Meaningful (Scientific Definition)

Meaningful refers to research results, innovations, or interventions that have clear biological, clinical, or translational significance beyond mere technical success.

Characteristics of Meaningful Outcomes

- Demonstrates functional or therapeutic impact
- Solves a defined clinical or scientific problem
- Offers improvement over existing alternatives
- Relevance is supported by context and application

Non-Examples

- Delivery of fluorescent proteins without therapeutic intent
- Engineering complexity without biological justification
- In vivo "proofs" that lack disease relevance

Example

A gene therapy that restores motor function in a Parkinson's model is meaningful. Delivering Cas9 to random brain cells without editing or phenotype data is not.

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