**Mechanistic Models, Model Mechanisms, and Computational Models of Explanation for Biological Phenomena**

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**Objectives**

- Identify appropriate rules of terms such as "mechanistic" and "mechanisms" for biology and mathematical modeling.
- Strengthen the credibility of simulations in biology by improving semantic and methodological clarity.
- Enhance the credibility of explanations for biological phenomena.
- Offer alternatives to ambiguous terminology, such as "mechanistic" and "mechanisms" for biology and mathematical modeling.

**Approach**

- Adapt a definition for the word "mechanisms" and use it to clarify published models of explanation into distinguishable types: linked to the definition of mechanism in "mechanisms".
- Acknowledge and use workflows in determining types of models of explanation.

**Mechanistic Models**

- Mechanistic models of biological phenomena (with or without computation) are explanatory by underlying biology and explain phenomena that are realized.

**Model Mechanisms**

- Model mechanisms are computational tools that are used to simulate and explain phenomena. They are based on the concept of a model mechanism and are used to explain phenomena by simulating them.

**Computational Models**

- Computational models are used to simulate phenomena and are based on the concept of a model mechanism.

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**Categories of Models of Explanation**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Example</th>
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<tbody>
<tr>
<td>I. Mechanistic Explanation</td>
<td>Mechanistic models of phenomena are explanatory by underlying biology and explain phenomena that are realized.</td>
<td>Mechanistic models of biological phenomena (with or without computation) are explanatory by underlying biology and explain phenomena that are realized.</td>
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<tr>
<td>II. Explanatory Model of a Mechanism</td>
<td>Model mechanisms are computational tools that are used to simulate and explain phenomena. They are based on the concept of a model mechanism and are used to explain phenomena by simulating them.</td>
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<td>III. Model Mechanism Explanation</td>
<td>Computational models are used to simulate phenomena and are based on the concept of a model mechanism.</td>
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<td>IV. Simulation of a Model of a Mechanism</td>
<td>The framework is built to run simulations of model mechanisms.</td>
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<td>V. Model Mechanism Simulation</td>
<td>The goal is to build executable models of mechanisms.</td>
<td>The goal is to build executable models of mechanisms.</td>
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<td>VI. Computational Model Mechanism</td>
<td>The workflow is used to build and simulate model mechanisms.</td>
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**References**