

2025 13th International Conference on Bioinformatics and Computational Biology (ICBCB 2025)

**Seoul, South Korea
27 February - 2 March 2025**



**IEEE Catalog Number: CFP2564M-POD
ISBN: 979-8-3315-1943-8**

**Copyright © 2025 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2564M-POD
ISBN (Print-On-Demand):	979-8-3315-1943-8
ISBN (Online):	979-8-3315-1942-1

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2025 13th International Conference on Bioinformatics and Computational Biology (ICBCB 2025)

Table of Contents

Preface	v
Conference Committee	vi

Genomic Sequence Analysis & Pattern Recognition

Genomic Transformers: Innovative Approaches to Hepatitis Virus Subtyping	1
<i>Love Fadia, Vatsal Shah, Mohammad Hassanzadeh, Majid Ahmadi, Jonathan Wu</i>	
An approach to the exploration of different metrics between DNA sequences	8
<i>Boris Melnikov, Elena Melnikova</i>	
Multi-Instance Contrastive Learning with Binomial K-Mers for Phage Host Interaction Prediction	15
<i>Yohei Okubo, Yao-zhong Zhang, Seiya Imoto</i>	

Biomedical Imaging & Diagnostic Models

Hardware-Friendly Palm Vein Recognition Algorithm Using Hybrid Compressed Convolutional Neural Network	22
<i>Yiqun Ma, Ninghao Pu, Zhiqiang Chen, Yifan Xu, Hao Liu</i>	
An automatic reverse shoulder arthroplasty planning method based on point cloud processing.....	30
<i>Yangyu Luo, Wei Han, JiuLong Wang, JinQuan Li, Jian Li, Teng Zhang, JunQiang Wang, XieYuan Jiang</i>	
Studies of Plausibility Using Deep Learning Techniques to Automatically Detect Retinal Neovascularization in Enface Optical Coherence Tomography Angiography Images.....	35
<i>Yar Zar Tun, Pakinee Aimmanee</i>	
Optimizing Pneumonia Detection from Chest X-rays: A Performance Comparison of Lightweight CNNs and Ensemble Methods.....	42
<i>Yousef Taha, Yazeed Rashed, Adnan Salman</i>	
Weakly Supervised Vector Quantization for Whole Slide Image Classification	49
<i>Dawei Shen, Yao-zhong Zhang, Seiya Imoto</i>	
Comprehensive Evaluation of Multimodal AI Models in Medical Imaging Diagnosis: From Data Augmentation to Preference-Based Comparison	58
<i>Cailian Ruan, Chengyue Huang, Yahe Yang</i>	

Neuro Transcriptomics & Molecular Profiling

- Functional Transcriptome Analysis Reveals Downregulation of Cerebellar Long-Term Depression as Potential Cause in Parkinson's Driven Tremor 65
Rohen Vargo, Claire Lee, Inhan Lee
- Exploring Dysregulated Pathways in STXBP1 Disorder using RNA-Seq Analysis 70
Tolga Corbaci, Hila Ben-Moshe
- Lead Discovery from *Hippophae rhamnoides*: A Systems Biology Approach to Target Differentially Expressed Genes in Alzheimer's Disease 77
Mayank Roy Chowdhury, Venkat Sai Reddy, Sudarshana Deepa Vijaykumar
- Communication Analysis of tRNA-derived Fragment Uptake and Signalling in Neurons..... 84
Kurt J.A. Pumares, Daniel P. Martins, Steven Fagan, Rachel Stewart, Jochen H.M. Prehn, Deirdre Kilbane

Computational Drug Discovery & Predictive Modeling

- Target Identification of Bio-inhibitor against *Mycobacterium tuberculosis* by Subtractive Proteomics Approach 91
Jiraporn Yongpisanphop, Warunyu Chockchowwat, Patchreenart Saparpakorn
- Fair dataset splitting for protein-ligand complex binding affinity prediction 97
Nozomu Yamazaki, Takashi Ishida
- Utilizing Deep Learning to Predict the Potency of Beta-Lactamase Inhibitors 103
Jericho Pasco, Sheena Stella Salde, Gerard Ompad, Christine Bandalan

Biological Network Analytics & Cancer Genomics

- Enhancing the prognostic precision of unsupervised lung cancer subtyping using a network-assisted data mining of early mutated driver genes 111
Sujiraporn Pakchuen, Teeraphan Laomettachit
- Exploring Complex Gene Relationships in Brain Cancer Through Graphical Regression 119
Qianqian Guo, Qiong Li
- Kron Reduction in Species-Reaction Graphs of Mass-Action Chemical Reaction Networks 128
Manvel Gasparyan, Ovidiu Radulescu, Shodhan Rao

Biomedical Prognostics & Control Systems

- Flexible survival regression with variable selection for heterogeneous population 134
Abhishek Mandal, Abhisek Chakraborty
- Adaptive Sliding Mode Control for Nonlinear Heart Rhythm Regulation: A Model-Based Approach 140
Mina Ghahestani, Mohsen Ehsani, Vahid Behnamgol, Rohollah Barzamini, Behnaz Sohani

Author Index