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## Autoreactive T cells respond to nucleobindin

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## Context

Nucleobindin (Nuc) was originally identified as a 55 kDa protein that enhanced anti-DNA antibody production when added to cultures of autoimmune MRL/lpr mouse spleen cells. Nuc is a DNA- and calcium-binding leucine zipper protein whose physiological functions remain unknown. In previous studies, the authors showed that Nuc is not only able to augment anti-DNA production *in vitro*, but also to accelerate the autoimmune response *in vivo* in MRL/+/+ mice. Moreover, Nuc mRNA expression was found to be increased in lymphatic organs of lupus mice. To verify if Nuc is involved in anti-DNA production by stimulating autoreactive T cells, the authors studied the T-cell response both in lupus mice and in normal mice injected with recombinant Nuc (rNuc).

## Significant findings

Spleen cells from 6-, 11- or 29-week-old MRL/lpr mice proliferated when cultured in the presence of 25 µg/ml rNuc. A higher proliferative response was observed in 6-week-old mice, and progressively decreased during the course of the disease. T-cell lines from BALB/c mice repeatedly injected with rNuc proliferate in response to Nuc. Nuc is probably presented in the context of MHC class II, since the response was abolished by the addition of antibody to I-Ad molecule. Finally T cells alone were unable to induce anti-dsDNA secretion in BALB/c mice, but enhanced their production when co-injected with rNuc.

## Comments

This study demonstrates that T cells from lupus mice can be activated in the presence of Nuc, and that T-cell lines specific for rNuc can provide help for the production of anti-dsDNA antibodies by B cells

from BALB/c mice injected with rNuc. Previous studies had shown that Nuc is present in culture supernatant of MRL/lpr mice and is increased in their lymphatic organs, suggesting that the overexpression and secretion of the protein may be involved in the activation of autoreactive T cells. The author did not comment on the production of Nuc in human lupus, nor in other murine lupus models such as NZBxNZW F1. Moreover, no data are presented addressing whether Nuc is itself the target of autoantibodies. The authors have not commented on the fact that nucleobindin was recently shown to be a Golgi resident protein, apparently involved in Ca<sup>2+</sup> storage, and it seems that it is not primarily localized in the nucleus as originally described (see Additional information).

## Methods

T-cell lines, proliferation assays, [ELISA](#)

## Additional information

Lin P, Yao Y, Hofmeister R, Tsien RY, Farquhar MG: **Overexpression of CALNUC (nucleobindin) increases agonist and thapsigargin releasable Ca<sup>2+</sup> storage in the Golgi.** *J Cell Biol* 1999, **145**:279-289 ([PubMedabstract](#)).

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