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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
P714. Pilot Study of Early-Onset Major Depression and Exosomal MicroRNA Cargo Enriched for Neuronal Cell Origin

Roxann Roberson-Nay\textsuperscript{1}, Dana Lapato\textsuperscript{1}, and Vasily Yakovlev\textsuperscript{1}

\textsuperscript{1}Virginia Commonwealth University

\textbf{Background:} Major depression (MD) is highly prevalent, ranking second in the global burden of disease, with an overall lifetime risk estimated to be 16.2\% in the general population. This pilot study addresses the molecular genetics of early life depression by characterizing the composition of extracellular vesicle (ECV) microRNA cargo in a phenotypically rich, extant twin sample (Parent R01 MH101518; Ntotal=860 twins; ages 15-22; 57\% female). We will target both bulk and neuronal-enriched ECVs and analyze the microRNA (miRNA) cargo to investigate potential biomarkers of differential biological pathway regulation based on multiple definitions and markers of MD in young people.

\textbf{Methods:} N=44 plasma samples have been selected. We are using next generation sequencing and microarray technology with qPCR to ask novel, phenotypically rich questions regarding ECV-derived miRNA and miRNA originating from brain cell lineages.

\textbf{Results:} We have completed ECV isolation and we were able to isolate intact ECVs and obtain, on average, 176 ng of total RNA (167 ng of miRNA fraction). We are currently conducting miRNA library preparation and next generation sequencing. As a final step, RNA-Seq data quality control, alignment, RNA type classification, and quantification will be performed. Moreover, between group comparisons (i.e., MD affected versus MD unaffected) will be conducted as well as correlational tests using a continuous measure of current depression symptoms (i.e., Short Mood and Feelings Questionnaire).

\textbf{Conclusions:} Results from this pilot study will contribute to a nascent understanding of bulk and neuronal ECV-miRNA and its potential role in and biomarker potential of MD pathophysiology of young people.

\textbf{Supported By:} Virginia Commonwealth University

\textbf{Keywords:} Neuronal Derived Extracellular Vesicle, Depression, Exosomes

P715. Increased Hair Cortisol Levels are Associated With a Shift Towards Exploitative Decision-Making in Health Care Workers in the COVID-19 Pandemic

Erika Kaske\textsuperscript{1}, Cathy Chen\textsuperscript{2}, Collin Meyer\textsuperscript{2}, Jeanine Pebbles\textsuperscript{3}, Nicola Grissom\textsuperscript{4}, Becket Ebitz\textsuperscript{2}, Amita Kapoor\textsuperscript{4}, David Darrow\textsuperscript{2}, and Alexander Herman\textsuperscript{2}

\textsuperscript{1}University of Minnesota Medical School, \textsuperscript{2}University of Minnesota, \textsuperscript{3}University de Montreal, \textsuperscript{4}University of Wisconsin

\textbf{Background:} During the COVID-19 pandemic, healthcare workers (HCWs) were required to make flexible decisions in a rapidly changing environment under significant stress. Linking subjective and physiological markers of stress to quantitative measures of decision-making is critical for understanding the resilience of healthcare workers during the pandemic. The aim of this study was to utilize an explore-exploit computational psychiatry paradigm to measure the effects of COVID-19 related stress on decision-making flexibility.

\textbf{Methods:} We utilized biomarker and survey data to query chronic stress; 123 participants completed the survey and 54 hair samples were collected. Cortisol was measured with LC/MS/MS. We evaluated explore/exploit behavior with a resting three-arm bandit task, and 66 completed the task.

\textbf{Results:} Eighty-seven met criteria for COVID-19 related PTSD, however we found no significant correlation between hair cortisol and symptoms measures. In contrast, we found that participants with higher hair cortisol exhibited greater exploitation (Pearson’s \( r=-0.36 \), \( p=0.046 \)). Additionally, explore-state reward-dependent switching behavior, a state-specific measure of learning from reward, significantly decreased with increasing cortisol (\( r=-0.49 \), \( p=0.007 \)). Further, in a basic 3-parameter reinforcement learning model, the learning rate alpha inversely correlated with cortisol (\( r=-0.467 \), \( p=0.007 \)).

\textbf{Conclusions:} Computational model-derived decision-making variables demonstrated a robust correlation with hair cortisol concentrations. Without this task, biomarker data may appear independent of chronic stress. This study highlights the importance of quantitative behavioral tasks and physiological signals to understanding the interaction of mood and cognition with stress.

\textbf{Supported By:} This work was supported by the University of Minnesota Office of Academic and Clinical Affairs COVID-19 Rapid Response Grant. Research in this publication was also supported in part by the Office Of The Director, National Institutes of Health under Award Number P51OD011106 to the Wisconsin National Primate Research Center, University of Wisconsin-Madison. This research was conducted in part (as applicable) at a facility constructed with support from Research Facilities Improvement Program grant numbers RR15459-01 and RR020141-01.

\textbf{Keywords:} Cognitive Flexibility, Hair Cortisol, COVID-19 Pandemic, Computational Psychiatry