

The background of the cover features a hand pointing towards a glowing, circular digital interface. The interface is composed of numerous overlapping, colorful lines (blue, purple, orange, yellow) that create a sense of motion and depth. The hand is positioned on the right side, with the index finger pointing towards the center of the glowing circle. The overall aesthetic is futuristic and scientific.

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Quick User Guide

November 2024

SPRINGER NATURE

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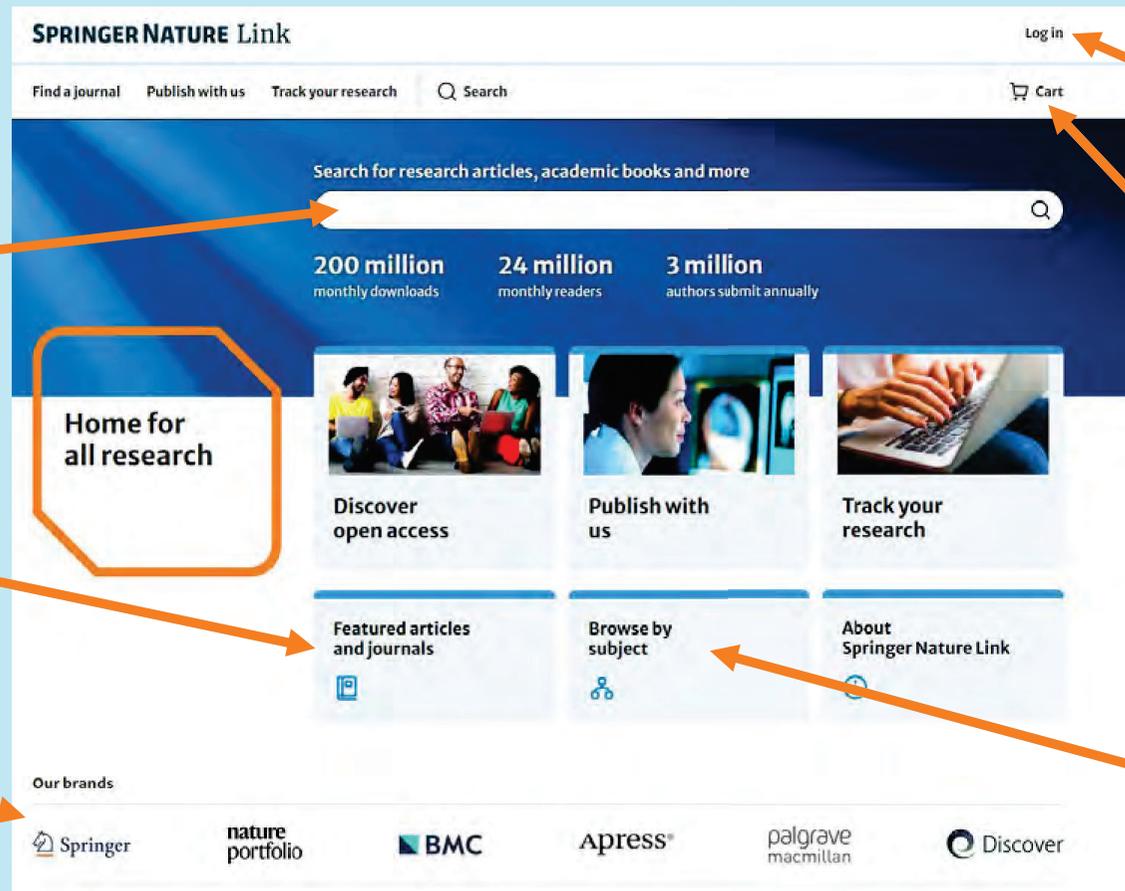
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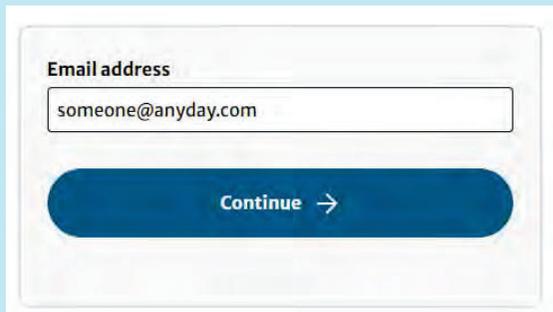
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CREATING AN ACCOUNT WITH EMAIL ADDRESS

For the first time

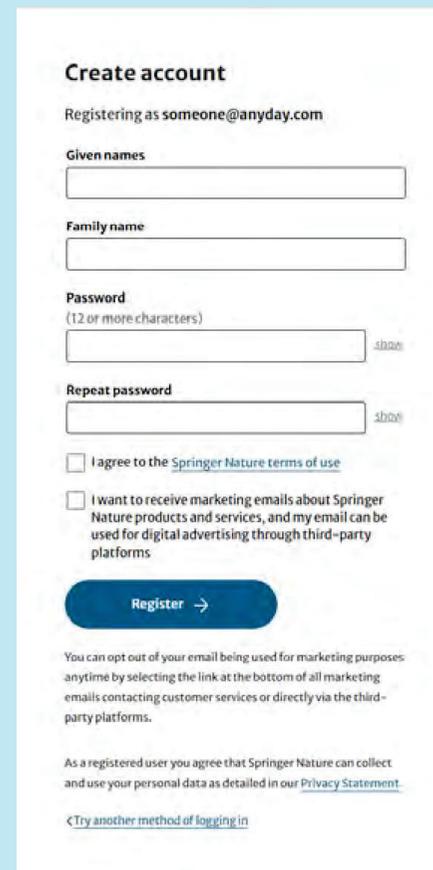
1) Enter email address on Log in page and press continue



Email address

Continue →

2) Fill in form and confirm terms of use. Press register.



Create account

Registering as someone@anyday.com

Given names

Family name

Password
(12 or more characters)

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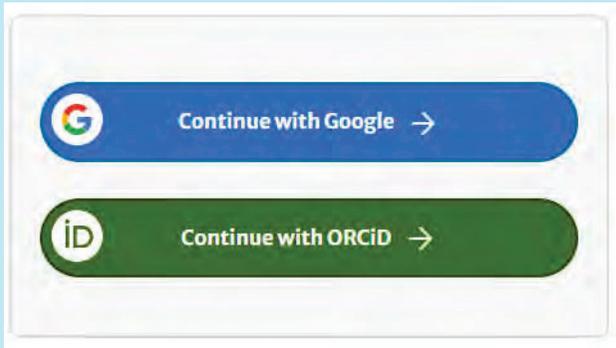
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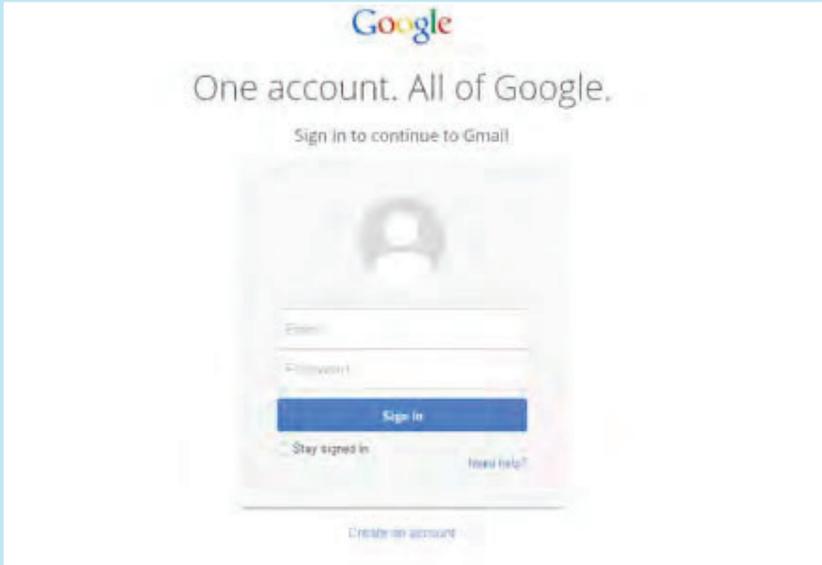
CREATING AN ACCOUNT WITH GOOGLE ACCOUNT

For the first time

1) Choose 'Continue with Google'



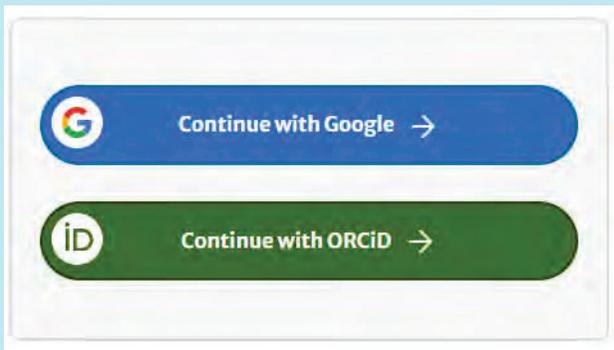
2) Sign in to Google using your email and password.



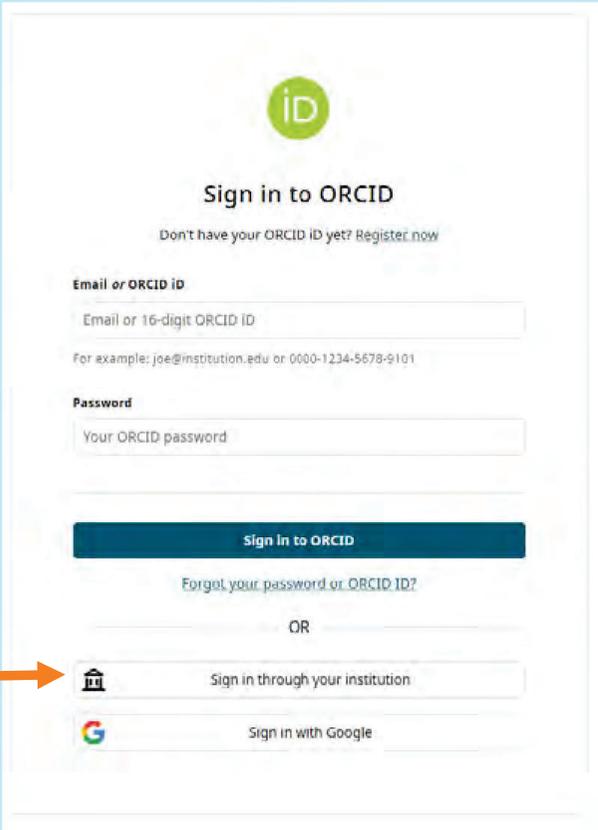
CREATING AN ACCOUNT WITH ORCID ACCOUNT

For the first time

1) Choose 'Continue with ORCID'



2) Sign in to ORCID using your email/ID and password.



Or click on this option to authenticate yourself through your institution.



SEARCHING FOR CONTENT

Finding what you need

1) Enter key word into search bar



2) Refine search using left hand menu, filtering results by:

- Content type
- Date published
- Language
- Subject
- Disciplines
- Subdisciplines

Then click **Update Results**

A screenshot of a search results page for 'mitochondria'. The search bar at the top contains 'mitochondria' and a search button. Below the search bar, there are filters for 'Content type', 'Date published', and 'Languages'. The 'Content type' filter is expanded, showing options like 'Article (191,336)', 'Research article (149,443)', 'Chapter (69,028)', 'Review article (27,275)', 'Reference work entry (6,071)', 'Conference paper (5,436)', 'Protocol (4,096)', and 'News article (1,308)'. The 'Date published' filter is also expanded, showing options like 'Last 3 months', 'Last 6 months', 'Last 12 months', 'Last 24 months', and 'Custom dates'. The 'Languages' filter is expanded, showing 'English (256,041)' and 'German (3,134)'. The search results are sorted by 'Relevance'. The first result is a 'Chapter' titled 'Mitochondria and Ageing' by Tiago Rodrigues in 'Cellular and Molecular Aspects of Ageing' 2024. The second result is an 'Article' titled 'Mitochondria in tumor immune surveillance and tumor therapies targeting mitochondria' by Lvyan LI, Yi Zhang, ... Wei Xiong in 'Cellular Oncology' 07 October 2024. The third result is an 'Article' titled 'Infection-induced peripheral mitochondria fission drives ER encapsulations and inter-mitochondria contacts that rescue bioenergetics' by William A. Hofstadter, Katelyn C. Cook, ... Ileana M. Cristea in 'Nature Communications' 27 August 2024. The fourth result is an 'Article' titled 'The role of mitochondria in tumor metastasis and advances in mitochondria-targeted cancer therapy'.

Result page

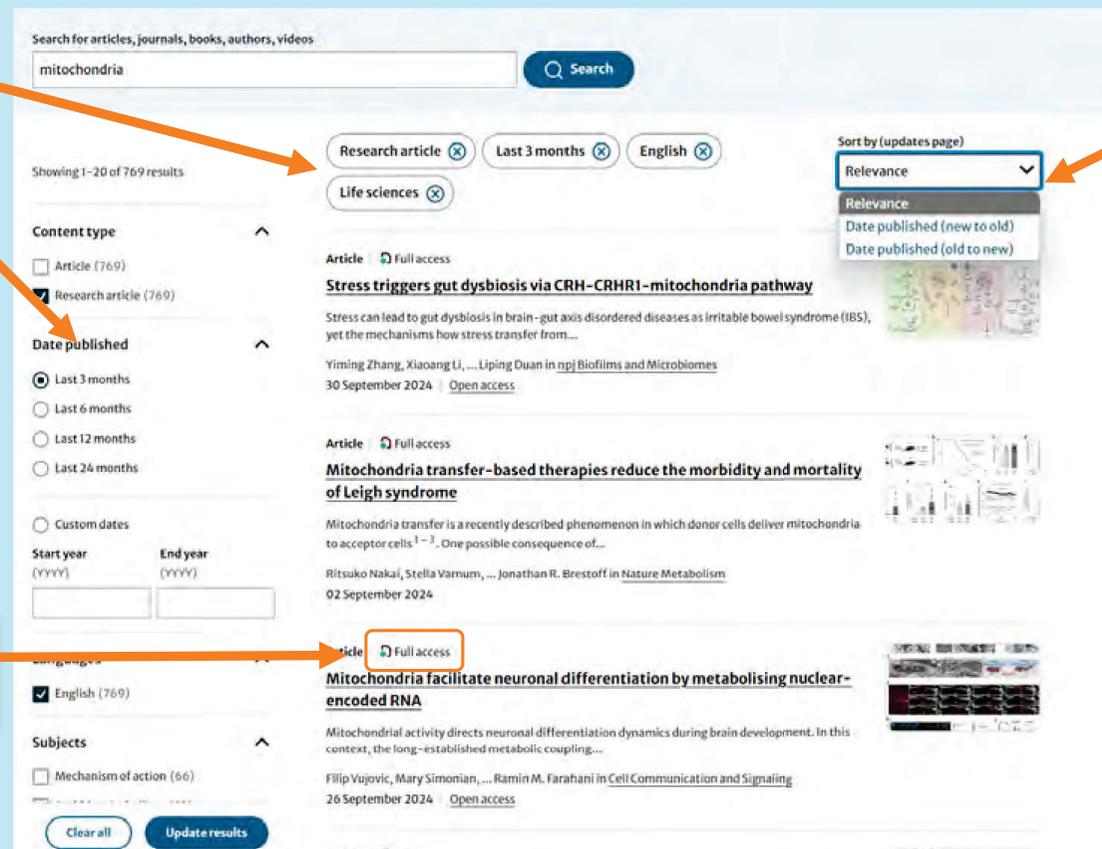
SEARCHING FOR CONTENT

Finding what you need

2) Review refined results

3) Sort by date

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EXPLORING CONTENT

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Explore metrics to see how many times it has been accessed, cited and mentioned on social media

The screenshot shows a journal article page with the following elements:

- Navigation bar: Find a journal, Publish with us, Track your research, Search, Cart
- Breadcrumbs: Home >npj Biofilms and Microbiomes > Article
- Article Title: Stress triggers gut dysbiosis via CRH-CRHR1-mitochondria pathway
- Open Access: Article | Open access | Published: 30 September 2024
- Volume: Volume 10, article number 93, (2024) | Cite this article
- Download PDF button: Download PDF (3) | You have full access to this open access article
- Authors: Yiming Zhang, Xiaolang Li, Siqi Lu, Hezhihu Guo, Zhuangyi Zhang, Haonan Zheng, Cunheng Zhang, Lindong Zhang, Kun Wang, Fei Pei & Liping Duan
- Metrics: 1154 Accesses | 2 Altmetric | Explore all metrics
- Abstract: Stress can lead to gut dysbiosis in brain-gut axis disordered diseases as irritable bowel syndrome (IBS), yet the mechanisms how stress transfer from the brain to the gut and disrupt gut microflora remain elusive. Here we describe a stress-responsive brain-to-gut axis which induces colonocytes' mitochondria to trigger gut dysbiosis. Patients with IBS exhibit significantly increased facultative anaerobes and decreased obligate anaerobes, related to increased serum corticotropin-releasing hormone (CRH) level and defected colonocytes' mitochondria ultrastructure. Mice exposed to acute stress experienced enhanced CRH-CRH receptor type 1 (CRHR1) signalling, which impaired mitochondria and epithelium hypoxia in the colon, subsequently triggered gut dysbiosis. Antagonizing CRHR1 expression to inhibit cAMP/Ras/MAPK signalling or activating mitochondria respiration conferred resilience against stress-induced mitochondria damaging and epithelium hypoxia impairment, ultimately improving gut dysbiosis. These results suggest that the CRH-CRHR1-mitochondria pathway plays a pivotal role in stress-induced gut dysbiosis that could be therapeutically targeted for stress-induced gastrointestinal diseases.
- Figure: A diagram comparing 'Health situation' and 'Stress situation'. In health, CRH levels are low, and the gut has a balanced microbiome with high obligate anaerobes and low facultative anaerobes. In stress, CRH levels are high, leading to impaired mitochondria, epithelium hypoxia, and a shift in the microbiome towards more facultative anaerobes.
- Table of Contents: Sections (Abstract, Introduction, Methods, Results, Discussion, Data availability, References, Acknowledgements, Author information, Ethics declarations, Additional information, Supplementary information, Rights and permissions, About this article), Figures, References
- Advertisement: EXPLORE SMOLDERING NEUROINFLAMMATION | sonofi

Jump to citation details and download citation

Review Figures and References

Jump to sections of interest

HOW TO CITE AN ARTICLE

The screenshot shows the top of a research article page. The title is "Stress triggers gut dysbiosis via CRH-CRHR1-mitochondria pathway". Below the title, there is a "Download PDF" button and a note about open access. The authors listed are Yiming Zhang, Xiaogang Li, Siqi Lu, Huaihu Guo, Zhiqiang Zhang, Haonan Zheng, Cunzheng Zhang, Jindong Zhang, Kun Wang, Fei Pei, & Liping Duan. The abstract text begins with "Stress can lead to gut dysbiosis in brain-gut axis disordered diseases as irritable bowel syndrome (IBS), yet the mechanisms how stress transfer from the brain to the gut and disrupt gut microbiota remain elusive. Here we describe a stress-responsive brain-to-gut axis which impairs colonocytes' mitochondria to trigger gut dysbiosis. Patients with IBS exhibit significantly increased facultative anaerobes and decreased obligate anaerobes, related to increased serum corticotropin-releasing hormone (CRH) level and defected colonocytes' mitochondria ultrastructure. Mice exposed to acute stress experienced enhanced CRH-CRH receptor type 1 (CRHR1) signaling, which impaired mitochondria and epithelium hypoxia in the colon, subsequently triggered gut dysbiosis. Antagonizing CRHR1 expression to inhibit cAMP/Ras/MAPK signaling or activating mitochondria respiration conferred resilience against stress-induced mitochondria damaging and epithelium hypoxia impairment, ultimately improving gut dysbiosis. These results suggest that the CRH-CRHR1-mitochondria pathway plays a pivotal role in stress-induced gut dysbiosis that could be therapeutically targeted for stress-induced gastrointestinal diseases." Below the text is a diagram comparing "Health situation" and "Stress situation" in the gut, showing the impact of CRH and CRHR1 on mitochondrial function and microbiota composition. An advertisement for "EXPLORE SMOLDERING NEUROINFLAMMATION" is visible on the right side of the article page.

1) Click "Cite this article"

2) Copy citation information or click "Download citation"

The screenshot shows the "Cite this article" section. It includes a "Check for updates" icon, the full citation: "Zhang, Y., Li, X., Lu, S. et al. Stress triggers gut dysbiosis via CRH-CRHR1-mitochondria pathway. *npj Biofilms Microbiomes* 10, 93 (2024). <https://doi.org/10.1038/s41522-024-00571-z>", and a "Download citation" button. Below this, there is a table with columns for "Received", "Accepted", and "Published" dates: Received 13 May 2024, Accepted 16 September 2024, and Published 30 September 2024. The DOI is also listed as <https://doi.org/10.1038/s41522-024-00571-z>. On the right side, there is a vertical list of links for "Data availability", "References", "Acknowledgements", "Author information", "Ethics declarations", "Additional information", "Supplementary information", "Rights and permissions", and "About this article".

REFERENCES

The screenshot shows the top portion of a scientific article page. The title is "Stress triggers gut dysbiosis via CRH-CRHR1-mitochondria pathway". Below the title, there is a list of authors: Yiming Zhang, Xiaogang Li, Siqi Lu, Huaihuo Guo, Zhiqiang Zhang, Haonan Zheng, Cunzheng Zhang, Jindong Zhang, Kun Wang, Fei Pei & Liping Duan. The abstract text begins with "Stress can lead to gut dysbiosis in brain-gut axis disordered diseases as irritable bowel syndrome (IBS), yet the mechanisms how stress transfer from the brain to the gut and disrupt gut microbiota remain elusive. Here we describe a stress-responsive brain-to-gut axis which impairs colonocytes' mitochondria to trigger gut dysbiosis. Patients with IBS exhibit significantly increased facultative anaerobes and decreased obligate anaerobes, related to increased serum corticotropin-releasing hormone (CRH) level and defected colonocytes' mitochondria ultrastructure. Mice exposed to acute stress experienced enhanced CRH-CRH receptor type 1 (CRHR1) signalling, which impaired mitochondria and epithelium hypoxia in the colon, subsequently triggered gut dysbiosis. Antagonizing CRHR1 expression to inhibit cAMP/Ras/MAPK signaling or activating mitochondria respiration conferred resilience against stress-induced mitochondria damaging and epithelium hypoxia impairment, ultimately improving gut dysbiosis. These results suggest that the CRH-CRHR1-mitochondria pathway plays a pivotal role in stress-induced gut dysbiosis that could be therapeutically targeted for stress-induced gastrointestinal diseases." Below the abstract is a diagram comparing "Health situation" and "Stress situation" in the gut, showing the impact of CRH and CRHR1 on mitochondrial function and microbiota composition. The diagram illustrates that in a health situation, CRH levels are low, and the gut has a balanced microbiota with both obligate anaerobes and facultative anaerobes. In a stress situation, CRH levels are high, leading to impaired mitochondrial function and epithelium hypoxia, which results in a dysbiotic microbiota dominated by facultative anaerobes.

1) Click "References"

2) Explore list of literature the author used to write the article.
Most references are linked to their source.

The screenshot shows the "References" section of the article. The "References" tab is selected in the top navigation bar. The list of references includes:
1. Morais, L. H., Schreiber, H. L. T. & Mazmanian, S. K. The gut microbiota-brain axis in behaviour and brain disorders. *Nature reviews. Microbiology* 19, 241–255, <https://doi.org/10.1038/s41579-020-00460-0> (2021).
2. Camilleri, M. Diagnosis and Treatment of Irritable Bowel Syndrome: A Review. *JAMA* 325, 865–877, <https://doi.org/10.1001/jama.2020.22532> (2021).
3. Stewart Campbell, A. et al. Safety and target engagement of an oral small-molecule sequestrant in adolescents with autism spectrum disorder: an open-label phase 1b/2a trial. *Nat. Med* 28, 528–534, <https://doi.org/10.1038/s41591-022-01683-9> (2022).
4. Dalile, B., Van Oudenhove, L., Vervliet, B. & Verbeke, K. The role of short-chain fatty acids in microbiota-gut-brain communication. *Nat. Rev. Gastroenterol. Hepatol.* 16, 461–478, <https://doi.org/10.1038/s41575-019-0157-3> (2019).

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