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## Research Articles

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1.

### **Optimizing Nonlinear Systems in Applied Mathematics Through Computational Models**

Elina Virtanen, Wei-Chen Huang, Fatima Al-Mansouri, José Carlos Mendoza

*Elina Virtanen: University of Turku, Turku, Finland; Wei-Chen Huang: University of Tasmania, Hobart, Australia; Fatima Al-Mansouri: University of Antioquia, Medellín, Colombia; José Carlos Mendoza: University of Antioquia, Medellín, Colombia*

*Keywords: nonlinear systems, computational models, applied mathematics, numerical simulations, scalability, optimization*

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2.

### **Evaluating the Impact of Community Health Interventions on Chronic Disease Prevalence in Urban Areas**

Sophie Müller, Haruto Nakamura, Fatima Al-Mansouri

*Kyungpook National University, Daegu, South Korea; Kanazawa University, Kanazawa, Japan; Jordan University of Science and Technology, Irbid, Jordan*

*Keywords: community health, chronic disease, urban populations, public health intervention, health education, disease prevalence*

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3.

### **Assessing the Impact of Microfinance on Rural Economic Development: A Comparative Analysis**

Linas Vaitkus, Farzana Rahman, Min-Jun Lee

Vilnius University, Vilnius, Lithuania; University of Dhaka, Dhaka, Bangladesh; Kyungpook National University, Daegu, South Korea

Keywords: microfinance, rural development, economic growth, cultural impact, panel data, policy frameworks

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4.

## **Epigenetic Regulation in Cellular Differentiation: Insights from Multi-Omic Approaches**

Dr. Ingrid Hansen, Prof. Bat-Erdene Tserendorj, Dr. Nneka Okeke

*Dr. Ingrid Hansen, University of Tromsø, Tromsø, Norway; Prof. Bat-Erdene Tserendorj, National University of Mongolia, Ulaanbaatar, Mongolia; Dr. Nneka Okeke, Oklahoma State University, Stillwater, USA*

Keywords: epigenetics, cellular differentiation, multi-omics, DNA methylation, histone modification, gene expression

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5.

## **Enhancing Machine Learning Models with Cross-Domain Feature Adaptation Techniques**

Yasuko Tanaka, Omar Al-Khatib, Aissatou Diouf

*Kanazawa University, Kanazawa, Japan; Al-Baath University, Homs, Syria; Cheikh Anta Diop University, Dakar, Senegal*

Keywords: machine learning, cross-domain adaptation, feature extraction, neural networks, domain adaptation, transfer learning

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6.

## **Cultural Influences on Behavioral Patterns: A Comparative Analysis Across Diverse Regions**

Miguel Rocha, Suriya Chaiwat, Zahra Farahani

*University of Coimbra, Coimbra, Portugal; Chiang Mai University, Chiang Mai, Thailand; Ferdowsi University of Mashhad, Mashhad, Iran*

Keywords: behavioral analysis, cultural influences, cross-cultural psychology, social dynamics, conformity, individualism

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7.

## **Exploring Anomalous Hall Effect in Two-Dimensional Transition Metal Dichalcogenides**

Liang Wei Chen, Alejandro Ortega, Amina Al-Mansur

*Condensed Matter Physics Department, Universiti Sains Malaysia, Penang, Malaysia; Center for Theoretical Physics, Gadjah Mada University, Yogyakarta, Indonesia; Institute for Advanced Studies, University of Tasmania, Hobart, Australia*

*Keywords: anomalous Hall effect, transition metal dichalcogenides, spintronics, density functional theory, Berry curvature, spin-orbit coupling*

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**8.**

## **Innovative Approaches to Harnessing Offshore Wind Energy in Remote Pacific Regions**

Ingrid Larsen, Arjun Mishra, Fatima Rahman

*University of Tromsø, Tromsø, Norway; University of Vermont, Burlington, USA; University of the South Pacific, Suva, Fiji*

*Keywords: offshore wind energy, renewable energy, Pacific regions, wind turbines, climate change, energy sustainability*

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