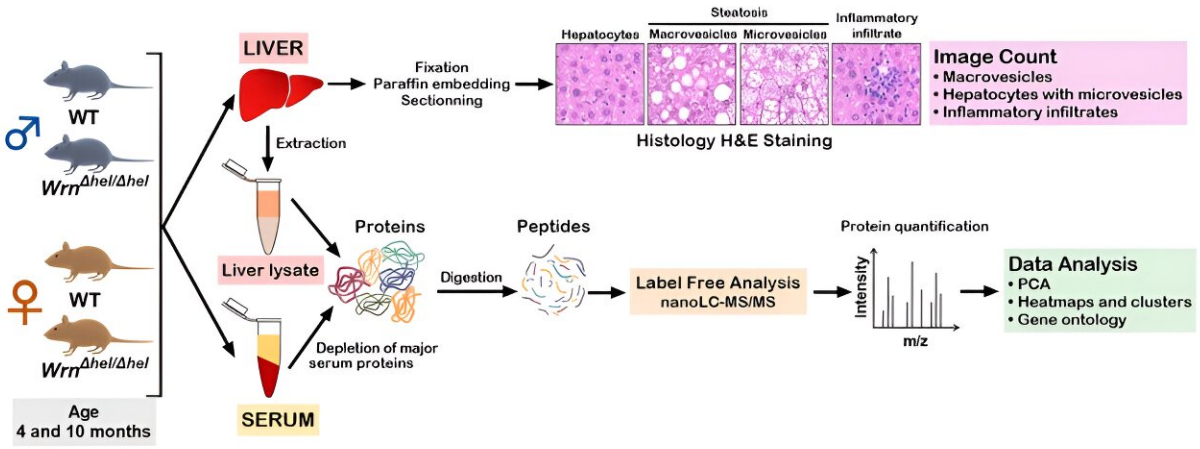
Proteomics uncover sexual dimorphism and immune changes in aging mice with Werner syndrome

June 3 2024



Experimental design of the study. Credit: *Aging* (2024). DOI: 10.18632/aging.205866

A new research paper titled "Integrated liver and serum proteomics uncover sexual dimorphism and alteration of several immune response proteins in an aging Werner syndrome mouse mode" has been published

in *Aging*.

Werner syndrome (WS) is a progeroid disorder caused by mutations in a protein containing both a DNA exonuclease and DNA helicase domains. Previous studies indicated that males lacking the helicase domain of the Wrn protein orthologue exhibited hepatic transcriptomic and metabolic alterations.

In this new study, researchers Lucie Aumailley, Marie Julie Dubois, André Marette, and Michel Lebel from Université Laval used a label-free liquid chromatography-tandem mass spectrometry approach to uncover protein abundance associated with specific biological processes that differed depending on the age (four or ten months) and/or the genotype (wild type or Wrn mutant) in the serum and liver of mice.

Principal component analysis of the proteomic data from both serum and hepatic tissue revealed a sexual dimorphism regardless of the age and the genotype of the mice.

"Moreover, although all Wrn mutant mice exhibited fatty liver by the age of ten months, a significant age and genotype dependent enrichment of proteins involved in lipid and fatty acid metabolic processes were uncovered only in males," the researchers add.

Also, a genotype dependent increase in serum oxidant detoxification processes was observed in the serum of Wrn mutant males. Despite these sexual differences, several aspects of the immune system were affected in both females and males. Finally, an increase in specific immunoglobulin molecules was common in the liver and serum of both older Wrn mutant females and males.

"Such results suggest that specific immunoglobulin variants may be associated with fatty liver progression in WS," the researchers conclude.

Medical Xpress

More information: Lucie Aumailley et al, Integrated liver and serum proteomics uncover sexual dimorphism and alteration of several immune response proteins in an aging Werner syndrome mouse model, *Aging* (2024). DOI: 10.18632/aging.205866

Provided by Impact Journals LLC

Citation: Proteomics uncover sexual dimorphism and immune changes in aging mice with Werner syndrome (2024, June 3) retrieved 17 July 2024 from https://medicalxpress.com/news/2024-06-proteomics-uncover-sexual-dimorphism-immune.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.