

University of Groningen

Hibernating mitochondria, the cool key to cellular protection and transplant optimization

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DOI:
[10.33612/diss.160451743](https://doi.org/10.33612/diss.160451743)

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Document Version
Publisher's PDF, also known as Version of record

Publication date:
2021

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Hendriks, K. (2021). *Hibernating mitochondria, the cool key to cellular protection and transplant optimization: Mitochondrial aspects of hibernators and non-hibernators in hypothermia*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen. <https://doi.org/10.33612/diss.160451743>

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1. Temperature reduction of cells leads to a progressive discrepancy between the reduction in mitochondrial ROS production and respiration, gradually tilting mitochondrial respiration towards ROS production. (this thesis) 2. The superior cold resistance of hibernator-derived cells is rooted in their capacity to sustain mitochondrial function. (this thesis) 3. In non-hibernator cells, cooling induces mitochondrial failure, leading to ATP depletion and excessive ROS formation, ultimately resulting in cell death by ferroptosis. (this thesis) 4. Prolonged hypothermia induces increasing amounts of DNA strand breaks together with failure of the DNA repair system. (this thesis) 5. Gasotransmitters fulfill important roles in maintaining accurate mitochondrial function and show a broad variety of potential therapeutic properties. (this thesis) 6. Hydrogen sulfide (H₂S) can be used to safely induce a short hypometabolic state in human-sized normothermic porcine kidneys. (this thesis) 7. A plateau body temperature of 32°C during cardiopulmonary bypass assisted CABG is associated with the highest postoperative survival. (this thesis) 8. Voor de ideale orgaanpreservatie dient er zo warm mogelijk gekoeld te worden. 9. Temperature management is one of the most important measures to sustain life. Just think of a cold beer on a hot summer day. 10. Een goede wetenschapper is voor een groot deel malloot, aangevuld met een lading koppigheid en een portie doorzettingsvermogen. 11. Het kweken van cellen heeft alles te maken met het volgen van een goed recept; het is 200 gram onderbuikgevoel, een onsje liefde, een flinke snuf handigheid afgeblust met goed timemanagement. 12. As conducting science means being inundated with countless questions, choosing the right question marks the true scientist. 13. Improviseren heeft hetzelfde effect op een wetenschappelijk experiment als op een live gitaarsolo – afwijken kan eeuwige roem opleveren, maar eindigt meestal in spijt.