1096-92-2706 **Leonila Lagunes*** (leo.lagunes13@gmail.com), 2627 N. Bourbon st apt 43, Orange, CA 92865, and **Charles H Lee** (charleshlee@fullerton.edu), 800 N. State College Blvd., Fullerton, CA 92831. *Cancer Screening Using Biomimetic Pattern Recognition with Hyper-Dimensional Planar Structures.*

Biomimetic Pattern Recognition (BPR) is a technique that creates a hyper-dimensional (HD) geometric body by mimicking a biological system and uses it for classification. BPR is derived from the Principle of Homology-Continuity (PHC), which assumes members of the same class are connected by means of gradual evolution. Recently, we introduced a new approach to the PHC, where elements of the same class were connected via HD line segments. In this research, we propose a new BPR technique where elements are connected via HD planes and thus there exist multiple ways to construct and connect alike members. In our case, we consider three different distance calculation techniques and three different extension methods when constructing a BPR structure. The resulting biological organisms are more complicated and the mimicking process becomes computationally intensive. When found, these structures represent the core of a class and provide a basis for classification of an arbitrary node. Elements of the test sets are classified based on their proximities relative to structures. We investigate the effect of different distance calculation and extension methods on the overall accuracy. Results based on DNA microarray data for Leukemia and Colon cancers are also discussed. (Received September 18, 2013)