

Regulation of the Heat Shock Response as a Treatment for Niemann-Pick type C disease

<https://neurodegenerationresearch.eu/survey/regulation-of-the-heat-shock-response-as-a-treatment-for-niemann-pick-type-c-disease/>

Principal Investigators

Dr Thomas Kirkegaard Jensen

Institution

Orphazyme Aps

Contact information of lead PI Country

United Kingdom

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Regulation of the Heat Shock Response as a Treatment for Niemann-Pick type C disease

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1

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Research Abstract

NPC is a devastating neurodegenerative disorder for which there is only one treatment licensed. The heat-shock response (HSR) is a key cellular process enabling the cell to cope with a wide variety of pathological stressors. Induction of the HSR and the HSP70 protein family, have been shown to be protective in several neurodegenerative diseases, including LSDs. Orphazyme is currently investigating two approaches for treatment; recombinant HSP70 and Arimoclomol, a small molecule which enhances the HSR and up-regulates HSP70. Both treatments have shown significant benefits on disease progression in a mouse model of NPC1 disease, but greater understanding of their mechanisms of action is needed to fully optimise treatment of this

disease and to identify further therapeutic targets and biomarkers for clinical trials. The HSR plays a role in a variety of cellular processes, e.g. refolding of damaged proteins and degradation of protein aggregates. HSP70 has also been shown to prevent lysosomal membrane permeation, a mechanism of cell death. Exploration of the molecular basis of NPC disease, and the therapeutic potential of HSR-induction, is a novel area of study. As other LSDs have convergent pathological pathways this may further impact other indications within this family of devastating and currently untreatable LSDs.

Further information available at:

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United Kingdom

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