Development of Methods and Assay for Measurement of Total Oxidized Phospholipid (OxPL)

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BACKGROUND
Nonalcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease in the United States. It can be broadly sub-classified into nonalcoholic fatty liver (NAFL), which is thought to have minimal risk of progression to cirrhosis, and nonalcoholic steatohepatitis (NASH), which is thought to have an increased risk of progression to cirrhosis. The current diagnostic gold standard for differentiating whether a patient with NAFLD has NAFL versus NASH is liver biopsy. However, liver biopsy is an invasive procedure, which is limited by sampling variability, cost, and may be complicated by morbidity and even death, although rare. Accurate, non-invasive, biomarkers for the detection of liver disease and liver disease progression e.g., progression to NASH, are currently also not available.

TECHNOLOGY DESCRIPTION
Researchers at UC San Diego have developed a method and assay measuring total oxidized phospholipids (OxPL) that can be used for determining and or distinguishing a disease or disorder associated with OxPL. The invention provides for methods, compositions and kits that utilize total Oxidized phospholipids to determine whether a subject has liver disease.

APPLICATIONS
Measurement of Total OxPL could be a valuable biomarker of the development of NASH. Our current data suggests it distinguishes patients with NAFL (fatty liver only) from patients with NASH (nonalcoholic steatohepatitis)

ADVANTAGES
There is currently no way to measure Total OxPL in plasma or serum of animal models or humans. The researchers have developed an assay that directly measures OxPL on apoB-100 containing lipoproteins and that for the most part this measures OxPL on Lipoprotein (a) particles, which contain apoB-100 and are enriched in OxPL. This assay does not measure OxPL on non-apoB particles.

STATE OF DEVELOPMENT
The assay is functional and has been used to show elevated levels of Total OxPL in NASH in both mice models and human patients

INTELLECTUAL PROPERTY INFO
The invention is patent-pending and is available for licensing and collaborations.

RELATED MATERIALS

PATENT STATUS
Patent Pending