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Title: COMPARATIVE STUDY OF OXIDATIVE STRESS RESTANCE IN NAKED MOLE RAT, MOUSE, DEGU, AND HUMAN ASTROGLIA

Abstract

A model of healthy aging, naked mole rat (NMR; *heterocephalus glaber*), presents as a salient target for aging research. NMR are euthermic social rodents that reside in complex tunnel systems and engage in complex social behaviors dictated by their lifestyle in colonies. Being a clear outlier in the body mass versus longevity correlation, the mechanisms behind their longevity remain to be better understood. In this study we looked at relative resistance of primary astroglia from different species to oxidative stress. NMR and mouse astroglia showed greatest resistance to ROS stress while human cells showed the greatest susceptibility. RNA sequencing analysis uncovered a number of potential mechanisms that could be protective against hypoxia and oxidative stress in NMR, including antioxidant and metabolic pathways. Modulation of nutrient supply to mimic NMR astroglial metabolic states resulted in significant increase in survival in human cells. Uncovering the mechanism behind the increased survival upon nutrient supply modulation will help understand the implications of cellular metabolism modulation in the settings of aging and disease.