

Journal of Andrology, Vol 10, Issue 6 472-477, Copyright © 1989 by The American Society of Andrology

JOURNAL ARTICLE

Stimulation of the proliferation and differentiation of Leydig cell precursors after the destruction of existing Leydig cells with ethane dimethyl sulphonate (EDS) can take place in the absence of LH

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In hypophysectomized rats, 2 days after the administration of the cytotoxic drug ethane dimethyl sulphonate (EDS), the proliferative activity of Leydig cell precursors increased six-fold. Thus, factors other than LH act locally to stimulate the proliferation of precursor cells after EDS. Twenty-six days after EDS administration, neither cells with the morphological characteristics of Leydig cells nor histochemical enzyme activities, such as 3 beta-HSD and alpha-naphtyl esterase, could be detected in testis tissue. In hypophysectomized rats treated daily with hCG (100 iu) for 7 days, starting at 26 days after EDS, the number of Leydig cells was increased to 48 +/- 11 cells (per 1000 Sertoli cells), which is approximately 4.5% of the intact control level. 3 beta-HSD and alpha-naphtyl esterase activity could be detected, and plasma testosterone levels had increased 15-fold compared with the hypophysectomized controls. These results show that proliferation and some differentiation of precursor cells along the Leydig cell lineage can occur independent of LH, but the final stages of the differentiation process require hCG stimulation.

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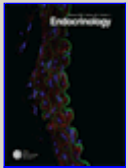
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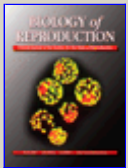
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Endocrinology, March 1, 2004; 145(3): 1453 - 1463.

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G. Wang and M. P. Hardy
Development of Leydig Cells in the Insulin-Like Growth Factor-I
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Biol Reprod, March 1, 2004; 70(3): 632 - 639.

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S.M.L. Chamindrani Mendis-Handagama and H.B. Siril Ariyaratne
Differentiation of the Adult Leydig Cell Population in the Postnatal
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Biol Reprod, September 1, 2001; 65(3): 660 - 671.

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H.B. Siril Ariyaratne, S.M.L. Chamindrani Mendis-Handagama, D. Buchanan
Hales, and J. Ian Mason
Studies on the Onset of Leydig Precursor Cell Differentiation in the
Prepubertal Rat Testis

Biol Reprod, July 1, 2000; 63(1): 165 - 171.

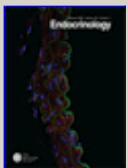
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L. Gnassi, S. Basciani, S. Mariani, M. Arizzi, G. Spera, C. Wang, C.
Bondjers, L. Karlsson, and C. Betsholtz
Leydig Cell Loss and Spermatogenic Arrest in Platelet-derived
Growth Factor (PDGF)-A-deficient Mice

J. Cell Biol., May 29, 2000; 149(5): 1019 - 1026.

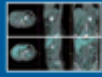
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T. Hämäläinen, M. Poutanen, and I. Huhtaniemi
Age- and Sex-Specific Promoter Function of a 2-Kilobase 5'-Flanking
Sequence of the Murine Luteinizing Hormone Receptor Gene in
Transgenic Mice

Endocrinology, November 1, 1999; 140(11): 5322 - 5329.

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J. C. Zenteno, P. Canto, S. Kofman-Alfaro, and J. P. Mendez
Evidence for Genetic Heterogeneity in Male Pseudohermaphroditism
due to Leydig Cell Hypoplasia

J. Clin. Endocrinol. Metab., October 1, 1999; 84(10): 3803 - 3806.

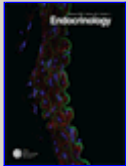
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K. J. Teerds, M. de Boer-Brouwer, J. H. Dorrington, M. Balvers, and R. Ivell
Identification of Markers for Precursor and Leydig Cell Differentiation
in the Adult Rat Testis Following Ethane Dimethyl Sulphonate
Administration

Biol Reprod, June 1, 1999; 60(6): 1437 - 1445.

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M. Tena-Sempere, A. Rannikko, J. Kero, F.-P. Zhang, and I. T. Huhtaniemi
Molecular Mechanisms of Reappearance of Luteinizing Hormone
Receptor Expression and Function in Rat Testis after Selective
Leydig Cell Destruction by Ethylene Dimethane Sulfonate

Endocrinology, August 1, 1997; 138(8): 3340 - 3348.

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