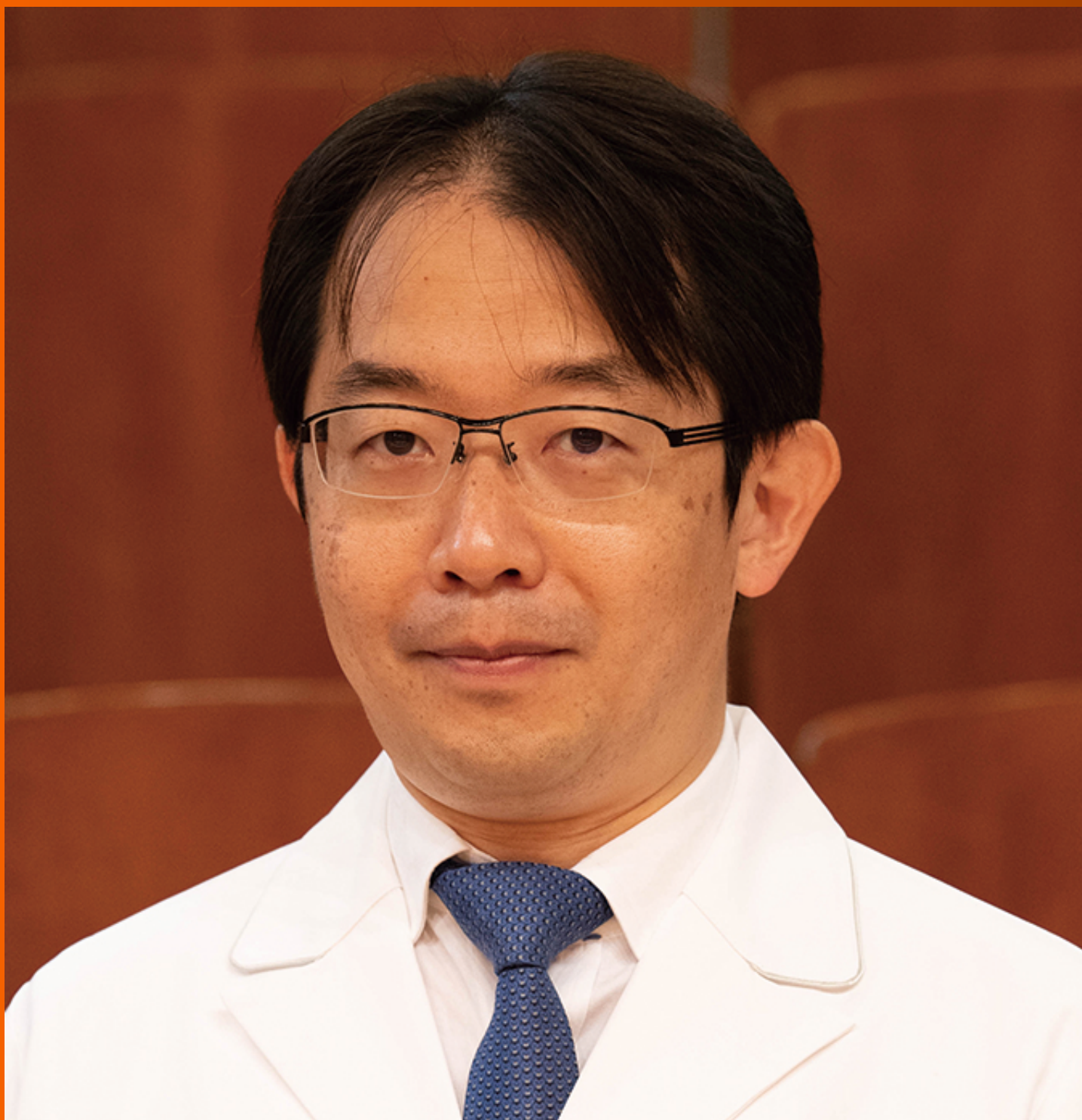


World Journal of *Gastroenterology*

World J Gastroenterol 2022 July 14; 28(26): 3008-3281



REVIEW

- 3008** Advances in the imaging of gastroenteropancreatic neuroendocrine neoplasms
Ramachandran A, Madhusudhan KS
- 3027** Tumor microenvironment involvement in colorectal cancer progression *via* Wnt/ β -catenin pathway: Providing understanding of the complex mechanisms of chemoresistance
Novoa Díaz MB, Martín MJ, Gentili C
- 3047** Role of baicalin as a potential therapeutic agent in hepatobiliary and gastrointestinal disorders: A review
Ganguly R, Gupta A, Pandey AK

MINIREVIEWS

- 3063** Alterations of autophagic and innate immune responses by the Crohn's disease-associated ATG16L1 mutation
Okai N, Watanabe T, Minaga K, Kamata K, Honjo H, Kudo M
- 3071** Anabolic androgenic steroid-induced liver injury: An update
Petrovic A, Vukadin S, Sikora R, Bojanic K, Smolic R, Plavec D, Wu GY, Smolic M
- 3081** Epidemiological and clinical aspects of hepatitis B virus infection in Italy over the last 50 years
Sagnelli C, Sica A, Creta M, Calogero A, Ciccozzi M, Sagnelli E
- 3092** Shared decision-making in the management of patients with inflammatory bowel disease
Song K, Wu D
- 3101** Clinical implications and mechanism of histopathological growth pattern in colorectal cancer liver metastases
Kong BT, Fan QS, Wang XM, Zhang Q, Zhang GL
- 3116** Role of gadoteric acid-enhanced liver magnetic resonance imaging in the evaluation of hepatocellular carcinoma after locoregional treatment
Gatti M, Maino C, Darvizeh F, Serafini A, Tricarico E, Guarneri A, Inchingolo R, Ippolito D, Ricardi U, Fonio P, Faletti R

ORIGINAL ARTICLE

Basic Study

- 3132** Neutrophil extracellular traps participate in the development of cancer-associated thrombosis in patients with gastric cancer
Li JC, Zou XM, Yang SF, Jin JQ, Zhu L, Li CJ, Yang H, Zhang AG, Zhao TQ, Chen CY
- 3150** Activation of natural killer T cells contributes to Th1 bias in the murine liver after 14 d of ethinylestradiol exposure
Zou MZ, Kong WC, Cai H, Xing MT, Yu ZX, Chen X, Zhang LY, Wang XZ

- 3164** *Bifidobacterium infantis* regulates the programmed cell death 1 pathway and immune response in mice with inflammatory bowel disease

Zhou LY, Xie Y, Li Y

- 3177** Involvement of Met receptor pathway in aggressive behavior of colorectal cancer cells induced by parathyroid hormone-related peptide

Novoa Díaz MB, Carriere P, Gigola G, Zwenger AO, Calvo N, Gentili C

- 3201** Intracellular alpha-fetoprotein mitigates hepatocyte apoptosis and necroptosis by inhibiting endoplasmic reticulum stress

Chen YF, Liu SY, Cheng QJ, Wang YJ, Chen S, Zhou YY, Liu X, Jiang ZG, Zhong WW, He YH

Retrospective Cohort Study

- 3218** Divergent trajectories of lean *vs* obese non-alcoholic steatohepatitis patients from listing to post-transplant: A retrospective cohort study

Qazi-Arisar FA, Uchila R, Chen C, Yang C, Chen SY, Karnam RS, Azhie A, Xu W, Galvin Z, Selzner N, Lilly L, Bhat M

Retrospective Study

- 3232** Tumor-feeding artery diameter reduction is associated with improved short-term effect of hepatic arterial infusion chemotherapy plus lenvatinib treatment

Wu DD, He XF, Tian C, Peng P, Chen CL, Liu XH, Pang HJ

Observational Study

- 3243** Impact of sodium glucose cotransporter-2 inhibitors on liver steatosis/fibrosis/inflammation and redox balance in non-alcoholic fatty liver disease

Bellanti F, Lo Buglio A, Dobrakowski M, Kasperczyk A, Kasperczyk S, Aich P, Singh SP, Serviddio G, Vendemiale G

SYSTEMATIC REVIEWS

- 3258** Endoscopic techniques for diagnosis and treatment of gastro-entero-pancreatic neuroendocrine neoplasms: Where we are

Rossi RE, Elvevi A, Gallo C, Palermo A, Invernizzi P, Massironi S

LETTER TO THE EDITOR

- 3274** Intestinal inflammation and the microbiota: Beyond diversity

Alberca GGF, Cardoso NSS, Solis-Castro RL, Nakano V, Alberca RW

- 3279** Intestinal virome: An important research direction for alcoholic and nonalcoholic liver diseases

Li Y, Liu WC, Chang B

ABOUT COVER

Editorial Board Member of *World Journal of Gastroenterology*, Koichi Suda, MD, PhD, FACS, Professor and Head, Divisions of GI and HPB Surgery, Department of Surgery, Fujita Health University, Rm C908, 1-98 Dengakugakubo, Kutsukake, Toyoake, Aichi 470-1192, Japan. ko-suda@fujita-hu.ac.jp

AIMS AND SCOPE

The primary aim of *World Journal of Gastroenterology* (WJG, *World J Gastroenterol*) is to provide scholars and readers from various fields of gastroenterology and hepatology with a platform to publish high-quality basic and clinical research articles and communicate their research findings online. WJG mainly publishes articles reporting research results and findings obtained in the field of gastroenterology and hepatology and covering a wide range of topics including gastroenterology, hepatology, gastrointestinal endoscopy, gastrointestinal surgery, gastrointestinal oncology, and pediatric gastroenterology.

INDEXING/ABSTRACTING

The WJG is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Current Contents/Clinical Medicine, Journal Citation Reports, Index Medicus, MEDLINE, PubMed, PubMed Central, Scopus, Reference Citation Analysis, China National Knowledge Infrastructure, China Science and Technology Journal Database, and Superstar Journals Database. The 2022 edition of Journal Citation Reports® cites the 2021 impact factor (IF) for WJG as 5.374; IF without journal self cites: 5.187; 5-year IF: 5.715; Journal Citation Indicator: 0.84; Ranking: 31 among 93 journals in gastroenterology and hepatology; and Quartile category: Q2. The WJG's CiteScore for 2021 is 8.1 and Scopus CiteScore rank 2021: Gastroenterology is 18/149.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Hua-Ge Yu; Production Department Director: Xu Guo; Editorial Office Director: Jia-Ru Fan.

NAME OF JOURNAL

World Journal of Gastroenterology

ISSN

ISSN 1007-9327 (print) ISSN 2219-2840 (online)

LAUNCH DATE

October 1, 1995

FREQUENCY

Weekly

EDITORS-IN-CHIEF

Andrzej S Tarnawski

EDITORIAL BOARD MEMBERS

<http://www.wjgnet.com/1007-9327/editorialboard.htm>

PUBLICATION DATE

July 14, 2022

COPYRIGHT

© 2022 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Intestinal virome: An important research direction for alcoholic and nonalcoholic liver diseases

Yan Li, Wen-Cheng Liu, Bing Chang

Specialty type: Gastroenterology and hepatology

Provenance and peer review: Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): A
Grade B (Very good): B
Grade C (Good): 0
Grade D (Fair): 0
Grade E (Poor): 0

P-Reviewer: AbdEl-Wahab EW, Ghoneim S

Received: November 3, 2021

Peer-review started: November 3, 2021

First decision: November 29, 2021

Revised: December 7, 2021

Accepted: June 13, 2022

Article in press: June 13, 2022

Published online: July 14, 2022



Yan Li, Wen-Cheng Liu, Bing Chang, Department of Gastroenterology, The First Affiliated Hospital of China Medical University, Shenyang 110001, Liaoning Province, China

Corresponding author: Bing Chang, MD, Associate Professor, Department of Gastroenterology, The First Affiliated Hospital of China Medical University, No. 155 Nanjing North Street, Heping District, Shenyang 110001, Liaoning Province, China. cb000216@163.com

Abstract

In recent years, the interaction between the gut microflora and liver diseases has attracted much attention. The intestinal microflora is composed of bacteria, archaea, fungi and viruses. There are few studies on the intestinal virome, and whether it has a causal relationship with bacterial changes in the gut is still unclear. However, it is undeniable that the intestinal virome is also a very important portion of the blueprint for the development of liver diseases and the diagnosis and therapeutic modalities in the future.

Key Words: Alcoholic fatty liver disease; Nonalcoholic fatty liver disease; Fatty liver disease; Gut microbiome; Intestinal virome

©The Author(s) 2022. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: As of the study of the gut microflora expands, the interaction between the intestinal virome and liver diseases has been gradually revealed. In this letter to the editor, we discuss the changes in the intestinal virome in patients with alcoholic liver disease and nonalcoholic liver disease, and provide suggestions for developing future diagnosis and treatment methods.

Citation: Li Y, Liu WC, Chang B. Intestinal virome: An important research direction for alcoholic and nonalcoholic liver diseases. *World J Gastroenterol* 2022; 28(26): 3279-3281

URL: <https://www.wjgnet.com/1007-9327/full/v28/i26/3279.htm>

DOI: <https://dx.doi.org/10.3748/wjg.v28.i26.3279>

TO THE EDITOR

We have carefully studied the reviews recently written by Sharma *et al*[1], titled “Significance of gut microbiota in alcoholic and nonalcoholic fatty liver diseases”. The authors elaborated the intestinal microecological changes in both alcoholic and nonalcoholic liver diseases, and the important effects of intestinal microorganisms on the development of fatty liver diseases. These findings could provide new ideas for the future diagnosis and treatment of fatty liver disease.

In addition to bacteria, archaea and a small amount of fungi, viruses are also an indispensable part of the intestinal microflora in human[2]. In 2020, a multicenter observational study on the enteroviruses from 89 patients with alcoholic hepatitis, 36 patients with alcohol use disorder and 17 patients without alcohol use disorder was concluded[3]. The results showed that in stool samples from patients with alcoholic liver disease, bacterial and fungal diversity decreased and virus diversity increased, which mainly manifested as a large increase in the number of *Myoviridae*, *Lactobacillus* phages, *Streptococcus* phages, *Podoviridae*, *Geobacillus* phages, *Escherichia* phages, and *Herpesviridae*[3]. This trend was positively correlated with the severity of the disease. The changes in the intestinal microecology of people with alcohol use disorder are mainly characterized by an increase in *Parvoviridae* and *Lactococcus* phages[3]. Another study of the intestinal virome in patients with nonalcoholic fatty liver disease (NAFLD) showed that the average relative abundance and viral diversity of phages in patients with NAFLD and severe hepatic fibrosis were significantly lower than those in patients with NAFLD and no or mild hepatic fibrosis[4]. Hence viruses also have positive implications in the diagnosis, severity classification, treatment and prognosis of alcoholic and nonalcoholic liver diseases. However, as an easily neglected part of gut microecology, the impact of viruses was not mentioned in Sharma *et al*[1]’s article.

Bacteria and fungi in the gut microflora have large individual variability and are susceptible to various factors such as age, drugs[5], environment[6], and diet[7]. Likewise, the same is true for viruses. A shotgun metagenome sequencing analysis of DNA viruses in fecal samples from cynomolgus monkeys of different ages showed that the abundance of DNA viruses was inversely proportional to age; that is, the DNA virus group in fecal samples of elderly individuals decreased significantly[8]. However, Lang *et al*[4] found that after the use of proton pump inhibitors, enteroviruses in the feces of patients with nonalcoholic liver disease were also changed. In addition, in high-fat diet-fed mice, the structural composition and β -diversity of enteroviruses were changed. There was a significant decrease in the expression of *Siphoviridae* and a significant increase in the expression of the eukaryotic viruses *Phycodnaviridae* and *Mimiviridae*, and these changes were accompanied by changes in intestinal bacteria [9]. Therefore, considering the original proposal that gut microorganisms should be included in future liver disease diagnosis and treatment, we suggest that in addition to performing a horizontal comparison and finding representative biological markers, it is indispensable to have a methodological design and vertical comparison. However, the effects of confounding factors should also be considered, and individualized diagnosis and treatment plans should be developed for different patients.

ACKNOWLEDGEMENTS

We would like to thank the Department of Gastroenterology of the First Affiliated Hospital of China Medical University for technical assistance.

FOOTNOTES

Author contributions: Li Y and Liu WC wrote this manuscript; Li Y and Chang B revised this manuscript; and all the authors contributed to the writing of this manuscript.

Conflict-of-interest statement: All the authors report no relevant conflicts of interest for this article.

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

Country/Territory of origin: China

ORCID number: Yan Li 0000-0002-1749-0283; Wen-Cheng Liu 0000-0002-7721-6892; Bing Chang 0000-0003-1965-5827.

S-Editor: Antwi SO, United States S-Editor

L-Editor: A

P-Editor: Wang JJ

REFERENCES

- 1 **Sharma SP**, Suk KT, Kim DJ. Significance of gut microbiota in alcoholic and non-alcoholic fatty liver diseases. *World J Gastroenterol* 2021; **27**: 6161-6179 [PMID: [34712025](#) DOI: [10.3748/wjg.v27.i37.6161](#)]
- 2 **Whon TW**, Shin NR, Kim JY, Roh SW. Omics in gut microbiome analysis. *J Microbiol* 2021; **59**: 292-297 [PMID: [33624266](#) DOI: [10.1007/s12275-021-1004-0](#)]
- 3 **Jiang L**, Lang S, Duan Y, Zhang X, Gao B, Chopyk J, Schwanemann LK, Ventura-Cots M, Bataller R, Bosques-Padilla F, Verna EC, Abalde JG, Brown RS Jr, Vargas V, Altamirano J, Caballería J, Shawcross DL, Ho SB, Louvet A, Lucey MR, Mathurin P, Garcia-Tsao G, Kisseleva T, Brenner DA, Tu XM, Stärkel P, Pride D, Fouts DE, Schnabl B. Intestinal Virome in Patients With Alcoholic Hepatitis. *Hepatology* 2020; **72**: 2182-2196 [PMID: [32654263](#) DOI: [10.1002/hep.31459](#)]
- 4 **Lang S**, Demir M, Martin A, Jiang L, Zhang X, Duan Y, Gao B, Wisplinghoff H, Kasper P, Roderburg C, Tacke F, Steffen HM, Goeser T, Abalde JG, Tu XM, Loomba R, Stärkel P, Pride D, Fouts DE, Schnabl B. Intestinal Virome Signature Associated With Severity of Nonalcoholic Fatty Liver Disease. *Gastroenterology* 2020; **159**: 1839-1852 [PMID: [32652145](#) DOI: [10.1053/j.gastro.2020.07.005](#)]
- 5 **Fasullo M**, Rau P, Liu DQ, Holzwanger E, Mathew JP, Guilarte-Walker Y, Szabo G. Proton pump inhibitors increase the severity of hepatic encephalopathy in cirrhotic patients. *World J Hepatol* 2019; **11**: 522-530 [PMID: [31293720](#) DOI: [10.4254/wjh.v11.i6.522](#)]
- 6 **Ng KM**, Aranda-Díaz A, Tropini C, Frankel MR, Van Treuren W, O'Loughlin CT, Merrill BD, Yu FB, Pruss KM, Oliveira RA, Higginbottom SK, Neff NF, Fischbach MA, Xavier KB, Sonnenburg JL, Huang KC. Recovery of the Gut Microbiota after Antibiotics Depends on Host Diet, Community Context, and Environmental Reservoirs. *Cell Host Microbe* 2019; **26**: 650-665.e4 [PMID: [31726029](#) DOI: [10.1016/j.chom.2019.10.011](#)]
- 7 **González Olmo BM**, Butler MJ, Barrientos RM. Evolution of the Human Diet and Its Impact on Gut Microbiota, Immune Responses, and Brain Health. *Nutrients* 2021; **13** [PMID: [33435203](#) DOI: [10.3390/nu13010196](#)]
- 8 **Tan X**, Chai T, Duan J, Wu J, Zhang H, Li Y, Huang Y, Hu X, Zheng P, Song J, Ji P, Jin X, Xie P. Dynamic changes occur in the DNA gut virome of female cynomolgus macaques during aging. *Microbiologyopen* 2021; **10**: e1186 [PMID: [33970533](#) DOI: [10.1002/mbo3.1186](#)]
- 9 **Schulfer A**, Santiago-Rodriguez TM, Ly M, Borin JM, Chopyk J, Blaser MJ, Pride DT. Fecal Viral Community Responses to High-Fat Diet in Mice. *mSphere* 2020; **5** [PMID: [32102942](#) DOI: [10.1128/msphere.00833-19](#)]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

