

Epigenetic Alterations and Stress Among New Mothers and Infants in the Democratic Republic of Congo

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The new field of Fetal Origins suggests that the quality of the intrauterine environment in which a fetus is programmed has great implications for the health of the child. Researchers are beginning to document the health effects of the passage of stress hormones from mother to fetus. Still, many important questions about the biological mechanisms for such transmission remain largely unknown.

This summer, with support from the Center for African Studies and in collaboration with Dr. Connie Mulligan, I began the first epigenetic study to take place in the Democratic Republic of Congo (DRC). This study is the first of its kind to analyze how the stress of 14 years of war in the eastern provinces of the DRC might produce epigenetic alterations among mothers and babies. This is particularly relevant in the context of eastern DRC, where systematic rape warfare is being used as a tool of war by soldiers operating in the region.

For this biocultural study, I took

semi-structured interviews, perinatal trauma surveys and biological samples from 25 women giving birth at the HEAL Africa hospital in Goma, eastern DRC, during July and August. Maternal blood, umbilical cord blood (a proxy for infant blood) and placental samples were taken from all participants. From these samples we will measure stress



hormones, biological markers of inflammation and epigenetic alterations. The interview and survey data and will provide the contextual details necessary to begin to understand how mundane stressors and other traumatic exposures of war such as sexual violence, map onto

patterns of epigenetic changes, stress and inflammation in mother-infant dyads.

During the course of the study, our partner doctors on the ground in Goma were capacitated to do basic DNA extraction and placental biopsies. We will continue to work with them during the analysis and further data collection for this study. The Mulligan lab donated several pieces of genetic equipment for the small molecular genetics laboratory that we set up at HEAL Africa for this study. We have plans to present the first round of findings to the community as soon as analysis is complete. Finally, this study will be expanded upon for my dissertation research, beginning in 2012. It is our hope that we produce conclusions which will not only expand our understanding of how adversity in the intrauterine environment affects birth outcomes and child health, but which will be relevant for policy makers and public health stakeholders in the DRC.

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