A Cytogenetic Comparison of Canine Prostate Cell Lines and Primary Tumor Using Array CGH and FISH

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Prostate cancer is currently the second leading cause of cancer death in men and the most frequent non-dermatological cancer diagnosed in U.S. men. Currently, there are several human cell lines used in research to help characterize this disease and find potential therapeutics. This study extends the use of cell line work for examining cytogenetic aberrations of prostate cancer into the domestic dog (canis lupus familiaris). The dog makes a compelling model for human comparative medicine because of their ability to develop spontaneous cancer and their extensive genomic homology to humans. In this study, three canine prostate cells lines are cytogenetically compared using fluorescent in situ hybridization (FISH) and high-resolution array- comparative genomic hybridization (aCGH). FISH analysis allows for detection of chromosome aberrations including gains, losses and translocations of chromosomal material and aCGH allows for high-resolution analysis of copy number aberrations of the genome as a whole. In addition, aCGH was used to compare genomic copy number aberrations of one of the cell lines and a corresponding primary prostatic adenocarcinoma from which the cell line was derived.