both rat and human prostate.

To determine whether the nuclear receptor is essential for the expression of hormonal sensitivity, we compared the amount of nuclear androgen-binding and the activities of acid phosphatase and plasminogen activator in the transplantable prostatic adenocarcinoma of Nb rats. Androgen-stimulated tumours were found to have more nuclear receptor and less acid phosphatase activity than autonomous tumours. Also the plasminogen activator activity was 7-fold lower in the androgen stimulated tumours than in the latter. These observations are consistent with the view that a diminished concentration of nuclear androgen receptor in prostatic carcinoma is associated with an increasing grade of malignancy.

13. Comparison between the contents of cytosolic steroid hormone receptors in the Dunning R-3327 prostatic adenocarcinoma of the rat and in human prostatic carcinoma. E. DAHLBERG, M. SNOCHOWSKI and J.-Å. GUSTAFSSON, Departments of Chemistry and Medical Nutrition, Karolinska Institutet, Fack, S-104 01 Stockholm, Sweden

The R-3327 transplantable rat prostatic adenocarcinoma was investigated with regard to receptors for hormonal steroids. It was found that glucocorticoid (dexamethasone) receptors, and progestin (R 5020) receptors were non-detectable in all tumors analyzed, i.e. 7 and 4 tumors, respectively. Estrogen (R 2858) receptors, and androgen (R 1881) receptors were detected in 5 of 6, and 8 of 9 tumors, respectively. The analyses were carried out using a dextran-coated charcoal technique, and the binding parameters were calculated according to Scatchard. The apparent dissociation constants (K_d) for estrogen and androgen receptors in the Dunning tumor were similar, and ranged from 0.57 to 1.85, and 0.73 to 1.85, respectively. The maximum number of binding sites (B_{max}) for the estrogen receptors ranged between 638 and 5,810 fmol/g tissue (8.31 - 90.2 fmol/mg protein; 304 - 1,260 fmol/mg DNA), and those for the androgen receptor ranged between 1,490 and 25,100 fmol/g tissue (19.4 - 363 fmol/mg protein; 710 - 5,450 fmol/mg DNA). In all cases containing both androgen and estrogen receptors, the former were more abundant.

Since several authors have suggested that this rat tumor may serve as a model for cancer of the human prostate, we compared our steroid receptor analyses of the Dunning tumor to those obtained with the same technique in primary and metastatic cancer of the human prostate. In a series of 25 biopsies from primary human prostatic carcinoma, methyltrienolone receptors were detected in 20 cases. In our series of 5 metastases from human cancer of the prostate, we found methyltrienolone (R 1881) receptors in 4 cases (B_{max} 110 - 28,500 fmol/g tissue), glucocorticoid receptors in 3 cases (B_{max} 4,730 - 13,600 fmol/g tissue), and progestin receptors in 2 cases (B_{max} 424 - 1,410 fmol/g tissue), but none of the metastases contained detectable estrogen receptors.

Hence, it may be concluded that although the Dunning tumor and the human cancer of the prostate are both androgen-dependant, and contain androgen receptors in most cases, the rat model seems to differ from metastatic prostate cancer with regard to steroid receptor content. On the other hand, it is possible that it is a suitable model for primary cancer of the human prostate. It would thus be of interest to compare this, and other animal tumors with primary cancer of the human prostate in order to find the most optimal model system for studies of the hormonal control of human prostatic cancer.

14. Distribution of dihydrotestosterone and of nuclear androgen receptors between stroma and epithelium of human benign hyperplastic prostatic tissue (BPH), D.A.N. SIRETT, S.K. COWAN, A.E. JANECZKO and J.K. GRANT, University Department of Steroid Biochemistry, Royal Infirmary, Glasgow G4 0SF, Scotland, U.K.

Previous work in our laboratory has indicated that 1) testosterone 5α-reductase activity is located predominantly in BPH stroma rather than in the epithelium, and 2) BPH androgen receptors are found predominantly in the nuclear fraction of whole tissue samples. To further examine stromal-epithelial relationships in BPH tissue, we have measured the concentrations of endogenous dihydrotestosterone (DHT) and of nuclear androgen receptors in separated epithelium and stroma. Endogenous androgens were ether-extracted from tissue homogenates, and DHT separated by Lipidex column chromatography and quantitated by RIA. Crude nuclei were extracted with buffer containing 0.5 M KCl, and the receptor concentration was determined by exchange with [^{3}H]DHT. Similar concentrations of DHT were found in stroma and epithelium, when results were expressed in terms of the DNA content of the separated tissue (stroma: 5.0 ± 1.2 ng/mg DNA; epithelium: 6.2 ± 2.6 ng/mg DNA, n = 6). All results mean ± S.E.M.). Epithelial enrichment of DHT was evident in terms of tissue protein (stroma: 93 ± 15 pg/mg protein; epithelium: 468 ± 98 pg/mg protein, n = 6). Receptor concentrations, expressed on a DNA basis, were similar in nuclear extracts from both components (stroma: 556 ± 76 fmol/mg DNA; epithelium: 697 ± 182 fmol/mg DNA, n = 8). These results suggest 1) low testosterone 5α-reductase activity in BPH epithelium does not prevent the accumulation of large amounts of DHT by this component, and 2) both epithelium and stroma from BPH tissue contain nuclear androgen receptors and so are probably androgen-sensitive.

15. Prostatic cancer - diagnostic and prognostic methods, F.H. SCHRÖDER, Erasmus Universiteit Rotterdam, Department of Urology, Rotterdam, The Netherlands

About 9% of all malignant tumors diagnosed clinically are prostatic carcinomas. This amounts to about 50 new cases per 100,000 males per year and makes prostatic cancer