APPLICATION OF THE *k-NN* CLASSIFIER FOR MUTAGENESIS TESTS. RECOGNITION OF WILD TYPE AND DEFECTIVE IN DNA REPAIR BACTERIAL STRAINS ON THE BASIS OF ADAPTIVE RESPONSE TO ALKYLATING AGENTS

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Abstract:

The k-Nearest Neighbor classifier *(k-NN)* was applied to differentiate two bacterial strains, the wild type and its mug derivative. Bacterial cells were exposed to different concentrations of chloroacetaldehyde and studied under two different conditions, i.e. with and without induction of an adaptive response. We evaluated the influence of adaptation on the *wt* and *mug* strains by estimating the probability of misclassification to the class: *no adaptation* or *adaptation.* We have also checked differentiation between *wt* and *mug,* separately for *adapted* and *non-adapted* conditions. Our results confirm the usefulness of the *k-NN* classifier as a tool for statistical analysis of results of mutagenesis tests.

Keywords: pattern recognition, *k-NN* classifier, DNA repair, adaptive response, mutagenesis, mug