Modeling Molecule to Mind

Lewis Rhodes Labs

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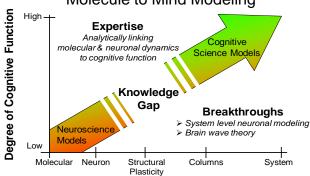
Executive Summary

Our modeling technology bridges the knowledge gap between neuroscience and cognitive science allowing us to directly relate known molecular and neuronal dynamics to critical aspects of cognitive function. Our breakthroughs have been successfully applied to the study of various neurological diseases generating novel insights.

The value of our modeling capabilities is the enhanced, verifiable understanding of how the brain represents and processes information. These insights are fundamental for enabling new functionality for next generation cognitive models.

Knowledge Gap Pioneers

Molecule to Mind Modeling

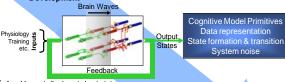


Level of Abstraction

Bridging the Knowledge Gap

System Level Developmental Model Non-deterministic, self organizing

- Neuron algorithms derived from
- published molecular mechanisms
- Brain wave mathematics
- Relate processing to spatial/temporal wave topology



Proof points: Hypoxic/Ischemic brain injury

- Model predicts
 - Adaptive response to molecular injury leading to loss of cognitive function
 - Prediction of brain wave alterations and relation to magnitude of clinical presentation
 - Novel therapeutic opportunities
- Follett et al. J Child Neurol, 2009

Perturbation Brain Waves Output States

Research Collaborations

Cognitive Modeling Thought Leaders

Organizational Expertise

- Molecule to Mind Research Insights:
 - State formation and transition
 - Brain Wave Cortex Dynamics
 - Information Representation
 - Role of noise in Cognitive Processing

Inclusion of Molecule to Mind primitives will revolutionize Cognitive Modeling

- Core Skills:
 - Computational Neuroscience
 - Brain Wave Theory
 - System Level Simulation
 - Clinical Neurology
 - Laboratory Neuroscience

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