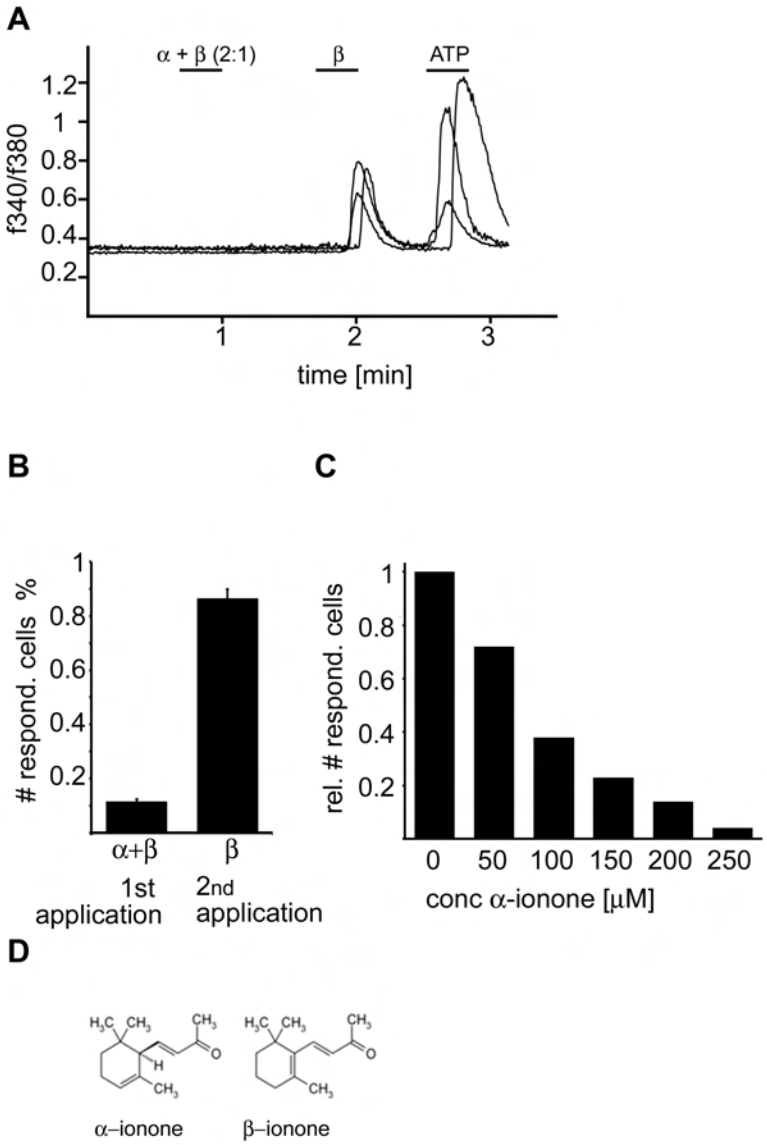
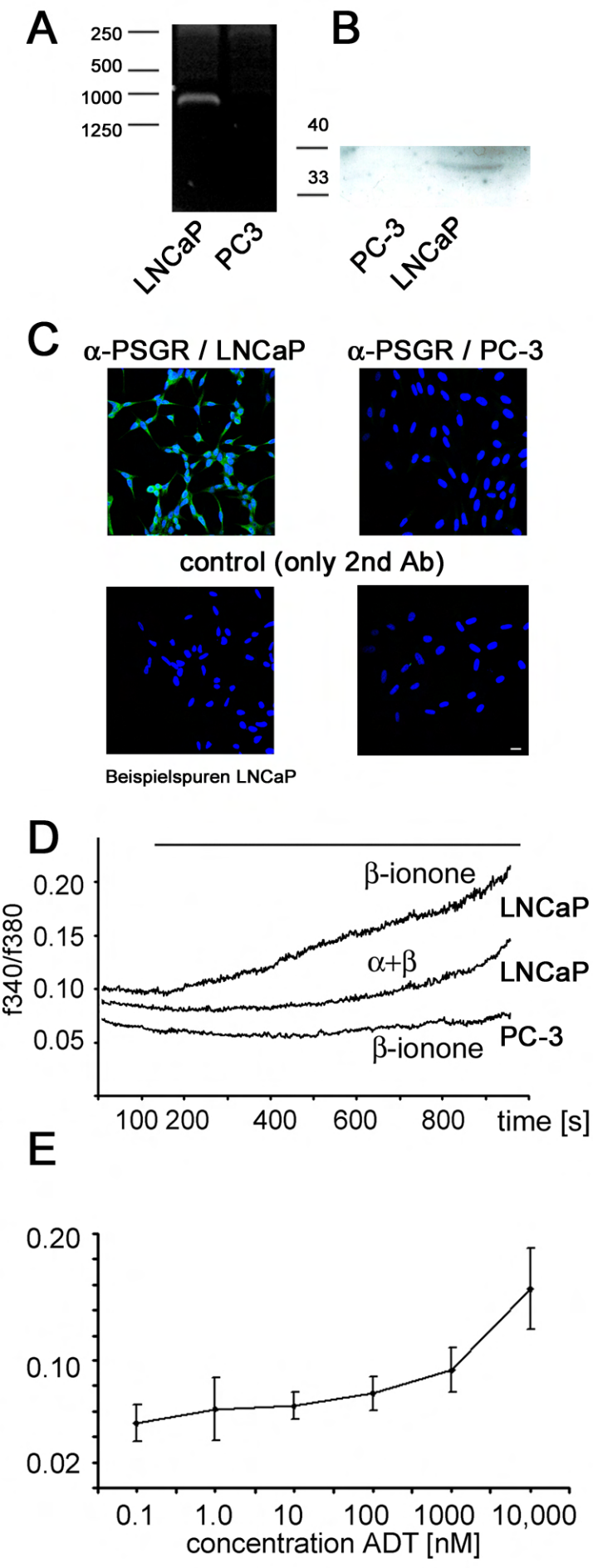
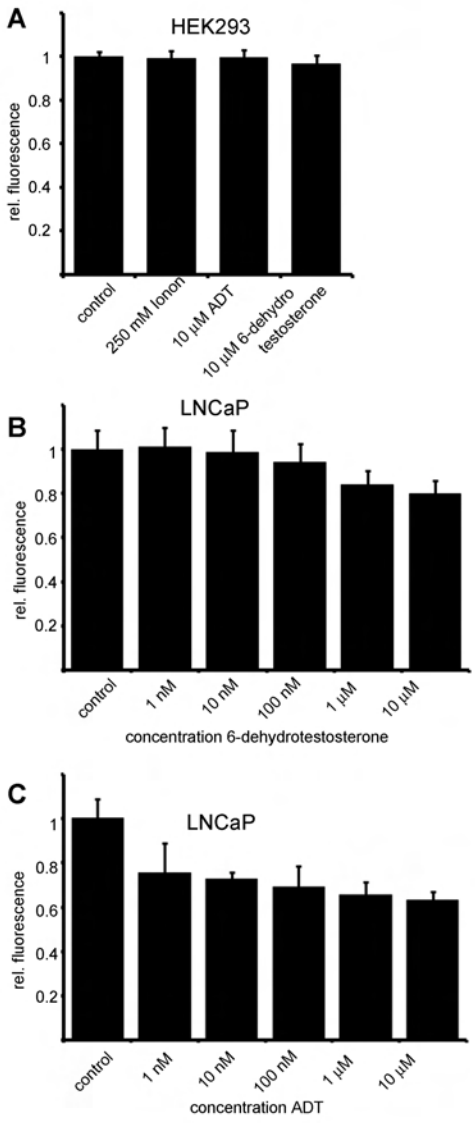
**Supplementary Figure 1**



# Supplementary Figure S2



## Supplementary Figure 3



**Supplementary Figure S1. Characterization of recombinantly expressed PSGR.**

(**A**) Inhibition of the β-ionone response of recombinantly expressed PSGR in HEK293 cells. In randomly selected fields of view, co-application of α- and β-ionone in a mixture of 2:1 (100 µM : 50 µM) did not induce $Ca^{2+}$ signals in PSGR transfected HEK293 cells, which in a second application responded to the application of β-ionone (50 µM) alone. ATP (200 µM) served as a control. The integrated fluorescence ratio (f340/f380) of fura-2 loaded cells is shown as a function of time. Substances were applied for 20 s. (**B**) Quantification of the observed effect. Shown is the number of cells responding to co-application of α- and β-ionone (100 µM : 50 µM) compared to the number of cells responding to the following application of β-ionone (50 µM) alone. (**C**) The inhibitory effect of α-ionone was dose dependent. Co-application of increasing concentrations of α-ionone caused an increased reduction of the number of cells responding to 50 µM β-ionone. Shown are relative numbers of cells responding to 50 µM β-ionone in the presence of varying concentrations of α-ionone. (**D**) Structures of β-ionone and α-ionone in comparison.

**Supplementary Figure S2. PSGR expression and activation in prostate epithelial cells.**

(**A**) We investigated PSGR expression by RT-PCR in LNCaP compared to PC-3 prostate cancer cell lines using the intron spanning primers displayed in Fig. 2*A*. PSGR transcripts were detected in LNCaP, but not in PC-3 cells. (**B**) Western blot showing expression of PSGR in LNCaP cells, but not in PC-3 cells. (**C**) Immunohistochemical stainings of PSGR were positive in LNCaP, but found to be absent PC-3 cells, which is in agreement with the results obtained with RT-PCR and western blotting. Stainings with the secondary antibodies only is shown as control. (**D**) The prostate epithelial cell lines LNCaP and PC-3 were investigated for activation by the identified PSGR ligand β-ionone using $Ca^{2+}$-imaging, β-ionone (500 µM) induced $Ca^{2+}$ signals are displayed as a function of time. The integrated fluorescence ratio (f340/f380) of fura-2 loaded cells is shown as a function of time. The ligands are applied from 100s on for the entire duration of the experiment (1000s). LNCaP cells showed a slow, gradual increase in the calcium concentration, which was reduced upon co-application of α–ionone in a ratio of 2:1. PC-3 cells did not show an increase in the calcium concentration upon application of 500 µM β-ionone. (**E**) The prostate epithelial cell line LNCaP was investigated for activation by different concentrations of the identified PSGR ligand ADT using ratiometric $Ca^{2+}$-imaging. As in the other experiments, the ligand was applied

from 100s on for the entire duration of the experiment (1000s). ADT induced $Ca^{2+}$ signals in LNCaP cells were quantified from 5 independent experiments, n>30 cells were analyzed for each concentration.

**Supplementary Figure S3. Activation of PSGR in LNCaP cells reduces cell proliferation.**

(**A**) Proliferation of HEK293 cells is not affected by application of 250 µM β-ionone, 10 µM ADT, or 10µM 6-dehydrotestosterone for 3 days. (**B**) LNCaP cells were treated with different concentrations of 6-dehydrotestosterone for 3 days. The effect on cell proliferation was stronger, when the steroid concentration was increased. (**C**) The same experiments were performed with the ADT as ligand. ADT was effective in reducing cell proliferation already at lower concentrations than 6-dehydrotestosterone. The experiments were repeated 6 times, *p <0.05; **p<0.01.