamin A axis") examined. Estrogen (in the form of estradiol) and progesterone levels of the expectant mothers were also recorded. Maternal-fetal blood levels were analyzed according to source (maternal versus cord) as well as within each dyad. Several clinical measures were also recorded, including Apgar scores, cord blood pH and birth weight.

Results
Maternal vitamin A and oxytocin levels were approximately 4- and 8-fold higher, respectively, than neonatal levels. Positive correlation was found between maternal and cord blood, both for oxytocin and CD38.

Conclusion
Wide variability in oxytocin, CD38 and vitamin A levels characterize healthy pregnant women and subsequent offspring. Maternal oxytocin and CD38 are significantly higher than newborn's levels. These three parameters may be informative reference biomarkers if found to be related to certain disorders such as autism.