

TITLE: DATABASE FOR IDENTIFICATION OF RESISTANCE GENES

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ABSTRACT:

The horizontal transfer of genes consists of segments of DNA exchanged between different species, by three methods: conjugation, transduction, and transformation are the main forms studied to understand how different types of bacterial genes are acquired between different species. Being the genetic material mobilized among the bacteria known as mobile genetic elements (MGES), which have an enormous impact on bacterial genomes causing relevant differences in pathogenicity. In view of this, it is important to understand how these MGES can enter into bacterial DNA in such a way that when fused to the genome results in the expression of virulence and pathogenicity, producing, for example, antimicrobial peptides (PAMs), better known as bacteriocins. Being the objective of the study to find those genes and peptides that promote this virulent character, to develop an antimicrobial database for the prediction of target sequences. Since all the genetic determinants of the database were collected from online works and resources, the nucleotide and protein sequences are downloaded in FASTA format from databases such as Resfinder, Card, BacMet, GenBank, APD3 and CAMP R3, banks of reference resistance increasing the reliability of the work as well as its completeness. In view of this, we identified antimicrobial resistance genes acquired, antimicrobial peptides, including mutation and classes of AMR drugs, as well as resistance to antibacterial metals and/or biocides. For the validation of the database was used the sequencing of the metagenome of the Tucuruí hydroelectric plant collected from 5 different points. In this sense, the five BLAST samples were referenced by the BLAST tool, which had already been previously referenced by another database, Card. As a result, 316 sequences homologous to the resistance genes of the database were found in the Tucuruí hydroelectric samples that were later characterized and annotated.

Keywords : resistance genes, BLAST, antimicrobial database, horizontal gene transfer

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