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# Preclinical evaluation of a PSMAxCD3 Diabody for therapy of prostate cancer

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Although prostate cancer is the most commonly diagnosed cancer in men and second leading cancer-related cause of death in the Western Civilization there is currently no curative option for advanced stages. A new approach in cancer therapy has been the retargeting of T-cells to the tumor cells by bispecific recombinant antibody fragments, termed diabodies. We have constructed a PSMAxCD3 diabody directed against the prostate specific membrane antigen (PSMA) on prostate cancer cells and the epsilon-chain of CD3 on T-cells. In the present study, the effectivity of the diabody was characterized *in vitro* and *in vivo.*

After expression into the periplasm of XL-1 Blue *E.coli* bacteria, the diabody was purified by Immobilized Metal Affinity Chromatography (IMAC). For determining the cytotoxic potential, PSMA-positive C4-2 cells were incubated with CD4+ and CD8+ lymphocytes. Lysis of the C4-2 cells was measured by a WST-1 assay. Our study proves that the PSMAxCD3 diabody is very potent in eliminating PSMA-positive prostate cancer cells by redirected lysis through CD3-positive T-lymphocytes *in vitro*. In a SCID mouse model with C4-2 xenograft tumors, the diabody together with human peripheral blood lymphocytes efficiently inhibited tumor growth. The results suggest the diabody to be a powerful agent which could contribute to an effective new therapy against prostate cancer.

## Biography

Patrick Bühler has completed his Ph.D at the age of 31 years from Freiburg University and continued to do postdoctoral research as research associate. He has published 19 papers in reputed journals.