

EXECUTIVE SUMMARY [NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]:

State **in layman's terms** the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project relevant to California.

During the early phase of the cycle of the human cell chromosomes are confined to regions called territories. The position of these territories has been associated with a number of biological phenomena (such as transcription and cell differentiation) as well as with the frequency of certain chromosome rearrangements observed in some genetic diseases and in cancer. Despite these important implications for human health the position of these territories remains largely unknown. In this project we propose to develop a statistical method, based on the emerging field of algebraic statistics, to help uncover proximity between chromosomes. Our goal is to find groups of chromosomes that are found in close physical proximity. We will analyze data provided by the Cornforth laboratory (UT Galveston Medical branch) on healthy lymphocytes. The techniques developed in this project will be used on other data sets available to us (e. g. fibroblasts cells). Once the techniques have been properly implemented they will be made publicly available through the web so that other groups can use them in their research.