

PHARMACOLOGY AND SYSTEMS PHYSIOLOGY  
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PROJECT TITLE: Role of Endoplasmic Reticulum Metalloproteinase 1 (ERMP1) in Non-Alcoholic Fatty Liver Disease (NAFLD)

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### Project Description

Non-alcoholic fatty liver disease is the most common form of chronic liver disease affecting more than 25% of the general population and it is highly associated with different metabolic disorders such as obesity and insulin resistance (Vernon, 2011). This condition involves fat accumulation in the liver and results from an interaction between genetic and environmental factors. Previous studies have shown 'key driver' genes regulating NAFLD. Follow-up studies have shown to highlight mitochondrial dysfunction as a key mechanistic driver of NAFLD and have identified Endoplasmic Reticulum Metalloproteinase 1 (ERMP1) as a candidate gene (Chella Krishnan, 2018). ERMP1 is a zinc-binding protease and has been observed to be highly upregulated in patients with liver, breast, lung, and colon cancer (Grandi, 2016 and Lu, 2020), yet its effects on the NAFLD have been largely unexplored. But since de novo lipogenesis (new fat biosynthesis) has been shown to play a causal role in liver fat buildup during NAFLD (Lambert, 2014), we would like to start our investigation here. The overall goal of this study is to test the direct relationship between ERMP1 gene, de novo lipogenesis and mitochondrial activity.