

Mechanistic Rigor

Mechanistic rigor refers to the depth and quality of experimental evidence supporting the biological mechanism underlying a scientific observation.

Key Criteria

- Demonstrates causality, not just correlation
- Includes mechanistic experiments (e.g., knockouts, inhibitors, pathway analysis)
- Connects molecular events to phenotypic outcomes
- Uses appropriate controls and model validation
- Avoids overreliance on indirect or superficial readouts

Lack of Mechanistic Rigor

- Fluorescent cargo delivery without demonstrating biological activity
- No exploration of endosomal escape or intracellular trafficking
- Absence of pathway dissection or rescue studies

Example

A study showing Cas9-loaded EVs editing a gene and rescuing phenotype in a disease model demonstrates mechanistic rigor. A study showing only cargo uptake in cells does not.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=mechanistic_rigor

Last update: **2025/06/18 09:40**

