alternatively spliced forms of the KLK15 gene. KLK15 is primarily expressed in the thyroid gland, and to a lower extent in the prostate, salivary and adrenal glands, colon, testis and kidney. Our results indicate that the expression of KLK15 is up-regulated by steroid hormones in the LNCaP prostate cancer cell line. KLK15 is structurally related to its adjacent gene, PSA. Based on the established role of KLK3 (PSA) in prostate cancer diagnosis and monitoring, and on being hormonally regulated in prostate cancer cell lines, we hypothesized that KLK15 is differentially regulated in prostate cancer. We examined 20 matched pairs of normal and prostate cancer tissues from the same patient and found that the KLK15 gene is up-regulated at the mRNA level in prostate cancer in comparison to the normal matching prostatic tissue. KLK15 up-regulation was found to be associated with more aggressive forms of prostate cancer. We conclude that this newly discovered gene has potential of being used as a diagnostic and/or prognostic marker for prostate cancer.