

# CD90/Thy1 Is Overexpressed by Stromal Cells Associated With Primary Prostate Carcinoma

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There is increasing evidence that stromal cells can affect the biology of human epithelium, both in development and in carcinomas. Although some of these studies have characterized the phenotype of cancer-associated stroma cells, most of these studies that used human tissue involved cell culture and animal model-based work. We have begun to characterize the phenotype of cancer-associated stroma in primary human prostate carcinoma using immunohistochemistry.

Thirty primary prostate carcinomas from prostatectomy specimens of a range of Gleason grade were immunostained for greater than 150 CD antigens using an indirect immunoperoxidase method applied to frozen sections of cancer from radical prostatectomy specimens. Distribution and intensity of staining (on a three-point scale) were assessed for each CD antigen. Based on the finding that CD90/Thy-1 was immunohistochemically overexpressed in cancer-associated stroma, an independent set of 10 primary prostate carcinomas analyzed for overexpression of mRNA using laser microdissected tumor cell samples from frozen sections and quantifying CD90/Thy-1 RNA levels by quantitative RTPCR.

In all immunostained cancers, an approximately 10-cell layer thick rim of CD90-positive stromal cells was adjacent to cancers. The intensity and extent of CD90 stromal cell expression was invariant to Gleason grade. Quantitative RTPCR confirmed overexpression of CD90 in 9 of the 10 samples, compared with benign gland-associated stromal cells, which had been handled identically.

We have found a stromal cell gene (CD90) that distinguishes prostate cancer-associated stroma from normal prostate gland-associated stroma. These stromal cells occupy an up to 10-cell thick "niche" around cancer cells. The stromal cell function of CD90 (Thy1), which is expressed in primitive hematopoietic progenitor cells, thymocytes, and fibroblasts, where it distinguishes fibroblasts with myogenic potential from those with adipogenic potential, is unknown in the prostate. CD90 can be used to isolate cancer-associated stroma to investigate mechanisms by which stroma affects prostate epithelium (benign and malignant). In addition, CD90 might serve as a molecular target for therapy to regulate the growth of primary prostate cancer.

## References

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