# Article information:

Protein import into peroxisomes occurs through a nuclear pore–like phase | Science
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# Article summary:

1. Peroxisomal protein import resembles nuclear transport, with a dense meshwork formed in the peroxisome's membrane by the YG domain of multiple copies of the peroxisomal protein PEX13.

2. The meshwork provides an aqueous conduit across the membrane into the peroxisomal lumen, allowing import receptors such as PEX5 to diffuse through and bring cargo along.

3. This mechanism explains how folded and oligomeric proteins are imported into peroxisomes and represents a previously unidentified principle by which proteins cross membranes.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article "Protein import into peroxisomes occurs through a nuclear pore–like phase" published in Science provides new insights into the mechanism of protein import into peroxisomes, which are organelles that play important roles in lipid metabolism and redox homeostasis. The authors found that peroxisomal import resembles transport through the nuclear pore, with a dense meshwork formed by the YG domain of multiple copies of the peroxisomal protein PEX13 providing an aqueous conduit across the membrane into the peroxisomal lumen. Peroxisomal import receptors such as PEX5 can diffuse through this meshwork and bring cargo along, using their WXXXF/Y motifs to locally dissolve the cohesive interactions holding the meshwork together.

The article is well-written and provides detailed information about the research conducted by Gao et al. However, there are some potential biases and limitations to consider. Firstly, while the authors provide evidence for their claims, they do not explore counterarguments or alternative explanations for their findings. For example, it is possible that other proteins or mechanisms may also be involved in peroxisomal protein import.

Additionally, while the article notes that peroxisomes are essential for human health and that defects in peroxisome biogenesis can cause life-threatening disorders such as Zellweger spectrum, it does not discuss any potential risks associated with this research or its implications for human health. It is important to consider any ethical concerns related to manipulating cellular processes and organelles.

Furthermore, while the article presents both sides of the argument regarding whether PEX13 or PEX14 is responsible for mediating protein translocation into peroxisomes, it does not provide equal coverage of alternative theories or hypotheses related to this process.

Overall, while this article provides valuable insights into how proteins are imported into peroxisomes, readers should be aware of potential biases and limitations in the research and consider alternative explanations or counterarguments. Additionally, it is important to consider any ethical concerns related to this research and its potential implications for human health.

# Topics for further research:

* Ethical concerns of manipulating cellular processes and organelles
* Alternative mechanisms for peroxisomal protein import
* Risks associated with peroxisome biogenesis defects
* Other proteins involved in peroxisomal protein import
* Alternative theories for mediating protein translocation into peroxisomes
* Implications of peroxisomal protein import for human health

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