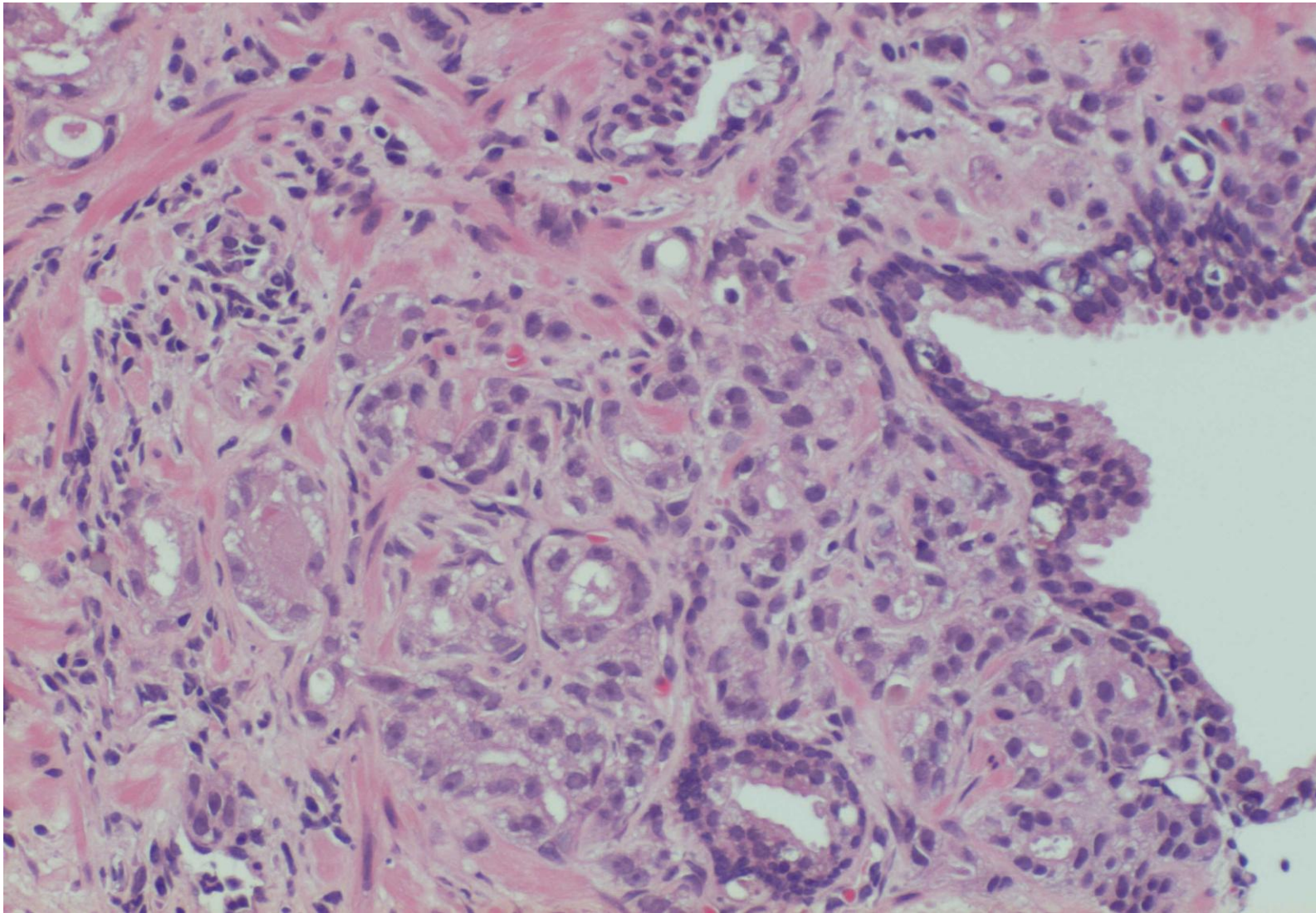


Which patient has prostate cancer?

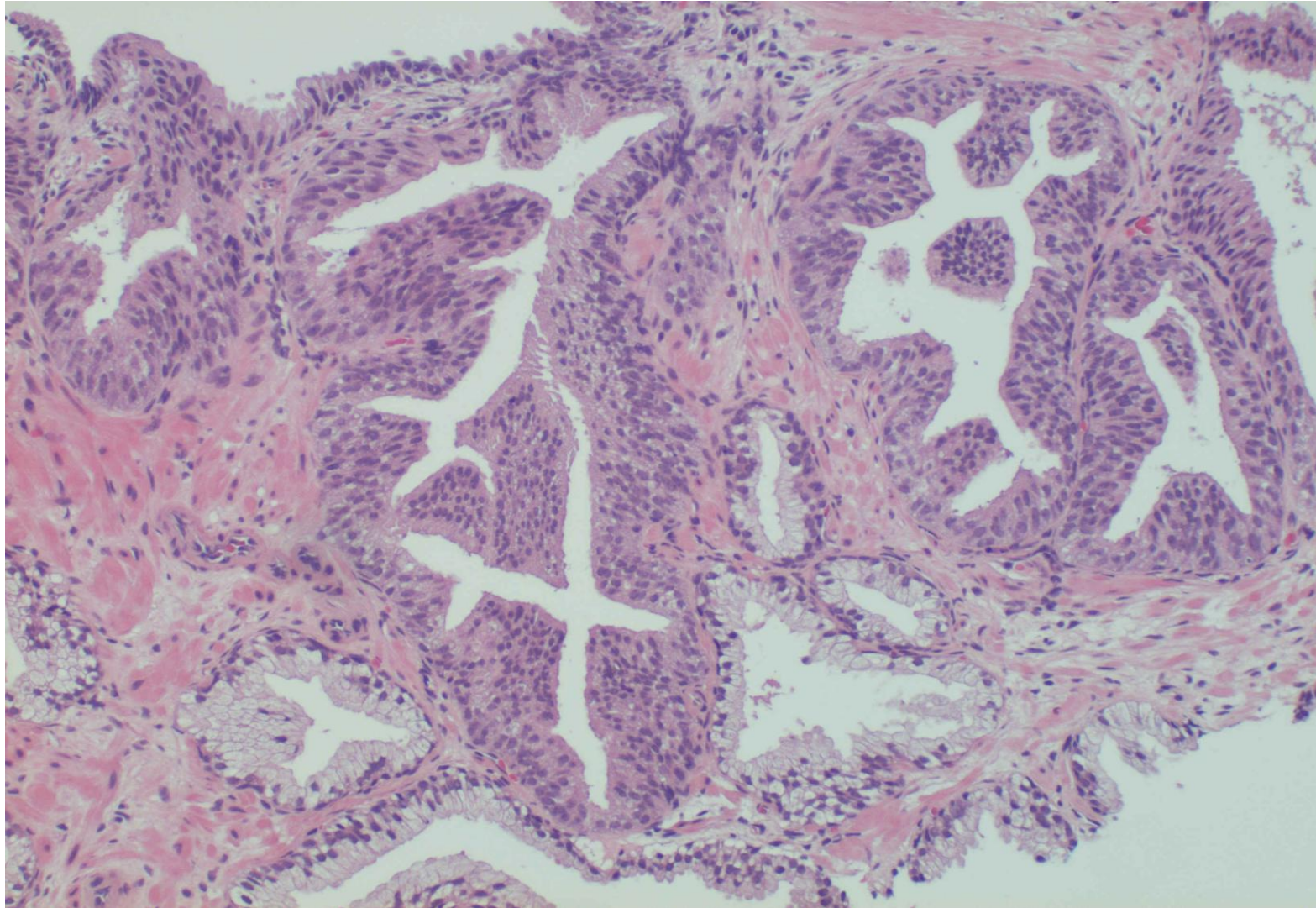
Blood typing for contaminated needle biopsy samples of the prostate

Needle biopsy specimens sampled from the prostate of two male patients were contaminated in a single bottle containing 10% formalin. H&E preparations disclosed one has prostatic acinar carcinoma but the other has a benign lesion. The ABO blood groups of the two patients were type AB and type O, respectively. In order to identify which patient has the prostate cancer, blood typing was performed using formalin-fixed, paraffin-embedded sections. Monoclonal antibodies against blood group carbohydrate antigens of types A, B and H were used. Pretreatment for epitope retrieval is unnecessary for the blood typing. Vascular endothelial cells consistently express blood group substances. In secretors of the blood group substances, the blood group antigens are also expressed in the glandular epithelial cells. It was concluded that the patient of blood group type O had the cancer. The blood group carbohydrate antigens are very stable, and detectable in paraffin sections prepared after very long formalin fixation more than 50 years.

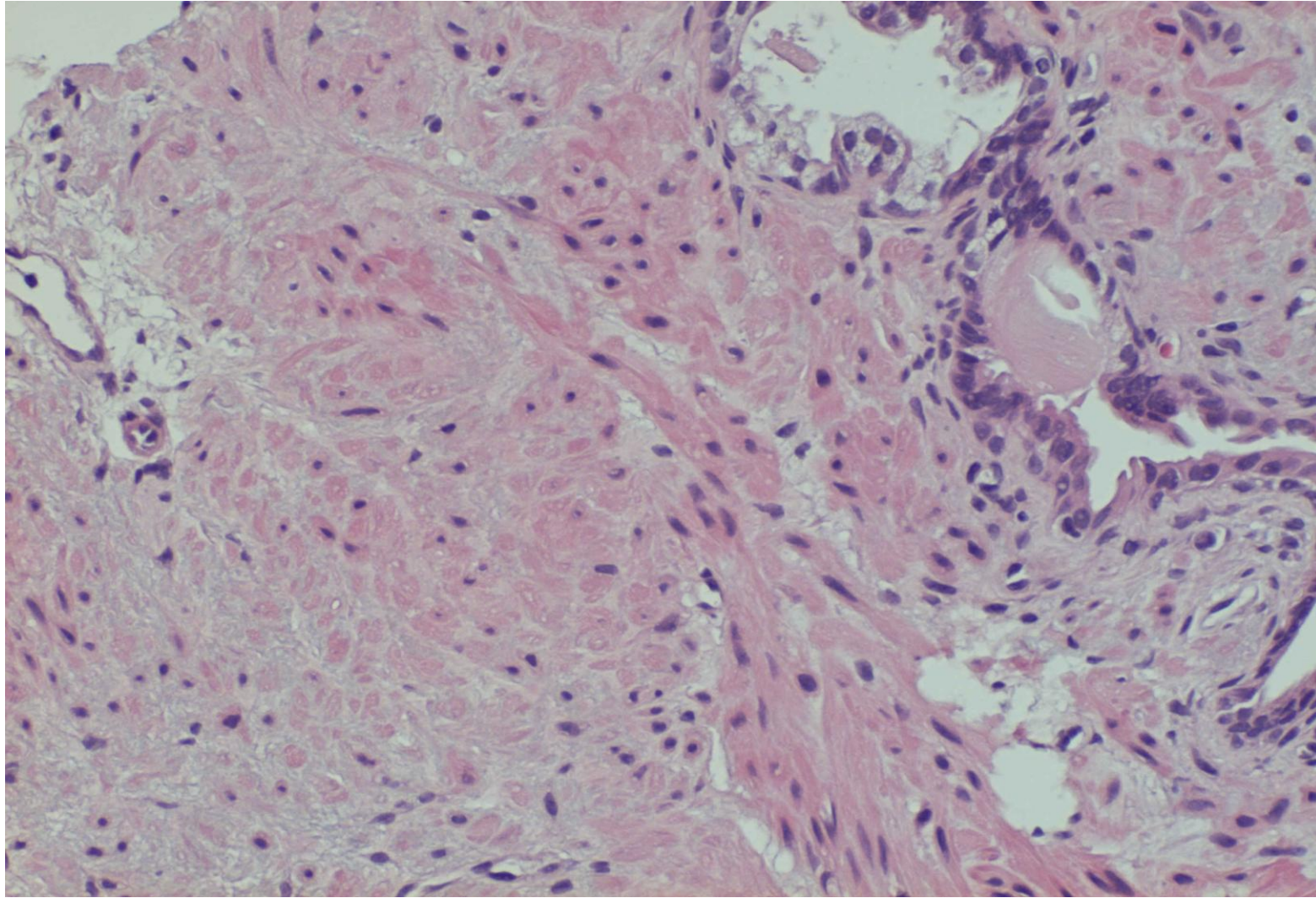
Ref.: Tsutsumi Y. Pitfalls and caveats in applying chromogenic immunostaining to histopathological diagnosis. *Cells* 2021, 10: 1501. doi: 10.3390/cells10061501



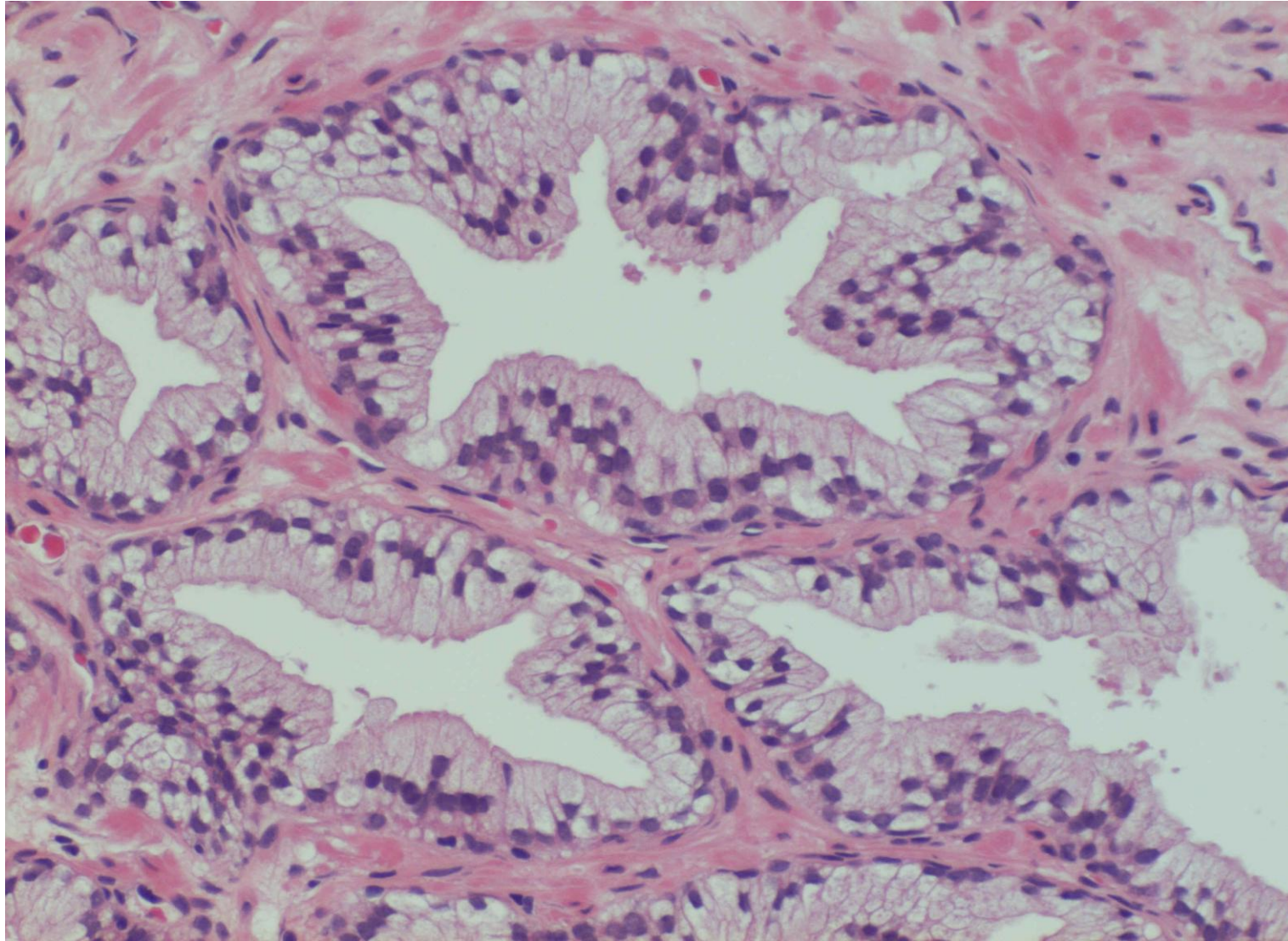
In one patient (72-year-old patient a), acinar adenocarcinoma with Gleason's score $3+3=6$ is focally detected. H&E-a1



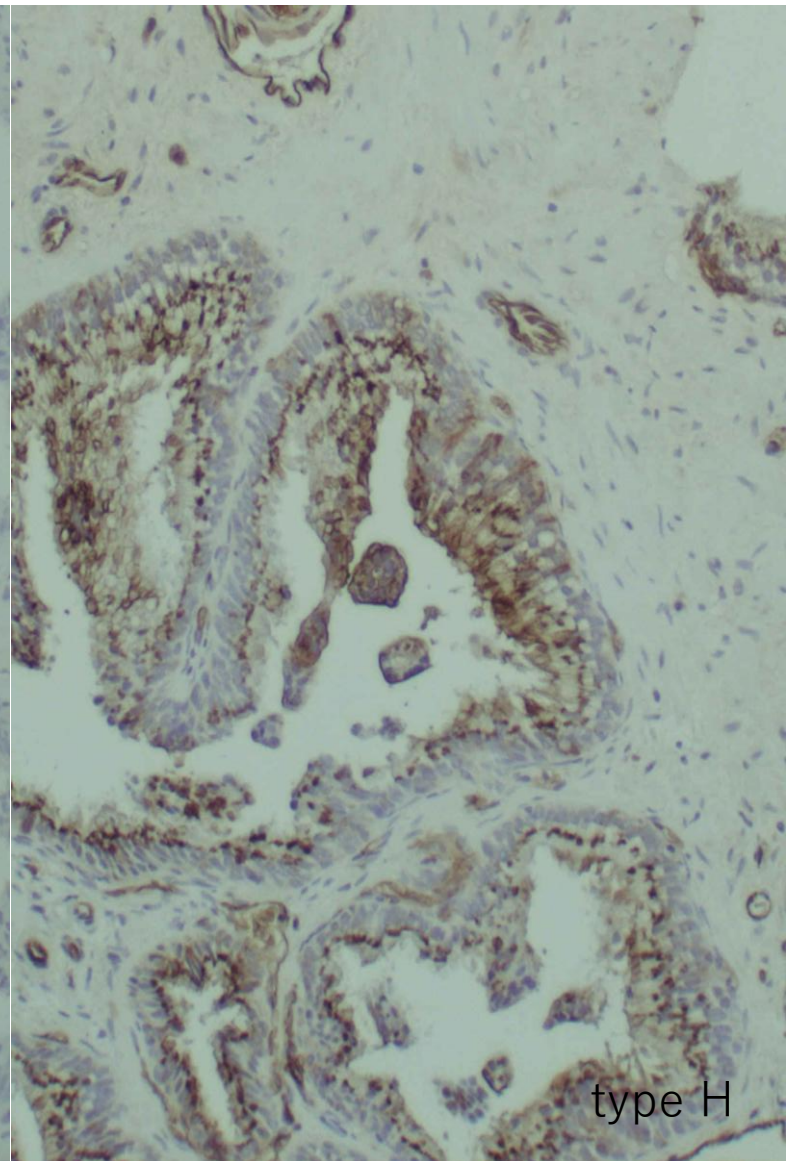
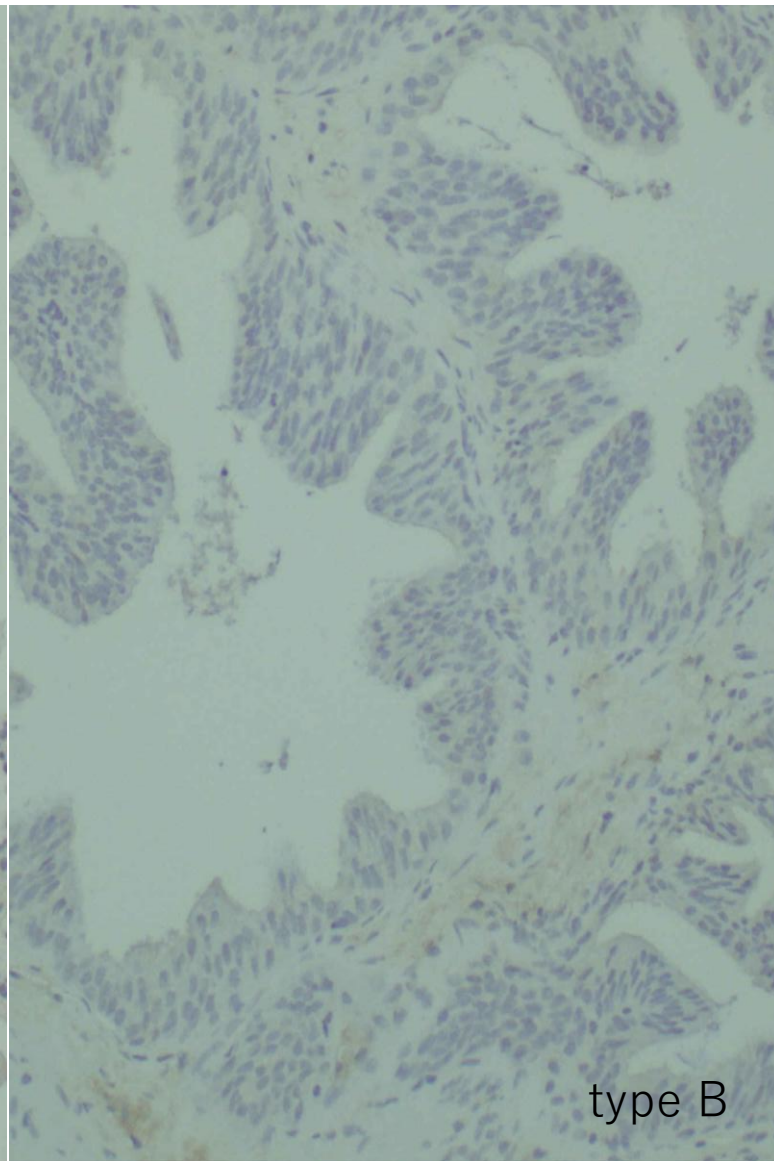
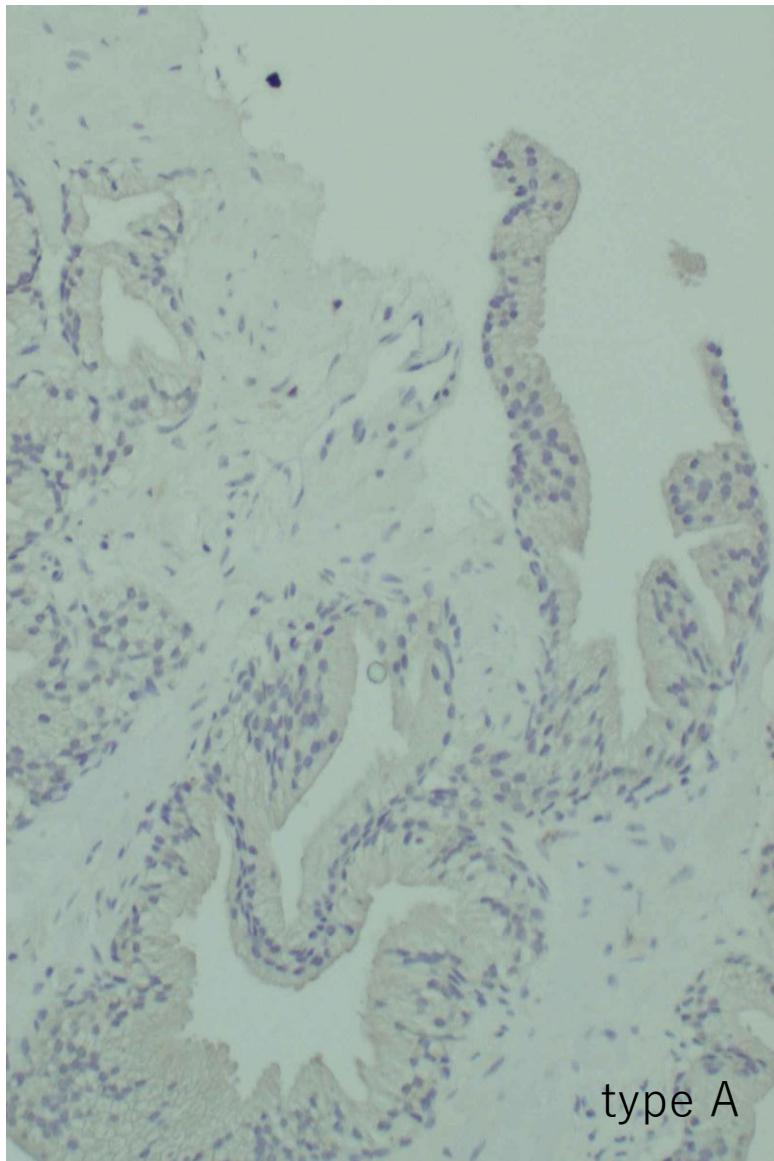
In another area of the patient a, prostatic intraepithelial neoplasia (PIN) is also seen. H&E-a2



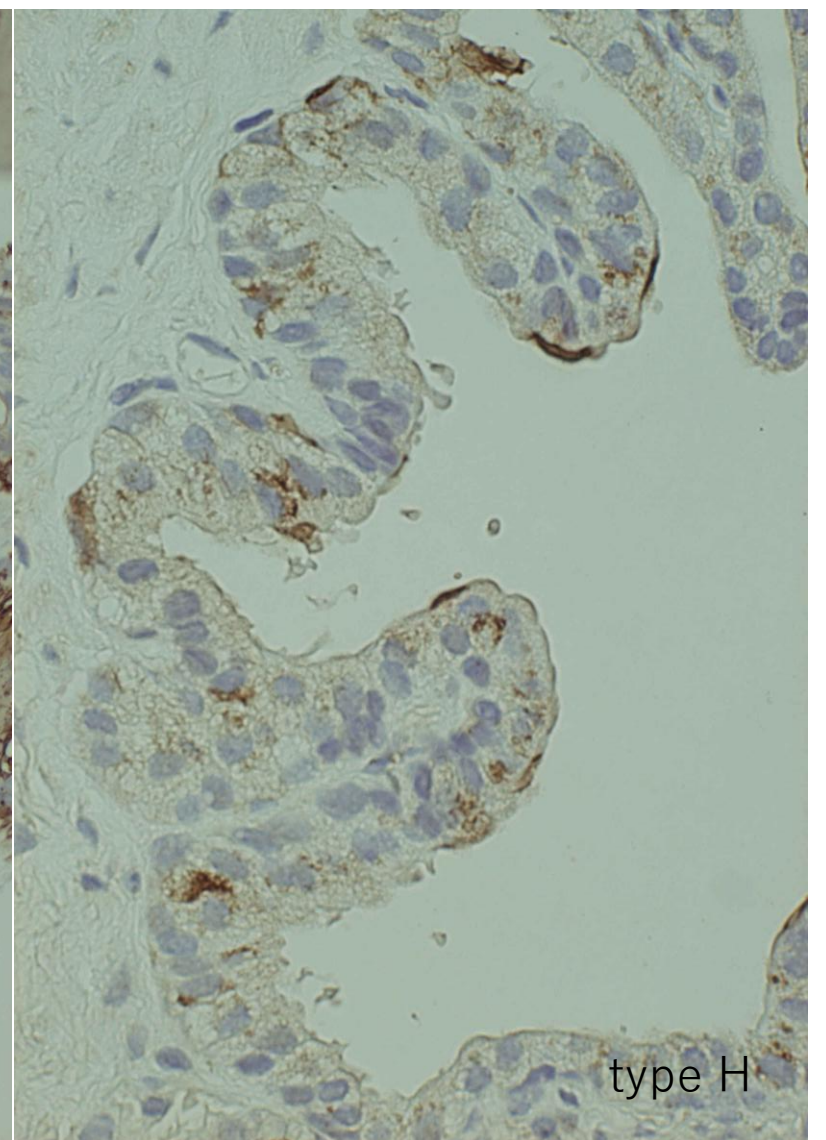
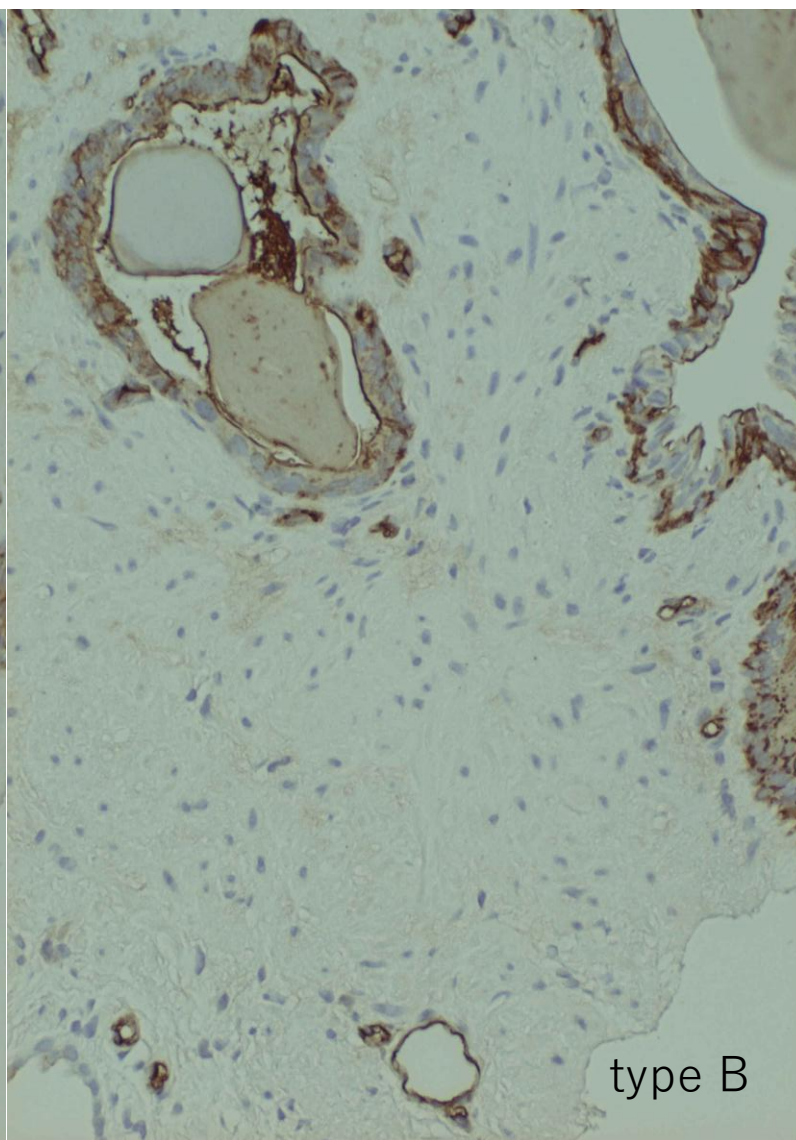
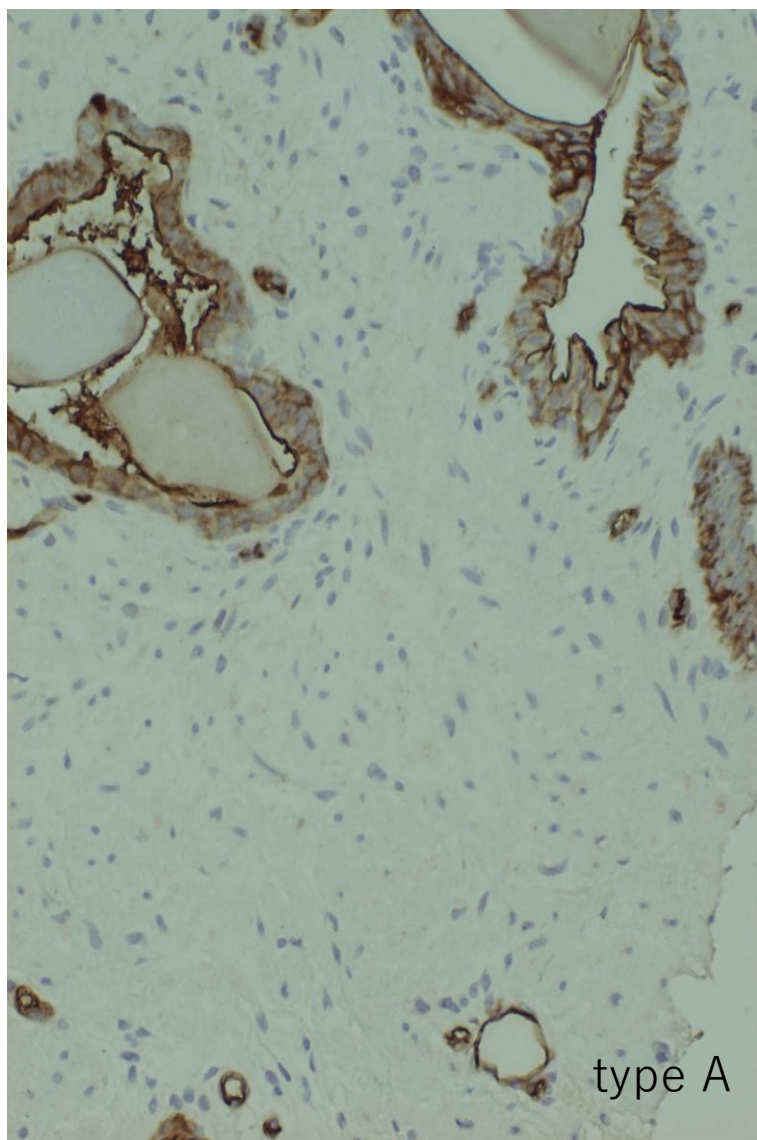
In another patient (65 year-old patient b), no malignancy is seen. Normal acinar glands and smooth muscle stroma are observed. H&E-b1



In another patient (65 year-old patient b), no malignancy is seen. Normal acinar glands with a two-celled pattern is noted. H&E-b2



Blood typing using formalin-fixed, paraffin-embedded biopsy specimens discloses blood group type O in the patient (a) with cancer and PIN: negative for types A and B antigens, but positive for type H antigen. Both the vascular endothelial cells and prostatic glands express type H antigen (indicating a secretory type individual). Immunostaining for blood groups A, B and H



Blood typing using formalin-fixed, paraffin-embedded biopsy specimens discloses blood group type AB in the patient (b) without cancer: positive for types A, B and H antigens in the vascular endothelial cells. The prostatic glands also express types A, B and H antigens (indicating a secretory type individual). Immunostaining for blood groups A, B and H