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(54) **Title:** A METHOD OF CLASSIFYING CHO CELLS

(57) **Abstract:** The present invention relates to a method of establishing a biomarker for a first phenotype of interest of a CHO cell, the method comprising the steps of: (a) measuring methylation values of all CpG sites within genomic DNA obtained from a population of different CHO cells that are a representation of the first phenotype of interest and are part of the training samples, (b) defining a set of specific CpG sites having consistent and reproducible methylation values in the training samples of step (a); and (c) processing the methylation values of step (b) and phenotypes of interest of the training samples using a machine learning based model; thereby obtaining the specific CpG sites with corresponding weighting factors defining the biomarker for the first phenotype of interest.