

PRESS RELEASE

NFLPA Commits \$2 Million to Fund Studies of the Brain and Gut Microbiome Relationship to better Treat Head Injuries.

Researchers from four Universities will work on projects that expands our understanding of the science on (i) identifying key gut microbiome biomarkers linked to brain health and/or (ii) developing an innovative, easy-to-use, non-invasive, and minimally intrusive gut microbiome sampling technology.

Washington, DC (November 6, 2024) – The NFL Players Association (NFLPA) announced they have awarded four grants in research funding totaling \$2,000,000 to independent researchers at four distinguished Universities. The concept to support more research on how to better optimize the Gut-Brain Axis was initiated by the NFLPA Scientific Advisory Board by soliciting competitive Request for Information (RFI) research projects.

Staying on the forefront of promising research that promotes player health is inherent to the mission of the NFLPA Scientific Advisory Board (SAB). Gut microbiome axis research is in its infancy but gaining knowledge quickly to advance the field. Promising research has uncovered links that the gut microbiome has important roles in maintaining good brain health including recovery from traumatic brain injury. Additional research suggests that proper gut microbiome homeostasis is a key determinant of health and a modifiable risk factor of diseases. Findings from the Football Players Health Study at Harvard have also revealed compelling evidence indicating that former NFL players exhibit heightened levels of inflammation and other early aging indicators.

Therefore, the SAB solicited projects that would help the NFLPA and its members accurately understand where the current gut microbiome field of science stands on (i) identifying key gut microbiome biomarkers linked to brain health and/or (ii) developing an innovative, easy-to-use, non-invasive, and minimally intrusive gut microbiome sampling technology. The successful completion of this project will have a lasting impact on our understanding of the gut-brain axis, providing much-needed insights into the role of the microbiota in neurophysiological health and disease. The development of a more accessible and less intrusive gut microbiome sampling method will facilitate widespread and routine monitoring of gut health, leading to a personalized approach to neurological healthcare, and potentially revealing novel therapeutic strategies.

The winning proposals for this research funding initiative are:

- 1. “Decoding Gut-Brain Biomarkers and Developing a Minimally Intrusive Gut Microbiome Sampling: Enhancing Cognitive Well-being in Athletes,” led by Dr. Tatiana Barichello at The University of Texas Health Science Center.**

A randomized, double-blind, placebo-controlled clinical trial with younger soccer players will investigate the impact of psychobiotics on gut health, neurological markers, and behavior over the soccer season. Psychobiotics constitute a distinct category of probiotics designed to impart mental health advantages to individuals. This Project's main objective is to evaluate the composition of soccer players' intestinal microbiota with or without psychobiotics, correlating it with biomarkers of brain health and its implications for concussion susceptibility and recovery among a soccer athletes' population.

2. “Getting to Gut: Comparative body site sampling toward less invasive gut microbiome assessment in military personnel/athletes,” led by Dr. Kent Werner at Uniformed Services University.

The primary objective of this study is to determine whether inguinal and perianal sampling sites using non-invasive methods can reliably reflect microbiome features associated with Traumatic Brain Injury (TBI), offering a more practical solution for regular monitoring, especially in physically demanding populations. Recent scientific advancements highlight the gut-brain axis's significance, indicating the potential of microbiome features as diagnostic and prognostic biomarkers for conditions like Alzheimer's Disease, Parkinson's Disease, and TBI. However, the lack of practical and socially acceptable sampling methods limits the translation of these findings into routine clinical practice, particularly for elite athletes and military personnel.

3. “Gut microbiome markers of sport-related brain concussion,” led by Dr. Sonia Villapol at the Houston Methodist Research Institute.

This project aims to revolutionize the safety and health management of NFL and college student athletes by identifying new biomarkers for concussions or mild Traumatic Brain Injury (mTBI) through the study of the gut microbiome. Leveraging the established connection between the brain and gut, our research seeks to unravel how brain injuries change gut bacteria, filling a significant gap in current medical knowledge. Our ultimate goal is to develop a microbiome profile associated with mTBI. This profile will be instrumental in developing a diagnostic tool to enhance immediate decision-making for athletes' return-to-play post-injury.

4. “Microbiome-Gut-Brain Axis Biomarkers for Prevention of Persistent Symptoms-TBI,” led by Dr. Lisa Brenner at the School of Medicine at University of Colorado, Anschutz Medical Campus.

Inflammation resulting from contact sport-related injuries is an underexplored factor that may explain these poor health outcomes. Persistent elevation of chronic-low grade inflammation is associated with increased risk of negative psychiatric outcomes. Excessive postinjury inflammatory responses are further exacerbated by failing immunoregulation, attributable to reduced exposure to diverse microbial environments (e.g., within the gut microbiome). Findings from this proposed work will highlight key gut biomarkers among those with acute and post-acute TBIs. Ultimately, likely results are expected to highlight treatment targets for interventions aimed at preventing exaggerated inflammatory responses, decreasing symptoms, and improving function.

The NFL Players Association (NFLPA) remains dedicated to optimizing player health, wellness, and safety. Empowering players with evidence-based and scientifically sound knowledge and technology, enables the players use state-of-the-science/art, approaches to maintaining best overall health, performance improvement, injury prevention and protection, and management of injuries and illnesses. One such encouraging area of research is the involves the gut microbiome.