

Bioinformatics

Helder I. Nakaya, PhD
Editor

Bioinformatics

Bioinformatics

Edited by

HELDER I. NAKAYA, PhD

Department of Clinical and Toxicological Analyses,
School of Pharmaceutical Sciences, University of Sao Paulo,
Sao Paulo, Brazil



Bioinformatics

ISBN: 978-0-6450017-1-6

DOI: <https://doi.org/10.36255/exonpublications.bioinformatics.2021>

Edited by

Helder I. Nakaya, PhD, Department of Clinical and Toxicological Analyses, School of Pharmaceutical Sciences, University of Sao Paulo, Sao Paulo, Brazil.

Published by

Exon Publications, Brisbane, Australia

Copyright© 2021 Exon Publications

Copyright of individual chapters belongs to the respective authors. The authors grant unrestricted publishing and distribution rights to the publisher. The electronic versions of the chapters are published under Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0). <https://creativecommons.org/licenses/by-nc/4.0/>. Users are allowed to share and adapt the chapters for any non-commercial purposes as long as the authors and the publisher are explicitly identified and properly acknowledged as the original source. The book in its entirety is subject to copyright by the publisher. The reproduction, modification, replication and display of the book in its entirety, in any form, by anyone, for commercial purposes are strictly prohibited without the written consent of the publisher.

Notice to the user

The views and opinions expressed in this book are believed to be accurate at the time of publication. The publisher, editors or authors cannot be held responsible or liable for any errors, omissions or consequences arising from the use of the information contained in this book. The publisher makes no warranty, implicit or explicit, with respect to the contents of this book, or its use.

First Published in March 2021

Printed in Australia

CONTENTS

Foreword	vii
Preface	ix
List of Contributors	xi
1 Text Mining Gene Selection to Understand Pathological Phenotype Using Biological Big Data	1
Christophe Desterke, Hans Kristian Lorenzo, Jean-Jacques Candelier	
2 Single-Cell RNA Sequencing Procedures and Data Analysis	19
Markus Wolfien, Robert David, Anne-Marie Galow	
3 Computational Methods for Detecting Large-Scale Structural Rearrangements in Chromosomes	37
Muneeba Jilani, Nurit Haspel	
4 Machine Learning Approaches for Biomarker Discovery Using Gene Expression Data	53
Xiaokang Zhang, Inge Jonassen, Anders Goksøyr	
5 Bayesian Inference of Gene Expression	65
Victor Jiménez-Jiménez, Carlos Martí-Gómez, Miguel Ángel del Pozo, Enrique Lara-Pezzi, Fátima Sánchez-Cabo	
6 Comprehensive Evaluation of Error-Correction Methodologies for Genome Sequencing Data	89
Yun Heo, Gowthami Manikandan, Anand Ramachandran, Deming Chen	

7	Plant Transcriptome Assembly: Review and Benchmarking	109
	Sairam Behera, Adam Voshall, Etsuko N. Moriyama	
8	WeMine Aligned Pattern Clustering System for Biosequence Pattern Analysis	131
	En-Shiun Annie Lee, Peiyuan Zhou, Andrew K. C. Wong	
9	Rational Design of Profile Hidden Markov Models for Viral Classification and Discovery	151
	Liliane Santana Oliveira, Arthur Gruber	
10	Pattern Discovery and Disentanglement for Aligned Pattern Cluster Analysis and Protein Binding Complexes Detection	171
	Peiyuan Zhou, En-Shiun Annie Lee, Andrew K. C. Wong	
	Index	183

Doi: <https://doi.org/10.36255/exonpublications.bioinformatics.2021>