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ABSTRACTS OF SHORT PAPERS

Growth Hormone and Pituitary Tumors

LH — RH

15. *W. Voelter, K. Zech* and *D. Gupta:* Synthesis of a peptide sequence Pyr-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2 with biological activity of LH/FSH-RH.
16. *H. Kuhl, C. Rosniatowski* and *H.-D. Taubert:* The role of hypothalamic L-cystine arylamidase activity in the feed-back mechanisms of gonadotrophin release.
17. *H.-D. Taubert, J. S. E. Dericks-Tan* and *H. Kuhl:* Stimulation of hypothalamic L-cystine arylamidase activity by prostaglandins E_2 and $F_{2\alpha}$ in the rat.
18. *G. Leyendecker, L. Wildt* and *W. Nocke:* Radioimmunoassay of LH-releasing hormone.
19. *E. Keller, H. G. Dahlen, G. Schubring, W. Klemt, R. Richter, E. Friedrich, E. W. Joel, H. I. Wyss, A. E. Schindler, H. J. Staemmler* and *H. P. G. Schneider:* Human pituitary gonadotropin index (HPGI): statistical analysis of 413 LRH tests.
20. *J. Happ, J. Beyer, F. Szamak, M. Neubauer, K. Demisch* and *K. Schöffling:* LH, FSH, testosterone and estrogens in serum of healthy men after prolonged infusion of synthetic LH-RH.
21. *A. Römmler* and *J. Hammerstein:* Time-dependent alterations in pituitary responsiveness caused by LH-RH stimulations in man.
22. *J. Girard, J. J. Staub, J. B. Baumann, M. Stahl* and *P. W. Nars:* Assessment of hypothalamo-anterior pituitary secreting capacity with one single test.
23. *D. Lüdecke, P.-C. Czygan, R. Hehrmann* and *D. Schrader:* Combined function tests with LRF and TRF in correlation to pituitary processes confirmed by operation findings.
24. *H. K. Kley, W. Wiegelmann, H. G. Solbach* and *H. L. Krüskemper:* A combined test for evaluating the somatotrophic, gonadotrophic and adrenocorticotrophic function of the anterior pituitary gland.
25. *D. Schönberg, E. W. Joel, E. Jetter* and *J. Bierich:* Graded dose response of plasma HLH and HFSH to synthetic gonadotrophin releasing factor in boys and girls before and after puberty onset.
26. *R. Illig, M. Tolksdorf, G. Mürset* and *A. Prader:* Evaluation of the hypothalamic-pituitary-gonadal axis by LH-RH in children and adolescents with Klinefelter's and Turner's syndrome.
27. *S. Heller* and *H. Weber:* Influence on LH release by prostaglandin $F_{2\alpha}$ in the rat.
28. *J. Sandow* and *W. Heptner:* Positive feedback effect of small doses of LH-RH after chronic treatment.
29. *F. Elsaesser, F. Ellendorff, N. Parvizi* and *A. König:* Response of the pituitary and testes to LH-RH in the neonatal miniature pig.

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30. *D. Beckmann* and *H. Breuer:* Metabolism of estrogens in liver and kidney of minipigs of different age and sex.
31. *J. H. H. Thijssen, J. Lourens* and *G. H. Donker:* Biogenesis of production of oestrogens in males with cirrhosis of the liver.
32. *P. Ball* and *E. Knuppen:* Metabolism of ethynyloestradiol and mestranol in man and interaction between 2-hydroxy-ethynyloestradiol and epinephrine.

33. *H. M. Bolt:* Kinetics of mestranol in humans in relation to its estrogenic activity.
34. *W. Wortmann, J. Schenker* and *J. C. Touchstone:* Aromatization of ^{3}H-androstenedione in the rhesus monkey liver in vivo.
35. *P. Barlas, K. Adelung, R. Röhner, A. Weimer, E. Keller* and *A. E. Schindler:* The effect of drugs on the steroid metabolism of the normal placenta.
36. *W. D. Lehmann:* The influence of prostaglandins and beta-mimetic substances on the aromatization rate in human placentas.
37. *L. Raith, A. Wirtz* and *H. J. Karl:* 5α-reduction of testosterone in mammary tumors.
38. *E. R. Lax* and *H. Schriefers:* Δ^4-3β-hydroxysteroid dehydrogenase activity in rat liver: intracellular distribution and sex dependency.
39. *H.-G. Hoff, R. Ghraf, E. R. Lax* and *H. Schriefers:* Regulation of the activities of the enzymes involved in the metabolism of steroid hormones in rat liver: the effect of 19-nortestosterone and the influence of cyproterone acetate on the action of testosterone and 5α-dihydrotestosterone.
40. *R. Ghraf, U. Vetter* and *H. Schriefers:* Organ specific sex differences in 17β-hydroxysteroid dehydrogenase activities in the rat.
41. *M. Krieg, R. Szalay* and *K. D. Voigt:* Binding and metabolism of testosterone and 5α-dihydrotestosterone in bulbocavernosus/levator ani muscle of male rats: in vivo and in vitro studies.
42. *H.-J. Horst, M. Dennis, J. Kaufmann* and *K. D. Voigt:* In vivo uptake and metabolism of ^{3}H-5α-androstane-3α, 17β-diol (3α-diol) and of ^{3}H-5α-androstane-3β, 17β-diol (3β-diol) by human benign prostatic hypertrophy.

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43. *K. Rager, D. Schönberg* and *D. Gupta:* Hormonal biotransformation in the testicular feminization syndrome.
44. *A. E. Schindler, A. Horvath* and *I. Sellin:* Steroid metabolism in the testes of a patient with testicular feminization.
45. *A. E. Schindler, E. Keller, E. Friedrich, E. R. Jaeger-Whitegiver, E. W. Joel, H. Pösl* and *E. Stolz:* Endocrine studies in patients with testicular feminization.
46. *H. Stolecke, R. A. Pfeiffer, H. A. Hienz* and *P. Strohmenger:* "Sex reversal" in a case of mixed gonadal dysgenesis with dicentric Y-chromosome (45, X/46, X, dic (Yq).
47. *H. Cramer, R. Buchholz, E. Daume, H. Kalbfleisch* and *G. Sturm:* Mixed gonadal dysgenesis: male hermaphroditism with 46, XY/45, XO/46, X dic Y mosaicism.
48. *F. Majewski, J. R. Bierich, M. Barz, W. F. Haberlandt* and *M. Stoeckenius:* On the frequency of malformations in the different forms of Turner's syndrome.
49. *G. Mürset, A. Prader* and *W. Schmid:* Correlation between phenotype and karyotype in Turner's syndrome.
50. *U. Hirche:* Genitography: diagnostic procedure in intersex problems.
51. *A. Attanasio, K. Jendricke, J. R. Bierich, D. Gupta, G. Bulle, A. Flach, I. Reisert* and *E. Tonutti:* Cryptorchidism: clinical, hormonal and histological studies.

Renin-Angiotensin-Aldosterone System, Adiuretic Hormone, Catecholamines

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53. *G. Benker, H. Kaulhausen, W. Oehm* and *H. Breuer:* Renin activity and concentration of aldosterone in plasma during the menstrual cycle.
54. *H. Kaulhausen, W. Mühlbauer, K. J. Beck* and *H. Breuer:* The effect of 17α-ethynyloestradiol-17β on plasma renin activity in ovariectomized women.
55. *W. Oelkers, M. Schöneshöfer, A. Blümel, H. Kutschke, H. Kreiser* and *R. Sterzel:* Effects of progesterone and of four synthetic gestagens on the renin-angiotensin-aldosterone system in man.
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57. *H. Thomas, D. Müller-Enoch* and *E. R. Lax:* 3-hydroxy-4-methoxymandelic acid, a new metabolite of adrenaline and noradrenaline.

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59. *U. Schwedes, H. Wehner, U. Leuschner, K. Schöffling* and *K. H. Usadel:* Development and function of isologous transplants of cell suspensions of fetal adrenal glands in the rat.
60. *E. Mäusle, H. Scherrer* and *B. Kubatsch:* Ultramorphometric studies regarding the effect of sex hormones on the adrenal cortex of the rat.
61. *R. Mies, D. Heesen* and *W. Winkelmann:* Disorders of Leydig cell function in primary adrenal insufficiency.
62. *E. Nieschlag* and *H. K. Kley:* Androgens in response to HCG in men with normal, suppressed and impaired adrenal function.
63. *W. v. Petrykowski* and *P. Burmeister:* Familial glucocorticoid insufficiency.
64. *J. Braun, O. A. Müller* and *P. C. Scriba:* Automated competitive protein binding analysis and radioimmunoassay of serum cortisol without prior organic solvent extraction.
65. *W. Vielhauer, K.-H. Gless* and *P. Vecsei:* Radioimmunoassay of 11-deoxycortisol in human plasma.
66. *A. T. A. Fazekas, J. Homoki* and *W. M. Teller:* Studies of the effect of ACTH on the cortisol content of different peripheral tissues and the adrenals in guinea pigs.
67. *B. P. Lisboa, M. Strassner, L. Nocke-Finck, H. Breuer* and *J. M. Bayer:* Studies on the metabolism of steroid hormones in a virilising tumour of the adrenal cortex.
68. *D. Engelhardt, L. Raith* and *H. J. Karl:* Female pseudohermaphroditism and hypertension due to 11β-hydroxylase deficiency in two siblings.
69. *F. Elsaesser, P. Stubbe* and *A. König:* Plasma testosterone, androstenedione and progesterone levels in newborn infants, in children and as an index of congenital adrenal hyperplasia.
70. *K. Holzmann, G. Wittenbecher* and *H. Mickan:* Prenatal diagnosis of adrenogenital syndrome.
71. *P. Edelmann* and *D. Gupta:* Hormonal investigations in adolescent idiopathic scoliosis.

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73. *K. Horn, K. R. Blümel, D. Koeppen* and *P. C. Scriba:* Radioimmunoassay for T_3 in serum: necessity of prior extraction.
74. *R. D. Hesch, A. v. z. Mühlen* and *J. Köbberling:* T_3 levels and the TRH test in the early phase of treatment of thyrotoxicosis with antithyroid drugs.
75. *M. Hüfner* and *H. Munzinger:* Functional parameters of the pituitary-thyroid system in thyroidectomized patients under different conditions of substitution.
76. *R. Hehrmann, C. Schneider* and *I. H. Tewfik:* The efficiency of triiodothyronine therapy in athyroid patients.
77. *J. Herrmann, H. J. Rusche, W. Wildmeister, H. A. Horster* and *H. L. Krüskemper:* Triiodotyronine and thyroxine serum levels after administration of T_3/T_4 mixtures.
78. *K. W. Wenzel* and *H. Meinhold:* Serum T_4 levels measured by radioimmunoassay in a single 3 mg L-thyroxine test in comparison to the classical L-triiodothyronine test for thyroid suppressibility: evidence of lower toxicity during thyroxine suppression.
79. *A. Ishihara, U. Loos, G. Rothenbuchner* and *E. F. Pfeiffer:* Thyroxine assay in urine as an index for the diagnosis of thyroid function.
80. *K. Joseph, J. Mahlstedt* and *Th. Kranz:* Correlation of serum TBG concentrations with the results of conventional in-vitro tests.
81. *P. G. Livesey, F. Erhardt, K. Horn* and *P. C. Scriba:* Isolation and radioimmunoassay of thyroxine binding globulin.
82. *G. Rabenhorst, K. Lennert, W. Bindeballe, Hg. Lahrtz, K. Schemmel* and *G. Waschulzik:* Cytology, cytophotometrical measurement of Feulgen DNA and cytochemistry of cold nodules.
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86. *D. Egert, W. Jonat* and *H. Maass:* Dependence of in-vitro progesterone metabolism on protein binding in the rat uterus.
87. *W. Geisthövel* and *K. D. Morgner:* Comparison of the binding capacity of the sexual hormone-binding globulin, free testosterone and stimulation of Leydig cells in patients with hypergonadotrophic and hypogonadotrophic hypogonadism.
88. *E. Nieschlag, H. K. Kley* and *K. H. Usadel:* Biological activity and metabolism of testosterone bound to circulating antibodies.
89. *E. Friedrich, E. R. Jaeger-Whitegiver, M. Bieder, H. Halverscheidt, B. Penke, P. Pallai, E. Keller* and *A. E. Schindler:* Standardization of specific radioimmunoassays for plasma progesterone, estradiol, estrone and androstenedione.

90. *B. Hoffmann* and *R. Hamburger:* Determination of progesterone in milk by radioimmunoassay and its application for the diagnosis of bovine fertility.
91. *P. Kemeter, H. Salzer, G. Breitenecker* and *F. Friedrich:* Progesterone, oestradiol-17β and testosterone levels in the follicular fluid of tertiary follicles and Graafian follicles of human ovaries.
92. *E. R. Jaeger-Whitegiver, M. Bieder, U. Nickel, E. W. Joel, E. Keller, E. Friedrich* and *A. E. Schindler:* Plasma estrogens, progesterone and FSH/LH ratio in normal and abnormal cycles and in cycles under oral contraceptive treatment.

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95. *V. Maier, M. Lambach, H. Laube* and *E. F. Pfeiffer:* On the mechanism of insulin secretion: in-vitro stimulation by butandioles.
96. *U. Krause, J. Beyer, K. H. Usadel* and *F. Stelzner:* Different insulin-producing tumors in a patient with polyadenomatosis of the islet cells.
97. *K. H. Usadel, U. Schwedes, U. Leuschner* and *K. Schöffling:* Development of isologous transplants of cell suspensions of the fetal pancreas in the rat.
98. *H. Bojar, K. Balzer, M. Stannek, W. Reipen* and *W. Staib:* Hormone sensitivity of isolated liver parenchymal cells.
99. *K.-G. Petersen, W. Doll, S. Steinhilber* and *L. Kerp:* Specific binding of insulin in the liver of steroid-diabetic mice.
100. *H. U. Tietze* and *R. D. Schmid:* Impaired regulation of cortisol and of epinephrine relase in children with ketotic hypoglycemia.
101. *L. Tharandt, R. I. Diekers, N. Breuer* and *W. Staib:* Effects of testosterone on glugacon and lactate-induced gluconeogenesis studied with the model of isolated perfused (without hemoglobin) mice livers.
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Prolactin, HCS

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107. *A. v. z. Mühlen, G. Schwinn, J. Köbberling. R. D. Hesch, F. Adlkofer* and H. *Schleusener:* Prolactin response to TRH and chlorpromazine in normal subjects and in patients with pituitary diseases.
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109. *H. G. Bohnet, H. G. Dahlen* and *H. P. G. Schneider:* Hyperprolactinemia and pulsatile LH fluctuation.
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111. *D. Schams, U. Andreae, V. Reinhardt* and *H. Karg:* The influence of TRH on release of prolactin and lactation in the bovine.
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TRH — TSH

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127. *J. Golstein, L. Vanhaelst, M. Bonnyns, G. Rothenbuchner, J. Birk* and *E. F. Pfeiffer:* TSH determination in rat serum by a homologous radioimmunoassay.
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Gonadotropins

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143. *K. Klinga, C. Hassenbach, J. Hohneck, H. Heep* and *B. Runnebaum:* Relationship between estradiol-17β receptor and free estradiol and between corticosteroid binding globulin and progesterone in human myometrium during the menstrual cycle.
144. *H. J. Kyrein* and *B. Hoffmann:* Effects of in-vivo pretreatment with anabolic preparations with estrogenic activity on uterine estrogen receptors of calves.
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ACTH

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163. *A. Espinoza, I. Andresen* and *M. Kroll:* Biological ACTH determination in human plasma in the pg-range.
164. *O. A. Müller, X. Baur, I. Marschner, P. Schwandt, P. C. Scriba* and *P. Weisweiler:* ACTH bioassay with isolated rat adrenal cells: ACTH activity of the porcine lipotropic peptide B.
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166. *A. Espinoza* and *M. Neuss:* Secretion dynamics and hormone synthesis of isolated human adenohypophyseal cells and hormonally active adenohypophyseal tumour cells.
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Calcium Metabolism

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171. *P. O. Schwille, N. M. Samberger* and *D. Scholz:* Pentagastrin-induced changes in plasma calcium fractions and pancreatic glucagon in humans.
172. *P. O. Schwille, U. Koch* and *N. M. Samberger:* Serum calcium fractions in subtotally thyroidectomized patients.
173. *M. A. Dambacher, Th. Lauffenburger, J. Guncaga* and *H. G. Haas:* Calcitonin in Paget's disease of bone: a study of the dose response to the human and salmon synthetic peptide.
174. *H. Schmidt-Gayk, H. Seitz, E. Ritz* and *E. Böhme:* Primary hyperparathyroidism: influence of renal function on urinary cyclic AMP.
175. *A. Schulz* and *G. Delling:* Long-term effect of calcitonin on delayed bone mineralization and bone remodelling in experimental hypoparathyroidism.

ABSTRACTS OF MAIN PAPERS

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II. Medizinische Klinik der Universität München

ISOLATION AND RADIOIMMUNOASSAY OF THYROXINE-BINDING GLOBULIN (TGB)*

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Problem: As a preliminary to investigating the peripheral control of thyroid status, it may be important to measure TBG directly. One of the difficulties in developing a radioimmunoassay lies in the need for isolating a pure preparation of TBG (1).

Methods and Results: 1. Affinity chromatography was used whereby thyroxine was coupled to agarose particles by cyanogen bromide activation. When incubated with serum at room temperature for one hour, TBG became bound to the agarose particles. These particles were washed with 0.5 M bicarbonate buffer pH 8.6 and layered into a column. After further washing the TBG was then eluted, using 0.002 M barbital buffer pH 9.3.

2. To improve the specificity of binding, a "spacer" molecule (l-lysine) was placed between the thyroxine molecule and the agarose backbone. Binding studies between ^{125}IT and TBG-extracted serum indicate the improved efficiency of agarose lysine-T_4 in extracting TBG compared with that of agarose-T_4. Nevertheless, despite this apparent advantage, subsequent elution of TBG from agarose-lysine-T_4 proved more difficult. Preliminary studies show that this is possible with 2.5% salicylate in barbital buffer pH 9.3.

3. Electrophoresis of the freeze-dried protein material eluted from either agarose-T_4 or agarose-lysine-T_4 showed it to contain TBG together with small amounts of non-specifically bound albumin and γ-globulin. Further purification was therefore necessary on a DEAE-Sephadex A 50 column, eluting with a linear concentration gradient of NaCl in 0.06 M Tris HCl buffer pH 8.6. The TBG peak, detected by prior incubation of the protein extract with $^{125}IT_4$, was eluted at between 0.08 and 0.1 M with respect to NaCl. Electrophoresis and autoradiography showed the eluted protein to be a single inter-α-globulin, which carried $^{125}IT_4$. Furthermore it was antigenic to a highly specific anti-TBG antibody (*Levy*, 1971), as demonstrated by a heavy precipitin line when subjected to immunodiffusion on 1% agar.

4. With this preparation of TBG, iodination with ^{125}I was possible employing several modifications of the Hunter and Greenwood method. 50% of the labelled ^{125}I-TBG (i. e. 10,000 opm) was subsequently found to bind to the anti-TBG antibody when used in a dilution of 1:40,000 to 1:80,000. This made it possible to plot a good standard curve and from it preliminary serum measurements of TBG were possible.

1. *Marshal, J. S.* and *Pensky, J.*: Arch. Biochem. *146*, (1971) 76.

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