

Possible roles and determinants of microchimerism in autoimmune and other disorders

Autoimmun Rev. 2004 Aug;3(6):454-63.

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Microchimerism is the presence of a low level of non-host stem cells or their progeny in an individual. The most common source of microchimerism is pregnancy. During pregnancy, bi-directional trafficking of hematopoietic cells occurs through the placenta and these microchimeric cells persist for decades after childbirth. A possible role of microchimerism in the pathogenesis of some (systemic sclerosis, systemic lupus erythematosus, primary biliary cirrhosis, autoimmune thyroid diseases and juvenile myositis) but not all autoimmune diseases has been suggested by recent studies. Contradictory reports exist regarding HLA allelic associations with persistent T lymphocyte microchimerism. Although much of the focus of past studies has been on microchimerism in the effector arm of the immune system, increasing evidence suggests that microchimeric cells may differentiate into many lineages in different tissues raising additional possible roles for these cells. The possibility of microchimerism in many organs should induce an exploration of how persistent mixtures of cells of different genetic backgrounds throughout the body may influence diverse physiologic processes during life. In the present review, we discuss possible influencing factors and roles of all forms of microchimerism in autoimmune and non-autoimmune diseases. A better understanding of the immune mechanisms, along with the identification of environmental and genetic risk factors, is crucial for further deciphering the many possible implications of maternal-fetal and fetal-maternal cell trafficking in health and disease.