Identifying Motifs Using Next-Generation Sequencing Experiments

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BRIEF DESCRIPTION

A novel motif discovery computer program called IMUNE (Identifying Motifs Using Next-generation sequencing Experiments).

BACKGROUND

As genetic sequencing has become more widespread, a clear trend in medicine has developed to utilize increasingly specialized treatments. More and more data is becoming available, and there is a clear need for experimental and computational methods that can identify the most significant information and use it to generate effective results. Some of the most important data available in the medical field is amino acid sequences, because it is possible to identify subsequences that are correlated to diseases. However, it is often very difficult to compile and effectively analyze such large datasets and find significant trends that are useful for treatment.

DESCRIPTION

UC Santa Barbara researchers have created a novel motif discovery computer program called IMUNE (Identifying Motifs Using Next-generation sequencing Experiments). The program analyzes millions of amino or nucleic acid sequences for subsequences that are statistically enriched in one population of patients but absent from another population (disease vs. control). It searches for patterns in provided sequences, and similarly statistically significant patterns are identified and aligned with each other. A motif is assembled by analyzing that alignment. IMUNE assumes that sequences were selected from a random library, and thus does not assume that all provided information is meaningful. This technology can be used to identify disease-associated biomarkers and to design diagnostic assays and novel therapeutics.

ADVANTAGES

· Rapidly searches and analyzes millions of biological sequences for motifs that are only enriched in a subpopulation of sequences

· Assumes that not all sequence information is meaningful

APPLICATIONS

· Bioinformatics analysis

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OTHER INFORMATION

KEYWORDS

bioinformatics, motif, genetic sequencing, dna, biomarkers, indpharma, indtelecom

CATEGORIZED AS

- **Biotechnology**
  - Bioinformatics
- **Computer**
  - Software

RELATED CASES

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