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1: [In Vivo](#). 2002 Mar-Apr;16(2):127-40.

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**Restoration of the thymic cellular microenvironment following autologous bone marrow transplantation.**

[Bodey B](#), [Siegel SE](#), [Kaiser HE](#).

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Mammalian thymic histogenesis can be morphologically divided into three consecutive stages: 1) epithelial; 2) lymphopoietic or lympho-epithelial; and 3) differentiated cellular microenvironmental, with formation of Hassall's bodies (HBs). The marked reduction of the thymic cellular microenvironment (TCM) is a well-controlled physiological process and is presumably under both local and global regulation by the cells of the RE meshwork and by the neuroendocrine axis, respectively. In humans, the age-related decline of facteur thymique sérique (FTS) levels in blood begins after 20 years of age and FTS completely disappears between the 5th and 6th decade of life. In contrast, serum levels of thymosin-alpha 1 and thymopietin seem to decline earlier, starting as early as 10 years of age. The influences of other hormones on the thymic involution have also been characterized: testosterone, estrogen and hydrocortisone treatment results in marked involution, cortisone and progesterone administration causes slight to moderate, while use of desoxycorticosterone has no effect. Since the thymus is the primary T-lymphopoietic organ during mammalian ontogenesis, its age-related involution with the typical immunomorphological alterations can be held responsible only for a decline in antigen-specific T-lymphocyte immune functions. Thymic involution and diminished T-lymphocyte proliferation can be partially restored by thymic tissue transplantation or administration of thymic hormones. The stimulus for thymic cell proliferation and differentiation is genetically determined within the organ implant. The only partial reconstitution of CD4+ T-helper-lymphocyte subset after anti-neoplastic chemotherapy and autologous BTM represents a significant, therapy-complicating, clinical problem. After high-dose chemotherapy, the restoration of thymus-dependent CD4+ T-lymphocyte genesis was reported only in children. Our radiation, stem cell transplantation, and hormone treatment experiments in animals resulted in age- and time-dependent regeneration of the cytoarchitecture of the TCM, as well as intrathymic lymphopoiesis.

PMID: 12073772 [PubMed - indexed for MEDLINE]

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