New study implicates disease-driving B cells in fatty liver disease development

March 22 2021, by Angel Mendez

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New research from the University of Minnesota Medical School suggests that disease-driving B cells, a white blood cell, play a role in the development of non-alcoholic fatty liver disease (NAFLD)—the most common chronic liver condition in the U.S. Their findings could lead to targeted therapies for NAFLD, which currently affects a quarter of the

nation and has no FDA-approved treatments.

After noticing that patients with the disease showed a large number of inflammatory B cells in their livers, Xavier Revelo, Ph.D., an assistant professor in the Department of Integrative Biology and Physiology and senior author, began studying B cells in NAFLD.

"This disease is increasing in prevalence with no approved therapies in sight," Revelo said. "Despite considerable efforts to better understand this disease, the triggers of inflammation during NAFLD are unclear. Our laboratory investigates those inflammatory triggers to provide potential diagnostic and therapeutic targets for its prevention and treatment."

This study was led by Fanta Barrow, a U of M Medical School second-year graduate student from the Revelo laboratory, and was published in *Hepatology*. The major findings are:

- Humans with NAFLD have higher numbers of B cells;
- A Western diet—defined as high in fat, cholesterol and carbohydrates, such as sucrose and fructose—was responsible for programming these pathogen-fighting B cells into disease-promoters;
- And, changes in the gut microbes were responsible for the activation of these disease-promoting B cells.

"These findings lay the foundation for the potential targeting of B cells, or pathways involved in their activation, for NAFLD treatment," Revelo said. "Further work is needed to study the efficacy, safety and potential side effects of such strategies."

More information: Fanta Barrow et al, Microbiota-Driven Activation of Intrahepatic B Cells Aggravates Nonalcoholic Steatohepatitis through

Innate and Adaptive Signaling, *Hepatology* (2021). DOI: 10.1002/hep.31755