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YOU ARE INVITED TO ATTEND THE DEFENSE OF THE DOCTORAL DISSERTATION

"The Effects of Social Isolation on Glucose Homeostasis and Hypothalamic Neuropeptide Expression in Mice"

By

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Department of Pharmacology, Physiology and Neuroscience

Monday, July 21th, 2025
MSB H609
10:00 AM

Join Zoom presentation

https://rutgers.zoom.us/j/98986510483?pwd=qsZyGuOtYgaxgyVtbY2d6hOrHZ90fm.1

Meeting ID: 952 8704 5615
Password: 985650

ABSTRACT

Human longitudinal studies demonstrate that social isolation is an independent risk factor for metabolic disease. Social isolation has also been associated with metabolic dysregulation in rodents. However, the field lacks systematic frameworks for examining temporal and environmental variables affecting glucose homeostasis in normoglycemic mice. Few studies have investigated isolation effects in female subjects, despite evidence that men and women exhibit different metabolic responses to social isolation in human populations. Furthermore, there is a deficit in research examining the neural mechanisms underlying the relationship between isolation and glucose regulation, with insufficient systematization hindering comparative analysis across studies. First, we systematically tested the temporal and sex-dependent effects of social isolation on glucose regulation in normoglycemic rodent models. Second, we investigated the effects of thermoneutrality and physical contact on glucose regulation in single-housed mice. Third, we characterized differences in hypothalamic receptor and neuropeptide expression between single-housed and co-housed mice, focusing on sub-nuclei that regulate metabolism, social behavior, and thermoregulation. Our findings establish a foundation for future mechanistic and epidemiological studies examining the impact of social isolation impact on glucose regulation. This research is particularly urgent in the post-pandemic era, where both social isolation and diabetes prevalence are rising. Results will inform the identification of individuals at higher diabetes risk and improve the design of preclinical trials for diabetes pharmaceuticals by incorporating social context considerations into study methodologies.