

## Special Issue

# Hypothesis-Driven Artificial Intelligence Approaches for Complex Systems Biology

### Message from the Guest Editors

This Special Issue focuses on approaches that attempt to recapitulate information extracted from data with AI tools into general frameworks that advance biological knowledge according to a hypothesis-driven methodology with the goal of overcoming mere statistical correlations. Theoretical frameworks and modelling paradigms of non-linear systems theory, complex systems science and dynamical systems theory, with their rich repertoire of tools, concepts and methods, can be a valuable source of inspiration. From the point of view of AI, all AI techniques and subfields are welcome as long as they are included in works that recapitulate the results in theory-based or model-based approaches. The non-exhaustive lists of potential contributions we are interested in will focus on approaches that integrate AI techniques with the following:

- Applications of dynamical systems theory to biological processes;
- Modelling approaches that exploit biological principles to reproduce observed data patterns;
- Parameters tuning and optimisation of mathematical models for biological and biochemical systems;
- Computational systems biology methodologies, etc.

### Guest Editors

Dr. Michele Braccini  
Dr. Andrea Roli  
Prof. Pasquale Stano

### Deadline for manuscript submissions

30 June 2026



## Systems

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### Message from the Editor-in-Chief

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### Editor-in-Chief

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