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the effects of stress. However, how correlated astrocyte and oligodendrocyte changes account for activity and connectivity alterations in depression and stress remains largely unknown. Our research aims to understand those changes in human subjects, and in animal and cell culture models relevant to depression pathophysiology.

**Methods:** In postmortem brain from human subjects with depression and control subjects, and rodent models of chronic stress (CUS), we used immunohistochemistry, morphometry, western blots and mRNA determinations of glutamate transporters, connexins and myelin markers. In mixed cultures of rat astrocytes, oligodendrocytes and neurons we observed effects of high corticosteroids on expression of connexins, astrocytes, oligodendrocytes and neurons we observed effects of high corticosteroids on expression of connexins, myelin and oligodendrocyte markers.

**Results:** In the prefrontal cortex of subjects with depression we found lowered glial cell density, astrocyte cytoskeletal markers, glutamate transporters and connexins 43 and 30. CUS caused diminished astrocyte glutamate transporters and GFAP, as well as lower immunostaining of myelin proteins and connexins. In mixed cell cultures, high corticosterone (CORT) reduced density of Cx43 aggregates (ANOVA, p ≤ 0.001, Dunnett’s test p < 0.01 CORT to control), immunoreactivity of myelin proteins and extent of myelination, effects blocked by GC receptor antagonist mifepristone (univariate tests were p < 0.01 for CORT compared to control or to mifepristone), suggesting that the effects of stress depended on reduced gap junction communication and disruption of myelin.

**Conclusions:** In summary, correlated disturbance of astrocytes and oligodendrocytes may be a mechanism accounting for anomalous activity and connectivity of the prefrontal cortex in depression and stress-related psychiatric disorders.

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**Keywords:** Astrocytes, Gap Junctions, Glucocorticoid Receptor, Oligodendrocytes, Chronic Stress

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**SYMPOSIUM**

**The COVID-19 Generation**

Co-Chairs: Dani Dumitriu, Catherine Monk

**Chasing the Footprints of COVID-19-RELATED STRESS: Behavioral and Epigenetics Effects in Pregnant Women and Their Infants**

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**Background:** During 2020, the COVID-19 pandemic dramatically hit Italy and rapidly emerged as a collective trauma. Pregnancy is a sensitive period during which prenatal stress may result in epigenetic signatures (e.g., increased DNA methylation) and altered infants’ developmental programming. The serotonin transporter gene (SLC6A4) is a well-known locus of epigenetic regulation by adverse environmental exposures.

**Methods:** In April 2020, the MOM-COPE project was launched. One-hundred-eight mother-infant dyads were enrolled from ten neonatal units in Northern Italy. Retrospective maternal self-report measures of COVID-19–related prenatal stress were obtained at birth. SLC6A4 methylation was estimated in 13 CpG sites using NGS in buccal cells of mothers and infants obtained at from 6 to 12 hours after delivery. Infants’ temperament was assessed at 3-month-age through the IBQ-R questionnaire.

**Results:** No effects emerged for maternal SLC6A4 methylation. COVID-19–related prenatal stress significantly and positively associated with infants’ SLC6A4 methylation in 7 out of 13 CpG sites (rs > .24, all ps < .05). These sites loaded on a single principal component (PC1) accounting for 35% of total variance. PC1 methylation was significantly and positively associated with COVID-19–related prenatal stress (RR = 0.07, F = 7.71, p = 0.007, B = 0.16) as well as with infants’ temperamental positive affect at 3 months (RR = 0.05, F = 5.05, p = 0.027, B = −0.45).

**Conclusions:** Prenatal pandemic-related stress was significantly associated with less-than-optimal temperament in 3-month-old infants, partly due to stress-induced epigenetic regulation of the SLC6A4 gene. Appropriate policy and clinical actions are needed to promote timely preventive strategies.

**Funding Source:** Italian Ministry of Health; Fondazione Roche per la Ricerca Indipendente

**Keywords:** COVID-19, Prenatal Maternal Stress, Infant Temperament, DNA methylation, Serotonin Transporter Gene

**The Impact of Covid-Related Stress on Maternal Sleep During Pregnancy**

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**Background:** Poor sleep during pregnancy is very common and is associated with increased risk of adverse maternal and infant outcomes. Maternal psychosocial stress has been found to negatively impact sleep. The recent outbreak of COVID-19 has exposed many individuals to an unprecedented level of stress, that will continue for an unknown period of time. Studies are showing that all these factors may not only increase levels of stress, but also influence sleep health.

**Methods:** From March 2020–May 2021, participants were recruited as part of the COVID-19 Mother Baby Outcomes (COMBO) study at Columbia University. Survey data on maternal depression (PHQ-9), perceived stress (PSS),