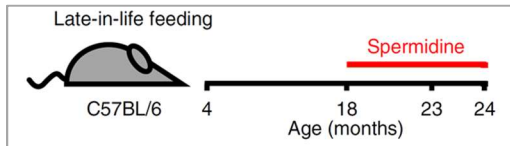


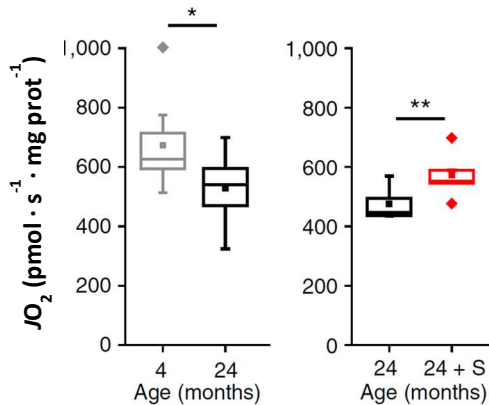
Tobias Eisenberg *et al.*

Cardioprotection and lifespan extension by the natural polyamine spermidine



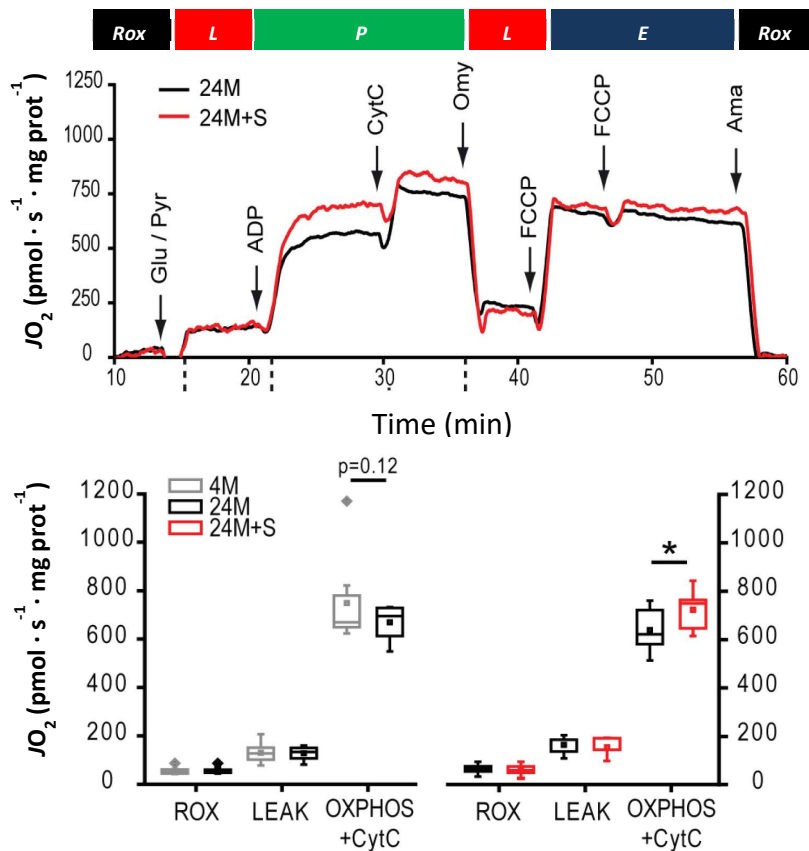
Spermidine improves cardiomyocyte composition and mitochondrial function in mice.

C57BL/6J male mice were supplemented with spermidine (+S) late in-life and hearts were subjected to molecular and biochemical analyses at the indicated age. Oxygen consumption (NADH-linked respiration, OXPHOS) of isolated cardiac mitochondria was assessed using high-resolution respirometry. n=8 (left), n=5 (right) mice per group.



Dietary spermidine reversed an age-induced decline in mitochondrial respiratory function

Representative oxygraphy recordings



Dietary spermidine reverses OXPHOS decline with age.

(top) NADH-linked pathway substrates glutamate and pyruvate (Glu/Pyr) were used to fuel the mitochondrial respiration in isolated mitochondria from the heart. (Bottom) Different respiratory states were assessed according to the protocol in the top figure. The supplementation of spermidine in the diet results in a recovery of the OXPHOS capacity n=8 (4M/24M) and n=5 (24M/24M+S) mice per group. *p<0.05 (Paired Student's t-test).

Reference: Eisenberg T, Abdellatif M, Schroeder S, Primessnig U, Stekovic S, Pendl T, Harger A, Schipke J, Zimmermann A, Schmidt A, Tong M, Ruckenstein C, Dammbrueck C, Gross AS, Herbst V, Magnes C, Trausinger G, Narath S, Meinitzer A, Hu Z, Kirsch A, Eller K, Carmona-Gutierrez D, Büttner S, Pietrocola F, Knittelfelder O, Schrepfer E, Rockenfeller P, Simonini C, Rahn A, Horsch M, Moreth K, Beckers J, Fuchs H, Gailus-Dürner V, Neff F, Janik D, Rathkolb B, Rozman J, de Angelis MH, Moustafa T, Haemmerle G, Mayr M, Willeit P, von Frieling-Salewsky M, Pieske B, Scorrano L, Pieber T, Pechlaner R, Willeit J, Sigrist SJ, Linke WA, Mühlfeld C, Sadoshima J, Dengjel J, Kiechl S, Kroemer G, Sedej S, Madeo F. (2016). Cardioprotection and lifespan extension by the natural polyamine spermidine. *Nat Med.* 22(12):1428-1438.