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JOURNAL ARTICLE

Human osteoblast-like cells contain specific, saturable, high-affinity glucocorticoid, androgen, estrogen, and 1 alpha, 25-dihydroxycholecalciferol receptors

P. Liesegang, G. Romalo, M. Sudmann, L. Wolf and H. U. Schweikert

Department of Internal Medicine, University of Bonn, Germany.

Glucocorticoids, androgens, estrogens and 1 alpha, 25-dihydroxycholecalciferol (1 alpha, 25-(OH)2D3) exert a variety of effects on bone homeostasis. We have measured the receptors for these hormones in cultured human osteoblast-like cells. Specific binding was found with each of the four steroids tested, namely maximum binding capacities, Bmax, of 2,581 (1,368-4,223), 146 (101-237), 176 (20-552), and 387 (290-620) fmol.mg DNA-1 (mean, range) for [3H]dexamethasone, [3H]5 alpha-dihydrotestosterone, [3H]17 beta-estradiol ([3H]E2), and [3H]1 alpha, 25-(OH)2D3, respectively. The corresponding apparent dissociation constants were 13.3 (9.2-22.2), 0.43 (0.23-0.94), 0.45 (0.17-0.88), and 0.020 (0.008-0.030) nM, respectively. Both high-affinity, low-capacity and low-affinity, high-capacity specific [3H]E2 binding were demonstrable. In conclusion, we could demonstrate that human osteoblast-like cells contain specific glucocorticoid receptors. In addition specific androgen, estrogen, and 1 alpha, 25-(OH)2D3 binding was demonstrated. These cells contain several times more binding sites for dexamethasone than for dihydrotestosterone, estradiol, and 1 alpha, 25-(OH)2D3, a feature that might contribute to the marked sensitivity of human bone to glucocorticoids.

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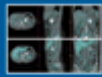
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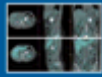
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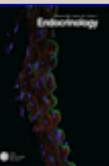


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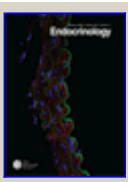


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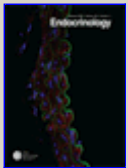
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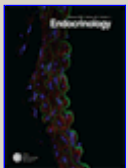
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