

James & Esther King Biomedical Research Program

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*2011 Program
New Investigator Research
(3-year project)*

Project Title: Neuroendocrine Disruption and Nicotine Preference in a Rat Model of Postpartum Depression

Project Summary: Postpartum depression (PPD) is a devastating disease occurring in 10-15 percent of women. Women who suffer from PPD appear to be sensitive to postpartum hormonal changes. Further, of women who quit smoking during pregnancy, those who develop PPD are at an increased risk of smoking relapse. Animal models exhibiting both PPD and nicotine preference have not been studied and thus, the mechanistic relationship between the two is unknown. Studies investigating susceptibility to drug abuse have indicated that animals who respond to a novel open field with high activity (HR) exhibit alterations in response to stress and a greater preference for nicotine compared with animals who respond with lower activity (LR). Thus, parallels between HR rats and rats exhibiting PPD suggest that the former may be used as a 'model' to study maternal behavior, susceptibility to depression, and increased nicotine preference. These studies will use differences between HR and LR rats to investigate PPD and nicotine dependence. It is predicted that postpartum, HR rats will exhibit both depression and a greater tendency to neglect their young as compared to LR rats. It is also anticipated that HR rats exhibiting signs of PPD will have higher nicotine preference, and that estrogen treatment will reduce this preference for nicotine. These studies will provide evidence on the etiology of PPD and a rationale for the use of estrogen replacement to prevent nicotine relapse during the postpartum period.