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(54) Title: SYSTEMS AND METHODS FOR DETECTING THE PRESENCE OF A BIOLOGICAL STATUS USING CLUSTERING

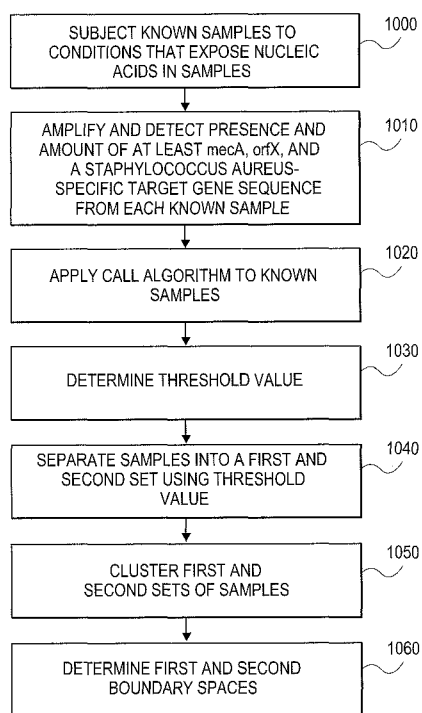


FIG. 1

(57) Abstract: A method for determining the presence of a biological entity. The method may include entering into a digital computer, at least a plurality of first input values associated with a first genetic element (e.g., *mecA*), a plurality of second input values associated with a second genetic element (*femA*), and a plurality of third input values associated with a third genetic element (e.g., *orfX*) associated with a plurality of samples. Each sample includes a first input value in the plurality of first input values, a second input value in the plurality of second input values, and a third input value in the plurality of third input values. The method also includes determining a threshold value associated with the third genetic element, separating the samples using the threshold value into a first set of samples and a second set of samples, clustering the first set of samples in a feature space defined by the first genetic element and the second genetic element, defining a first boundary space using the first set of samples, and defining a second boundary space using the second set of samples. The first and second boundary spaces differentiate a biological entity from other biological statuses. Other embodiments may also include the use of a genetic element such as *SCCmec*.



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