

Regulation of skeletal muscle mitochondrial biogenesis by GSK-3 β

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Stellingen

Behorend bij het proefschrift

Regulation of skeletal muscle mitochondrial biogenesis by GSK-3 β

Wessel F. Theeuwes, Maastricht, 3 april 2020.

1. Inactivation of GSK-3 β increases mitochondrial biogenesis both in adult muscle as well as during muscle regeneration. – (*this thesis*)
2. Inactivation of GSK-3 β regulates skeletal muscle oxidative energy metabolism via a TFEB/PGC-1 α signaling axis. – (*this thesis*)
3. GSK-3 β is located at a key position in the molecular pathways regulating skeletal muscle mass and oxidative energy metabolism. – (*this thesis*)
4. While inactivation of GSK-3 β improves muscle oxidative energy metabolism, activation of GSK-3 β has no effect. – (*this thesis*)
5. Mitochondrial transfer is promising in healing damaged or stressed cells *in vitro* and *in vivo*. – (adapted from Caicedo *et al.* (2018) *Stem Cells Int.*)
6. PGC-1 α -driven myokine release improves mitochondrial health in tissues beyond the skeletal muscle itself. – (based on Boström *et al.* (2012) *Nature*)
7. The transfer of the mitochondrial genome is so complex, even the paternal mtDNA can be inherited. – (based on Luo *et al.* (2018) *Proc Natl Acad Sci USA*)
8. No exercise-mimetic is as effective as physical activity to maintain or improve skeletal muscle mitochondrial function and muscle health.
9. The scientific community should invest more in publishing negative data in order to minimize duplication of experiments and unnecessary animal work.
10. Failure is simply an opportunity to begin again, this time more intelligently. – (*Henry Ford*)
11. Sustaining health throughout the process of ageing requires dedicated care, as should sustaining the environment in order to be able to live healthy in the future.