

Title: Depression and Heart Disease: Investigating the Role of the Social Environment in an Animal Model

Project Summary

Research indicates that there is a bi-directional association between depression and heart disease, and this link represents an important public health concern. Several theories exist to explain this relationship, however the current behavioral and neurobiological mechanisms are not well understood. One potential mechanism that may influence both depression and heart disease involves changes in the social environment. For instance, negative social experiences increase the vulnerability to both depressive disorders and heart disease. Furthermore, disruptions of the social environment negatively influence the autonomic nervous system, producing disruptions in blood pressure and heart rate.

Therefore, negative social experiences may lead to depression and heart disease through direct effects on the autonomic nervous system. To better understand these relationships, the present project will use a valid and reliable animal model, the prairie vole, to more directly study how the social environment interacts with the autonomic nervous system. This unique rodent species displays social behaviors similar to those of humans, including an active engagement in the social environment and forming enduring social bonds. The specific goal of this project is to experimentally investigate the effects of social isolation and social support in prairie voles on depressive behaviors, blood pressure, and heart rate.

This study will include both graduate and undergraduate students at many levels, including the experimentation, data analyses, presentation/publication of results, and application of future grant and student fellowship proposals. The findings from this project will extend previous research from my laboratory, and also will increase our understanding of how negative social experiences can influence biology and behavior. These results will provide a foundation for designing improved treatments for individuals with depression and heart disease, and therefore will have a significant impact on society.