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Titel des Beitrags:
Lowest numbers of primary CD8(+) T cells can reconstitute protective immunity upon adoptive immunotherapy.

Abstract:
Patients undergoing allogeneic hematopoietic stem cell transplantation (allo-HSCT) are threatened by potentially lethal viral manifestations like cytomegalovirus (CMV) reactivation. Because the success of today’s virostatic treatment is limited by side effects and resistance development, adoptive transfer of virus-specific memory T cells derived from the stem cell donor has been proposed as an alternative therapeutic strategy. In this context, dose minimization of adoptively transferred T cells might be warranted for the avoidance of graft-versus-host disease (GVHD), in particular in prophylactic settings after T-cell-depleting allo-HSCT protocols. To establish a lower limit for successful adoptive T-cell therapy, we conducted low-dose CD8(+) T-cell transfers in the well-established murine Listeria monocytogenes (L.m.) infection model. Major histocompatibility complex-Streptamer-enriched antigen-specific CD62L(hi) but not CD62L(lo) CD8(+) memory T cells proliferated, differentiated, and protected against L.m. infections after prophylactic application. Even
progenies derived from a single CD62L(hi) L.m.-specific CD8(+) T cell could be protective against bacterial challenge. In analogy, low-dose transfers of Streptamer-enriched human CMV-specific CD8(+) T cells into allo-HSCT recipients led to strong pathogen-specific T-cell expansion in a compassionate-use setting. In summary, low-dose adoptive T-cell transfer (ACT) could be a promising strategy, particularly for prophylactic treatment of infectious complications after allo-HSCT.