Journal of Inflammation Research

Dovepress
Taylor & Francis Group

Open Access Full Text Article

LETTER

# Refining the Role of EGR1 as a Biomarker in MASLD [Letter]

Xuefan Zeng

Chongqing Medical University, Chongqing, People's Republic of China

Correspondence: Xuefan Zeng, Chongqing Medical University, No.21, Mid University Town Road, Chongqing, 400016, People's Republic of China, Email zxfcqmu@163.com



## Dear editor

We were highly interested in Wu et al's article published in the Journal of Inflammation Research.[1] While the study offers valuable insights into EGR1's potential role as a diagnostic biomarker and its involvement in MASLD's pathogenesis, we believe there are some aspects worth further consideration to enhance the findings' robustness and applicability.

### Sample Size and Dataset Limitations

The study relies on datasets sourced from the GEO database, which, while valuable, have inherent limitations. The sample size across the datasets used for training and validation is relatively small, which may affect the generalizability of the findings. Additionally, the heterogeneity between datasets could introduce variability that is not fully accounted for in the analysis. While the authors have employed rigorous machine learning techniques to identify key genes, the limited sample size may restrict the statistical power to detect subtle but significant differences. Future studies should consider larger cohorts, potentially through multi-center collaborations, to validate these findings in more diverse populations.

### Clinical Validation

The study validates the findings using an external dataset and cellular/animal models. While these validations are crucial, the absence of clinical validation in human subjects is a notable limitation. The translation of these findings from animal models to clinical practice requires careful consideration of the differences in disease progression and response between species. Clinical validation through prospective studies involving patients with MASLD would provide stronger evidence for the diagnostic utility of EGR1 and other identified biomarkers.

### Potential Confounding Factors

The study acknowledges the complexity of MASLD pathogenesis, which involves multiple factors such as insulin resistance, obesity, and gut microbiota. However, the analysis does not fully account for potential confounding factors that could influence gene expression and immune profiles. For example, lifestyle factors such as diet and physical activity, which are known to impact both MASLD progression and immune function, are not considered in the study design.[2] Adjusting for these factors in future analyses could provide more accurate and reliable results.

### Longitudinal Studies

The current study design is cross-sectional, which limits the ability to infer causality or temporal relationships between EGR1 expression and MASLD progression. Longitudinal studies that track changes in EGR1 expression and immune profiles over time would provide valuable insights into the dynamic nature of MASLD. Such studies could help determine whether EGR1 expression precedes or follows disease progression, thereby clarifying its role as a potential early biomarker or therapeutic target.[3]

Received: 9 February 2025
Accepted: 13 February 2025
Published: 17 February 2025

In conclusion, the identification of EGR1 as a key diagnostic biomarker in MASLD by Wu et al represents an important step forward in understanding this complex disease. However, addressing the limitations outlined above would strengthen the robustness of these findings and enhance their translational potential. Future research should focus on larger clinical cohorts, mechanistic studies, and longitudinal analyses to fully elucidate the role of EGR1 in MASLD and its potential as a therapeutic target.

## Disclosure

The author reports no conflicts of interest in this communication.

## References

1. Wu X, Pan T, Fang Z, et al. Identification of EGR1 as a key diagnostic biomarker in metabolic dysfunction-associated steatotic liver disease (masld) through machine learning and immune analysis. *J Inflamm Res*. 2025;18:1639–1656. doi:10.2147/JIR.S499396
2. Benedé-Ubieto R, Cubero FJ, Nevzorova YA. Breaking the barriers: the role of gut homeostasis in metabolic-associated steatotic liver disease (mASLD). *Gut Microbes*. 2024;16(1):2331460. doi:10.1080/19490976.2024.2331460
3. Go CK, Gross S, Hooper R, Soboloff J. EGR-mediated control of STIM expression and function. *Cell Calcium*. 2019;77:58–67. doi:10.1016/j.ceca.2018.12.003



https://doi.org/10.2147/JIR.S521696