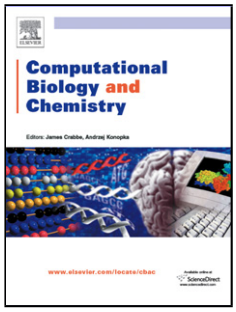
Accepted Manuscript



Title: AROHap: An Effective Algorithm for Single Individual Haplotype Reconstruction based on Asexual Reproduction Optimization

Authors: Mohammad-H Olyaee, Alireza Khanteymoori

PII: S1476-9271(16)30536-9
DOI: https://doi.org/10.1016/j.compbiolchem.2017.12.005
Reference: CBAC 6763

To appear in: *Computational Biology and Chemistry*

Received date: 15-10-2016
Revised date: 22-11-2017
Accepted date: 10-12-2017

Please cite this article as: Olyaee, Mohammad-H, Khanteymoori, Alireza, AROHap: An Effective Algorithm for Single Individual Haplotype Reconstruction based on Asexual Reproduction Optimization.Computational Biology and Chemistry https://doi.org/10.1016/j.compbiolchem.2017.12.005

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

AROHap: An Effective Algorithm for Single Individual Haplotype Reconstruction based on Asexual Reproduction Optimization

Mohammad-H Olyaee

Computer Engineering Department, University of Zanjan, Zanjan, Iran
mh.olyaee@znu.ac.ir

Alireza Khanteymoori

Computer Engineering Department, University of Zanjan, Zanjan, Iran

khanteymoori@znu.ac.ir

We propose an improved method in order to solve haplotype reconstruction problem. The method has some notable characteristics:

1. An efficient two-step method is proposed for haplotype reconstruction
2. A modified metric is used for initial clustering of input fragments and building a weighted graph
3. Asexual Reproduction Optimization(ARO) as a high speed and bio-inspired algorithm is used to improve bi-partitioning of the input fragments
4. The convergence speed of ARO is increased based on the similarities and dissimilarities of the input fragments

Abstarct

In this paper, a method for single individual haplotype (SIH) reconstruction using Asexual reproduction optimization (ARO) is proposed. Haplotypes, as a set of genetic variations in each chromosome, contain vital information such as the relationship between human genome and diseases. Finding haplotypes in diploid organisms is a challenging task. Experimental methods are expensive and require special equipment. In SIH problem, we encounter with several fragments and each fragment covers some parts of desired haplotype. The main goal is bi-partitioning of the fragments with minimum error correction (MEC). This

Download English Version:

https://daneshyari.com/en/article/6486977

Download Persian Version:

https://daneshyari.com/article/6486977

Daneshyari.com