SUMMIT

RESEARCH

# Quantitative proteomic profiling of age-related protein aggregation in the healthy mouse liver

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3 GOOD HEALTH AND WELL-BEING

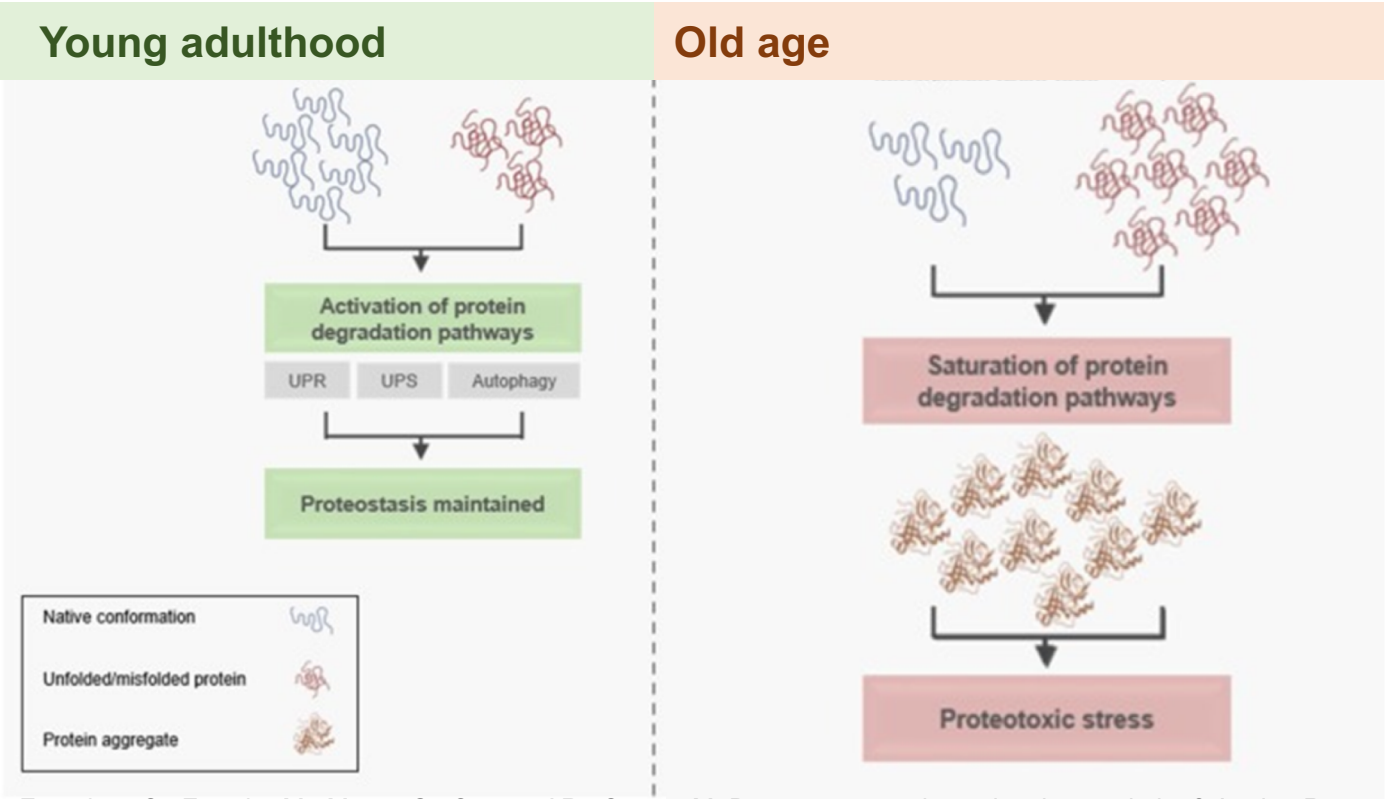
# Is there protein aggregation throughout healthy mammalian aging?

**Aging can be defined as the progressive decline of cellular function over time.**

Risk factor for **age-related diseases**
Alzheimer´s disease
Parkinson´s Disease
Amytrophic Lateral Sclerosis
Type II Diabetes

One hallmark of aging and age-related diseases is **proteostasis decline**

Increases the propensity for **protein aggregation**.

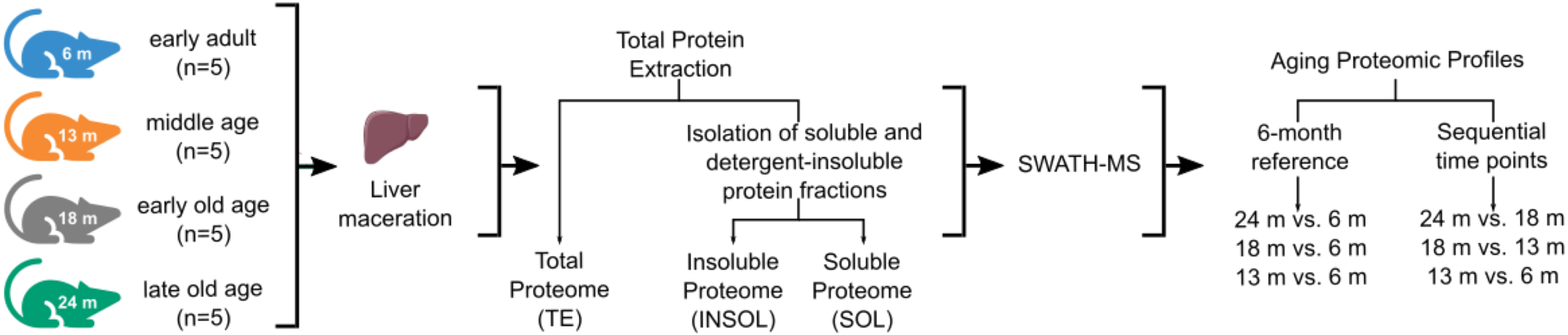



Francisco S., Ferreira M., Moura G., Soares AR., Santos M. Does proteostasis get lost in translation? Ageing Research Reviews, 62, 101119.

# Is there protein aggregation throughout healthy mammalian aging?

## Methodology

Characterization of  protein aggregation profiles in mouse livers using SWATH mass spectrometry



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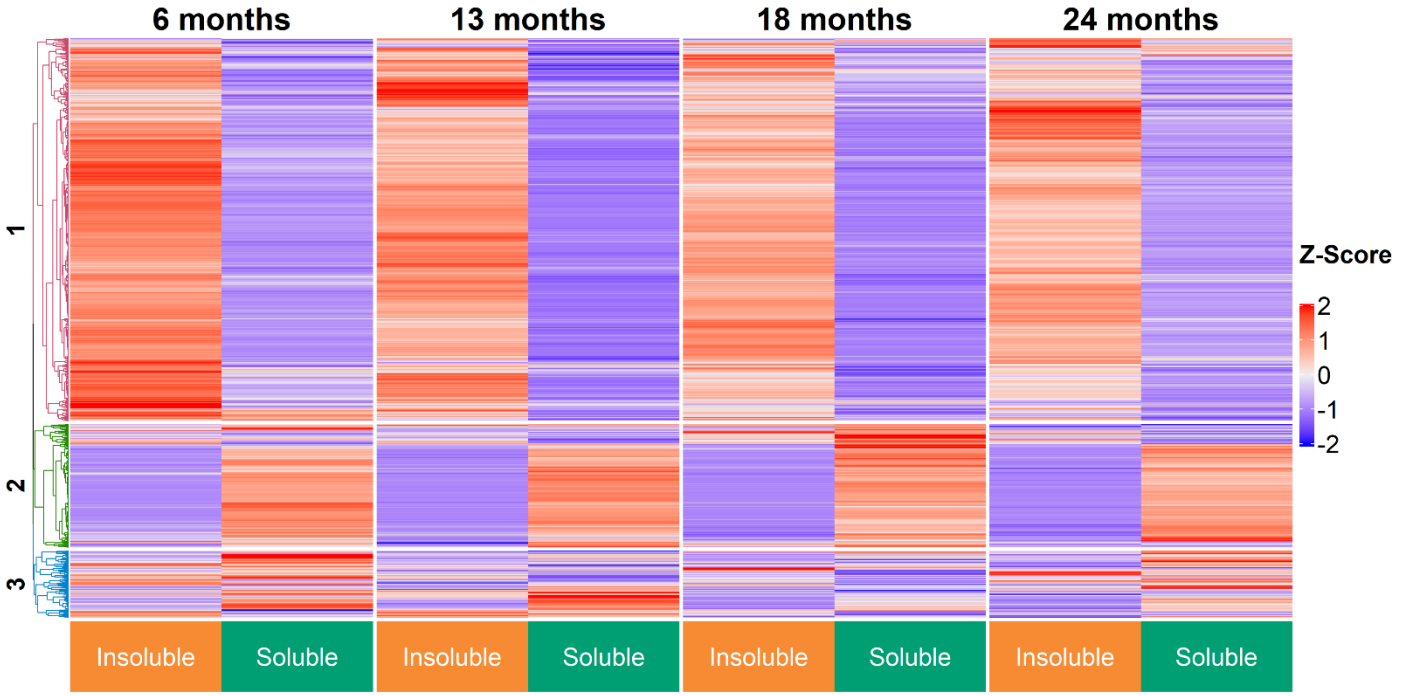
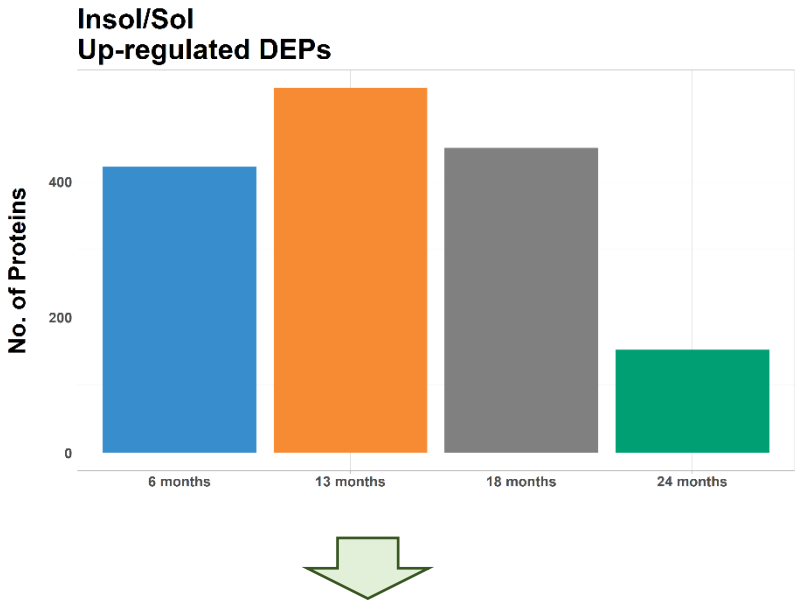
## Preliminary results




*Unpublished data* - Heatmap with hierarchical clustering of all detected insoluble aggregates and soluble proteins using SWATH mass spectrometry.




Many are proteostasis network components

# Is there protein aggregation throughout healthy mammalian aging?

## Future steps

1. Identification and characterization of aggregates
2. Integration of data with other –omics analyses

**ULTIMATE GOAL :** Possible biomarkers for anti-aging strategies and therapeutics

# Is there protein aggregation throughout healthy mammalian aging?

## Current Impact

### AGEING RESEARCH REVIEWS

Francisco S., Ferreira M., Moura G., Soares AR., Santos MAS. Does proteostasis get lost in translation? Implications for protein aggregation across the lifespan. Ageing Research Reviews (2020), doi:10.1016/j.arr.2020.101119

### CONFERENCES AND SEMINARS

11/11/2020 – 14/11/2020 > – Virtual Cold Springs Harbor Laboratory Conference - Proteostasis in Health and Disease. Francisco S*., Nobre A*., Ferreira M., Santa C., Anjo S., Manadas B., Santos MAS., Soares AR. Proteomic analysis of tissue-specific protein aggregation signatures throughout mammalian aging. Cold Springs Harbor Laboratory Conference : Protein Homeostasis in Health and Disease. November 11 - 14, 2020, Virtual

16/11/2020 – 19/11/2020 > – Virtual EMBL Conference: From Functional Genomics to Systems Biology
Ferreira M*.,Francisco S*., Nobre A., Santa C., Anjo S., Manadas B., Santos MAS., Soares AR. From transcriptomics to proteomics: An integrated characterization of age-related protein aggregation throughout the mammalian lifespan. EMBL Conference: From Functional Genomics to Systems Biology 16 - 19 November 2020, Virtual

11/11/2019 – 14/11/2019 > – Ericeira, Portugal - EMBO Workshop Proteostasis : From organelles to organisms
Francisco S., Nobre A., Santa C., Martins F., Camões F., Rebelo S., Manadas B., Santos MAS., Soares AR. Characterization of widespread proteome aggregation through aging in mammals. EMBO Workship From organelles to organisms. Nov 11 2019 source-work00 id: cv-prod02 id-1282356

# Is there protein aggregation throughout healthy mammalian aging?

## Acknowledgements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