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#### **Elucidating Cross-Talk Mechanisms in Plant Immune Signaling Pathways**

Katrin E. Müller, Yuko Sato, Andrés M. Pérez

*Keywords: plant immunity, Arabidopsis thaliana, signaling pathways, CRISPR-Cas9, transcriptomics, salicylic acid, jasmonic acid, ethylene*

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2.

#### **Elucidating the Mechanisms of Self-Antigen Recognition in Autoimmune Disorders**

Hans-Jürgen Müller, Kim Soo-Jin, Leila Haddad

*Keywords: autoimmune diseases, self-antigen recognition, T-cell receptors, cytokines, systemic lupus erythematosus, rheumatoid arthritis*

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3.

#### **Integrative Network Analysis Enhances Predictive Modeling in Genomic Studies**

Levent Ozdemir, Hiroshi Nakamura, Aditi Raghavan

*Keywords: Predictive modeling, Genomic analysis, Network integration, Gene expression, Protein interaction, Epigenomics, Cancer genomics*

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#### **Elucidating the Allosteric Mechanisms in Human AMPK Through High-Resolution Cryo-EM Studies**



Hans-Peter Müller, Li Ming-Hu, Priya N. Iyer

*Keywords: AMP-activated protein kinase, cryo-electron microscopy, allosteric regulation, molecular dynamics, phosphorylation sites, metabolic disorders*

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## **Characterizing Neural Network Dynamics Using Advanced fMRI Techniques in Cognitive Processing**

Lars M. Kaufmann, Min-Jae Lee, Sofia R. Hernandez

*Keywords: fMRI, cognitive processing, neural networks, brain connectivity, dynamic causal modeling, independent component analysis, prefrontal cortex*

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## **Adaptive Mechanisms in Viral Evolution: Insights from RNA Virus Mutation Dynamics**

Hiroshi Nakamura, Priya S. Menon, Ahmed El-Mansouri

*Keywords: RNA virus, mutation dynamics, viral evolution, genetic recombination, genomic surveillance, replication fidelity*

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**7.**

## **Exploring the Role of Chaperone Proteins in the Dynamics of Protein Folding Pathways**

Hiroshi Masuda, Fatima El-Sayed, Kumiko Nishimura

*Keywords: protein folding, chaperone proteins, molecular dynamics, Hsp70, protein homeostasis, misfolding, therapeutic strategies*