Machine Learning for Systems Biology Model Determination

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OTHER INFORMATION

CATEGORIZED AS

- **Biotechnology**
  - Bioinformatics
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BRIEF DESCRIPTION

A revolutionary method utilizing machine learning to derive systems biology models from experimental data to improve drug discovery and development.

FULL DESCRIPTION

This innovative approach uses machine learning to analyze data from cells with reporter genes, thereby understanding biological processes and the impact of drugs on these processes. It focuses on creating in-silico drug models for preliminary evaluation before proceeding to in-vitro experiments, facilitating a bottom-up strategy in drug design that is informed by intricate biological interactions.

SUGGESTED USES

- Pharmaceutical screening to improve cost-efficiency and speed up drug development.
- Design of new drugs with a higher success rate and fewer side effects.
- Optimal hypothesis dosing in cell models for accurate drug intervention strategies.

ADVANTAGES

- Optimizes biological model determination from data.
- Reduces reliance on brute force search methods for experimental design.
- Enables evaluation of models with intractable likelihoods.
- Facilitates the prediction of drug interactions with biological pathways.
- Decreases drug development costs and time.
- Reduces off-target effects and enhances drug efficacy.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20240006016	01/04/2024	2022-99L

RELATED MATERIALS

- Zaballa, V., Hui, E. (2021). Optimal Design of Experiments for Simulation-Based Inference of Mechanistic Acyclic Biological Networks. bioRxiv.

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