

In vivo survival and homeostatic proliferation of mature NK cells

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While the specificity and development of NK cells have been intensely studied, little is known about homeostasis of the mature NK population. Here we show that NK cells undergo homeostatic proliferation when transferred into an NK-deficient environment. Normal NK functional activity is maintained during this process, but there are some changes in NK phenotype. Using cell sorting, we confirm that mature (Mac-1^{hi}) NK cells undergo homeostatic proliferation in NK-deficient Rag^{-/-} gC^{-/-} hosts, although immature (Mac-1^{lo}) NK cells can also proliferate in such hosts. In contrast, we find that mature NK cells survive but do not proliferate in hosts which possess an endogenous NK pool. However, we go on to show that mature NK survival is critically dependent on IL-15. These data imply that, similar to T cells, homeostasis of the NK pool is much more dynamic than previously appreciated and this may be relevant to manipulation of NK cells for therapeutic purposes.