

# SPRINGER NATURE Link

**Quick User Guide**

November 2024

A hand is shown pointing towards a glowing, circular digital interface. The interface is composed of numerous overlapping, colorful particle trails in shades of blue, purple, and orange, creating a sense of motion and energy. The background is dark with scattered, colorful bokeh lights. The overall aesthetic is futuristic and high-tech.

**SPRINGER NATURE**

# INTRODUCING SPRINGER NATURE LINK

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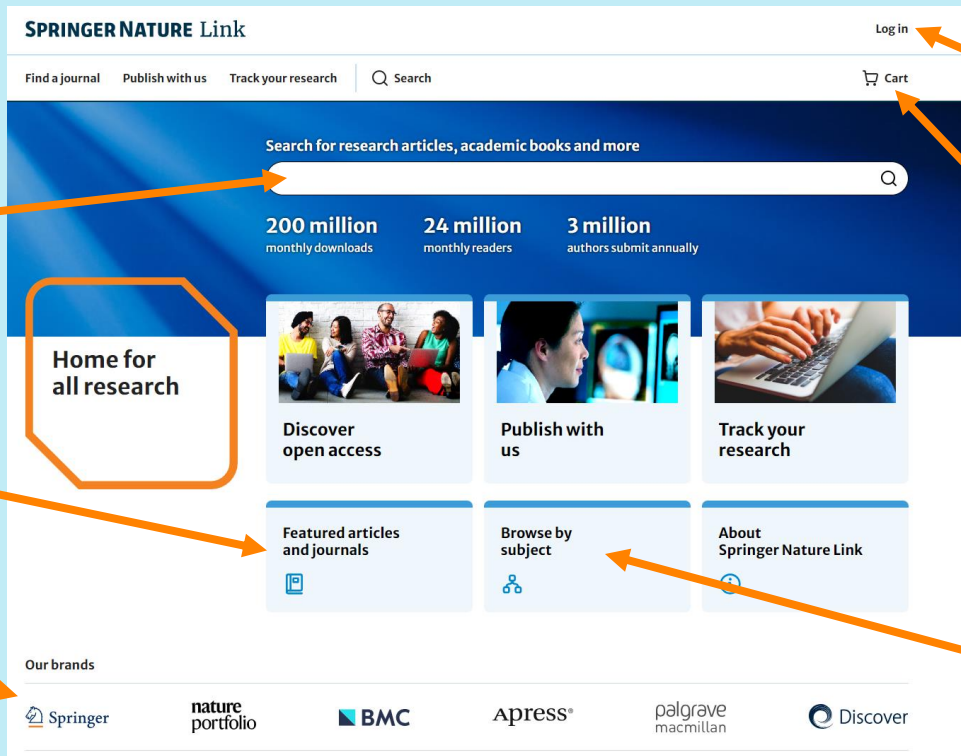
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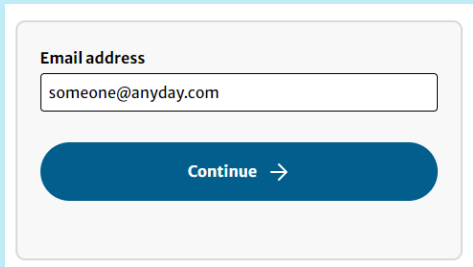
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# CREATING AN ACCOUNT WITH EMAIL ADDRESS

For the first time

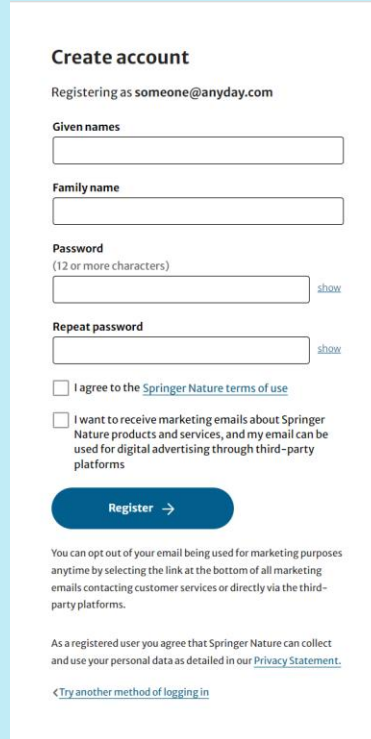
1) Enter email address on Log in page and press continue



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)

Repeat password

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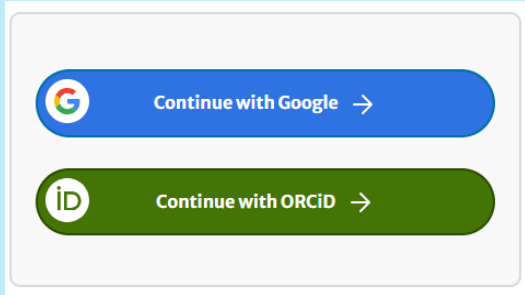
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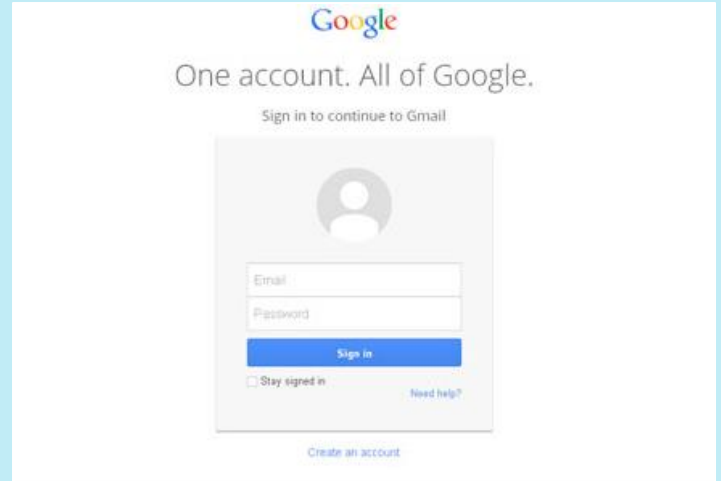
# CREATING AN ACCOUNT WITH GOOGLE ACCOUNT

For the first time

1) Choose 'Continue with Google'



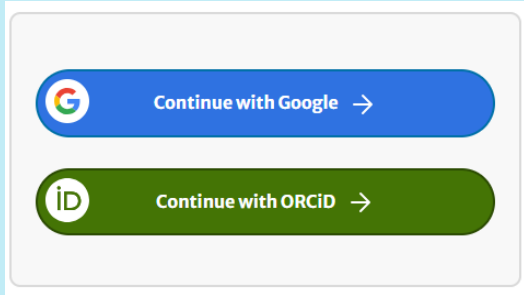
2) Sign in to Google using your email and password.



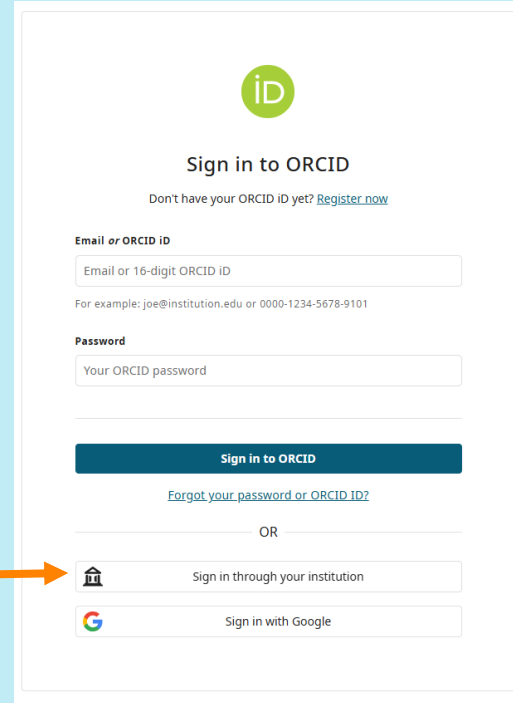
# CREATING AN ACCOUNT WITH ORCID ACCOUNT

For the first time

1) Choose 'Continue with ORCID'



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# SEARCHING FOR CONTENT

## Finding what you need

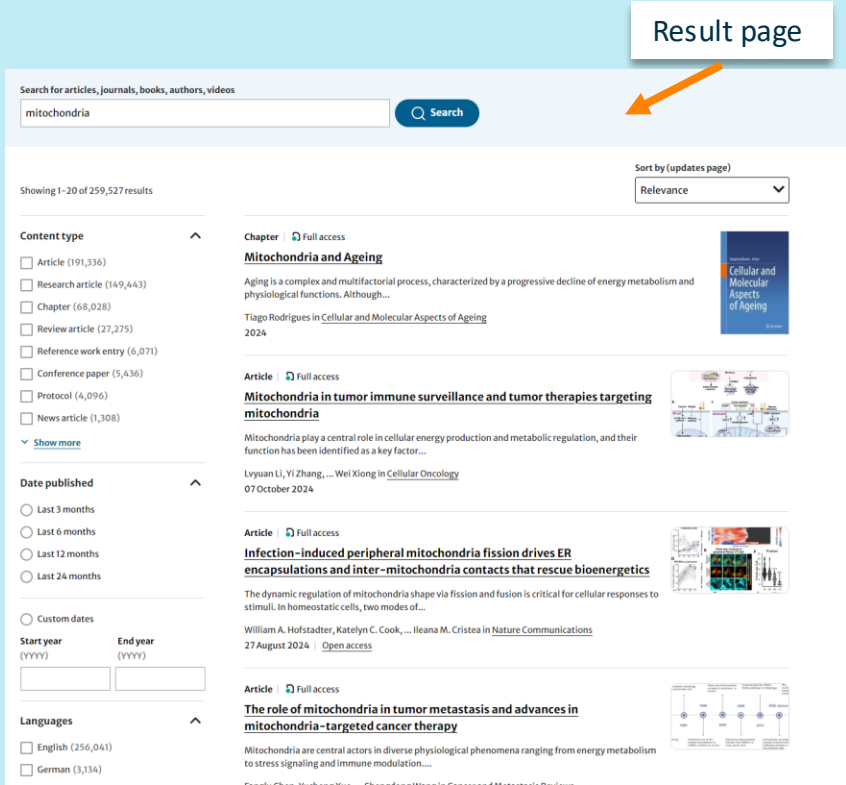
1) Enter key word into search bar



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

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

Then click **Update Results**



# SEARCHING FOR CONTENT

## Finding what you need

2) Review refined results

3) Sort by date

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The screenshot shows a search results page for the term "mitochondria". The search bar at the top contains "mitochondria" and a search button. Below the search bar, there are filters for "Research article", "Last 3 months", "English", and "Life sciences". The results are sorted by "Relevance". The first result is an article titled "Stress triggers gut dysbiosis via CRH-CRH1-mitochondria pathway" by Yiming Zhang, Xiaoang Li, and Liping Duan, published on 30 September 2024. The second result is "Mitochondria transfer-based therapies reduce the morbidity and mortality of Leigh syndrome" by Ritsuko Nakai, Stella Varnum, and Jonathan R. Brestoff, published on 02 September 2024. The third result is "Mitochondria facilitate neuronal differentiation by metabolising nuclear-encoded RNA" by Filip Vujovic, Mary Simonian, and Ramin M. Farahani, published on 26 September 2024. Annotations include orange arrows pointing from the text boxes to the search bar, filters, sorting dropdown, and the "Full access" label on the third article.



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## Stress triggers gut dysbiosis via CRH-CRHR1-mitochondria pathway

Article | Open access | Published: 30 September 2024  
Volume 10, article number 93, (2024) [View this article](#)

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Yiming Zhang, Xiaobang Li, Siqi Lu, Hualin Guo, Zhuangyi Zhang, Haonan Zheng, Cunheng Zhang, Jindong Zhang, Kun Wang, Fei Pei & Liping Di (✉)

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### 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 involves 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 detected 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/MAK 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.

### Sections

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# HOW TO CITE AN ARTICLE

The screenshot shows the top navigation bar with 'Find a journal', 'Publish with us', 'Track your research', and a search icon. Below is the article title 'Stress triggers gut dysbiosis via CRH-CRHR1-mitochondria pathway' with a 'Download PDF' button. The authors listed are Yiming Zhang, Xiaoyang Li, Siqi Lu, Huaiqin Guo, Zhuangyi Zhang, Haonan Zheng, Cunzhen Zhang, Jindong Zhang, Kun Wang, Fei Pei & Liping Qian. The abstract 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/Bas/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.'

The diagram at the bottom illustrates the 'Health situation' and 'Stress situation'. In the health situation, the gut epithelium is shown with mitochondria and a balanced microbiota of obligate anaerobes and facultative anaerobes. In the stress situation, stress triggers the release of CRH, which binds to CRHR1 on the epithelium, leading to increased cAMP levels. This activates PKA, which in turn inhibits the mitochondrial pathway involving AMPK, CaMK, and PGC-1α, leading to mitochondrial dysfunction and oxidative stress. This results in epithelium hypoxia and a shift in the microbiota composition.

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The 'Cite this article' section displays the citation: 'Zhang, Y., Li, X., Lu, S. et al. Stress triggers gut dysbiosis via CRH-CRHR1-mitochondria pathway. *npj Biofilms Microbiomes* 10, 33 (2024). <https://doi.org/10.1038/s41522-024-00571-z>'. Below the citation is a 'Download citation' button with a download icon. To the right, there are links for 'Data availability', 'References', 'Acknowledgements', 'Author information', 'Ethics declarations', 'Additional information', 'Supplementary information', 'Rights and permissions', and 'About this article'. The 'Received' date is 13 May 2024, the 'Accepted' date is 16 September 2024, and the 'Published' date is 30 September 2024. The DOI is <https://doi.org/10.1038/s41522-024-00571-z>.

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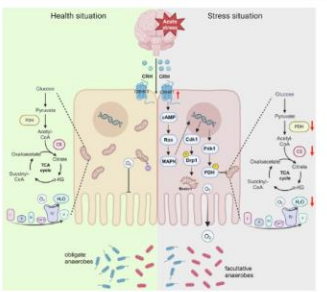
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*Yiming Zhang, Xiaolang Li, Siqi Lu, Huaili Zhu Guo, Zhuangyi Zhang, Haonan Zheng, Cunzhen Zhang, Jindong Zhang, Kun Wang, Fei Pei & Liping Qian*

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**Sections** Abstract Introduction Methods Result Discussion Data availability References Acknowledgements Author information Ethics declarations Additional information Supplementary information Rights and permissions About this article

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2) Explore list of literature the author used to write the article.

Most references are linked to their source.

**Sections** **Figures** **References**

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