Marquita McKissick

Major: Biology
University: University of Arkansas at Pine Bluff
Faculty Mentor: Dr. Joel Maruniak
Mentor Department: Biological Science

Funded by: NSF-REU Biology & Biochemistry

How caloric restriction extends life

Marquite McKissick, Phil Stepp and Joel Maruniak

People have always wanted to know how to live longer lives. Researchers have found that caloric restriction allows this in most animals. Caloric restriction (CR) is defined as the restriction of food but still enough to maintain life. It is not known how CR slows aging. Aging occurs when cells can no longer divide and they malfunction or die. We hypothesized that CR slows aging by reducing rates of mitosis. In this research, mice were caloric restricted by reducing calories by at least twenty percent for two weeks. CR and CRC (control) mice were all injected with BrdU in order to visualize the dividing cells. Tissue sections were taken in order to observe and calculate the mitotic rate of the CR and CRC mice. The number of BrdU-labelled cells in the epithelial layer of the skin was 58/mm in control mice and 34/mm in caloric restricted mice. This means that caloric restriction caused the mitotic rate of skin cells to decrease by 41%. Our results suggest that caloric restriction extends lifespan by slowing the average rate of mitosis in cells.